Abstracts

Oktober 2016

DOS Kongressen 2016

Radisson Blu Scandinavia Hotel 26.–28. oktober

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DOS Bulletin

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DOS Bestyrelse
Se hele bestyrelsen side 244

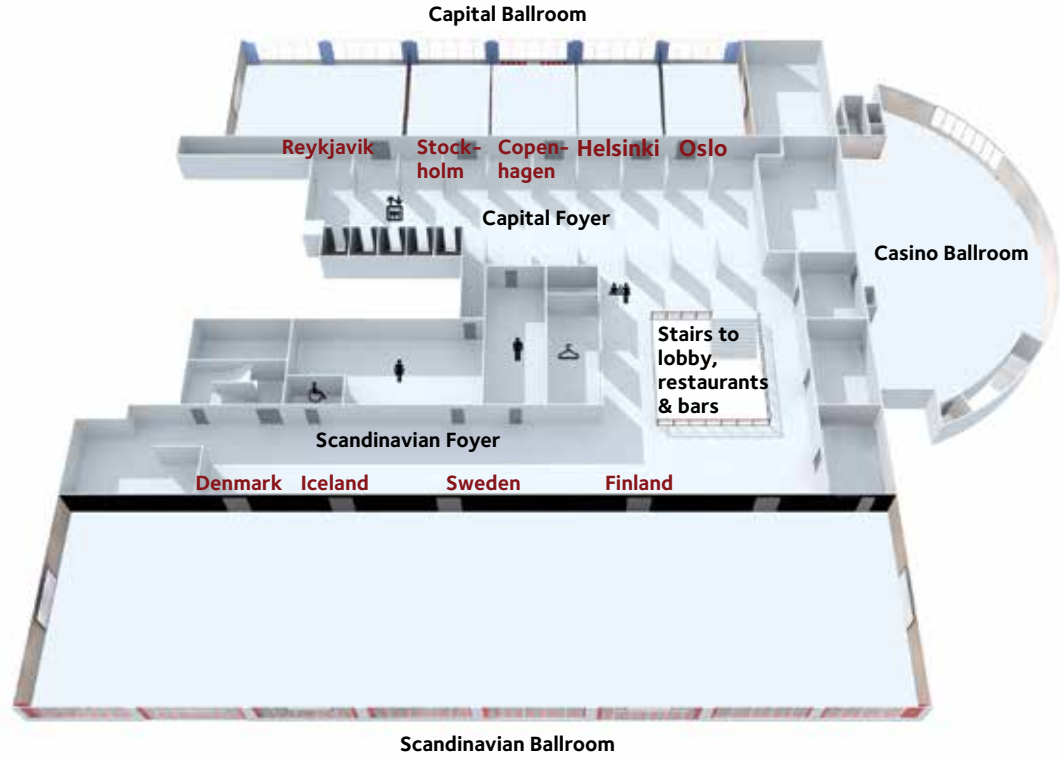
ISSN 0902-8633

Næste BULLETIN
Deadline: uge 31, 04.08.2017
Udkommer: uge 39, 29.09.2017
Alle indlæg til bulletinen bedes indsendes i word-format.

	Onsdag d. 26. oktober	Torsdag d. 27. oktober	Fredag d. 28. oktober
08.00-08.30		Generalforsamling	
08:30-09:00			
09:00-09:30	1: Experimentel and Tumor 2: Knee I 3: Trauma I Symposium (Videnskabeligt Udvalg)		14: Sports Medicine II 15: Infection/Amputation and Traume II Symposium (Uddannelsesudvalg)
09:30-10:00		7: Paediatrics 8: Spine 9: YODA Best Papers	
10:00-10:30			
10:30-11:00	Kaffe i udstillingen	Kaffe i udstillingen	Kaffe i udstillingen
11:00-11:30	Poster I+II+III	DOS HonoraryLecture	Guildal Lecture
11:30-12:00			
12:00-12:30	Frokost i udstillingen	Frokost i udstillingen samt Frokost symposium	Frokost i udstillingen
12:30-13:00			
13:00-13:30	Møde i fagområderne	10: Foot/Ankel and Shoulder/Elbow 11: Hip I and Knee II 12: Sports Medicine I Symposium (Børneortopædi)	16: Hand/Wrist and Trauma III 17: Hip II Symposium (Kvalitetsudvalg)
13:30-14:00			
14:00-14:30			
14:30-15:00	Kaffe i udstillingen	Kaffe i udstillingen	Uddelinger og kaffe
15:00-15:30	Møde i fagområderne (fortsat)	Professorforelæsning	
15:30-16:00		13: DOS Best Papers Vote for Best Poster Velkomst til nye kollegaer	
16:00-16:30			
16:30-17:00			
17:00-17:30			
17:30-18:00	Posterwalk and 18: Cases / Technical Notes		
18:00-18:30			
18:30-19:00		DOS Party	
19:30			

Indhold

Floorplan


Capital Ballroom
Reykjavik
Stock-holm
Copen-hagen
Helsinki
Oslo
Capital Foyer
Casino Ballroom
Stairs to lobby, restaurants & bars
Scandinavian Foyer
Denmark
Iceland
Sweden
Finland
Scandinavian Ballroom

Udstillere

Firma	Stand nr.
Arthrex Danmark A/S	1
Bandagist Jan Nielsen A/S	2
B. Braun Medical A/S	3
ConMed Denmark	4
Curetis GmbH	5
DePuy Synthes	6
DJO Nordic	7
Episurf Medical AB	8
Fischer Medical ApS	9
Geni Medical B.V.	10
Globus Medical Denmark	11
Innosurge A/S	12
KEBOMED A/S	13
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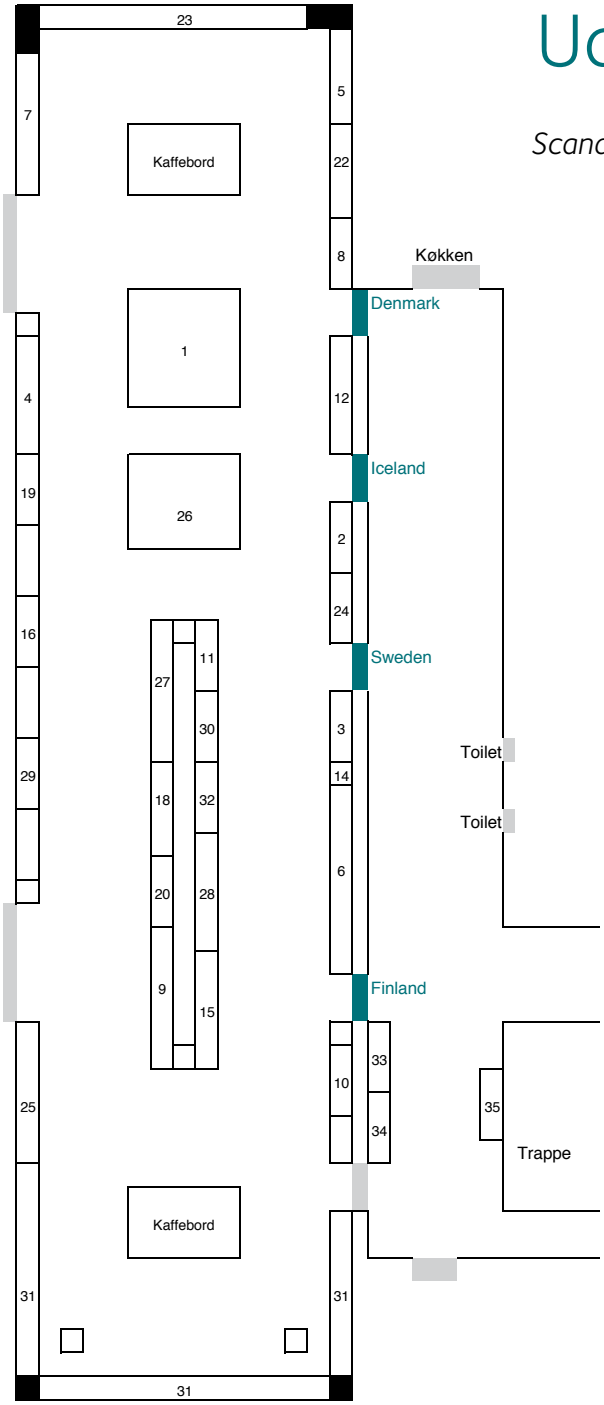
Udstilling

Scandinavian Ballroom



Dagsprogram

Onsdag d. 26. oktober 2016

		Lokale:
09:00 – 10:30	**Session 1** *(Experimentaland Tumor)*	*Reykjavik*
09:00 - 10:30	**Session 2** *(Knee I)*	*Stockholm/ Copenhagen*
09:00 - 10:30	**Session 3** *(Trauma I)*	*Helsinki/Oslo*
09:00 - 10:30	**DOS Symposium:** *(Videnskab)* ***"Studiedesigns – muligheder, styrker og svagheder"***	*Casino Ballroom*
10:30 - 11:00	***Kaffe i udstillingen***	
10:30 - 12:00	*Forum for ledende overlæger*	*Lokale 2620 (26. etage)*
11:00 - 12:00	**Session 4** *(Poster med foredrag I)*	*Reykjavik*
	Session 5 *(Poster med foredrag II)*	*Stockholm/ Copenhagen*
	Session 6 *(Poster med foredrag III)*	*Helsinki/Oslo*
12:00 - 13:00	***Frokost i udstillingen***	
13:00 - 14:30	**Møde i fagområderne**	
	Fagområde:	Lokale:
	Dansk Selskab for Hofte- og Knækirurgi	*Casino Ballroom*
	Dansk Selskab for Håndkirurgi	*Reykjavik*
	Dansk Ortopædisk Traumeselskab	*Oslo*
	SAKS og DSSAK (sammen)	*Stockholm/ Copenhagen*
	Dansk Fod- og Ankelkirurgisk selskab	*Helsinki*
	Dansk Børneortopædisk Selskab	*Directors*

14:30 - 15:00	***Kaffe i udstillingen***	
15:00 - 17.30	**Møde i fagområderne (fortsat) samt:**	
	Ryginteressegruppen	*Chairmans*
16:00 - 17:30	*SAKS (alene)*	*Stockholm*
	DSSAK (alene)	*Copenhagen*
	Dansk Selskab for Ortopædisk Infektionskirurgi (DSOI)	*"Top of Town" (25. etage)*
17:30 – 18:30	**Velkomst og Posterwalk**	*Capital Foyer*
17:30 – 18:30	**Session 18** (Cases and Technical notes)	*Casino Ballroom*
18:00 – 20:00	*Danske Ortopæders Organisation*	*Helsinki*
18:30 – 20:30	*Yngre Ortopædkirurger Danmark (YODA)*	*Islands Brygge*

Dagsprogram

Torsdag 27. oktober 2016

		Lokale
08:00 - 09:30	**Generalforsamling i DOS**	*Casino Ballroom*
09:30 - 10:30	**Session 7** *(Pediatrics)*	*Reykjavik*
09:30 - 10:30	**Session 8** *(Spine)*	*Stockholm/ Copenhagen*
09:30 - 10:30	**Session 9** *(YODA Best Papers)*	*Helsinki/Oslo*
10:30 - 11:00	***Kaffe i udstillingen***	
11:00 - 12:00	**DOS Honorary Lecture** ***v/Miss Deborah M Eastwood,*** ***"Timeline of Hip Disorders from Child to adolescent"***	*Stockholm/ Copenhagen Helsinki/Oslo*
12:00 - 13:00	***Frokost i udstillingen***	
12:15 - 12:45	**Frokostsymposium:** **Zimmer Biomet** **Professor Andrew Price** **Nuffield Orthopaedic Centre, Oxford, UK** ***"Oxford Partial Knee,*** ***40 Years of Excellence"***	*Casino Ballroom*
13:00 - 14:30	**Session 10** *(Foot/Ankle + Shoulder/Elbow)*	*Reykjavik*
	Session 11 *(Hip I and Knee II)*	*Stockholm/ Copenhagen*
	Session 12 *(Sports Medicine I)*	*Helsinki/Oslo*

13:00 - 14:30	**DOS Symposium** **Børneortopædi, Jubilæumssymposium** *"Børnefrakturer"*	*Casino Ballroom*
14:30 - 15:00	***Kaffe i udstillingen***	
15:00 – 15:30	**Professorforelæsning** **Professor Hagen Schmal** ***"Pelvic Fractures: Evaluation of Trends based on Registry Research"***	*Stockholm/ Copenhagen/ Helsinki/Oslo*
15:30 – 17:00	**Session 13** *(DOS Best Paper and Poster vote)*	*Stockholm/ Copenhagen/ Helsinki/Oslo*
18.30 -	***Kongresfest*** Uddeling af DOS og YODA priser	*Casino Ballroom/ Stockholm/ Copenhagen/ Helsinki/Oslo*

Dagsprogram

Fredag 28. oktober 2016

		Lokale:
09:00 – 10:30	**Session 14** *(Sports Medicine II)*	*Reykjavik*
	Session 15 *(Infection/Amputation and Trauma II)*	*Stockholm/ Copenhagen*
09:00 - 10:30	**DOS Symposium (Uddannelse)** *"Test og Kompetencevurdering af den kommende speciallæge"*	*Helsinki/Oslo*
10:30 – 11:00	***Kaffe i udstillingen***	
11:00 – 12:00	**Guildal Lecture** **Professor Denise Eygendaal, MD The Netherlands** ***"The Elbow: Exclusive, Effective and Essential"***	*Stockholm/ Copenhagen/ Helsinki/Oslo*
12:00 - 13:00	***Frokost i udstillingen***	
13:00 - 14:30	**Session 16** *(Hand/Wrist and Trauma III)*	*Reykjavik*
	Session 17 *(Hip II)*	*Stockholm/ Copenhagen*
13:00 - 14:30	**DOS Symposium (Kvalitetsudvalget)** ***"NKR om menisklidelser"***	Helsinki/Oslo
14:30-15:00	**Uddelinger:** • **DOS Fonden** • **Guildalfonden**	*Stockholm/ Copenhagen*
15:00	***Kaffe***	*Stockholm/ Copenhagen*

Session 1: Experimentel and Tumor

Onsdag d. 26. oktober
09:00-10:30
Lokale: Reykjavik

Chairmen: Thomas Jakobsen / Johnny Keller

1. In vivo drug release behavior and osseointegration of a doxorubicin-loaded tissue-engineered scaffold
Ming Sun, Muwan Chen, Miao Wang, Jakob Hansen, Anette Anette Baatrup, Frederik Dagnaes-Hansen, Jan Rölfing, Jonas Jensen, Helle Lysdahl, Mogens Johannsen, Dang Le, Jørgen Kjems, Cody Bünger

2. Comparison of sheep adipose and bone marrow stem cells on bone formation identified by anti-human vimentin stain in an ectopic mouse model
Kristian Kjærgaard, Chris H Dreyer, Nicholas Ditzel, Christina M Andreasen, Li Chen, Søren P Sheikh, Søren Overgaard, Ming Ding

3. Epidemiology in surgical treatment of metastatic bone disease of the appendicular skeleton -Reporting from a consecutive prospective population based cohort.
Michala Skovlund Sørensen, Klaus Hindsø, Anders Troelsen, Stig Dalsgaard, Tobias Fog, Tomasz Zimnicki, Michael Mørk Petersen

4. Surveillance for development of local recurrence after primary surgical excision of soft tissue sarcomas and borderline tumours of the extremities and trunk wall
Thea Hovgaard, Tine Nymark, Michael Mørk Petersen

5. Investigating time point for stimulation of vascular endothelial growth factor and mesenchymal stem cell on bone formation in severe immunodeficiency mice
Chris Dreyer, Kristian Kjærgaard, Nicholas Ditzel, Jørgensen Niklas , Søren Overgaard, Ming Ding

6. Preoperative plasma YKL-40 levels in bone and soft tissue sarcoma patients
Andrea P. Thorn, Mette L. Harving, Gunnar S. Lausten, Julia S. Johansen, Michael M. Petersen

7. The intracortical accumulation of enlarged lacunae is a key contributor to the increased cortical porosity and trabecularization during aging
Christina M. Andreasen, Jean-Marie Delaissé, Bram C.J. van der Erden, Dorie Birkenhäger- Frenkel, Johannes P. T. M. van Leeuwen, Ming Ding, Thomas L. Andersen

8. Implant fixation with BMP-2 and Zolendronate in a peri-implant gap - with and without allograft
Rasmus Cleemann, Mette Sørensen, Jørgen Baas, Joanie Bechtold, Kjeld Søballe

9. Collagen type IV-induced changes in expression of stress-related proteins in normal and osteoarthritic chondrocytes are mediated by integrins - α2β1 and αvβ3
Casper Bindzus Foldager, Martin Lind, Wei Seong Toh, Helle Lysdahl

10. Prognostic Factors for Survival of High Grade Osteosarcoma - A 20 Year Single-institution Assessment from Eastern Denmark
Thomas Colding-Rasmussen, Andrea Pohly Thorn, Peter Frederik Horstmann, Michael Mørk Petersen

11. Comparison of two alternative wound closure methods for tumor arthroplasty of the hip.
Werner Hettwer, Peter Horstmann, Michael Mørk Petersen

Session 2: Knee I

Onsdag d. 26. oktober
09:00-10:30
Lokale: Stockholm / Copenhagen

Chairmen: Henrik Schrøder / Ashir Ejaz

12. Causes of Prolonged Length of Stay and Readmissions after "Fast-Track" Total Knee Arthroplasty.
Martin Lindberg-Larsen, Mette Hornsleth, Jens Bagger, Susanne van der Mark

13. No effect of a bipolar sealer on total blood loss or blood transfusion in non-septic revision knee arthroplasty – a prospective study with matched retrospective controls
Christian Skovgaard Nielsen, Kirill Gromov, Jans Oeivind , Anders Troelsen , Husted Henrik

14. Weight Loss Intervention before Total Knee Replacement
Anette Liljensøe, Jens Ole Laursen, Henning Bliddal, Kjeld Søballe, Inger Mechlenburg

15. Is Forgotten Joint Score a better tool than Oxford Knee Score to measure patient reported outcomes after Total Knee Replacement?
Henriette Appel Holm, Lasse Enkebølle Rasmussen, Per Wagner Kristensen

16. No exacerbation of knee joint pain and effusion following preoperative progressive resistance training in patients scheduled for total knee arthroplasty: secondary analyses from a randomized controlled trial
Birgit Skoffer, Ulrik Dalgas, Thomas Maribo, Kjeld Søballe, Inger Mechlenburg

17. Is the learning curve in cementless unicompartmental knee replacements related to periprostetic fractures and subscidence?
Lasse E. Rasmussen, Bjørn Gotlieb Jensen, Claus Varnum

18. Oxford Unicompartmental Knees display contactloss during step-cycle motion and bicycle motion
Kristian Horsager, Bart L. Kaptein, Peter Bo Jørgensen, Maiken Stilling

19. Efficacy of pre-operative progressive resistance training in patients undergoing total knee arthroplasty – 1 year follow-up
Birgit Skoffer, Thomas Maribo, Inger Mechlenburg, Kjeld Søballe, Ulrik Dalgas

20. Preoperative Methylprednisolone does not reduce the loss of Knee-Extension Strength after Fast-Track Total Knee Arthroplasty - a randomized, double-blind, placebo-controlled trial
Viktoria Lindberg-Larsen, Thomas Bandholm, Camilla Zilmer, Hornsleth Mette, Bagger Jens, Kehlet Henrik

21. The survival of total knee arthroplasties depends on the need for additional component supplementation – A Danish population-based study including 52.876 patients
Anders El-Galaly, Steffen Haldrup Andersen, Alma Becic Pedersen, Andreas Kappel, Poul Torben Nielsen, Michael-Ulrich Jensen

22. Bone mass is lower in patients with severe knee osteoarthritis and attrition.
Karina Nørgaard Linde, Katriina Bøcker Puhakka, Bente Lomholt Langdahl, Kjeld Søballe, Inger Krog-Mikkelsen, Maiken Stilling

Session 3: Trauma I

Onsdag d. 26. oktober
09:00-10:30
Lokale: Helsinki / Oslo

Chairmen: Nanna Salling / Michael Brix

23. Reoperation after long and short intra medullary nail in patients with per- and subtrochanteric fracture.
Lasse Eriksen, Frederik Højsager, Katia Damsgaard Bomholt, Søren Overgaard, Jens Lauritsen, Bjarke Viberg

24. Reoperations after cemented and uncemented hemiarthroplasty - A study from the Danish Multidisciplinary Registry of Hip Fractures (DMRHF)
Bjarke Viberg, Alma Becic Pedersen, Anders Kjærsgaard, Jens Lauritsen, Søren Overgaard

25. Exploring learning curves for simulation-based hip-fracture surgery
Amandus Gustafsson, Poul Pedersen, Henrik Palm, Lars Konge

26. Dementia as risk factor of Corail stem dislocation
Bjørn Nedergaard, Ahsan Al-Maleh

27. Management of hip fractures in Denmark: a questionnaire
Peter Hedelund Rabøl

28. Thrombosis after hip fracture surgery
Liv Riisager Wahlsten, Henrik Palm, Jonas Olesen, Gunnar Gislason, Stig Brorson

29. 35-year trends in first-time hospitalization for hip fracture and one year mortality: a Danish nationwide cohort study, 1980-2014
Alma B Pedersen, Vera Ehrenstein, Szimonetta Szepligeti, Astrid Lunde, Ylva T Lagerros, Anna Westerlund, Grethe S Tell, Henrik Toft Sørense

30. Can trauma surgeon's subjective intraoperative conclusions on patients bone quality be trusted?
Ole Brink, Tei Randi, Langdahl Bente

31. Influence of computer tomography scans on treatment of bi- and trimalleolar fractures
Mads Terndrup, Amandus Gustafsson, Kolja Weber, Kristoffer Barfod, Anders Troelsen, Ilija Ban

32. Function, health status and satisfaction after surgery with THA following femoral neck fracture or osteoarthritis.
Steffan Tabori Jensen, Torben Bæk Hansen, Søren Bøvling, Morten Homileus, Peter Aalund, Maiken Stilling

33. Mortality in patients treated with cemented or uncemented hemiarthroplasty - A study from the Danish Multidisciplinary Registry of Hip Fractures (DMRHF)
Bjarke Viberg, Alma Becic Pedersen, Anders Kjærsgaard, Søren Overgaard, Jens Lauritsen

Session 7: Pediatrics

Torsdag 27. oktober
09:30-10:30
Lokale: Reykjavik

Chairmen: Peter Buxbom / Christian Færgeman

34. The effect of spinal rotation on Cobb' angle
Christian Wong, Johanna Hall, Kasper Gosvig

35. Evaluation of Treatment of Bone Bridges After Injury to the Growth Plate
Ahmed Abdul-Hussein Abood, Bjarne Møller-Madsen, Juan Manuel Shiguetomi-Medina, Casper Bindzus Foldager, Ole Rahbek

36. Calcaneal cuboid joint motion can be assessed by radiostereometric analysis
Polina Martinkevich, Maiken Stilling , Bjarne Møller-Madsen, Ole Rahbek

37. Obstetric risk factors in children with Congenital Muscular Torticollis
Nina Hardgrib, Ole Rahbek, Bjarne Møller-Madsen, Rikke Maimburg

38. Evaluation of Screening Programme for Developmental Dysplasia of the Hip
Jens Svendsson, Ahmed Abood, Søren Harving, Anne-Sofie Jensen

39. Evaluation of the interdiciplinary CPOP consultations in the Southern Denmark: A parental satisfaction survey
Helle Sneftrup Poulsen, Niels Wisbech Pedersen

40. Effectiveness And Pittfalls Of The bilateral 8-Plate Technique For Treatment Of Moderate Leg-Length Discrepancy
Roshan Latifi, Johanna Hall, Silas Gylvin, Christian Wong

Session 8: Spine

Torsdag d. 27. oktober
09:30-10:30
Lokale: Stockholm / Copenhagen

Chairmen: Cody Bünger / Dennis Hallager

41. Clinical outcome after decompression surgery for lumbar spinal stenosis
Rune Tendal Paulsen, Mikkel Østerheden Andersen, Leah Carreon, Jamal Bech Bouknaitir, Søren Fruensgaard

42. Radiographic Predictors for Mechanical Failure following Adult Spinal Deformity Surgery
Dennis Winge Hallager, Sven Karstensen, Naeem Bukhari, Martin Gehrchen, Benny Dahl

43. Long-term Survival after Surgical Treatment of Spinal Metastasis – The Predictive Role of Gender
Dennis Karimi, Søren Morgen, Sidsel Fruergaard, Martin Gehrchen, Benny Dahl

44. Incidence of revision surgery following long fusions using lumbar, lumbo-sacral fixation or iliac fixation in adult scoliosis patients
Miao Wang, Cody Bünger, Abarajitha Thiyagarajah, Ming Sun, Ebbe Stender Hansen, Haisheng Li, Kestutis Valencius, Peter Helmig, Kristian Høy

45. The Effect of Tranexamic Acid on Duration of Surgery and Complications. A double blind, randomized study of patients undergoing lumbar spine surgery. Preliminary report
Signe Forbech Elmose, Else Bay Andersen, Mikkel Østerheden Andersen

46. Organ dose and effective dose with the EOS scanner in spine deformity surgery. A study on anthropomorphic phantoms describing patient radiation exposure in full spine examinations
Peter Heide Pedersen, Søren Peter Eiskjær, Asger Greval Petersen

47. Metal-on-metal wear in Children with Growth Rod Instrumentation (GR) in Early Onset Scoliosis

Simon Toftgaard Skov, Jan Hendrik Duedal Rölfing, Haisheng Li, Ebbe Stender Hansen, Cody Bünger

Session 9: YODA Best Papers

Torsdag d. 27. oktober
09:30-10:30
Lokale: Helsinki / Oslo

Chairmen: Søren Ohrt Nissen / Nanna Sillesen

48. Can easily identifiable radiographic features predict component malpositioning in measured resection Total Knee Arthroplasty?
Roshan Latifi, Kirill Gromov, Thomas Kallemose, Henrik Husted, Anders Troelsen

49. Bone, Subcutaneous Tissue and Plasma Pharmacokinetics of Vancomycin in Total Knee Replacement Patients
Mats Bue, Mikkel Tøttrup, Pelle Hanberg, Otto Langhoff, Hanne Birke-Sørensen, Kjeld Søballe

50. Passive knee stability after anterior cruciate ligament reconstruction using Endobutton or ToggleLoc with ZipLoop as femoral fixation device – a comparison of 3175 patients from the Danish Knee Ligament Reconstruction Register
Christian Asmus Peter Asmussen, Mikkel Lindegaard Attrup, Kristian Thorborg, Per Hölmich

51. Closed Reduction of Distal Radius Fractures: A Systematic Review and Meta-analysis
Hjalte Würtz, Sükriye Corap, Julie Erichsen, Bjarke Viberg

52. The Noergaard technique, a simple and non-traumatic method for reduction of anterior shoulder dislocations
Nikolaj Erin-Madsen, Ilija Ban, Morten Grove Thomsen, Jens Noergaard, Peter Toft Tengberg

Session 10: Foot/Ankle and Shoulder/Elbow

Torsdag 27. oktober
13:00-14:30
Lokale: Reykjavik

Chairmen: Marianne Vestermark / Brian Elmengaard

53. Non-union of displaced midshaft fractures of the clavicle: A predictor model using pain scores.
Andreas Qvist, Michael Toft Væsel, Carsten Moss, Thomas Jakobsen, Steen Lund Jensen

54. Long-term Survival Rates of Different Shoulder Arthroplasty Types Used for Glenohumeral Osteoarthritis.
Jeppe Vejlgaard Rasmussen, Steen Lund Jensen, Stig Brorson

55. An exercise programme for people with severe polyneuropathy and diabetic foot ulcers - 5 case reports on feasibility, safety and preliminary effectiveness
Kajsa Lindberg, Britt Sundekilde Møller, Klaus Kirketerp-Møller, Morten Tange Kristensen

56. Development and reliability of the Achilles Tendon Length Measure and comparison with the Achilles Tendon Resting Angle on patients with an Achilles tendon rupture
Maria Swennergren Hansen, Kristoffer Weisskirchner Barfod, Morten Tange Kristensen

57. Pedobar pressure and comfort in a mass produced orthopaedic stiletto compared to a standard stiletto and a sneaker. In the lab and in life
Jeannette Ø. Penny, Merete Speedtsberg, Thomas Kallemose, Jesper Bencke

58. Suspected Impingement Syndrome - prevalence of radiographic findings – and their relation to Oxford Shoulder Score
Linda Christie Andrea, Poul Frost, Kate Smidt, John Gelicneck, Torben Bæk Hansen, Søren Rasmussen Deutch , Susanne Wiulff Svendsen

59. OATS in the Talus- a success or a failure- 8 Year follow up
Ellen Hamborg-Petersen, Manfred Thomas

60. Treatment efficacy of degenerative shoulder lesions did not improve in Denmark from 1996 to 2013. A registry study of 244.519 patients.
Nina Monrad, Ann Ganestam, Thomas Kallemose, KW Barfod

61. High incidence of periprostetic lucency in CCI Evolution ankle implants, measured by CT and X-ray
Sanja Somodi, Jeannette Østergaard Penny, Kim Hegnet Andersen, Lars Bo Ebskov, Peter Bro Rasmusen, Omar Muharemovic

62. The Critical shoulder angle show excellent reliability
Arnar Oskar Bjarnison, Thomas Juul Sørensen, Thomas Kallemose, Kristoffer W. Barfod

63. Clinical validation of a handheld wound measurement device. Measuring diabetic foot ulcers – a pilot study.
Halschou-Jensen Peter Max, Bouchelouche Pierre , Sauer Jannie, Fabrin Jesper

Session 11: Hip I and Knee II

Torsdag d. 27. oktober
13:00-14:30
Lokale: Stockholm / Copenhagen

Chairmen: Henrik Daugard / Claus Emmeluth

64. Safe Performance of E-vitamin Infused Polyethylene in Total Knee Arthroplasty at 3-year Follow-up Evaluated in a Prospective, Multicenter Study.
Timothy Hunt Batter, Christian Skovgaard Nielsen, Vincent Galea , Huddleston James , Henrik Malchau, Anders Troelsen

65. Iron deficiency and causes of preoperative anemia in patients scheduled for elective hip- and knee arthroplasty – an observational study
Øivind Jans , Khan Nissa , Christian Skovgaard Nielsen , Kirill Gromow, Anders Trolsen, Henrik Husted

66. What predicts preoperative joint awareness in patients undergoing Total Knee Arthroplasty?
Dana Li, Anders Troelsen, Lina Ingelsrud, Henrik Husted, Kirill Gromov

67. Implementation of value-based healthcare in elective total hipreplacement at Sahlgrenska University Hospital
Erik Malchau, Ola Rolfson, Magnus Karlsson, Adina Welander, Peter Grant, Maziar Mohaddes

68. 6 years minimum followup of an offloading knee brace for unicompartmental knee arthritis
Paul Lee

69. Predictors of pain and physical function at 3 and 12 months after total hip arthroplasty
Sarah E Plews, Randi L. Nielsen, Søren Overgaard, Carsten Jensen

70. Occupational and environmental risk factors for Hip and Knee Osteoarthritis and gene-exposure interaction: a co-twin control study from the DTR, DHA and DKA
Søren Glud Skousgaard, Lars Peter Andreas Brandt, Søren Overgaard, Sören Möller, Axel Skytthe

71. The effect on knee-joint load of analgesic use compared with neuromuscular exercise in patients with knee osteoarthritis: a randomized, single-blind, controlled trial
Anders Holsgaard-Larsen, Brian Clausen, Jens Søndergaard, Robin Christensen, Thomas P. Andriacchi, Ewa M. Roos

72. Early results of cemented Rimfit X3 cup
Morten S Wad

73. What do surgeons consider as optimal acetabular component positioning during primary total hip arthroplasty?
Dana Cotong, Anders Troelsen, Henrik Husted, Kirill Gromov

74. Risk of pneumonia and urinary tract infection after total hip arthroplasty and the impact on survival
Eva Natalia Glassou, Torben Bæk Hansen, Alma Becic Pedersen

Session 12: Sports Medicine I

Torsdag d. 27. oktober
13:00-14:30
Lokale: Helsinki / Oslo

Chairmen: Simon Døssing / Ole Gade Sørensen

75. Reliability of measurements on x-rays for knee dysplasia and patella height
Anders Bøvling, Rune D Bech, Bertel Understrup, Bjarke Viberg

76. The influence of the anterolateral ligament on knee stability during flexion-internal rotation. A biomechanical cadaver study using dynamic radiostereometric analysis
Emil T. Nielsen, Kasper Stentz-Olesen, Sepp de Raedt, Peter Bo Jørgensen, Ole G. Sørensen, Bart Kaptein, Michael S. Andersen, Maiken Stilling

77. The influende of graft fixation methods on revision rates after primary ACL reconstruction.
Niclas Højgaard Eysturoy, Torsten Grønbech Nielsen, Martin Carøe Lind

78. Epidemiology of groin injuries in a professional football league
Andrea Mosler, Adam Weir, Cristiano Eirale, Per Hölmich, Kay Crossley

79. Predicting MRI injury location using clinical examination in athletes with acute groin injuries.
Andreas Serner, Adam Weir, Johannes L Tol, Kristian Thorborg, Frank Roemer, Ali Guermazi, Per Hölmich

80. Quadriceps strength and hop test performance following anterior cruciate ligament reconstruction: A prospective cohort study of 123 patients.
Kristoffer Weisskirchner Barfod, Julian A Feller, Ross Clark, Taylor Hartwig, Brian M Devitt, Kate E Webster

81. Knee and back pain in patients with symptomatic femoroacetabular impingement before and after hip arthroscopy
Signe Kierkegaard, Bent Lund, Kjeld Søballe, Ulrik Dalgas, Inger Mechlenburg

82. Reliability of MRI assessment of acute musculotendinous groin injuries in athletes
Andreas Serner, Frank Roemer, Per Hölmich, Kristian Thorborg, Jingbo Niu, Adam Weir, Johannes L Tol, Ali Guermazi

83. Danish Hip Arthroscopy Registry: Capsular closing in patients with femoroacetabular impingement (FAI). Results of a matched-cohort controlled study.
Søren Winge, Bjarne Mygind-Klavsen, Bent Lund, Torsten Grønbech Nielsen, Niels Maagaard, Otto Kraemer, Per Hölmich, Martin Lind

84. Is muscle strength impairments different for male vs. female patients with symptomatic femoroacetabular impingement?
Signe Kierkegaard, Ulrik Dalgas, Bent Lund, Kjeld Søballe, Inger Mechlenburg

85. High incidence in acute and recurrent patellar dislocations; A retrospective nationwide epidemiological study involving 24.154 primary dislocations
Kasper Skriver Gravesen, Anders Troelsen, Lars Blønd, Kristoffer Weisskirchner Barfod

Session 13: DOS Best Papers

Torsdag d. 27. oktober
15:30 – 17:00
Lokale: Stockholm / Copenhagen / Helsinki / Oslo

Chairmen: Ole Rahbek / Jeannette Penny

86. Comparison of soft tissue and bone graft fixation for reconstruction of the medial patellofemoral ligament. A randomized controlled trial.
Martin Lind, Peter Faunø, Ole Gade Sørensen, Bjarne Mygind-Klavsen, Lene MIller, Thorsten Nielsen

87. Alarmingly high failure rate after Medial Patellofemoral Ligament reconstructions. A retrospective nationwide epidemiological study with a 10 year follow up on surgical intervention and 2.572 Medial Patellofemoral Ligament reconstruction surgeries
Kasper Skriver Gravesen, Anders Troelsen, Lars Blønd, Kristoffer Weisskirchner Barfod

88. Gait Function Before and After Total Knee Arthroplasty A Randomized Study of Fixed Bearing versus Mobile Bearing Articulation
Michael Tjørnild, Uwe Kersting, Kjeld Søballe, Poul Mogensen, Maiken Stilling

89. Collagenase clostridium histolyticum (Xiapex®) versus percutaneous needle fasciotomy for Dupuytren's contracture in proximal interphalangeal joints. An independent, open-label, randomized controlled trial
Simon Toftgaard Skov, Therkel Bisgaard, Per Søndergaard, Jeppe Lange

90. Achilles Tendon Length, ATRS and Functional Outcomes 5 Years After Acute Achilles Tendon Rupture Treated Conservatively
Rasmus Kastoft, Jesper Bencke, Kristoffer Barfod, Merete Speedtsberg, Rasmus M. Søndergaard, Jeannette Ø. Penny

91. Risk of revision and reasons for revision after shoulder replacement for acute fracture of the proximal humerus: a Nordic registry-based study of 6,756 cases

Stig Brorson, Björn Salomonsson, Steen Lund Jensen, Anne Marie Fenstad, Yilmaz Demir, Jeppe Vejlgaard Rasmussen

92. Early Mobilization after Volar Plate Osteosynthesis of Distal Radius Fractures - a Prospective Randomized Study.

Thomas Juul Sørensen, Kecia Ardensø, Gunnar H. Laier, Susanne Kristensen Mallet

Session 14: Sports Medicine II

Fredag 28. oktober
9:00-10:30
Lokale: Reykjavik

Chairmen: Nis Nissen / Per Hölmich

93. Risk factors influencing the one year postoperative risk of reoperation after arthroscopic meniscal repair: a three year retrospective observational, cohort study.
Lotte Drustrup, Laura Fuglsang, Helene Rovsing, Cecilie Rovsing, Carsten Mølgaard, Sten Rasmussen

94. Dynamic radiostereometric analysis for evaluation of hip joint pathomechanics
Lars Hansen, Sepp de Raedt, Bjarne Mygind-Klavsen, Peter Bo Jørgensen, Kjeld Søballe, Bart L. Kaptein, Maiken Stilling

95. Diagnostic value of magnetic resonance imaging on meniscal healing after meniscal repair
Emilie Faunø, Ole Gade Sørensen, Claus Tvedesøe, Torsten Grønbæk Nielsen, Peter Faunø, Martin Lind

96. Several reasons for saphenous nerve injuries after gracilis tendon harvesting. A cadaver study.
Signe Wisbech Vange

97. Bone Tunnel Enlargement after ACL Reconstruction with Hamstring Autograft Is Dependent on Original Bone Tunnel Diameter
Steffen Sauer, Martin Lind

98. A novel clinical method for non-invasive quantification and grading of pivot-shift test
Emil T. Nielsen, Michael S. Andersen, Ole G.Sørensen, Sepp de Raedt, Maiken Stilling

99. Trends in arthroscopic meniscectomy and meniscal repair controlled for age, sex and lesion
Helene Rovsing, Cecilie Rovsing, Laura Drustrup, Carsten Mølgaard, Sten Rasmussen

100. One year follow-up after hip arthroscopy with labral repair using a clinical algorithm for decision-making
Christian Dippmann

101. Appropriate Methods for Development, Validation, and Use of Patient Reported Outcome Measures
Jonathan Comins, Michael Krogsgaard, Svend Kreiner, John Brodersen

102. Measurements of trochlea dysplasia: A literature review with quality assessment of radiological measurements
Mathias Paiva, Lars Blønd, Per Hölmich, Robert N. Steensen, Gerd Diederichs, Julian A Feller, Kristoffer Weisskirchner Barfod

103. Effect of autograft type on muscle strength symmetry of the knee extensors and flexors in patients with anterior cruciate ligament reconstruction – Preliminary data.
Kasper Staghøj Sinding, Torsten Grønbech Nielsen, Ulrik Dalgas, Martin Lind

Session 15: Infection/ Amputation and Trauma II

Fredag d. 28. oktober
9:00-10:30
Lokale: Stockholm / Copenhagen

Chairmen: Christian Wied / Rasmus Elsøe

104. Development and inter-rater reliability of the Basic Amputee Mobility Score (BAMS) for use in patients with a major lower limb amputation
Morten Tange Kristensen, Annie Østergaard Nielsen, Peter Gebuhr

105. Risk of acute renal failure and mortality after surgery for a fracture of the hip
Alma B Pedersen, Christian F Christiansen, Henrik Gammelager , Johnny Kahlert, Henrik Toft Sørensen

106. Methodological differences between studies of clavicular bone shortening - A systematic review
Anders Thorsmark Høj, Lars Henrik Frich, Ole Maagaard, Søren Overgaard, Søren Torp-Pedersen

107. The total blood loss after transfemoral amputations is more than twice the intraoperative loss.
Christian Wied, Peter Toft Tengberg, Morten Tange Kristensen, Gitte Holm, Thomas Kallemose, Anders Troelsen, Nicolai Bang Foss

108. Efficacy of 6 versus 12 weeks physiotherapy including progressive strength training in patients shortly after hip fracture surgery – a multicenter randomized controlled trial.
Jan Arnholtz Overgaard, Thomas Kallemose, Morten Tange Kristensen

109. Socioeconomic inequality in patient outcome among hip fracture patients: A population-based cohort study
Pia Kjær Kristensen, Theis Muncholm Thillemann, Alma Becic Pedersen, Kjeld Søballe, Søren Paaske Johnsen

110. Is the higher mortality among men with hip fracture explained by sex-related differences in quality of in-hospital care? A population-based cohort study
Pia Kjær Kristensen, Anil Mor, Theis Muncholm Thillemann, Søren Paaske Johnsen, Alma Becic Pedersen

111. In-Vivo and In-Vitro Evaluation of Vancomycin and Gentamicin Elution from Bone Graft Substitutes
Thomas Colding-Rasmussen, Peter Horstmann, Hanna Dahlgren, Eva Lidén, Werner Hettwer, Michael Mørk Petersen

112. External Fixation versus two-stage Open Reduction Internal Fixation of distal intra-articular Tibia Fractures: a systematic review
Julie Ladeby Erichsen, Peter Andersen, Carsten Jensen, Frank Damborg, Bjarke Viberg, Lonnie Froberg

113. Low Surgical Apgar Score is associated with postoperative complications in lower extremity amputations in dysvascular patients.
Christian Wied, Nicolai Bang Foss, Morten Tange Kristensen, Gitte Holm, Thomas Kallemose, Anders Troelsen

114. Prospective clinical trial for septic arthritis: inflammation is associated with cartilage degradation, up-regulation of cartilage metabolites, but is inhibited by chondrocytes
Hagen Schmal, Anke Bernstein, Elia Roul Langenmair, Eva Johanna Kubosch

Session 16: Hand/Wrist and Trauma III

Fredag 28. oktober
13:00-14:30
Lokale: Reykjavik

Chairmen: Charlotte Hartig Andreasen / Torben Bæk Hansen

115. Long-term fixation and function of cementless and cemented Avanta PIP joint arthroplasty. A randomized clinical RSA study.
Maiken Stilling, Martin Bille Henriksen , Karsten Krøner, Bo Munk, Janni Kjærgaard Thilleman

116. Functional outcome comparing a dual mobility cup to a standard cup in total joint arthroplasty of the trapeziometacarpal joint
Lone Kirkeby, Lene Dremstrup, Torben Bæk Hansen

117. 2 year results with Electra bi-metal screw cup in total trapezio-metacarpal arthroplasty evaluated with RSA
Lene Dremstrup, Maiken Stilling, Lone Kirkeby, Torben Bæk Hansen

118. Good 2 year results with the new conical press-fit cup design and dual-mobility articulation in total trapeziometacarpal arthroplasty
Maiken Stilling, Lone Kirkeby, Lene Dremstrup, Torben Bæk-Hansen

119. Incidence of heterotopic ossification following total joint replace-ment of the trapeziometacarpal joint
Andrey Kovalev, Lone Kirkeby, Torben Bæk Hansen

120. Which Colles' fracture requires an operation?
Jan Duedal Rölfing, Mette Normann Lund, Lars Borris, Daniel Wæver, Rikke Thorninger

121. Efficacy of acute in-hospital physiotherapy with versus without knee-extension strength training in reducing strength deficits in patients with a hip fracture: a randomised controlled trial
Lise Kronborg, Thomas Bandholm, Henrik Palm, Henrik Kehlet, Morten Tange Kristensen

122. Reoperations in patients with pertrochanteric fractures treated with a short or long intramedullary nail: A register study
Pernille Bovbjerg, Morten Schultz Larsen , Carsten Fladmose, Jesper Schønnemann

123. Evaluation of a Fracture Liaison Service with osteoporosis-nurses screening hospitalized hip fracture patients for later follow-up in the osteoporosis outpatient clinic
Jette Nielsen, Dorthe Sørensen, Lars Hyldstrup, Jens -Erik Beck Jensen, Henrik Palm

124. Metacarpophalangeal joint arthrodesis of the thumb – a minimum of eight months follow up
Rasmus Wejnold Jørgensen, Stig Brorson, Claus Hjorth Jensen

125. Lateral vs. posterior approach to the hip in patients with hip fractures treated with hemiarthroplasty. A systematic review with meta-analysis.
Komal Tariq, Lisa Forkman, Julie Erichsen, Søren Overgaard, Bjarke Viberg

Session 17: Hip II

Fredag d. 28. oktober
13:00-14:30
Lokale: Stockholm / Copenhagen

Chairmen: Nanna Sillesen / Kjeld Søballe

126. Effect of preoperative Explosive-type Resistance Training on Patients with Hip Osteoarthritis after Total Hip Arthroplasty – a randomized controlled trial
Andreas EB Hermann, Anders Holsgaard-Larsen, Bo Zerahn, Steen Mejdahl, Søren Overgaard

127. Can Surgeons Reduce Risk For Dislocation Following Primary THA Performed Using Posterolateral Approach?
Kirill Gromov, Roshan Latifi, Bjørn Glise Madsen, Henrik Husted, Thomas Kallemose, Anders Troelsen

128. The impact of information of expected length of stay after primary total hip arthroplasty
Christian Hofbauer, Charlotte Troldborg, Christoffer C Jørgensen, Claus Varnum

129. One-year incidence of prosthetic joint infection in total hip arthroplasty: a cohort study with linkage of the Danish Hip Arthroplasty Register and Danish Microbiology Databases
Per Hviid Gundtoft, Alma Pedersen, Henrik Carl Schønheyder, Jens Kjølseth Møller, Søren Overgaard

130. 5 year Radiostereommetry, Bone Mass Density, and Whole Blood Cr Co levels in Resurfacing (RHA), Large Diameter Head (LDH) and Standard THA. Results from Randomized studies
Jeannette Penny, Ming Ding, Ole Ovesen, Søren Overgaard

131. Posterior or anterolateral approach in hip joint arthroplasty - impact on frontal plane moment.
Marianne Tjur, Asger R. Pedersen, William Sloth, Kjeld Søballe, Nina D. Lorenzen, Maiken Stilling

132. Intraoperative and early postoperative periprosthetic femoral fractures after total hip arthroplasty
Martin Lindberg-Larsen, Christoffer Jørgensen, Søren Solgaard, Anne Grete Kjersgaard, Henrik Kehlet

133. Eighteen-year trends in comorbidity and subsequent mortality in total hip or knee arthroplasty patients: A Danish nationwide, population-based cohort study, 1996-2013
Eva Natalia Glassou, Alma Becic Pedersen, Torben Bæk Hansen

134. The impact of age on patient experienced outcome after total hip and knee arthroplasty
Peter Kloster Aalund, Eva Natalia Glassou, Torben Bæk Hansen

135. Differences in characteristics and patient-reported questionnaire responses in patients who choose non-surgical versus surgical treatment for severe hip osteoarthritis
Mads Have, Søren Overgaard, Carsten Jensen

136. Treatment of infected Exeter prosthesis with two stage revisions and cement in cement implantation
Arnar Oskar Bjarnison, Leif Broeng

Session 18:
Cases / Technical Notes

Onsdag d. 26. oktober
17:30-18:30
Lokale: Casino Ballroom

Chairmen: Thomas Baad Hansen / Martin Gottliebsen

137. Digitally reconstructed radiograph based radiostereometric analysis: A novel method validated on the hip joint
Sepp De Raedt, Lars Hansen, Peter Bo Jørgensen, Bjarne Mygind-Klavsen, Maiken Stilling

138. Introduction of open reduction for severe Slipped Capital Femoral Epiphysis using the sub capital realignment procedure after surgical dislocation of the hip joint
Martin Gottliebsen, Mathias Bünger, Ole Rahbek, Bjarne Møller-Madsen

139. Accuracy of custom pelvic tumor resection and reconstruction with patient-specific resection guides and matching implant scaffolds
Werner Hettwer, Andreas Krieg, Michael Mørk Petersen, Fritz Hefti

140. Life threatening PVL-positive MRSA sepsis with tibial osteomyelitis and septic arthritis of the knee in a previously healthy 13-year-old boy: a case report
Nina Hardgrib, Mikala Wang, Anne Grethe Jurik, Klaus Kjær Petersen

141. Controversies in imaging measurements and normal values of Wibergs CE angle in the hip of young adults
Niels Egund

Session 4:
Poster med foredrag I

Onsdag 26. oktober
11:00 – 12:00
Lokale: Reykjavik

Chairmen: Claus Varnum / Niels Wisbeck

142. Pain reduction after periacetabular osteotomy in the treatment of symptomatic acetabular hip dysplasia.
Søren Reinhold Jakobsen, Stig Storgaard Jakobsen, Inger Mechlenburg, Kjeld Søballe

143. Efficacy of ultrasound-guided Saphenous and Obturator Nerve Blocks after primary Knee Arthroplasty. A double-blind, randomized clinical study
Jens Bagger, Mette Hornsleth, Katja Lenz, Pia Therese Jaeger, Katrine Tanggaard, Jens Børglum, Kenneth Jensen

144. Supervised neuromuscular exercise prior to hip and knee replacement: 12-month clinical effect and cost-utility analysis alongside a randomised controlled trial
Fernandes Linda, Roos Ewa, Overgaard Søren, Villadsen Allan, Søgaard Rikke

145. Allograft usage results in higher re-revision rate for revision anterior cruciate ligament reconstruction
Kåre Amtoft Nissen, Torsten Grønbech Nielsen, Martin Lind

146. High two-year revision rates after primary knee arthroplasty – causes and implemented interventions for improvement
Martin Lindberg-Larsen, Mette Hornsleth, Jens Bagger

147. The Danish Hip Arthroscopy Registry: Baseline patient reported outcomes and surgical characteristics
Erik Poulsen, Bent Lund, Ewa M Roos

148. Agreement and reliability of acetabular Bone Mineral Density measurements in total hip arthroplasty using Single and Dual energy computed tomography with 3-dimensional segmentation
Bo Mussmann, Søren Overgaard, Trine Torfing, Morten Bøgehøj, Oke Gerke, Poul Erik Andersen

149. Assessment of pelvic tilt and acetabular parameters in patients with retroversion of the acetabulum using conventional X-rays and the EOS 2D Imaging System.
Anne Soon Bensen, Carsten Jensen, Bo Mussmann, Trine Torfing, Ole Ovesen, Søren Overgaard

150. Substrate and Surface Guidance of Human Chondrocytes In Vitro
Natasja Jørgensen, Morten Foss, Nikolaj Gadegaard, Casper Foldager, Martin Lind, Helle Lysdahl

151. Strength testing following anterior cruciate ligament reconstruction. A prospective cohort study investigating redundancy of tests.
Kristoffer Weisskirchner Barfod

152. Possible causes for lack of 1-year follow-up in national ACL-registry
Martin Albert Lundorff, Bent Lund

Session 5:
Poster med foredrag II

Onsdag 26. oktober
11:00 – 12:00
Lokale: Stockholm / Copenhagen

Chairmen: Maiken Stilling / Michael Mørk Petersen

153. Long-term clinical results of patients treated for posterolateral elbow joint instability using an ipsilateral triceps tendon graft.
Christian Kastenskov, Jeppe Vejlgaard Rasmussen , Janne Ovesen, Bo Sanderhoff Olsen

154. Surgery for Congenital muscular Torticollis
Laura Christoffersen, Gert Rahbek Andersen

155. Long-term effect of surgery for wrist extension in adolescent cerebral palsy patients
Thomas Petersen, Hans Tromborg

156. Descriptive demographic and clinical data on 647 post-treatment crps patients
Pelle Baggesgaard Petersen, Jes Bruun Lauritzen, Michael Rindom Krogsgaard

157. Diabetic and non-diabetic patients report equal symptom relieve after arthroscopic capsular release of frozen shoulder
Johanne Lyhne, Jon Jacobsen, Søren Hansen, Carsten Jensen, Deutch Søren

158. Surgical repair of acute distal biceps tendon rupture with one-incision technique and EndoButton – A follow up study
Martin Bille Henriksen, Jensen Steen Lund

159. Physiotherapy after Volar Plate Osteosynthesis - which factors are predictive
Brian Weng Sørensen, Christopher Jantzen, Thomas Michael Nissen-Juul Sørensen, Kecia Vicki Ardensø, Susanne Kristensen Mallet

160. Boston Brace treatment in Adolescent Idiopathisc Scoliosis
Ane Simony, Mikkel Osterheden Andersen, Steen Bach Christensen

161. Predictors of perioperative blood transfusion in surgical treatment of adolescent idiopathic scoliosis – one-center experience in 150 patients
Søren Ohrt-Nissen, Naeem Bukhari, Jacob Steensballe, Martin Gehrchen, Benny Dahl

162. Surveillance for development of lung metastases after primary surgical excision of soft tissue sarcomas of the extremities and trunk wall
Thea Hovgaard, Tine Nymark, Michael Mørk Petersen

163. Patient-reported outcome and revision rate off 137 Copeland resurfacing hemiarthroplasties in patient with degenerative shoulder disease performed from 2008 to 2013 at Koege Hospital – a retrospective cohort study
Kim Schantz, Ulrik Kragegaard Knudsen, Tommy Henning Jensen, John Kloth Petersen, Signe Rosenlund

Session 6:
Poster med foredrag III

Onsdag 27. oktober
11:00 – 12:00
Lokale: Helsinki / Oslo

Chairmen: Peter Tengberg / Ellen Hamborg

164. Percutaneous Needle Toe Flexor Tenotomy of Hammer, Mallet and Claw Toes in the Diabetic Patient
Jonas Hedegaard Andersen, Klaus Kirketerp, Anne Rasmussen

165. Two cases of surgical excision of symptomatic os talus secundarius
Simon Damgaard Petersen, Ellen Hamborg-Petersen

166. Aggressive early mobilization and weight-bearing in non-operative treatment of acute Achilles tendon rupture may increase the risk of rerupture – a retrospective cohort study
Mazaher Azizpour, Rebekka Fonnesbæk, Kristian Behrndtz, Jorgen Baas

167. Identifying a possible change in the complication rate when treating dislocated distal radius fractures over a period of 6 years by open reduction and internal fixation using volar plating
Roland Knudsen, Frank Damborg, Julie Ladeby Erichsen, Zafar Bahadirov

168. Outcome following suprapatellar approach to tibia nailing.
Ole Brink

169. Barthel-100 and the Cumulated Ambulation Score are superior to the de Morton Mobility Index for the assessment of mobility in patients with acute hip fracture
Signe Hulsbæk, Rikke Faebo Larsen, Morten Tange Kristensen

170. Ultrasonography of the ligaments after ankle sprain
Spogmai Zadran, Jens Olesen, Sten Rasmussen

171. Hip Fracture Surgery and New Oral Anticoagulants – An Increasing Problem?
Charlotte Packroff Stenqvist, Naja Bjørslev, Susanne van der Mark

172. Re-rupture rate of conservatively treated Achilles tendon ruptures
Linea Holck Lundholm, Kim Hegnet Andersen, Jeannette Østergaard Penny

173. Healing of hypertrophic femoral shaft non-union with motorized distraction nailing - a case report
Ulrik Kähler Olesen

174. Impact of body mass index on risk of acute renal failure and mortality in elderly patients undergoing hip fracture surgery
Alma B Pedersen, Henrik Gammelager, Johnny Kahlert, Henrik Toft Sørensen, Christian F Christiansen

Posterudstilling

Fra onsdag 26. oktober
Lokale: Capital Foyer

175. Platelet-rich plasma leads to new matrix formation around articular cartilage chips embedded in fibrin glue in vitro
Morten Lykke Olesen, Natasja Leth Jørgensen, Bjørn Borsøe Christensen, Helle Lysdahl, Martin Lind, Casper Bindzus Foldager

176. Re-operation Rates after Femoral Neck Fractures Treated with Cannulated Screws.
Mostafa Almadareb, Martin Lindberg-Larsen, Thomas Giver Jensen, Susanne van der Mark

177. Long-term outcome of arthroscopically assisted Elmslie-Trillat tibial tubercle osteotomy
Carsten M. Mølgaard, Sinan Said

178. Hip fractures - experiences from the Patient Compensation Association and suggestions to improvements in treatment
Niels Jørgen Thomsen, Kim Lyngby Mikkelsen, Christian Wong

179. Proteomic analysis of early cartilage repair in a chronic cartilage defect model in minipigs
Casper Bindzus Foldager, Morten Lykke Olesen, Bjørn Borsøe Christensen, Kris Hede, Martin Lind, Johan Palmfeldt

180. Patients self-perceived well-being and satisfaction with everyday life 5 years after knee replacement.
Anette Enemark Larsen, Hanne Pedersen Hundsholdt, Ida-Marie Lykke Larsen, Julie Marie Eriksen, Maria Holse Jørgensen

181. Orthogeriatrics Didn't Improve Mortality in Patients with a Hip Fracture Admitted from Nursing Homes
Charlotte Packroff Stenqvist, Susanne van der Mark

182. Scand-Ankle – Effect of alcohol intervention among acute ankle fracture surgery (RCT)
Julie W. M. Egholm, Bolette Pedersen, Kristian Oppedal, Jes Bruun Lauritzen, Bjørn Madsen, Hanne Tønnesen

183. Fatigue and pain limits independent mobility and physiotherapy after hip fracture surgery
Kristine Husum Münter, Christopher Clemmesen , Nicolai Bang Foss, Henrik Palm, Morten Tange Kristensen

184. Re-operations and mortality after major lower extremity amputations
Morten Torrild Schmiegelow, Nikolaj Sode, Troels Riis, Jes Bruun Lauritzen, Lindberg-Larsen Martin

185. Medium to long term follow-up after primary and revision arthroscopic Bankart repair with a knotless anchor. Do the results last?
Kristine Andersen, Kamille Fogh, Henrik Eshøj, Klaus Bak

186. The use of blood test S-100b as biomarker for intracranial haemorrhage in adult patients with mild head injury in Danish Emergency Departments
Anders Kjærsgaard Valen, Karen Toftdahl Bjørnholdt, Bent Lund

187. Surgical treatment of STT osteoarthritis with the STPI implant
Niels Henrik Søe, David Eckerdal, Marianne Nygaard, Nina Venden-Jensen, Lars B.Dahlin

188. Surgical approach for elastic stable intramedullary nail (ESIN) in pediatric radius shaft fracture – A systematic review
Nørgaard Sandra Lohne, Riber Sara Schødt, Danielsson Frederik Borup, Pedersen Niels Wisbech, Viberg Bjarke Løvbjerg

189. Can active warming blankets prevent hypothermia during total hip replacement surgery?
Ameneh Mosayebi Marghoob, Karen Toftdahl Bjørnholdt, Mathias Bjerring Ho, Charlotte Hartig Andreasen

190. The Critical Shoulder Angle is Associated with Osteoarthritis in the Shoulder but not Rotator Cuff Tears. A retrospective case control study

Arnar Oskar Bjarnison, Thomas Juul Sørensen, Thomas Kallemose, Kristoffer W. Barfod

191. Alarming Increase in Degenerative Shoulder Lesions in Denmark in the period 1996 to 2013

Nina Monrad, Ann Ganestam, Thomas Kallemose, Kristoffer W Barfod

192. 2 years Retrospective Follow-up of Posterior Dynamic Stabilization (Dynesys®) in lower back pain without olistesis using patient reported outcomes.

Niklas Tøndevold, Jamal Bouknaitir, Hassan Shakir

193. Quantitative Bone Mineral Changes Evaluated by DEXA after Bone Defect Reconstruction using a Biphasic Bone Graft Substitute after Intralesional Curettage in Benign Bone Tumors or Cysts

Peter Horstmann, Werner Hettwer, Michael Mørk Petersen

Abstracts

In vivo drug release behavior and osseointegration of a doxorubicin-loaded tissue-engineered scaffold

1.

Ming Sun, Muwan Chen, Miao Wang, Jakob Hansen, Anette Anette Baatrup, Frederik Dagnaes-Hansen, Jan Rölfing, Jonas Jensen, Helle Lysdahl, Mogens Johannsen, Dang Le, Jørgen Kjems, Cody Bünger

Orthopaedic Research Lab , Aarhus University Hospital; Interdisciplinary Nanoscience Center (iNANO), Aarhus University; Orthopaedic Research Lab , Aarhus University Hospital; Department of Forensic Medicine, Aarhus University; Orthopaedic Research Lab , Aarhus University Hospital; Department of Biomedicine, Aarhus University; Orthopaedic Research Lab , Aarhus University Hospital; Orthopaedic Research Lab , Aarhus University Hospital; Orthopaedic Research Lab , Aarhus University Hospital; Department of Forensic Medicine, Aarhus University; Orthopaedic Research Lab , Aarhus University Hospital; Interdisciplinary Nanoscience Center (iNANO), Aarhus University; Orthopaedic Research Lab , Aarhus University Hospital

Background: Bone tissue-engineered scaffolds with therapeutic effects must meet the basic requirements as to support bone healing at the defect side and to release an effect drug within the therapeutic window.
Purpose / Aim of Study: Here, a rapid prototyped PCL scaffold embedded with chitosan/nanoclay/β-tricalcium phosphate composite (DESCLAYMR) loaded with chemotherapeutic drug doxorubicin (DESCLAYMR _DOX) is proposed as a potential multifunctional medical application for patients who undergo bone tumor resection.
Materials and Methods: In this study, we have set up two animal models: 1) mouse model was used to investigate the in vivo release behavior of DOX from the DESCLAYMR scaffold. Local release behavior in treated area was obtained using an in vivo imaging system (IVIS) and systemic pharmacokinetics were analyzed by UHPLC- MS/MS. 2) Pig model was employed to investigate the bone biocompatibility of the DESCLAYMR scaffold loaded with or without DOX.
Findings / Results: We showed the DESCLAYMR_DOX scaffold released DOX locally in a sustained manner in mice without significantly increasing the plasma DOX concentrations. The evaluation of osseointegration in a porcine study showed increased mineralized bone formation, unmineralized collagen fibers and significantly higher alpha Smooth Muscle Actin (α- SMA) positive areas relative to total investigated area (TA) in defects treated solely with the DESCLAYMR scaffold than in the DESCLAYMR_DOX; and Alkaline phosphatase activity, α-SMA/TA and bone formation were higher in the DESCLAYMR loaded with 100 µg/scaffold DOX (DOX_low) than with 400 µg/scaffold DOX (DOX_high).
Conclusions: Our results suggest that the DESCLAYMR_DOX can be a viable candidate as a multifunctional medical application by delivering the chemotherapeutic agent to target remaining tumor cells and facilitate bone formation.
No conflicts of interest reported

Comparison of sheep adipose and bone marrow stem cells on bone formation identified by anti-human vimentin stain in an ectopic mouse model

2.

Kristian Kjærgaard, Chris H Dreyer, Nicholas Ditzel, Christina M Andreasen, Li Chen, Søren P Sheikh, Søren Overgaard, Ming Ding

Department of Orthopaedic Surgery and Traumatology, Odense University Hospital, Institute of Clinical Research, University of Southern Denmark; Department of Endocrinology and Metabolism, Molecular Endocrinology Laboratory (KMEB), Odense University Hospital, University of Southern Denmark; Laboratory of Molecular and Cellular Cardiology, Department of Clinical Biochemistry and Pharmacology, Odense University Hospital.

Background: Scaffolds for bone tissue engineering (BTE) can be loaded with mesenchymal stem cells (MSC) to improve osteogenesis. MSC can be found in bone marrow, adipose tissue and other tissues. Little is known about osteogenic potential of adipose-derived stem cells (ASC).
Purpose / Aim of Study: This study aims to compare in vivo ostegenic capacity between ASC and bone marrow derived stem cells (BMSC).
Materials and Methods: ASC and BMSC were isolated from five female sheep and seeded on hydroxyapatite granules prior to subcutaneous implantation in 14 immunodeficient mice, four implants in each mouse. The doses of cells of the implants were 0.5×10^6, 1.0×10^6 and 1.5×10^6 ASC and 0.5×10^6 BMSC, respectively. After eight weeks, bone volume vs. total volume was quantified using histomorphometry. Origin of new bone was assessed using human vimentin (HVIM) antibody staining.
Findings / Results: BMSC yielded significantly more bone than any ASC group, and differences between ASC groups were not statistically significant. HVIM antibody stain was successfully used to identify sheep cells in this model.
Conclusions: ASC and BMSC were capable of forming bone. Though ASC were capable of forming new bone as assessed by vimentin staining, in vitro treatment to enhance osteogenic capacity is suggested as further research in ovine bone tissue engineering.

No conflicts of interest reported

Epidemiology in surgical treatment of metastatic bone disease of the appendicular skeleton -Reporting from a consecutive prospective population based cohort.

3.

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Background: Cancer related skeletal events in need of surgical treatment (SEST) is a devastating event for patients suffering from cancer. Epidemiological data and the incidence rate is lacking in current literature.
Purpose / Aim of Study: 1) find the incidence and epidemiological composition of SEST in the appendicular skeleton. 2) see if the general health status of the patient (HOP) influences the referral pattern.
Materials and Methods: A consecutive prospective population-based cohort in the Capital Region of Denmark was systematically screened for metastatic lesions treated surgically in the appendicular skeleton for a two-year period.
Findings / Results: 174 lesions were identified giving an incidence of 48.6 SEST/million inhabitants/year. Twelve patients had more than one SEST during the period of whom nine patients was treated for two lesions in same anesthesia. Ninety-nine surgeries (57%) were treated at a tertiary referral center (TRC). The 5 most common cancers causing the lesions were: Mamma (n=39), lung (n=31), renal cell (n=25), prostate (n=24) and myeloma (n=19). Anatomical location of lesions was: 126 femur (97 hip), 29 humerus (16 proximal), 14 pelvis, and 5 others. Fractured lesions/impending fractures =131/43. Surgical treatment was: no reconstruction (n=10), reconstruction with prosthesis (n=94) and osteosynthesis (n=70). Mean Karnofsky score 7.39 (TRC 7,47, p=0.47). Mean ASA score was 2.60 (TRC 2.45, p=0.02). One-year survival was 44% (95%CI: 36%-53%). Patients being treated at a TRC one-year survival were 52% (95%CI: 41%-63%) and outside 34 % (95%CI: 22%-47%), p<0.05. No biopsy peroperative n=61.
Conclusions: Incidence of SEST was found. Surgical technique, anatomical location of lesion and cancer causing the lesions were identified. HOP did influence the referral pattern indicating a selection of patients to highly specialized surgery.

No conflicts of interest reported

Surveillance for development of local recurrence after primary surgical excision of soft tissue sarcomas and borderline tumours of the extremities and trunk wall

4.

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Background: Current routine follow-up policy for soft tissue sarcomas (STS) lacks evidence. Early detection and surgical removal of a local recurrence (LR) is associated with improved survival. In Jan 2010 we introduced a new follow-up program for the first 2 postoperative years where STS were examined 4 times a year; high-grade malignant STS alternating between clinical examination (CE) preceded by focal MRI and chest CT-scan (CT) and a CE with chest X-ray (XR). Low-grade malignant STS alternated between a CE and a CE preceded by focal MRI.
Purpose / Aim of Study: To evaluate the new surveillance program for identification of LR within the first 2 years postoperatively.
Materials and Methods: We retrospectively assessed the medical files of all patients (n=232, mean age 57 (18-88) years, F/M=117/115) with STS (including borderline tumours) of the extremities and trunk wall, who underwent surgery from 2010-2013. We extracted information on how LR were detected during the first 25 months post-surgery. Statistics: Kaplan Meier survival analysis and 2x2 contingency table with chi2-test.
Findings / Results: 25/232 patients experienced LR within the first 25 months post-surgery (25 months-LR free rate 92%). Compared to CE, local imaging (LI) mainly MRI led to a larger amount of suspicions of LR (37/557 versus 8/703, $p<0.001$). Furthermore the suspicions from LI were more accurate than from CE (17/37 affirmed versus 0/8 affirmed, $p<0.015$). LI (n=557) finds a larger number of LR than CE (n=703) (17 (3%) versus 0 (0%), $p<0.016$). 33 patients suspected LR themselves; 8 of them were affirmed.
Conclusions: Bi-annual LI (MRI) the initial first 2 postoperative years after surgical treatment of STS, will detect LR better than CE, and therefore render regular CE between these MRIs unnecessary, but patients´ own suspicion of LR is still important.

No conflicts of interest reported

Investigating time point for stimulation of vascular endothelial growth factor and mesenchymal stem cell on bone formation in severe immunodeficiency mice

5.

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Background: To get sufficient bone formation, optimal conditions are needed, and insufficient blood supply may be a limitation. VEGF promotes angiogenesis by increasing endothelial proliferation and migration, vessel permeability, tube formation and survival.
Purpose / Aim of Study: To evaluate time points for stimulation with VEGF of mesenchymal stem cell derived bone formation in severe immunodeficiency (SCID) mice.
Materials and Methods: Twenty-eight SCID mice were divided into 7 groups. All groups received hydroxyapatite (HA) granules coated with 5x10^5 MSCs. One group without VEGF served as the control without. 6 groups had different VEGF stimulation time points through degradable pellets: Day 1-7 post-operatively; day 1- 14; day 1-21; day 1-42; day 7-14 and day 21-42. Granules+MSCs+VEGF were placed subcutaneously dorsally in 3 pockets of the mice. Each group contained 4 randomly allocated mice. At sacrifice, the implant samples were stained with haematoxylin eosin (HE) for histomorphometric analysis. Human vimentin staining (HVIM) was performed to confirm the origin of sheep stem cell. Serum blood samples were collected for determination of bone-related markers: Osteoprotegerin (OPG), Receptor activator of nuclear factor kappa-B ligand (RANKL), osteocalcin, type 1 procollagen (P1NP), sclerostin and C- terminal telopeptide (CTX).
Findings / Results: The histomorphometric analysis revealed the VEGF stimulation in the day 1-14, and day 1-21 groups showed more bone formation relative to the control group and the day 21-42 group ($p<.01$). Serum biomarkers of the 6 groups with VEGF stimulation were not significantly different compared to control group. HVIM staining confirmed bone regenerative effect was caused by MSCs from sheep.
Conclusions: The most bone formation was shown when stimulating with VEGF in 1-14 or 1-21 days after surgery.

No conflicts of interest reported

Preoperative plasma YKL-40 levels in bone and soft tissue sarcoma patients

6.

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Background: YKL-40 is a glycoprotein that has showed expression in several types of cells such as cancer cells. Previous studies have shown that elevated plasma concentrations of YKL- 40 in patients with various types of cancer constitute an independent prognostic variable for survival.
Purpose / Aim of Study: The aim of this study was to identify if YKL- 40 in plasma can serve as a marker for prediction of the outcomes in patients with bone and soft tissue sarcomas.
Materials and Methods: Sixty-seven patients (mean age 61 (29-90) years, F/M= 34/33) with bone sarcoma (BS) or soft tissue sarcoma (STS) (BS/STS=15/52) of the extremities, spine or trunk wall treated by surgical excision at the Department of Orthopaedics, Rigshospitalet, during the time-period August 2009 until April 2012 were included in the study. All patients had a blood sample taken at the day of surgery or the day before surgery. The samples were analysed using ELISA in order to determine the amount of YKL-40 in plasma. Patient files were reviewed for various information, patient overall survival was updated January 2016 (minimum follow up of 3.75 years for patients still alive).
Findings / Results: The probability of 5-year survival for all sarcoma patients (n=67) was 64%. Patients with a YKL-40 concentration below the mean (147 µg/L (18-576 µg/L), n=52, 5- year survival 76%) had a better survival (p=0.001) than patients with YKL-40 concentration above the mean (n=15, 5- year survival 15%). YKL-40 concentration for patients that were still alive at the end of follow-up was lower than patients who died during the follow up (p=0.02).There was a tendency to higher YKL-40 concentration in patients that had local recurrence (p=0.09) and higher malignancy grades (p=0.11).
Conclusions: A high YKL-40 plasma concentration measured preoperatively in sarcoma patients are connected to a poor overall survival.

No conflicts of interest reported

The intracortical accumulation of enlarged lacunae is a key contributor to the increased cortical porosity and trabecularization during aging

7.

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Background: In order to improve treatment of the patients we need to enhance our understanding of the intracortical bone remodeling.
Purpose / Aim of Study: To investigate the characteristics of the intracortical pores contributing to the increased cortical porosity and trabecularization during aging.
Materials and Methods: A histomorphometric analysis of the intracortical pores was performed on sections from transiliac bone specimens from 35 women (16-78 years) undergoing forensic examination due to a sudden unexpected death.
Findings / Results: The bone specimens had a statistically significant age-dependent increase in cortical porosity ($p<0.05$) and mean pore diameter ($p<0.05$), and a reduction in cortical thickness ($p<0.01$). The analysis included in total 3969 intracortical pores: 68.3% of these pores were refilled osteons with a quiescent surface, 8.8% were asymmetrically refilled osteons with both a quiescent and eroded surface, 6.5% had only eroded surfaces and no osteoid surfaces, 7.0% had osteoid surfaces, while 5.9% were refilled osteons with extensive erosions widening the previously quiescent pores. In 34.8% of the latter pores, the widening resulted in the merge of two or more previously quiescent pores, forming enlarged irregular shaped lacunae. Although the widened pores and the formed lacunae only account for 5.9% and 2.1% of the pores, they on average contribute to 44.4±22.1% and 30.3±23.3% of the cortical porosity. These two types of pores showed a statistically significant age-dependent increase in their contribution to the cortical porosity ($p<0.001$) and pore density ($p<0.01$), while the pores with osteoid surfaces showed an age- dependent decrease ($p<0.01$).
Conclusions: Collectively, this study supports that the accumulation of widened previously quiescent pores and lacunae contributes to the increased cortical porosity during aging.

No conflicts of interest reported

Implant fixation with BMP-2 and Zolendronate in a peri-implant gap - with and without allograft

8.

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Background: BMP-2 stimulates formation of new bone; if Zolendronate can prevent BMP-2 associated bone resorption, this may improve implant fixation.
Purpose / Aim of Study: To quantify effects in a peri-implant gap with or without allograft, with 3 BMP-2 doses locally and with systemic Zolendronate.
Materials and Methods: In 12 male canines, 4 implants were inserted in 2.5 mm allografted gaps in bilateral proximal humerei, and 4 implants were inserted in 0.75 mm non-grafted gaps in bilateral femoral condyles. The implant surface was coated with 240 µg, 60 µg, 15 µg of BMP-2 or control. Zolendronate (0.1 mg/kg) was administered once IV, 10 days post surgery. After 28 days, specimens were evaluated by histomorphometry and mechanical push- out.
Findings / Results: Grafted gap: Compared to any BMP-2 dose, control had the best mechanical fixation, the most bone at implant surface, the most volume of new bone near the implant (from 0-1 mm but not 1-2 mm), and the most retained allograft. With any BMP-2 dose, volume of allograft decreased near the surface (0-1 mm) and dose dependently further away (1-2 mm). Non-grafted gap: 15 µg BMP-2 had the best mechanical fixation, the most bone at implant surface and in the gap compared to control, 60 µg and 240 µg BMP-2.15 µg and control did not differ in volume of new bone in the gap. Outside the original implant gap, volume of new bone correlated to increasing BMP-2 dose.
Conclusions: The different surface fraction and volume of new bone in the grafted and non-grafted gap settings suggest a variable response to the combined anabolic and catabolic stimuli when graft is present. BMP-2 can augument implant fixation, but the therapeutic window seems narrow and addition and timing of Zolendronate administration is essential to harvest a positive effect on initial implant fixationt. Both areas need further experimental investigation.

No conflicts of interest reported

Collagen type IV-induced changes in expression of stress-related proteins in normal and osteoarthritic chondrocytes are mediated by integrins - α2β1 and αvβ3

9.

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Background: Chondrocytes in healthy cartilage express collagen type IV (COL4) in the pericellular matrix (PCM) and the expression is decreased around osteoarthritic (OA) chondrocytes.
Purpose / Aim of Study: The aim was to investigate the role of COL4 in the expression of stress-related proteins in healthy and OA chondrocytes and to determine the role of COL4-binding integrins ($\alpha 1\beta 1$, $\alpha 2\beta 1$, and $\alpha \nu\beta 3$).
Materials and Methods: Chondrocytes isolated from three healthy patients undergoing anterior cruciate ligament reconstruction and OA chondrocytes were isolated from three patients undergoing knee replacement surgery. Cells in passage one were seeded at 10,000 cells/cm2 in COL4-coated wells or non-coated control wells and cultured for 1, 5, and 14 days. Integrin profiles of $\alpha 1\beta 1$, $\alpha 2\beta 1$, and $\alpha \nu\beta 3$ were performed using flow cytometry. Evaluation of stress-related proteins was performed on day 5, with and without five-hour prior integrin blocking by antibodies, using Proteome Profiler™ Human Cell Stress Array. Data was analyzed using Kruskal-Wallis and Wilcoxon-Mann-Whitney tests.
Findings / Results: Both cell types expressed the evaluated integrins. On days 5 and 14, OA chondrocytes had higher $\alpha 1\beta 1$ expression than normal chondrocytes. COL4 decreased the expression of $\alpha 2\beta 1$ on both cell types on day 5. The expression of stress-related proteins was increased by COL4 in normal chondrocytes, while it was decreased in OA chondrocytes. Integrin blocking with neutralizing antibodies indicated that $\alpha 2\beta 1$, and $\alpha \nu\beta 3$ were comparatively more involved than $\alpha 1\beta 1$ in mediating the stress-response induced by COL4.
Conclusions: Integrin blocking revealed $\alpha 2\beta 1$, and $\alpha \nu\beta 3$ as primary mediators of changes in the expression of stress-related proteins induced by the PCM molecule COL4.

No conflicts of interest reported

Prognostic Factors for Survival of High Grade Osteosarcoma - A 20 Year Single-institution Assessment from Eastern Denmark

10.

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Background: Overall survival of patients diagnosed with high- grade osteosarcoma (HO) – the most common primary bone cancer – has not improved significantly the last 20 years. Accordingly, treating HO remains a major challenge.
Purpose / Aim of Study: To evaluate prognostic factors for survival in patients diagnosed with HO between 1990 and 2010 at the department of orthopedic tumor surgery, Rigshospitalet, Copenhagen, Denmark (RH).
Materials and Methods: 156 patients received an osteosarcoma diagnosis in the RH Pathologic database from 1990-2010. 101 patients (mean age=29 years, F/M ratio=56/45) were suited for further analysis. 55 patients were excluded due to either low grade classification (n=22), non-confirmed tentative diagnosis (n=11), tumor in axial skeleton (n=18) or metastatic/relapsed tumor (n=4). Statistics: Kaplan Meier survival analysis and Cox regression.
Findings / Results: The probability of 5 – and 10 year survival from time of diagnosis was 51% and 46% respectively. Metastatic disease (multivariate cox: HR=3.5, CI 95%: 1.5-7.8) and tumor-size ≥10 cm (multivariate cox: HR: 2.9, CI 95%: 1.5-5.4) at time of diagnosis, were statistically significant risk factors for decreased overall survival. Among patients treated with curative intent (preoperative chemotherapy and surgery, n=79), the survival rate was higher (multivariate cox: HR=2.8 CI 95%: 1.2-6.5), if the degree of tumor cell necrosis was ≥90%.
Conclusions: Overall survival for patients with HO in East Denmark is consistent with the international average survival for this patient-group. Metastasis and tumor- size ≥10 cm at time of diagnosis are significant prognostic factors for surviving HO, as well as degree of chemotherapeutic induced tumor necrosis among patients treated with curative intent.

No conflicts of interest reported

Comparison of two alternative wound closure methods for tumor arthroplasty of the hip.

11.

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Background: Prolonged wound drainage is a common complication after extensive surgery involving the hip, such as tumor resection and endoprosthetic reconstruction.
Purpose / Aim of Study: We wished to determine a possible beneficial effect of an alternative wound closure method compared to routine wound closure with skin staples in this challenging patient population.
Materials and Methods: A retrospective case-control study of a cohort of 70 frequency matched patients with metastatic bone disease or malignant hematologic bone disease, treated at our center between 2012 and 2014 was performed. All patients underwent tumor resection and subsequent endoprosthetic reconstruction of the proximal femur and either occlusive wound closure (OWC), with a combination of intradermal suture, Steristrips and an occlusive skin adhesive (Investigational group, n=35) or routine wound closure with conventional staples (Control group, n=35).
Findings / Results: Patients with OWC were significantly faster to achieve dry wound status and experienced significantly shorter administration of antibiotics and hospital stay accordingly. Compared to the patients in the control group their wounds were already dry after a mean 3.4 days (vs 6.7 days, $p<0.0001$), they received antibiotics for a mean 4.2 days (vs 6.8 days, $p<0.0001$) and their mean hospital stay was 6.3 days (vs 8.0 days, $p<0.015$). Prolonged wound drainage (PWD) for 7 days or more was observed in 34% of patients (n=12) closed with staples, compared to (n=0) of patients with OWC.
Conclusions: Compared to conventional staples, occlusive wound closure (OWC) appears to significantly reduce wound complications, use of antibiotics and hospital stay in patients undergoing tumor hip arthroplasty, which may also contribute to a reduction of the potentially increased risk for periprosthetic joint infection (PJI) in this patient population.

No conflicts of interest reported

Causes of Prolonged Length of Stay and Readmissions after "Fast-Track" Total Knee Arthroplasty. 12.

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Background: The Danish Knee Arthroplasty Annual Report 2015 indicated a high 30 day readmission rate after primary total knee arthroplasty (TKA) performed at Bispebjerg Hospital in 2014.
Purpose / Aim of Study: To investigate causes of prolonged length of stay (LOS) and readmissions ≤ 30 days post-operatively.
Materials and Methods: A retrospective analysis of 175 patients operated with TKA in 2014. Patient characteristics were available from The Lundbeck Foundation Centre for Fast-Track Hip and Knee Replacement Database (LCDB) and readmissions/transferals from Danish National Patient Register and patient files.
Findings / Results: Comparing patient characteristics with the LCDB population, we found that 43% lived alone (vs 31%, p=0.019), 20% smoked (vs 13%, p=0.027) and 16% were alcohol abusers (vs 7%, p<0.001). Median LOS was 2 days, but 29 patients were internally transfered from the elective fast-track unit to other wards resulting in increased LOS (13 to ortho-geriatric unit). Main causes of transferal were need of further mobilization (9) and serious medical complications (13). A total of 19 (10.9%) patients were readmitted ¡Ü30 days postoperatively. Most frequent causes of readmissions were suspected DVT (8), suspected infection (1) or suspected myocardial infarction (1), but disproved in all cases. Need of further mobilization caused readmission in 4 cases. More serious causes of readmission were infection (1), fall (1), anaemia (1), hypoglycemia (1) and gastro-intestinal bleeding (1).
Conclusions: 17% of the patients could not adhere to the fast-track protocol and >50% of readmissions were non-serious and should not have caused readmission. Preventing unnecessary readmissions is a future focus as well as further improvement of the combined ortho- geriatric and fast-track set-up to optimize the treatment of elderly patients with increased co-morbidity.

No conflicts of interest reported

No effect of a bipolar sealer on total blood loss or blood transfusion in non-septic revision knee arthroplasty – a prospective study with matched retrospective controls

13.

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Background: Postoperative anemia is frequent after revision of total knee arthroplasty (TKA) with reported transfusion rates up to 83 %. Despite increased efforts of reducing blood loss and enhancing fast recovery within the fast-track setup, a considerable transfusion rate is still evident.
Purpose / Aim of Study: The aim of this study was therefore to evaluate the effect of a bipolar sealer on blood loss and transfusion in revision TKA.
Materials and Methods: In this single-center prospective cohort study with retrospective controls, 51 patients were enrolled in a fast-track setup for revision TKA without the use of a tourniquet. Twenty-five prospectively enrolled patients received treatment with both a bipolar sealer and electrocautery, whereas 26 patients had received treatment with a conventional electrocautery only in the retrospective group.
Findings / Results: No significant differences were found neither for calculated blood loss, with 1397 (SD±452) ml in the bipolar sealer group versus 1452 (±530) mL in the control group (p = 0.66), nor for blood transfusion rates of 53% and 46% (p = 0.89), respectively. Four controls were readmitted within 90 days follow up.
Conclusions: The use of a bipolar sealer in a TKA revision setting without the use of tourniquet did not reduce blood loss or blood transfusion rates.

No conflicts of interest reported

Weight Loss Intervention before Total Knee Replacement

14.

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Background: Obesity increasingly leads to problems in patients after Total knee replacement (TKR). Several observational studies have shown that obesity is associated with poor health- related quality of life (QoL), physical function, and more pain after surgery than in patients with BMI < 30.
Purpose / Aim of Study: To investigate whether weight loss interventions before primary TKR would improve QoL, knee function, mobility, and body composition 1 year after surgery.
Materials and Methods: Patients scheduled for TKR due to osteoarthritis (OA) of the knee and obesity were randomized to a control group with standard care or to an 8-week low-energy 810kcal/d liquid diet before TKR. Patient-reported QoL, 6 Minutes' Walk Test (6MW), and body composition by dual energy X-ray absorptiometry (DXA) were assessed before intervention for the diet group, and within 1 week preoperatively for both groups, and the change in outcome from baseline to 1 year after TKR were compared between groups.
Findings / Results: The results showed large improvement in both study groups in QoL and knee function, with no statistical differences between the groups 1 year after TKR. The average weight loss after 8-week preoperatively intervention was 10.7 kg, and consisted of a 6.7 kg reduction in fat mass. 20% more subjects mobilized immediately after surgery in the diet group than in the control group. 1 year after TKR the participants in the diet group managed to maintain the weight reduction, whereas there was no change in the control group.
Conclusions: An 8-week pre-operative intervention resulted in a 10% body weight loss, improved body composition, cardiovascular risk factors and s-leptin sustained after TKA surgery for one year. One year after surgery the weight loss group did not achieve a greater improvement in QoL and knee function than the control usual care group.

No conflicts of interest reported

Is Forgotten Joint Score a better tool than Oxford Knee Score to measure patient reported outcomes after Total Knee Replacement?

15.

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Ortopeadic , Vejle ; Ortopeadic , Vejle; Ortopeadic , Vejle

Background: Low knee awareness after TKR has become the ultimate goal in trying to achieve a natural feeling knee. With improving patient outcome after TKR new assessment tools with increased discriminatory power especially in well- performing patients are desirable. The Forgotten Joint Score (FJS) is a new patient reported tool to determine outcomes. It evaluates to what extend the patients are aware of the artificial knee and if the knee feels natural.
Purpose / Aim of Study: To compare FJS with OKS in patients treated with TKR 5 years postoperatively.
Materials and Methods: PROM Survey. In 2015 a number of 175 consecutive patients were enrolled in a Joint Awareness Study (100 females,75 males). All patients received the OKS and the FJS questionnaire > 5 years postoperatively. Responds rate 91%.
Findings / Results: Overall satisfaction: OKS 85,5% compared to FJS 71,4%, p<0,001. 21 patients in both OKS and FJS obtained a 100 % satisfaction, however only15 patients had the maximum score in both questionnaires. Highest satisfaction in both score systems is achieved in personal washing/showering. OKS 83,5%, FJS 72,5%. Lowest satisfaction was kneeling, using a dustpan OKS 18%, and rising from low position FJS 27%. FJS takes sports activity into account and regarding awareness in performing favourite sport 51% are rarely aware of the knee.
Conclusions: In this study a significant higher OKS compared to FJS is shown. Questions with the highest and lowest satisfaction cover similar areas in both questionnaires. FJS is a more sensitive tool to measure patient related outcome, it picks up subtle differences and a less ceiling effect is shown. FJS is appealing to measure outcome in patients with high performance.

No conflicts of interest reported

No exacerbation of knee joint pain and effusion following preoperative progressive resistance training in patients scheduled for total knee arthroplasty: secondary analyses from a randomized controlled trial

16.

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Background: Preoperative progressive resistance training (PRT) is controversial in patients scheduled for total knee arthroplasty (TKA).
Purpose / Aim of Study: To examine if PRT initiated 5 weeks prior to TKA 1) would exacerbate pain and knee effusion and 2) would allow a progressively increased training load throughout the training period that would subsequently increase muscle strength.
Materials and Methods: Thirty patients scheduled for TKA underwent unilateral PRT (3 sessions/week). Exercise loading was 12 repetition maximum (RM) with progression towards 8RM. The training program consisted of 6 exercises performed unilaterally. Before and after each training session, knee joint pain, effusion, and training load were recorded. The first and last training session were initiated by 1RM testing of unilateral leg press, knee extension and knee flexion.
Findings / Results: Median differences of the knee pain at rest from before to after each training session varied from 0-2. Knee joint pain after the training session was unchanged over time, $p = 0.99$. Mean differences of the knee joint circumference from before to after each training session varied from 0-0.4 cm. Knee joint circumference after the training session was unchanged over time, $p = 0.99$. Training load generally increased and maximal muscle strength improved; unilateral leg press mean 18% ± 30 ($p = 0.03$), knee extension mean 81% ± 156 ($p < 0.0001$) and knee flexion mean 53% ± 57 ($p < 0.001$).
Conclusions: PRT of the affected leg initiated shortly before TKA does not exacerbate knee joint pain and effusion despite a substantial general load progression and increased muscle strength.

No conflicts of interest reported

Is the learning curve in cementless unicompartmental knee replacements related to periprostetic fractures and subscidence?

17.

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Background: Clinical and radiological data from a design centre of unicompartmental knee replacement (UKR) show as good as, or even better outcome of the cementless compared to the cemented UKR. Our institution (a high volume hospital with UKR surgeons performing on average 40 UKRs per year) changed from cemented to cementless UKR in 2015 with a concomitant occurrence of fractures and subscidence of the tibial implant, not previously observed in the cemented UKR.
Purpose / Aim of Study: To elucidate whether or not a learning curve relates to early failures in cementless UKR.
Materials and Methods: Since January 2015, we investigated clinical and x-ray outcome after 4 weeks and 1 year in all patients, receiving a cementless UKR at our institution
Findings / Results: From Jan, 2015 to March 2016, 216 cementless UKR were implanted by 5 knee surgeons. All the surgeons had patients with early periprosthetic fracture or subscidence. Within 6 months of primary UKR, 4.2% (9 of 216) underwent revision due to either fracture or instability from subscidence. Periprostetic fractures 4/216 = 1,9%, (3 revised, 1 not revised), Subscidence with the occurrence of instability and concomitant revision: 6 / 216 = 2,8%. Radiological subscidence (not revised) 11/216 = 5 % In September 2015 we altered the surgical technique, taking extreme care in tapping down the tibial component, and the company provided coating on the lateral wall of the tibial implant. Hereafter: Revision due to fractures = 0 %. 1 patient was revised due to subscidence and instability.
Conclusions: Even in high volume hospitals with experienced UKR surgeons, shifting from cemented to cementless UKR may increase failure rate as a part of a learning curve. Whether the implant design influenced the early failures remains to be elucidated.

No conflicts of interest reported

Oxford Unicompartmental Knees display contactloss during step-cycle motion and bicycle motion

18.

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Background: The Oxford Unicompartmental Knee (UKA) is designed fully congruent, with the purpose of minimizing wear and wear related revisions. No study has investigated this design feature in-vivo.
Purpose / Aim of Study: We aimed to evaluate if the articulating surfaces of the Oxford UKA stayed fully connected (no contactloss) during bicycle- and step-cycle motion.
Materials and Methods: Fifteen patients (12 males, mean age: 69 years) with an Oxford UKA (mean in-situ: 4.4 years) participated in this cross-sectional study. Each patient was recorded with dynamic RSA (10 fr/sec) during bicycle- and step-cycle motion (step-up, stand, step- down). The recordings were analyzed with Model-based RSA, which allowed the quantification of contactloss (joint space width) between the articulating surfaces. Polyethylene (PE) wear was measured from standing RSA examinations. Clinical outcomes were evaluated with American Knee Society Score (AKSS) and Oxford Knee Score (OKS).
Findings / Results: Contactloss was seen in all patients during both exercises ($p<0.001$). Median contactloss was 0.8mm (95%PI: 0.3; 1.5) for bicycle motion and 0.3mm (95%PI: 0.24; 0.35) for step-cycle motion. Contactloss occurred during the late- upstroke for bicycle motion, and during initialization, stand and end of step-cycle motion. The linear PE wear rate of 0.06 mm/year (95%CI: 0.04; 0.08) was not correlated with contactloss ($r<0.1$, $p>0.8$). OKS (mean 44, range: 24; 48) and AKSS Function score (mean 94, range: 30; 100) correlated with contactloss during step-cycle motion ($r<-0.55$, $p<0.035$).
Conclusions: All Oxford UKA displayed contactloss during bicycle- and step-cycle motion. The size of contactloss during step-cycle motion correlated with poorer OKS and AKSS function scores. Contactloss did not correlate with PE wear rate.

No conflicts of interest reported

Efficacy of pre-operative progressive resistance training in patients undergoing total knee arthroplasty – 1 year follow-up

19.

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Background: Efficacy of pre-operative progressive resistance training (PRT) on functional performance and muscle strength was previously demonstrated six and twelve weeks after total knee arthroplasty (TKA).
Purpose / Aim of Study: To investigate the efficacy of PRT one year post-operatively in patients undergoing total knee arthroplasty.
Materials and Methods: 59 patients were included in a single- blind, randomized, clinical, controlled trial. Participants were randomized to preoperative PRT (PRT group) or to a control group who "lived as usual" the last 4 weeks before TKA. The PRT group comprised 4-weeks of pre- operative and 4 weeks of post- operative progressive resistance training (PRT) compared to 4 weeks of post-operative PRT in the control group, and outcome measures were functional performance, e.g. 30s chair stand test (30sCST), knee extensor and knee flexor muscle strength and patient-reported outcomes. The differences between one year data and baseline data were compared between the PRT group and the control group with 30sCST as primary outcome. Statistical analyses were performed according to intention-to-treat.
Findings / Results: 15 patients were lost to one year follow- up. The PRT group had significantly higher normalized knee extensor muscle strength (0.5 Nm/kg (0.4;0.6) vs. 0.2 Nm/kg (0.1;0.3), p=0.002) and higher normalized knee flexor muscle strength (0.3 Nm/kg (0.2;0.4) vs. 0.2 Nm/kg (0.0;0.3), p=0.042) in the operated leg compared to the control group leg. A borderline significant group difference was found in regard to 30sCST (4.0 rep. (2.7;5.2) vs. 2.3 (0.9;3.6), p=0.067).
Conclusions: Supervised pre-operative PRT is an efficacious intervention for improving long term effect on muscle strength and a borderline long-time effect on functional performance in patients undergoing TKA.

No conflicts of interest reported

Preoperative Methylprednisolone does not reduce the loss of Knee-Extension Strength after Fast-Track Total Knee Arthroplasty - a randomized, double-blind, placebo-controlled trial

20.

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Background: Early mobilization and functional performance is delayed due to postoperative quadriceps weakness after total knee arthroplasty (TKA). Central activation failure of the quadriceps muscle due to neuro- inflammation seems to contribute considerably to the decrease in knee- extension strength.
Purpose / Aim of Study: The purpose was to evaluate the efficacy of a single preoperative dose of systemic methylprednisolone (MP) on knee-extension strength after fast- track TKA.
Materials and Methods: 70 patients undergoing elective unilateral TKA at a single center were randomized (1:1) receiving preoperative MP 125 mg IV (group M) or isotonic saline IV (group C). All procedures were performed under spinal anesthesia without Tourniquet, and a standardized, multimodal analgesic regime was used. The primary outcome was change in knee- extension strength between groups from baseline to 48 hours postoperatively. Secondary outcomes were knee joint circumference, functional performance (Timed Up and Go (TUG)), plasma C-reactive protein (CRP) concentration, pain during aforementioned tests and rescue analgesic requirements. Trial ID: NCT02319343
Findings / Results: MP significantly reduced the inflammatory response (CRP): 24 hours postoperatively; group M 33 (IQR 21-50) mg/l vs. group C 72 (IQR 58-92) mg/l, $p<0.001$, and 48 hours postoperatively; group M 83 (IQR 56- 125) mg/l vs. group C 192 (IQR 147- 265) mg/l, $p<0.001$, but loss in quadriceps muscle strength did not differ between groups: group M 1.04 (SD 0.42) Nm/kg vs. group C 1.02 (SD 0.35) Nm/kg, $p=0.843$. No between- group differences were observed for knee circumference, TUG, and pain scores.
Conclusions: Preoperative systemic administration of MP 125 mg reduced the inflammatory response but was not superior to placebo in reducing the loss of knee-extension strength and functional performance early after fast- track TKA.

No conflicts of interest reported

The survival of total knee arthroplasties depends on the need for additional component supplementation – A Danish population-based study including 52.876 patients

21.

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Background: Previous minor studies have reported an inferior survival of total knee arthroplasties (TKA) inserted due to post-traumatic osteoarthritis (PTA) when compared to TKA inserted due to primary osteoarthritis (OA).
Purpose / Aim of Study: We conducted a population-based study with the aim of confirming the previous findings on a larger cohort. In addition, we hypothesize that the need for additional component supplementation (CS) during surgery were more pronounced in patients with PTA and that this might be associated with the inferior survival.
Materials and Methods: 52.876 primary TKAs inserted between 1997 and 2013 were withdrawn from the Danish Knee Arthroplasty Registry. 1.423 were inserted due to PTA and 51.453 were inserted due to OA. We examined short- (0-1 year), mid- (1-5 years) and long term (+5 years) implant survival using cumulative incidence and adjusted hazard ratio (HR) with revision as endpoint and death as competing risk. The analyses were repeated after dividing the patients by the need for additional CS.
Findings / Results: An inferior survival of TKAs inserted due PTA was present in all follow-ups. The five-year cumulative incidence was 9% in the PTA-group and 4% in the OA-group, with a corresponding adjusted HR of 1,93. Additional CS was needed in 22% of the PTA-group and in 4% of the OA-group, and the five-year cumulative incidence in these cases were 33% and 40%, respectively. An adjusted HR of 2,41 was calculated for TKAs inserted with the need for additional CS. All reported results were significant with p<0,001.
Conclusions: The study confirmed the inferior survival of TKAs inserted due to PTA, and found that this is strongly related to the need for additional CS. To our knowledge this relationship has not previous been described and should be remembered when informing the patient prior and following surgery.

No conflicts of interest reported

Bone mass is lower in patients with severe knee osteoarthritis and attrition.

22.

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Background: Bone quality is probably important for the survival of knee arthroplasty (KA), however little is known about preoperative bone mass, bone turnover and vitamin D status.
Purpose / Aim of Study: To explore the prevalence of osteoporosis and preoperative bone turnover in relation to knee osteoarthritis (OA) grade in patients scheduled for KA.
Materials and Methods: Prospective preoperative evaluation of patients with OA scheduled for KA between 2014- 2016. 475 patients (281 females) were examined with standing knee radiography, DXA (BMD lowest T-score of hip or spine), and biomarkers for bone turnover (CTX, P1NP) and vitamin D. OA grading on the first 184 patients was made in consensus with an experienced radiologist by use of the Altman Atlas (AA). Grading is currently ongoing towards the full cohort.
Findings / Results: Mean patient age was 67.8 years (CI95 66.8;68.8). The proportion of patients with osteoporosis (OP) was 10.2% (CI95 7.4;12.9), while the proportion of patients with osteopenia was 36.2% (CI95 32.0; 40.7). Mean BMD T-score was 0.7 lower in women than in men ($p<0.0001$). After adjustment for age mean BMD T-score was 0.44 (CI95 0.05;0.83) lower when attrition (AA) was present medially or laterally compared to not present ($p=0.026$). Altman total grade and CTX and P1NP had a weak but significant correlation ($p<0.001$). After adjustment for age P1NP was 11% higher ($p=0.16$) when attrition (AA) was present compared to not present. No difference in CTX with the presence of attrition ($p=0.53$). Serum vitamin D was 78.9 (CI95 76.1;81.7) nmol/L. There was no association between vitamin D and AA grade ($p>0.34$).
Conclusions: Bone mass was lower with severe knee osteoarthritis (attrition). There was a trend towards higher bone turnover biomarker (P1NP) with higher grade of knee osteoarthritis. 10% of patients had osteoporosis.

No conflicts of interest reported

Reoperation after long and short intra medullary nail in patients with per- and subtrochanteric fracture. 23.

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Background: Short (SIMN) and long Intramedullary Nails (LIMN) are frequently used in the management of femoral pertrochanteric (Pfx) and subtrochanteric fractures (Sfx) but the literature is scarce on the optimal choice regarding re-operations. The motivation for use of LIMN in Pfx has been prophylaxis for new fractures distal to a short nail.
Purpose / Aim of Study: To compare reoperation proportions between SIMN and LIMN in patients with Pfx and Sfx.
Materials and Methods: From 2008–2013 data on 8.516 hip fractures in the Region of Southern Denmark was retrieved from the Danish Multidisciplinary Registry for Hip Fractures (DMRHF). 1.419 patients with the procedure codes KNFJ51-52 were included. Data from DMRHF includes age, sex, Charlsons Comorbidity Index (CCI), and reoperations within 2 years. All health records were reviewed for type of IMN and fracture near the IMN (fxIMN). Proportions of reoperation and crude and age/sex/CCI adjusted Odds Ratios (OR) from logistic regression comparing SIMN and LIMN are given with 95% Confidence intervals.
Findings / Results: There were 807 patients with Pfx and 612 with Sfx. The median age was 84.8 years and 70.6% were female with no differences between groups. Pfx reoperation level for SIMN was 5.6% (3.7;8.0) (27/483 – 3 fxIMN) compared to 8.0% (5.3;11.5) (26/324 – 4 fxIMN) for LIMNs. Crude OR = 1.47 (0.84;2.57), adjusted OR = 1.56 (0.89;2.74) comparing LIMN to SIMN. Sfx reoperation level for SIMN was 10.8% (7.0;15.8) (23/213 – 5 fx-IMN) compared to 6.0% (3.9;8.8) (24/399 – 2 fxIMN) for LIMN. Crude OR = 0.52 (0.29;0.96), adjusted OR =0.49 (0.26;0.9) comparing LIMN to SIMN.
Conclusions: This is the largest study to date showing no difference between SIMN and LIMN for Pfx but an increased risk of reoperation for Sfx managed with SIMNs. Thus there seems to be no indication for use of long nails in Pfx as a routine.

No conflicts of interest reported

Reoperations after cemented and uncemented hemiarthroplasty - A study from the Danish Multidisciplinary Registry of Hip Fractures (DMRHF)

24.

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Background: Cemented hemiarthroplasty (cemHA) has in several nationwide registries shown to be superior to uncemented hemiarthroplasty (uncemHA) in regards to reoperation, but still the uncemented is used in a number of countries.
Purpose / Aim of Study: To compare the reoperations for cemHA vs uncemHA in hip fracture patients with up to 5 years' follow-up.
Materials and Methods: This is a population based register study with data from DMRHF and the Danish National Registry of Patients. Data was retrieved from 01.01.2004 to 12.31.2013 with a minimum of 2 years' follow-up on procedure codes (NFB02, NFB12), age, sex, Charlson Comorbidity Index (CCI), reoperation status and vital status. Among 70,652 hip fractures in total, 16.741 have had a HA. Reoperation was defined as dislocations, periprostethic fractures, deep infections and other reasons, and were based on data reported to DNRP.
Findings / Results: There were 8513 uncemHA and 8228 cemHA with no difference between median age (quartiles) of 84.2 (79.1-88.7) for uncemHA and 83.8 (78.5-88.5) for cemHA, respectively. There were 76 % females in both groups and the median follow-up was 3.5 years. The reoperation percentage was 4.6 % for uncemHA and 3.4 % for cemHA. A crude Cox-regression analysis using Hazard Ratio (HR) with 95 % CI for uncemHA compared to cemHA yielded 0.72 (0.62;0.84) after 1 year, 0.76 (0.63;0.91) from 1-2 years, and 0.68 (0.56;0.82) from 2-5 years. When adjusting for age, sex, and CCI the HR was 0.72 (0.62;0.84) after 1 year, 0.75 (0.63:0.90) from 1-2 years, and 0.68 (0.56;0.82) from 2-5 years. Higher age seems to be a protective factor.
Conclusions: CemHA has an overall lower reoperation percentage compared to ucemHA and this nationwide study from DK suggest that patients with femoral neck fractures should be treated with a cemHA rather than a uncemHA.

No conflicts of interest reported

Exploring learning curves for simulation-based hip-fracture surgery

25.

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Background: Inexperienced orthopedic interns can contribute to a higher reoperation rate in hip fracture surgery. Computer-simulation has improved operative skills in other surgical specialties and mandatory training to proficiency on a hip fracture surgery simulator should be considered for orthopedic interns.
Purpose / Aim of Study: The aims of this study were to explore how much simulation training orthopedic interns need for reaching the plateau phase of their learning curve and to define a pass/fail standard for mastery learning based on the level of the plateaus.
Materials and Methods: Sixteen orthopedic interns were included for simulation with cannulated screws, Hansson Pins and Sliding Hip Screw on the Swemac TraumaVision, which has a scoring system with validity evidence. The scores as a percentage of maximum for the three procedures were combined to one average total score. The training ceased when an intern failed to improve the total score for three consecutive times.
Findings / Results: The orthopedic interns practiced the three procedures eight to 18 times, average 179 minutes (110-246 minutes). Participants improved significantly and performed more consistently after training, initial score = 71.2 (SD 11.0) and maximum score = 94.5 (SD 4.0). Maximum score above 90 points was achieved after a mean of 145 minutes (59-241 minutes). There was a significant correlation between the initial score and the maximum score (Pearson's r=0.51, p=0.046).
Conclusions: Performance improved for all, but with large variations in the individual progression and the initial performance to some degree predicting the max score. There was no correlation between the time spend practicing and the maximum score, but all interns except one could achieve a max score above 90, which we suggest as a pass standard in a formal mastery learning simulation program.

No conflicts of interest reported

Dementia as risk factor of Corail stem dislocation

26.

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Background: Dementia is a neurologic disorder causing cognitive impairment. The prevalence in Denmark is 80.000 and concern has been raised as to whether these patients have an increased risk of hip hemiarthroplasty dislocation.
Purpose / Aim of Study: To determine if dementia is a risk factor of dislocation of Corail stem and Ultima caput.
Materials and Methods: Retrospective evaluation of patients operated from 01.01.2007 to 31.12.2010 at Svendborg Hospital. Inclusion criteria: Operation code KNFB02 (primary operation with uncemented distal component of hip hemiarthroplasty). Exclusion criteria: Death or reoperation within the first year (both unless the arthroplasty has dislocated first) or dementia state unknown. After surgery patients were admitted to the geriatric ward and evaluated by the staff during rehabilitation. If suspicion of cognitive impairment arose, the patients were assessed at the geriatric out-patient clinic 3 months post-discharge and potentially diagnosed with dementia. We evaluated patient files for dementia (DF00, DF01, DF03) and dislocation of arthroplasty up to 1 year after the initial operation.
Findings / Results: 319 patients met the inclusion criteria. 92 were excluded (49 died < 1 year, 2 were reoperated < 1 year, 41 were lost before geriatric evaluation). 227 patients (71%) were included of which 68 (30%) had dementia and 159 (70%) did not. 10 (14%) of the patients with dementia dislocated their arthroplasty within the first year vs. 6 (3%) of the patients without dementia resulting in an OR for dislocation (dementia vs. no dementia): 4,3 [95% CI 1,53 – 12,64]. There was no difference in age (dementia vs. no dementia) p=0,81, and no difference in age (+dislocation vs. – dislocation) p=0,75.
Conclusions: Patients with dementia have 4,3 times higher risk of dislocating their hip hemiarthroplasty vs. patients without dementia.

No conflicts of interest reported

Management of hip fractures in Denmark: a questionnaire

27.

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Background: Management of hip fractures (HipFx) are part of the daily activities in most orthopaedic departments. The typical patient is geriatric with several co-morbidities. Post-operative mortality remains high and reoperations are frequent. In 2008 the Danish Orthopaedic Society published updated management guidelines for HipFx patients to help standardize treatment according to best evidence.
Purpose / Aim of Study: We sought to investigate to which extent the guidelines are used today in the Danish orthopaedic departments treating HipFx. Our focuses were surgeon experience and supervision, fracture classification and implant selection, co-work with geriatricians and out-patient follow-up.
Materials and Methods: We composed an online questionnaire distributed to all 24 Danish orthopaedic departments treating HipFx. The response rate was 100%. 2 departments declined due to very low frequency of HipFxs.
Findings / Results: In 13 of the 22 departments, HipFxs were primarily treated by junior surgeons. Rate of supervision varied and 10 departments had no formalized operative training. 10 co-worked with Geriatricians and only 5 provided out-patient follow-up. 16 used surgical algorithms for choice of implant, which to some extent appeared in accordance with the Danish Orthopaedic Society guidelines.
Conclusions: The parts of the Danish Orthopaedic Society guidelines covered in this study were widely used across the country. However, HipFxs were primarily operated by junior surgeons, with several departments lacking formalized training and supervision. Also less than half of departments co-worked with Geriatricians. In our opinion, these aspects need focus for further optimizing the HipFx treatment in Denmark.

No conflicts of interest reported

Thrombosis after hip fracture surgery

28.

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Background: Thromboembolism is a serious complication after hip fracture surgery. Antithrombotic prophylaxis guidelines have been debated and based on literature now recommend treatment 10 days post-op for all hip fracture patients. If thrombosis risk factors are identified, future antithrombotic prophylaxis guidelines could however be individualized.
Purpose / Aim of Study: To determine event rates, temporal patterns, and risk factors of clinical significant thromboembolic complications after hip fracture surgery; including venous thromboembolism (VTE), myocardial infarction (MI), stroke, and all-cause mortality.
Materials and Methods: All Danish citizens aged ≥50 years surviving until discharge after surgery for hip fractures between 1999 and 2012 were included in this national cohort study. Data was obtained from the national administrative databases. Cox regression models were used to identify covariates associated with an event.
Findings / Results: We included 98,212 patients surviving surgery for a hip fracture. During 1-year of follow-up, VTE occurred in 1.66%, MI in 1.92%, and stroke in 4.03%, mortality was 29%. The event rate was highest in the beginning of the follow-up period, and the median time to an event was 28 days for VTE, 11 days for MI, and 22 days for stroke. The strongest risk factor of any thromboembolic complication was having a previous history of the event, leading to hazard ratios at 3.6 (CI 2.8-4.5) for previous VTE, 7.5 (CI 7.1-8.0) for previous MI, and 4.9 (CI 4.4-5.4) for previous stroke.
Conclusions: Thromboembolism seems to occur early after hip fracture surgery. Also it appears possible to identify patients at high risk, which indicates the possibility of future more individualized antithrombotic prophylaxis guidelines.

No conflicts of interest reported

35-year trends in first-time hospitalization for hip fracture and one year mortality: a Danish nationwide cohort study, 1980-2014

29.

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Background: Osteoporosis affects 200 million persons worldwide, with hip fracture being the most common manifestation of the disease.
Purpose / Aim of Study: To examine trends in hip fracture incidence in Denmark from 1980 to 2014, and trends in subsequent one-year mortality by sex, age, and comorbidity.
Materials and Methods: Nationwide cohort study based on prospectively collected Danish registries. Participants: 262,437 patients with incident hip fracture. Outcomes: Standardized incidence rate of hip fracture; mortality 30 days and 31-365 days after hip fracture. Comorbidity was assessed using the Charlson Comorbidity Index (CCI) score. We computed mortality rate ratios (MRRs) using Cox regression.
Findings / Results: Despite slight increases in incidence rates of hip fracture up to the mid-1990s, the incidence rate decreased by 29% from 1980 to 2014 in women, but remained stable in men. Rates decreased in persons of all age groups. The proportion of patients with very severe comorbidity preceding hip fracture increased from 5.6% in 1980-1984 to 26.5% in 2010-2014, respectively. Adjusted MRRs were 0.7 (95% confidence interval (CI): 0.6-0.7) within 30 days and 0.6 (95% CI: 0.6-0.7) within 31-365 days of hip fracture in 2010-2014 compared with 1980-1984. Analyses stratified by CCI revealed a reduction in mortality from 1980 to 2014 both in patients without comorbidity and in patients with different scores of comorbidity.
Conclusions: We found a decrease in rates of hip fracture in women, and in all age groups from 1980 through 2014. Although the proportion of patients with comorbidity increased twofold to fivefold over time, 30-day and 31-365 day mortality decreased by 30% to 40% over the study period. The decrease in mortality was seen in patients without and with comorbidity before hip fracture across calendar periods of hip fracture diagnosis.

No conflicts of interest reported

Can trauma surgeon's subjective intraoperative conclusions on patients bone quality be trusted?

30.

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Background: How are my bones, do I have osteoporosis? Orthopedic surgeons are occasionally asked this question, but how valid is the surgeons answer?
Purpose / Aim of Study: The purpose of this study was to validate trauma surgeon's estimation of bone quality and conclusions whether a patient undergoing fracture surgery has osteoporosis or not.
Materials and Methods: Trauma surgeons were asked to evaluate the quality of the bone on a 10 cm visual analogue scale (VAS) ranging from very poor to extremely high bone quality. The surgeons also concluded "osteoporosis", "not osteoporosis" or "not able to answer". Within three months after surgery all patients were invited to a dual x-ray absorptiometry (DXA) for measuring bone mineral density. ROC curves were used as diagnostic tools to describe the accuracy of VAS score against DXA. Nonparametric methods were used to calculate area under the ROC curves.
Findings / Results: Fifty-three patients were included. Area under the ROC curve measuring accuracy of VAS as diagnostics tool for osteoporosis was 0.698 and for diagnosing a status of osteopenia or osteoporosis the area was 0.727. Using a cut point on the VAS scale 4 cm or less as diagnostics for osteoporosis the sensitivity was 84%, the specificity 42% and 75% were correctly classified. Using the same cut point of 4 cm for diagnosing osteopenia or osteoporosis from the VAS scale the sensitivity was 93%, specificity 27% and 45% were correctly classified. The positive predictive value of the surgeons' conclusion of osteoporosis was 50% and the negative predictive value was 83%. If surgeons' conclusion of osteoporosis was used as a surrogate for any abnormal low bone density (osteopenia or osteoporosis) the positive predictive value raised to 86%.
Conclusions: The trauma surgeon's conclusions concerning a patients bone quality can be trusted to some degree.

No conflicts of interest reported

Influence of computer tomography scans on treatment of bi- and trimalleolar fractures

31.

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Background: Several studies have indicated that plain radiographs are insufficient in evaluation of complex malleolar fractures. In one recent study this was especially true for trimalleolar fractures, dislocated fractures, suprasyndesmotic fractures and in cases where plaster obscured the fracture area. However these studies have been either small or retrospective

Purpose / Aim of Study: To assess change of planned operative management (patient positioning, surgical approach and fixation) between preoperative x-ray and CT-evaluation

Materials and Methods: Adult patients with bi- or trimalleolar fractures or unimalleolar fractures with dislocation were CT-scanned. The surgeon subsequently filled out a purpose made form after 1) evaluation of x-rays, 2) evaluation of CT-scans and 3) performed surgery. The form addressed among others AO classification, location of fracture step-off, patient positioning, planned incisions and fixation of medial and lateral malleoli, posterior tibia and the syndesmosis. 69 patients were included

Findings / Results: Change in AO-classification (p= .035) and presence of fracture step-off in the posterior tibia (p= .003) was significant after x-ray and CT-scan evaluation. Changes in planned incisions (17,4%) and patient positioning (8,7%) were more frequent after X-ray and CT- scan evaluation compared to plan after CT and performed surgery, (1,4%) and (4,3%) respectively, but these findings were non- significant. Changes in planned fixation after x- ray and CT-scan evaluation (29,0%) was lower than the change seen between plan after CT- scan and actually performed surgery (37,7%)

Conclusions: The role of preoperative CT-scans in the management of ankle fractures is unclear. Our results indicate a more precise AO classification and detection of fracture step-off in the posterior tibia, but CT-scans do not seem to change surgical management

No conflicts of interest reported

Function, health status and satisfaction after surgery with THA following femoral neck fracture or osteoarthritis.

32.

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Background: Displaced femoral neck fracture (FNF) is a common injury in the elderly, and treatment with total hip arthroplasty (THA) has low complication and revision rate. Less is known about the functional results after ended rehabilitation.
Purpose / Aim of Study: To investigate function, health status and satisfaction in patients treated with primary THA after displaced FNF.
Materials and Methods: From 2005-2011, 414 consecutive FNF patients were operated with Saturne Dual mobility (DM) THA. At min 1-year follow-up, 124 (95 women) responded to an invitation and were evaluated with Oxford Hip Score (OHS), a general health-related quality of life measure (EQ-5D) and 2 functional tests: Timed Up and Go (TUG) and Sit To Stand 10 times (STS). The FNF patients were matched 1:2 by age, sex and surgery date with patients receiving THA due to osteoarthrosis (OA group) with 1 year OHS and EQ5D. EQ-5D for the FNF group was matched to the general population index.
Findings / Results: Patient age at time of surgery was mean 74.8 (range 30-92) years. At a mean follow-up of 2.8 (1.0 – 7.7) years the mean EQ-5D score was 0.79 (sd 0.15) in the FNF group, which was similar to the matched general populations index (p=0.4), but lower (p=0.001) when compared to the OA group. Mean OHS was 36.4 (sd 9.5) in the FNF group and 38.4 (sd 7.2) in the OA group (p=0.05). Hip pain (Q1 from OHS) was similar between groups (p=0.10). Mean TUG was 13.5 (sd 4.9) sec and mean STS was 37.9 (sd 15.3) sec in the FNF group. Mean VAS at rest was 1.0 (sd 1.7) and during activity 2.1 (sd 2.7), and 89% were satisfied with the result of the operation in the FNF group.
Conclusions: At short term follow-up, patients with DM THA following displaced FNF had a good functional and satisfaction result. EQ-5D was similar to the age/gender matched population index, but lower compared with OA THA patients.

No conflicts of interest reported

Mortality in patients treated with cemented or uncemented hemiarthroplasty - A study from the Danish Multidisciplinary Registry of Hip Fractures (DMRHF)

33.

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Background: Several nationwide studies have shown that cemented hemiarthroplasty (cemHA) has higher mortality compared with uncemented (uncemHA) on the first post-operative day and lower after 1 year but longer term results are not known.
Purpose / Aim of Study: To compare the postoperative mortality after cemHA with uncemHA in hip fracture patients with up to 5 years' follow-up.
Materials and Methods: This is a population based register study with data from the DMRHF and the Danish National Registry of Patients. Data was retrieved from 01.01.2004 to 12.31.2013 with a minimum of 2 years' follow-up on procedure codes (NFB02, NFB12), age, sex, Charlson Comorbidity Index (CCI), reoperation status and vital status. There were 70,652 hip fractures that included 45,809 osteosyntheses, 7,020 total hip arthroplasties and 17,283 HA.
Findings / Results: There were 8751 uncemHA and 8532 cemHA, and the median age (quartiles) was 84.2 (79.1-88.7) for uncemHA and 83.8 (78.5-88.5) for cemHA. There were 76 % female in both groups and the median follow-up was 3.5 years. The mortality for uncemHA compared to cemHA was within the first postoperative day 0.8 % versus 1.2 %, and reversed already after 1 week with 3.6 % versus 3.2 %. In a Cox-regression analysis adjusted for age, sex, and CCI the Hazard Ration (HR) (95 % CI) for 1-day was 1.48 (1.10; 2.00), 1-week 0.94 (0.80; 1.10), 1 month 0.83 (0.73; 0.93), 1-year 0.87 (0.81; 0.94), and 5-years 0.98 (0.93; 1.03). The 1-day HR for cemHA patients with CCI=0 is 3.43 (1.69;6.94), 0.90 (0.57;1.41) for CCI=1-2, and 1.70 (0.99;2.91) for CCI≥3.
Conclusions: Overall mortality was higher after one day, lower from one month to one year and comparable at five years when comparing cemHA with uncemHA. An unexpected possibly U-shaped co-morbidity to mortality risk at 1-day associated with cemHA warrants further study.

No conflicts of interest reported

The effect of spinal rotation on Cobb' angle

34.

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Background: The importance of vertebral rotation as well as measurement of vertebral rotation in the development and management of scoliosis is recognized as important. The common radiological method of evaluating scoliosis by Cobb's angle is biased by measurement variation
Purpose / Aim of Study: To examine the effect of vertebral axial rotation on Cobb's angle as an indicator of the potential and inherent bias of truncal rotation in the normal or slight scoliotic spine
Materials and Methods: This study was conducted as a cross-sectional study, where 40 anonymized patients were included and scanned by CT consecutively. Coronal reconstructions covering the whole pelvis and spine executed in an angle of -15, -10, -5, 0 ,5,10 and 15 degrees (dg). Cobb's angle was measured from TH4-TH11 in the thoracic part and TH12-L4 for the lumbar part. All measurements were performed blinded by three experienced doctors separately. The data were evaluated by mixed effect model, including fixed effects for reconstructions and parts and a random slope effect for reconstructions within each patient. all analysis was perform in SPSS (ver 22)
Findings / Results: Measurements of Cobbs angle ranged from 0.05 dg to 36.3 dg with at average of 5.5 dg for the thoracic spine and from 0.3 dg to 29.1 dg with an average of 3.8 dg in the lumbar spine. There was a significant effect for vertebral rotation (< 0.001) with an estimated effect of 4.2 dg for every 5 dg vertebral rotation (SE = 0.6 dg)
Conclusions: Vertebral rotation has a significant effect on Cobb's angle. This indicates, that there seem to be a clinical implication, where truncal rotation under radiological examination bias Cobb's angle in the slightly scoliosis and normal spine, thus causing potential misdiagnosis of scoliosis (> 10 degrees of Cobb's angle) and initiation of monitoring and management of early scoliosis

No conflicts of interest reported

Evaluation of Treatment of Bone Bridges After Injury to the Growth Plate

35.

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Background: Fractures involving the growth plate can cause bone bridge formation leading to leg length discrepancy, angular bone deformities, and early secondary arthrosis. The gold standard treatment is to remove the bone bridge surgically and replace it with fat.
Purpose / Aim of Study: The purpose was to evaluate bone bridge formation using the gold standard compared with no treatment using MRI in a porcine model.
Materials and Methods: In five immature female pigs the distal femoral growth plate was identified using fluoroscopy. The medial part of both growth plates was injured in a standardised procedure using a 6 mm cannulated drill bit operated manually. The injury included the metaphyseal and epiphyseal part of the bone to simulate a gap after excision of a bone bridge. The defects were rinsed sterile saline. Defects in both hind legs were randomized to filling of subcutaneous fat (group A, n = 5) or no filling (group B, n = 5). The animals were followed for 14 weeks. Three-dimensional MRI including water- content were performed at 14 weeks and followed by euthanasia. Presence or absence of a bone bridge was determined on MRI.
Findings / Results: Bone bridge formation was confirmed in 60% of the animals for group A and 100% for group B. Water-content MRI shows less water-content in the injured part of the growth plate compared to the uninjured all the animals in both groups.
Conclusions: Bone bridge formation was seen less frequently in the group treated with the current gold standard, nevertheless a bone bridge still occurred in 60% of the animals. Hence, there is a need for further investigation of alternative treatment options for bone bridge formation.

No conflicts of interest reported

Calcaneal cuboid joint motion can be assessed by radiostereometric analysis

36.

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Background: Subluxation in the calcaneo-cuboid joint (CCJ) with dorsal displacement of the anterior calcaneal fragment following a calcaneal lengthening osteotomy in children is a frequently observed finding. Various methods to quantify the displacement have been proposed using conventional X-rays. However these methods are unprecise and only allow for uniplanar measurement.
Purpose / Aim of Study: We investigated the feasibility of using marker-based radiostereometric analysis (RSA) for measurements of the CCJ in pediatric patients who underwent calcaneal lengthening surgery for flexible flatfoot.
Materials and Methods: Eight patients diagnosed with flexible flatfoot (8 feet; 1 male, 7 females) with mean age 12.3 years (range 8.2-14.2) were examined one year after calcaneal lengthening osteotomy (CLO). Supine and standing stereoradiographs were obtained. The Oxford ankle foot questionnaire (OxAFQ) was used to assess the affect of the foot on the quality of life of the child.
Findings / Results: Precision of the RSA measurements of the CCJ ranged between 0.14-0.58 mm for translations and 2.08-4.26 degrees for rotations. In response to loading we find the cuboid to translate (mean; range) distally by -0.92 mm(-1.78;-0.12), dorsally by 2.13 mm(0.58;4.07), laterally by -1.94 mm(-3.94;-0.17) and rotate medially around the x-axis by 7.23 degrees (-1.05;17.06) with reference to the distal calcaneal fragment. Based on the OxAFQ scores children were asymptomatic.
Conclusions: This is the first in vivo study describing the CCJ kinematics in children one year after CLO using RSA. This is the first step towards understanding the CCJ before and after CLO, and to examine the clinical consequences of this motion. In the future, model-based RSA and fluoroscopy can allow for obtaining preoperative models of the foot and provide a complete kinematic analysis of the CCJ during motion.

No conflicts of interest reported

Obstetric risk factors in children with Congenital Muscular Torticollis

37.

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Background: Congenital muscular torticollis (CMT) is an orthopedic diagnosis seen in childhood and presents within months after birth. In general the etiology remains unknown. However medical textbooks suggest trauma at birth as a main reason.
Purpose / Aim of Study: The aim of this study was to systematically describe obstetric outcomes in a population of children with a confirmed CMT diagnosis
Materials and Methods: Children with a validated diagnosis of CMT born at Aarhus University Hospital from 1993-2014 were included in the study. Information on perinatal, intrapartum and neonatal characteristic were obtained from databases and from medical records and systematically described.
Findings / Results: In this study, there were no differences in birth characteristics in children with left and right sided CMT, between boys and girls or between the conservatively treated and the children who needed surgery. Four children were in breech presentation, eighteen in vertex and two in unspecified cephalic presentation. Of those born vaginally, five children were delivered by vacuum extraction, and two children were assisted vaginal breech births. Five children were delivered by cesarean section. The mean second stage of labour for the vaginal deliveries was 32 minutes. Most of the children with CMT in this study were delivered at term without signs of birth complications or trauma. None experienced moderate or severe asphyxia.
Conclusions: The results of the present study suggests that complicated birth or birth trauma may not be the main cause of CMT and point towards intrauterine and prenatal reasons for developing Congenital muscular torticollis.

No conflicts of interest reported

Evaluation of Screening Programme for Developmental Dysplasia of the Hip

38.

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Background: It has been suggested that breech presentation during pregnancy, family history of Hip Dysplasia (DDH) or twins have an increased risk of DDH. Different screening methods are applied in different regions with controversy.
Purpose / Aim of Study: The purpose of this study is to evaluate the current screening programme of DDH at Aalborg University Hospital (AAUH).
Materials and Methods: Patients were identified using registrations of patients screened for DDH at the department of paediatric orthopaedics AAUH from 2004 until 2014. Patients were divided into 5 groups according to referring cause: breech presentation, family history of DDH, twin birth, clinical hip instability and asymmetrical skinfolds. For each group the final clinical examination and treatment was determined. Patients with lower body deformities were excluded.
Findings / Results: 176 patients were included. The screening of 127 (72%) patients was completed after first examination. For the 5 groups the percentage of patients terminated in the programme after first examination ranged from 43% to 76%. Lowest for the patients referred due to unstable hips and highest for the genetically predisposed patients. 96% of the patients terminated the programme within the first 6 months. All patients included completed the programme with no treatment other than a Dennis Brown brace or instructions in spreading exercises.
Conclusions: The findings may suggest a to aggressive screening programme for children referred due to the 5 mentioned causes.

No conflicts of interest reported

Evaluation of the interdiciplinary CPOP consultations in the Southern Denmark: A parental satisfaction survey

39.

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Background: CPOP is a combined follow-up program and a healthcare quality register for children with cerebral palsy. The professional treatments are coordinated at interdisciplinary consultations offered by the paediatric departments, at which the child, parents, neuropediatrician, paediatric orthopaedic surgeon, physio- and occupational therapist participate.
Purpose / Aim of Study: To evaluate parental satisfaction with the CPOP consultations in the Region of Southern Denmark.
Materials and Methods: A questionnaire was developed and validated by parents from the target group. The questionnaire consisted of five dimensions; staff, context, participation, information and overall impression. Answers were given on a scale from 1 to 5 (1= to a very small extent, 5= to a very large extent). Eight of the items were based on LUP (National survey of patient experiences). Inclusion criterion: Parents who attended a CPOP consultation in the period June 6th to Dec. 18th 2015. Parents, who cannot read Danish, were excluded. Descriptive statistics and confidence intervals were used in the analysis.
Findings / Results: 104 questionnaires are analyzed. Dimension scores range from 4.3 to 4.7. The highest rated questions are the ones concerning staff´s kindness and their professional relevance, where 75% answered 5 and 21-23% answered 4. The lowest-rated questions relate to the involvement of the child and to the information provided, where 6-8% answered 1 and 2. Comparing the eight items based on LUP with the corresponding LUP results, a statistically significant difference in satisfaction is found in seven out of eight items in favor of the CPOP study.
Conclusions: The study shows a high degree of parental satisfaction with the CPOP consultations in Southern Denmark. Furthermore, the study indicates areas where the quality can be improved.

No conflicts of interest reported

Effectiveness And Pittfalls Of The bilateral 8-Plate Technique For Treatment Of Moderate Leg-Length Discrepancy

40.

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Background: Bilateral 8-plates (B8P) has been introduced off-label for performing temporary total epiphysiodesis (ttE) for correction of moderate leg length discrepancy (LLD). Concerns has been raised of development of secondary distal femoral dysplasia
Purpose / Aim of Study: To study the efficacy and potential development of secondary femoral dysplasia after B8P for ttE for correcting moderate LLD
Materials and Methods: Fourteen patients were identified retrospectively and 8 were included. These were all treated with B8P. Mean follow-up time was 4.8 years and average initial LLD was 3.2 cm. Information of clinical assessments were retrieved. Long legs radiographs were obtained and measurements of bilateral leg length, knee alignment, femur and tibia length, femoral central, medial and lateral epiphyseal height for both legs were done by 3 doctors independently. Preoperative radiographs were also retrieved. Paired t-tests were performed in SPSS
Findings / Results: Knee alignment and leg and femoral length were not significant different between the operated leg and non-operated leg, but not tibial length. The three femoral epiphysial heights were significant larger from the preoperative height, but not compared to the opposite leg, indicating growth. The ratios between the central part divided with the lateral, medial side, respectively, had no significant difference when compared to the ratios of the non-operated leg at follow-up, and the preoperative operated side. This indicated no femoral dysplasia. Clinical assessments and the other retrieved data were in agreement with the above measurements
Conclusions: ttE with B8P for moderate LLD seems to be an effective treatment without secondary femoral dysplasia and with inconsiderable number and severity in complications when evaluated clinically and radiologically. This indicated no femoral dysplasia

No conflicts of interest reported

Clinical outcome after decompression surgery for lumbar spinal stenosis

41.

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Background: Lumbar spinal stenosis (LSS) is a clinical syndrome of buttock or lower extremity pain, which may occur with or without back pain, associated with diminished space available for the neural and vascular elements in the lumbar spine. LSS is typically seen in elderly patients, with prevalence estimated to be 47% in people over the age 60. LSS is the most common reason for spine surgery in Denmark and the number of surgical procedures is likely to increase due to demographic changes.
Purpose / Aim of Study: The purpose of this study was to evaluate the patient reported outcomes and perioperative complications of spinal decompression surgery in patients with LSS.
Materials and Methods: This study is a retrospective study of prospectively collected data from 3420 consecutive patients with clinical and MRI confirmed LSS. Patients were treated with posterior decompression surgery between 2009 and 2014 at three regional centers in Denmark. Patients treated with concomitant fusion were excluded. Data were obtained from the DaneSpine register and collected pre- and postoperative after at least one year. Outcome measures were ODI, EQ-5D, VAS, MCS, PCS and self- reported walking distance.
Findings / Results: Of 3420 cases enrolled, 2591 (75%) had complete data after at least one year Mean ODI scores were 39,8 and improved to 24,0. Mean EQ-5D score was 0,40 and improved to 0,66. Mean VAS-leg improved from 54 to 36. Mean VAS-back improved from 46 to 34. Mean MCS improved from 28 to 36. Mean PCS improved from 40 to 45. All comparisons were statistically significant with p-values of 0,0000
Conclusions: Decompression surgery improved all patient-reported outcome measures (ODI, EQ5D, MCS, PCS, VAS and walking distance). Improvements were all of statistical and clinical relevance.

No conflicts of interest reported

Radiographic Predictors for Mechanical Failure following Adult Spinal Deformity Surgery

42.

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Background: Mechanical failure rates following adult spinal deformity surgery is reported up to 37%. The importance of spinal alignment and balance is well documented for surgical outcome, however the role of these parameters as predictors for mechanical failure remains uncertain.
Purpose / Aim of Study: We aimed at evaluating radiographic predictors for mechanical failure following adult spinal deformity correction.
Materials and Methods: All adult spinal deformity patients having at least five thoracolumbar levels of instrumentation between 2008 and 2012 were included. Inability to measure pre- and postoperative SVA and radiography wearing a brace were exclusion criteria. Pre-, postoperative and change in coronal Cobb, central sacral vertical line, thoracic kyphosis (TK), lumbar lordosis (LL), sacral slope (SS) and sagittal vertical axis (SVA) were evaluated as predictors for mechanical failure using cause-specific Cox regression. Mechanical failure was defined as a revision procedure because of rod breakage, screw loosening or breakage, pseudarthrosis, fractures or symptomatic degeneration immediate above or below the instrumentation.
Findings / Results: 138 of 165 patients were included. Mean follow-up was 3.9 years (range 2.1-6.8). Median age at surgery was 61 years. Median 10 levels were instrumented with 71% ending at S1 and 44% had 3-column osteotomy performed. 47% had mechanical failure requiring revision during follow- up. Multivariate regression adjusting for age showed significant increased hazard from change in LL>30° (HR: 1.9 (95%CI: 1.0-3.4), P=0.038), postoperative TK>50° (HR: 1.9 (95%CI: 1.1-3.4), P=0.001) and postoperative SS≤30° (HR: 2.1 (95%CI: 1.3-3.5), P<0.001).
Conclusions: Change in LL>30°, postoperative TK>50° and postoperative SS≤30° independently increased the hazard of mechanical failure following adult spinal deformity correction.

Conflict of Interest
Dennis Winge Hallager: Travel support from Globus Medical Inc.

Long-term Survival after Surgical Treatment of Spinal Metastasis – The Predictive Role of Gender

43.

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Background: Numerous pre-operative scoring systems based on clinical and imaging variables have been suggested to predict long-term survival in patients undergoing surgical treatment for symptomatic spinal metastasis, but the possible role of gender as an independent predictor of long-term survival has not been reported in studies with long time follow-up. Since 2005, Rigshospitalet, has been responsible for the treatment of patients with acute symptoms of spinal metastasis and serves as a referral unit for the Eastern half of the country. This organization makes it possible to follow a large group of patients with MSCC and to follow long-term outcomes.
Purpose / Aim of Study: To examine whether gender predicts long term survival in patients with symptomatic spinal metastasis after surgical treatment.
Materials and Methods: A prospective database including all patients referred with acute symptoms of spinal metastasis was established in 2005. Relevant variables were registered at referral including age, gender, and primary oncologic diagnosis. From January through December 2015 the survival status of all patients was obtained through the Central Office of Civil Registration.
Findings / Results: A total of 58 patients were operated for MSCC in 2005. The average age of the patients was 63 years and 55% were males. At the ten years follow-up 55 patients had died and the average survival time after surgery was 20 months. Survival time was significantly longer for females compared to males; 32 vs. 10 months ($P<0.05$). The hazard-ratio of 10- years survival for females was 2.12 ($P< 0.01$). This difference remained significant after adjusting for specific primary tumors and operation-age.
Conclusions: In spite of the small sample size, these results could indicate that gender should be included in pre- operative scoring systems used for patients with spinal metastasis.

No conflicts of interest reported

Incidence of revision surgery following long fusions using lumbar, lumbo-sacral fixation or iliac fixation in adult scoliosis patients

44.

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Background: Adult scoliosis is a common disorder that is associated with significant pain, and functional impairment. Surgical treatment can significantly restore the function and improve the quality of life. However, the choice of lowest level of long fixation remains controversial for spine surgeons.
Purpose / Aim of Study: The aim of this study is to investigate the surgical outcome of iliac fixation and lumbosacral fixation in adult scoliosis patients.
Materials and Methods: We retrieved 78 adult patients with scoliosis in Aarhus University Hospital from March 2010 to May 2015. 63 female and 15 male patients. Average age is 64-year old. Pre- and postoperative X-ray and the revision operation were examined. McNemar test was used to compare the revision rate between two groups.
Findings / Results: In the lumbosacral fixation group, the lowest level of initial surgical fixation was selected as lumbar level (L4/L5) for 34 patients; sacrum level for 9 patients. The iliac level was selected for 35 patients. In total of 17 re-operations were performed. lumbar fixation group had 15 reoperations (15/34 pts, 44%). Sacrum fixation groups had 2 re-operations (2/9 pts, 22%). Iliac fixation groups had no reoperation. The reoperation rate of lumbosacral group is significant higher than iliac fixation group ($p<.05$). the 15 re- operated patients from lumbar group underwent different fixation surgeries. 3 another level fixation, 4 sacrum and 8 iliac fixation. two re- operated did not undergo extended surgery to level.
Conclusions: Long fusion surgery ended at lumbar level has the highest revision rate. The lowest level was selected as iliac level for adult scoliosis has significantly lower revision rate compared to lumbosacral level.

No conflicts of interest reported

The Effect of Tranexamic Acid on Duration of Surgery and Complications. A double blind, randomized study of patients undergoing lumbar spine surgery. Preliminary report

45.

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Background: Studies have shown that the antifibrinolytic drug TXA reduces blood loss during major spine surgery. There are no studies on the effect of TXA in minor lumbar spine surgery and no studies investigate the effect of TXA on OP-time.
Purpose / Aim of Study: We investigate the effect of tranexamic acid (TXA) compared to placebo in low- risk adult patients undergoing elective minor lumbar spine surgery. Primary objective is operative time (OP-time) and secondary objectives estimated perioperative (peri-OP) blood loss, incidence of dural tears, postoperative symptomatic spinal epidural hematomas (SEH) and venous thromboembolic events (VTE).
Materials and Methods: A clinical double blind randomized, placebo-controlled study. We included 220 patients (ASA 1-2), undergoing lumbar decompressive surgery at Middelfart Hospital. Exclusion criteria; thromboembolic disease, coagulopathy, hypersensitivity to TXA or history of convulsion. Randomization by blocks of 10, in two groups, TXA or placebo. Anticoagulation therapy was discontinued 2-7 days preoperatively. Patients received pre-incision either a bolus of TXA (10mg/kg IV), or an equivalent volume of placebo (saline). Statistics: Students t-test, Wilcoxon Mann-Whitney or chi2-test, significance level p=0.05.
Findings / Results: 14 patients were excluded, 206 analyzed (TXA-group n=103, placebo- group n=103). The groups had an unequal sex ratio TXA 49/51 and placebo 33/67 (female/male, %), otherwise comparable by basic demographics. There was no significant difference in OP-time. Statistical significant difference in estimated post-OP blood loss, median TXA 5ml (n=59) and placebo 21ml (n=64), $p<0.001$. No difference in per- OP blood loss or dural tears. No SEH or VTE.
Conclusions: A single dose of TXA can significantly reduce the post-OP blood loss in minor lumbar spine surgery on low-risk adult patients.

No conflicts of interest reported

Organ dose and effective dose with the EOS scanner in spine deformity surgery. A study on anthropomorphic phantoms describing patient radiation exposure in full spine examinations

46.

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Background: Ionizing radiation potentially leads to tissue damage. It has been documented in large cohort studies that radiographic imaging during childhood for spinal deformities eg. scoliosis, increases the lifetime risk of breast cancer. The EOS biplane x-ray imaging system (EOS Imaging S.A, Paris France) has been developed to produce high quality images while at the same time reducing radiation dose. At our institution we use the EOS for pre- and postoperative full spine examinations.
Purpose / Aim of Study: The purpose of the study is to make first time organ dose and effective dose evaluations with micro-dose settings in full spine examinations. Our hypothesis is that organ dose and effective dose can be reduced 5-10 times compared to standard settings, without too high image-quality trade off, resulting in a theoretical reduction of radiation induced cancer.
Materials and Methods: Patient dosimetry is performed on anthropomorphic child phantoms. Thermoluminiscent detectors are used to measure organ dose. A first time measurement with micro-dose settings in both AP and PA will be performed in addition to standard settings in AP and PA positions. Effective dose is calculated using mean organ doses and tissue weighting factors. These findings will be compared to previously reported findings in standard settings and to conventional digital x-ray(CR)
Findings / Results: In AP position we found a mean liver organ dose of 0.03mSv as compared to 0.25mSv with standard dose settings, a significant dose reduction of 88%. As expected the liver dose was higher in PA position than AP position, 0.05mSv vs. 0.03mSv.
Conclusions: Preliminary results with micro-dose settings show a 88% reduction of organ dose and a theoretical reduction of radiation induced cancer. Previously a 35% effective dose reduction was reported for the EOS in standard settings compared to CR.

No conflicts of interest reported

Metal-on-metal wear in Children with Growth Rod Instrumentation (GR) in Early Onset Scoliosis

47.

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Background: Wear and corrosion of metal implants are of great concern especially in MoM hip implants. Evidence of MoM wear in spinal implants in children is sparse.
Purpose / Aim of Study: To determine metal ion levels in children with cobalt-chromium/titanium GR undergoing interval lengthening.
Materials and Methods: Cross-sectional study in 34 patients including 8 children prior to surgery, median age 11.0 (range 3.3-15.8) were included during 1.7 years. Standardized venous blood samples were collected at median 2.6 (0-10) years post index surgery. Contamination-free consensus guidelines were followed. Blinded analysis was performed for serum chromium(Cr), cobalt(Co), molybdenum(Mo), titanium(Ti), aluminium(Al), vanadium(V) using high- resolution mass spectrometry at a certified laboratory.
Findings / Results: The Cr levels at index were median 1.9 ppb (0.5-10) vs. 1.1 ppb (0.5-80) during elongation, p=0.46. Cr levels exceeded the 7 ppb warning threshold given by MHRA (www.gov.uk) in 8 out of 34 children between 2.4-3.4 years post index surgery. All 8 Cr levels returned below threshold within the following year, despite presence of metal debris in most operated patients. Co levels increased from median 0.2 (0-0.4) ppb to 0.5 (0-2.6) ppb, p<0.0001. The median Ti levels at index was below the detection limit of 1 ppb (max 3.4) vs. 10.6 ppb (1.1-48.4) during elongation, p<0.001. Al, Mo, V levels did not differ.
Conclusions: 8 patients had transient Cr levels above the warning threshold. All returned below threshold within the next year. The children with elevated ion levels did not differ clinically from the remaining group. Minimizing and monitoring iatrogenic metal ion exposure in these children is important due to the increased risk of genotoxicity and mutagenicity. This study could not confirm an increased risk.

No conflicts of interest reported

Can easily identifiable radiographic features predict component malpositioning in measured resection Total Knee Arthroplasty?

48.

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Background: Malalignment of the primary Total Knee Arthroplasty (TKA) components has been shown to be a risk factor for implants failure and inferior patient reported outcomes. We hypothesised that surgeons are reluctant to deviate from the preoperative anatomical state of the knee and therefore easily identifiable preoperative radiographic features can predict postoperative implant positioning

Purpose / Aim of Study: To investigate whether preoperative features can predict the overall alignment of the knee, tibia and femoral components

Materials and Methods: We identified 772 consecutive and unselected patients undergoing primary unilateral or bilateral total knee arthroplasty between March 2013 and December 2014. All surgeries were performed using measured resection technique. Pre- and postoperative radiological parameters as well as BMI, age, sex and implant types were registered. Standard safe zones for postoperative tibia and femoral alignment were determined. Logistic regression analysis was performed to identify independent preoperative risk factors for each postoperative misalignment

Findings / Results: K-L grade 4 compared to 2 was an independent risk factor for placement of the tibia component outside the coronal safe zone(OR:1.55,CI:1.05-2.29,P:0.029). Male gender was an independent risk factor for placement of the femoral component outside the coronal safe zone(OR:0.68,CI: 0.50-0.93,P:0.018). Preoperative femoral coronal alignment outside the safe zone was an independent risk factor of postoperative femoral component placement outside of the safe zone(OR: 1.65,CI:1.18-2.32,P:0.004)

Conclusions: Surgeons tend to place the tibia component outside the safe zone more often in patients with severe osteoarthritis. This could be explained by altered bone morphology and inability to make sufficient lateral resection in varus knees with medial osteoarthritis

No conflicts of interest reported

Bone, Subcutaneous Tissue and Plasma Pharmacokinetics of Vancomycin in Total Knee Replacement Patients

49.

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Background: High treatment failure rates and the need for prolonged antimicrobial therapy for osteomyelitis and implant-associated infections suggest that antimicrobial bone penetration may be incomplete. Assessment of the bone pharmacokinetics of antimicrobials is challenged by a lack of validated methods.
Purpose / Aim of Study: The objective of this study was to compare and describe plasma, subcutaneous tissue and bone pharmacokinetics of vancomycin in patients.
Materials and Methods: Postoperatively, 1,000 mg of vancomycin was administered to ten male patients undergoing total knee replacement as a single dose over 100 min. Plasma, subcutaneous tissue and bone pharmacokinetics were investigated over 8 hours. Microdialysis catheters were applied for collection of samples in bone and subcutaneous tissue. Venous samples were drawn from a venous catheter. The vancomycin concentration in microdialysates was determined using ultra-high performance liquid chromatography, whilst the free plasma concentration was determined using Cobas c501.
Findings / Results: For all extravascular tissue, an impaired penetration was demonstrated. Area under the concentration- time curve (AUC) were found lower for bone and subcutaneous tissue when compared to free plasma. The lowest AUC was found in cortical bone.
Conclusions: Bone penetration of vancomycin was found to be incomplete and delayed. Future studies should further focus on validating the applicability of microdialysis for assessment of antimicrobial bone pharmacokinetics.

No conflicts of interest reported

Passive knee stability after anterior cruciate ligament reconstruction using Endobutton or ToggleLoc with ZipLoop as femoral fixation device – a comparison of 3175 patients from the Danish Knee Ligament Reconstruction Register

50.

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Background: Clinical and biomechanical studies show different results regarding the stability and possible elongation of adjustable fixation devices. This has lead to growing concern over the stability of ToggleLoc with ZipLoop used in ACLR in vivo.
Purpose / Aim of Study: This study aims to compare passive anterior knee stability 1 year after anterior cruciate ligament reconstruction (ACLR) in patients where Endobutton or ToggleLoc with ZipLoop was used for graft fixation.
Materials and Methods: Data from 3175 patients was included from the Danish Knee Ligament Reconstruction Register between June 2010 and September 2013. 2807 patients were operated with Endobutton and 368 were operated with ToggleLoc with ZipLoop. Data was retrieved from standardized anterior cruciate ligament forms. Knee stability was evaluated using one of two arthrometers – Rolimeter or KT1000 – and the pivot shift test.
Findings / Results: ACLR with both fixation devices resulted in increased knee stability ($p < 0.001$). A significant difference in mean postoperative anterior tibial translation between Endobutton (-1.25 mm, std. dev. 1.9 mm) and ToggleLoc with ZipLoop operated patients (-0.83 mm, std. dev. 1.7 mm) was found ($p < 0.001$). ToggleLoc with ZipLoop operated patients were found to have a better preoperative ($p < 0.001$) and postoperative ($p < 0.001$) pivot shift test score. Despite this, the level of improvement in pivot shift test scores for both devices was similar ($p = 0.188$).
Conclusions: Patients operated with ToggleLoc with ZipLoop have significantly larger passive knee stability with less anterior tibial translation and better pivot shift test scores 1 year after surgery. The use of either device is not expected to produce any differences of clinical importance and, therefore, will not affect the favorability of one device over the other.

No conflicts of interest reported

Closed Reduction of Distal Radius Fractures: A Systematic Review and Meta-analysis

51.

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Background: To date, there has been insufficient evidence to determine the best possible method of closed reduction for distal radial fractures (DRF).
Purpose / Aim of Study: To compare reduction of DRF by finger-trap traction (FTT) with manual traction (MT) in terms of radiographic outcome and pain in RCTs.
Materials and Methods: Pubmed, Embase and Cochrane databases were searched on March 1st 2016. Two authors independently screened 4348 articles by title and abstract. 14 articles were reviewed full-text. Bias was assessed by the Cochrane Risk of Bias Tool. Meta-analysis was performed for radial shortening and dorsal tilt while it was not possible for pain assessment due to different outcome measures.
Findings / Results: 3 RCTs with a total of 483 patients were included, 240 FTT and 243 MT. Risk of bias was generally unclear. None of the studies reported any statistically or clinically significant differences in radiographic outcome. Forest plot of the dorsal tilt showed 0.43[0.25;0.61, p<0.00001] in favor of MT. Radial shortening forest plot showed -0.19[-0.37;-0.01, p=0.04] in favor of FTT. One study found FTT associated with less pain, even without anesthesia, and another found FTT to be associated with a better functional outcome.
Conclusions: FTT seems to be slightly superior in restoring radial length compared to MT whereas MT seems sligthly superior in restoring dorsal tilt compared to FTT. FTT might be less painful. The studies were very heterogenic and further studies are warranted.

No conflicts of interest reported

The Noergaard technique, a simple and non-traumatic method for reduction of anterior shoulder dislocations 52.

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Background: The Noergaard technique is an atraumatic reduction method that has proven successful for reduction of anterior shoulder dislocations through several years of practice in the emergency department (ED). It can be performed by experienced ED nurses giving verbal instructions to the patient.
Purpose / Aim of Study: We describe the technique and evaluate the results of the technique through a retrospective analysis of patients admitted and treated in the ED in a 1-year period.
Materials and Methods: The patient is placed standing in an upright position in front of the rail on a hospital bed. Legs should be comfortably stretched with a wide well balanced stance. The patient is then instructed to bend forwards, resting the forehead on the back of the non-affected forearm, which is put on the rail. The affected arm should now be relaxed and stretched, hanging straight down toward the floor. The patient is then instructed to attempt to relax and make pendular and circular motions with the affected arm hanging down.
Findings / Results: Our results show a successrate of 77% when using the Noergaard technique. 114 patients were diagnosed with anterior dislocation. Reduction was primarily attempted in 67 patients by the means of the Noergaard technique, 22 patients had their shoulder reduced by means of a different reduction method and in 25 patients the reduction technique was not described. Successful reduction was achieved in a total of 52 by means of the Noergaard technique. 10 patients in whom the Noergaard technique was unsuccessful the shoulder was reduced by means of a different technique in the ED and another 5 were admitted for closed shoulder reduction under general anesthesia in the operating room.
Conclusions: Based on our results and experience we recommend the use of this technique as a first line of treatment in anterior shoulder dislocations.

No conflicts of interest reported

Non-union of displaced midshaft fractures of the clavicle: A predictor model using pain scores. 53.

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Background: Surgical treatment of displaced midshaft fractures of the clavicle reduces the risk of non-union, but provides no long-term benefits in functional outcome scores. Treating all displaced fractures operatively with the purpose of reducing non-union rates would lead to many unnecessary treatments (NNT=7).
Purpose / Aim of Study: To identify early predictors for non-union in displaced midshaft clavicular fractures and to develop a predictor model for non-union.
Materials and Methods: We examined prospectively collected data on 64 non-operatively treated patients aged 18-60 years from a multicentre randomized controlled trial. Odds ratios (OR) for various predictors were calculated using logistic regression. For selected predictors we used receiver operating characteristic (ROC) curve analysis to identify cut-off values for a predictor model.
Findings / Results: We identified 12 (19 %) patients with symptomatic non-union. Failure to reduce pain VAS (pVAS) from week two to week four (OR 20.25, 95% CI 2.56 to 160.78, for no reduction in pain) and pVAS score at week four (OR 2.28, 95% CI 1.4 to 3.6, for each point increase) were predictors of non-union. ROC curve analysis identified a reduction in pVAS at 50 per cent as the cut-off value to predict non-union. The area under the ROC curve was 0.84 (95% CI 0.70 to 0.93). The predictor model identifies 22 (34 %) patients at high risk of developing non-union. In the high risk group 11 (50%) patients developed non-union whereas only one patient (3 %) in the low risk group developed non-union ($p<0.0001$).
Conclusions: It is possible to identify patients at high risk of non- union using changes in pVAS score from week two to week four combined with pVAS score at week four following a displaced midshaft fracture of the clavicle. This finding could lead to a new treatment algorithm for midshaft clavicular fractures.

No conflicts of interest reported

Long-term Survival Rates of Different Shoulder Arthroplasty Types Used for Glenohumeral Osteoarthritis.

54.

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Background: The functional outcome following total shoulder arthroplasty is superior to that of hemiarthroplasty, but surgeons may hesitate to use a glenoid component because of the risk of loosening
Purpose / Aim of Study: The aim of this study was to compare 10-year survival rates for common types of primary shoulder arthroplasty used for osteoarthritis and to evaluate age as risk factor for revision.
Materials and Methods: This study is based on a dataset from the Nordic Arthroplasty Registry Association. Data from 2004-13 was prospectively collected by the national registries in Denmark, Norway and Sweden and merged into a common dataset in 2014. The dataset was defined as a set of variables containing only data that all registries could deliver. Revision was defined as removal or exchange of any component or the addition of a glenoid component.
Findings / Results: 6,871 arthroplasties were used for osteoarthritis. The estimated survival rates at 10 year after resurfacing hemiarthroplasty (n=1,923), stemmed hemiarthroplasty (n=1,587), anatomical total shoulder arthroplasty (n=2,340) were 0.82, 0.92 and 0.96 respectively ($p<0.001$, Log rank test). Glenoid loosening as a cause of revision in anatomical total shoulder arthroplasty was rare (0.5%). The risk of revision for patients younger than 55 years was 3.8 (2.8-5.3 95% CI), $p<0.001$ compared to patients older than 75 years, and 1.6 (1.2-2.1 95% CI), $p=0.001$ compared to patients between 55 and 75 years (gender, year of surgery and arthroplasty design were included in the cox regression model).
Conclusions: We found the lowest revision rate for total shoulder arthroplasty with low risk of glenoid loosening. The results support the choice of anatomical total shoulder arthroplasty as our preferred treatment of osteoarthritis. Young patients have, independently of the arthroplasty type, a high risk of revision.

No conflicts of interest reported

An exercise programme for people with severe polyneuropathy and diabetic foot ulcers - 5 case reports on feasibility, safety and preliminary effectiveness

55.

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Background: The common recommendation is that off-loading is necessary for healing of diabetic foot ulcers, and thereby avoiding a potential amputation. However, this is commonly associated with an inactive lifestyle. Thus, the management challenge is to combine off-loading with an active lifestyle that includes regular exercise.
Purpose / Aim of Study: To investigate if an exercise program for people with diabetes, severe polyneuropathy and foot ulcer is safe, feasible and preliminary effective.
Materials and Methods: Five men at a mean (SD) age of 68.2 (7.1) years with diabetic foot ulcers and severe polyneuropathy, participated in a 10 week municipality- based aerobic, resistance and ankle mobility exercise program, designed with a minimum of weight bearing. Safety and feasibility was evaluated by change of the foot ulcer area, adverse events, adherence to the program, and patient satisfaction.
Findings / Results: Only minor adverse events occurred, and foot ulcers were reduced for all participants, from a median of 1.9 (IQR, 1.1-7.3) to 0.0 (0.0-3.0) cm2. All participants completed the program with a session attendance from 85- 95%, and with a satisfaction rate ¡Ý 9 on a 10 point Numeric Rating Scale. The distance on stationary bike was improved from a mean of 3.30 (1.1) to 5.36 (0.5) kilometers, while training loads for muscle groups were progressed, and especially for the lower limbs. Knee-extension strength improved with 23%, while perceived limitations in activities of daily living were reduced from a median of 4 (IQR, 2-5) to 7 (5-8) points.
Conclusions: An exercise program for people with diabetes, severe polyneuropathy and foot ulcers did not compromise the healing of ulcers. Program adherence and patient satisfaction was extremely high, performances improved, and perceived limitations were reduced. We suggest the program be further evaluated.

No conflicts of interest reported

Development and reliability of the Achilles Tendon Length Measure and comparison with the Achilles Tendon Resting Angle on patients with an Achilles tendon rupture

56.

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Background: A prolonged Achilles Tendon (AT) following AT rupture is associated with strength deficits and reduced function. The first three months after injury have been identified as the time when the main changes of the AT length occur. Therefore a valid, reliable, and easily applicable clinical measure of the length of the AT that can be used during this time period after rupture is needed.
Purpose / Aim of Study: To examine the reliability of a new ruler based measurement, the Achilles Tendon Length Measure (ATLM) in comparison with the goniometer-based Achilles Tendon Resting Angle (ATRA).
Materials and Methods: The development of ATLM originates from the well-known Matles test. The ATLM use identical positioning of the patient and feet, but aim to provide an objective assessment by measuring the exact distance between the feet and the examination couch with a ruler. As well as ATRA, the resting position of the feet is measured during ATLM as an indirect measure of the length of the AT. ATLM and ATRA measurements were performed by two independent physiotherapists eight weeks after AT rupture on 28 patients treated non- operatively. The data assessors were inter- and intra-rater blinded to outcome data.
Findings / Results: The mean (SD) injured ATLM was 56.5 (2.3) cm, ICC2.1 0.91(CI [0.72-0.97]), SEM 0.7cm (SEM% 1.2), MDC 1.9cm (MDC% 3.4). Corresponding data for the injured ATRA was mean 64.4° (3.9°), ICC2.1 0.84 (CI [0.68-0-92]), SEM 1.5° (SEM% 2.4), MDC 4.3° (MDC% 6.6).
Conclusions: Both ATLM and ATRA showed excellent inter-rater reliability with low measurement error. Both measurements seem easy to use in clinical practice and potentially providing an indirect measure of the length of the AT after rupture.

No conflicts of interest reported

Pedobar pressure and comfort in a mass produced orthopaedic stiletto compared to a standard stiletto and a sneaker. In the lab and in life

57.

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Background: Stilettos increases forefoot pressures and pain.
Purpose / Aim of Study: Can an off-the-rack "orthopedic" stiletto alter pressure and comfort scores in the forefoot and arch? Does anatomy have an influence?
Materials and Methods: 22 women, aged 21 to 61, shoe-size 38 (36 to 41) had standardized X-rays and a clinical examination Three conditions tested: 8 cm "orthopaedic" stiletto (OS) with built-in latex metatarsal lift and arch support; same-height standard stiletto (SS) without inlays and a sneaker(SN) . 10 steps analyzed. Peak Pressure (kPa) and Pressure-time integral (kPa/s) measured by Novel Pedar-X pressure insoles. Each shoe-type worn 3 days. Mundermanns comfort VAS recorded daily. P<0.05=*, p>0.01=**, p<0.001=***
Findings / Results: Compared to SS the peak pressure under the 2+3 metatarsals was reduced to 82% in the OS and 60% in the SN***. Under the first metatarsal it was reduced to 73% and 40%, respectively***.Under the arch it was similar for SN and OS and 30% lower for the SS*. Under the heel the OS was 27-28% lower than SS and SN***. Similar reductions were seen in the pressure-time integrals, but with smaller difference between OS and SS**.and larger reductions in the SN to 49% under 2+3 metatarsals***. For forefoot, arch and heel, the comfort was rated highest for the SN*** and lowest for the SS**. No statistical difference between OS and SS in the arch. For each mm the second metatarsal was longer than the first, the pressure time integral rose 3 kPa/s)** under the MT2+3* The VAS score dropped (less comfortable) 0.3 mm for each kPa/s increase.
Conclusions: A mass produced "orthopaedic" stiletto can alter foot pressures, approaching those achieved in a sneaker and increase comfort for the user. An increase in pressure-time integral under 2+3 metatarsals increases the discomfort and the pressure is increased in index-minus feet.

No conflicts of interest reported

Suspected Impingement Syndrome - prevalence of radiographic findings – and their relation to Oxford Shoulder Score

58.

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Background: Danish patients suspected of impingement syndrome generally have radiographs of their shoulder, before their first consultation with a surgeon.
Purpose / Aim of Study: We aimed to describe the prevalence of radiographic findings of rotator cuff- calcifications, osteoarthritis of the acromioclavicular joint, acromial spurs, and a hooked acromion (Bigliani type 3), on standard radiographs. We hypothesized that these findings are associated with shoulder disability in terms of a low Oxford Shoulder Score (OSS)
Materials and Methods: We conducted a cross-sectional study of all 1039 patients aged 18-63 years, who were suspected of impingement syndrome based on the referral letter and who responded a questionnaire, which included OSS, when seen at one of six orthopaedic departments in Central Denmark Region during 2011. Radiographs at time of referral were examined by one of two resident doctors, who were blinded to symptoms and clinical findings. Data was analyzed with logistic regression, with mutual adjustment for each radiographic finding and for sex and age.
Findings / Results: Radiographs were available for 853 patients (82.1%) Mean OSS was 28. The prevalence of radiographic findings was: 25.3% for calcifications, 17. 5% for a hooked acromion, 11.9% for osteoarthritis of the acromioclavicular joint, and 15.1% for spurs. Spurs were associated with a low OSS (OSS<24) with an adjusted OR of 1.7 (95% CI 1.1-2.6). No association was seen between any of the other radiographic findings and a low OSS.
Conclusions: One fourth of all patients referred for orthopaedic evaluation on suspicion of impingement syndrome had rotator cuff calcifications on radiographs. The calcifications have no significant association with OSS. Spurs were the only radiographic findings associated with a low OSS.

No conflicts of interest reported

OATS in the Talus- a success or a failure - 8 Year follow up

59.

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Background: Treatment of symptomatic osteochondral lesions(OCL) of the talus is challenging. Different treatment modalities exist. Little is known about long term outcome after Osteochondral Autograft transfer system (OATS)
Purpose / Aim of Study: Retrospective long term follow up after OATS in the talus
Materials and Methods: Twentynine patients (30 feet) were operated with OATS in the talus at the Hessingpark-Clinic 2004-2009. 15 patients (16 feet) were available for follow up and clinical control. All patients had been followed regularly with MRI and AOFAS score pre- and post operatively. 10 patients were available for a new MRI. Health related quality of life (HRQL) was assessed by using the SF-36 questionnaire for all patients.
Findings / Results: Clinical and radiological follow up time 7,95 (5,9-11,6) and 7,69 (5,9-11,2) years. Average patient age 47,2 years (18,6-69,3). OATS donor site: Femur condyle 13, anterior Talus 3. Fourteen medial, 2 lateral OCL lesions. OCL lesion size: average 132 (49-242) mm2. Average AOFAS score preoperatively 62, 1 year postoperatively 71,0 and 8 years post operatively 86,3. Magnetic resonance of cartilage repair tissue (Mocart) score 3 mths post op 82,3 and 8 years post op 52,3. The physical component summary score (PCS) of SF-36 showed no significant difference compared to Danish norm population using one sample T-test, same age. (87,33 and 87,69) No correlation between cystic lesions in the OATS and AOFAS scores. No radiological breakdown of OATS. No reoperations. One patient had pesistent knee pain after OATS.
Conclusions: Long term clinical evaluation of OATS in the talus indicates a high patient satisfaction and a radiologically good long term integration and quality of the Osteochondral cylinders. No correlation between AOFAS score and Mocart score. Knee pain can be a persistent problem for patients after OATS.

No conflicts of interest reported

Treatment efficacy of degenerative shoulder lesions did not improve in Denmark from 1996 to 2013. A registry study of 244.519 patients.

60.

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Background: Degenerative shoulder lesions are common and difficult to treat.
Purpose / Aim of Study: The purpose of the study was to investigate treatment of degenerative shoulder lesions in Denmark from 1996 to 2013 with focus on incidence of surgical procedures, treatment efficacy and the risk of developing frozen shoulder.
Materials and Methods: The National Patient Registry was retrospectively searched to find the number of degenerative shoulder lesions in Denmark during the period 1996– 2013. Regional population data were retrieved from the services of Statistics Denmark. Risk estimates were analyzed by logistic regression models .
Findings / Results: During the 18-year period, 244.519 individual contacts with a DM 75 diagnosis were registered. Of those 28% received surgical treatment due to their shoulder condition. The probability of being operated given you had degenerative shoulder disease was 25% in 1996, rose to 32% in 2008 and dropped to 16% in 2013. Odds ratio for being operated in 2013 compared to 2008 was 0.41, $p < 0.001$. Patients aged 31-70 had twofold odds of surgery compared to patients aged 18-30 or above 70, $p<0,001$. The risk of continued shoulder problems 2 years from time of diagnosis did not change significantly over the 18-year study period; the highest risk was 14% for people aged 31-50 and the lowest risk was 7% for people >70. The risk of developing frozen shoulder after a shoulder operation was 3.8% in 1996 and 1.7% in 2013.
Conclusions: The prognosis of having ongoing shoulder pain 2 years after diagnosis did not change over the study period indicating that treatment hasn't improved over the past 18 years. The probability of being operated given you had degenerative shoulder disease peaked in 2008 after which the probability was halved. This coincides with high quality trials questioning the effect of subacromial decompression.

No conflicts of interest reported

High incidence of periprostetic lucency in CCI Evolution ankle implants, measured by CT and X-ray

61.

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Background: A mobile bearing ankle prosthesis used at Hvidovre Hospital 2010-2013, was abandoned due to failures and findings of bone loss at revision.
Purpose / Aim of Study: The aim of this study was to a) Determine our true revision rate, b) Investigate prevalence, size and location of periprosthetic bone cysts through X-ray and CT and c) Relate these findings patient reported outcome measurements (PROMs).
Materials and Methods: 51 primary surgeries were performed, prior to this study 8 had been revised. Out of 43 un-revised patients, 36 were enrolled and underwent evaluation with metal artefact reduction CT-scans and conventional X-ray. They filled out 3 PROMs; SEFAS, SF-12, EQ-5D. Cyst volume larger than 0.1 ml was measured using VITREA volume tools for CT-scans and calculation of spherical volume for X- rays; using AP- and lateral projections. PROMs association to osteolytic volume was analyzed by linear- and logistic regression.
Findings / Results: Finding large osteolytic lesions caused 4 additional patients to undergo revision and 7 are being monitored due to high risk of failure. Of the original 51 implants 14 have been revised, primarily because of osteolytic lesions and non-union (8 true revisions/implant exchange or bone transplant), periprosthetic fractures (3 cases, of which 2 were non-traumatic fractures) and 3 cases due to exostosis. The 3- and 5 year revision rate was 14% and 16% for revision and 17% and 27% overall. Cystic lesions were found in 81% of participants. Total cystic volume was not significantly related to PROM-scores (P 0.16-0.5).
Conclusions: The implant investigated performs below standard, compared to public registries* that report overall 5 year revision rates at 5 - 6.5% in comparable implants. Cysts were common, large and not related to PROMs. *Swedish National Foot Registry Ann. Report 2013. New Zealand 15 Year Report 2014.

No conflicts of interest reported

The Critical shoulder angle show excellent reliability

62.

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Background: In 2013 Moor et al introduced the concept of the critical shoulder angle (CSA) and suggested that an abnormal CSA was a leading factor in development of Rotator Cuff Tear (RCT) and Osteoarthritis of the shoulder (OA).
Purpose / Aim of Study: The purpose of the study was to test inter- and intra- rater reliability of the CSA in a population suffering from RCT or OA.
Materials and Methods: The study was performed as a retrospective reliability study. 97 patients with RCT and 87 patients with OA constituted the study population. The CSA was measured as described by Moor et al in 2013 by two independent raters and repeated by rater 1 after 4 weeks. Data were evaluated using the Inter/intra Correlation Coefficient (ICC), calculated by mixed effect models, and the Minimal Detectable Change (MDC).
Findings / Results: Intra-rater reliability showed a non-significant systematic difference in CSA of 0.05° for RCT and 0.08 ° for OA between test days ($p=0.71$ and 0.52). For RCT the ICC value was 0.92, MDC 0.4°; for OA the ICC was 0.95, MDC 0.4 and 0.3. Inter-rater reliability showed a systematic difference between raters of 0.8° for RCT and 0.7° for OA ($p<0.001$ for both). For RCT the ICC value was 0.95, MDC 0.3°; for OA the ICC was 0.93, MDC 0.4.
Conclusions: The CSA measurement showed excellent reliability for use between raters and at repeated measurements by the same rater. Differences of more than 0.4° can be detected which is sufficient to distinguish between a normal and an abnormal CSA.

No conflicts of interest reported

Clinical validation of a handheld wound measurement device. Measuring diabetic foot ulcers – a pilot study.

63.

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Background: There are about 300.000 diabetics in Denmark. Foot ulcers is a major complication to diabetes and the risk of developing a foot ulcer is as high as 25%. There is no standardized methods for measuring the size of these wounds although several medical devises are used. However, none of these produced results good enough to be useful. With a precise and reproducible device, it will be possible to detect a progress in wound healing within a short period of time. We used a special handheld digital 3D camera and software to measure the wound size as part of a large double blinded randomised controlled study. Our hypothesis is that oral vitamin D supplementation may improve healing in patients with chronic diabetic foot ulcers. We know that about 50% of the general population has vitamin D insufficiency (<50 nmol/l) and that vitamin D insufficiency is more common in diabetics and even more in diabetics with a chronic foot ulcer.

Purpose / Aim of Study: The aim of this study was to evaluate the precision (intra- and interrater variability) and usability of a hand- held wound measurement device.

Materials and Methods: The study was an observational study where four independent raters, three nurses and one doctor, assessed the dimensions of 5 wounds, 5 times. Giving 100 measurements. All the wounds were located on the foot or ankle region and classified as chronic diabetic wounds.

Findings / Results: The mean area of the five wounds were respectably 3.43 cm2, 1.28 cm2, 12.35 cm2, 5.10 cm2 and 12.65 cm2. Variances and coefficients of variation (CV) within raters (intrarater) and between raters (interrater) over the five wounds for surface area was 2.28% and 4.33%.

Conclusions: The device was found to have low intra- and interrater variation. The photographic record and measurements can be collected in approximately two minutes and in a non-contact fashion.

No conflicts of interest reported

Safe Performance of E-vitamin Infused Polyethylene in Total Knee Arthroplasty at 3-year Follow-up Evaluated in a Prospective, Multicenter Study. 64.

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Background: E-vitamin infused polyethylene is expected to have reduced rate of wear in TKA due to anti-oxidant effects compared to highly crosslinked polyethylene. This is supported by in vitro TKA studies and clinical studies in THA, however never evaluated in vivo for TKA.
Purpose / Aim of Study: The aim of this prospective multicenter study was to investigate E-vitamin infused polyethylene used in TKA after 3 years for 1) risk potential to develop osteolytic lesions and radiolucent lines as measured by radiological assessment and 2) the quality of life and functionality as measured by patient reported outcome measures (PROMs).
Materials and Methods: 499 patients from centers in Europa, USA, Asia and Australia received TKA. Surgery was performed from January 2011 to December 2014. Demographic data, postoperative radiographs, and PROMs were collected at 3 years ± 6 months. Radiological analysis was performed according to outlined by the American Knee Society (AKS) for radiolucency and osteolytic lesions. PROMs measured the clinical outcomes (KOOS, UCLA, AKS and EQ5D score).
Findings / Results: For the 127 patients who received 3 year radiographs, 73.4% were females, mean BMI was 30.4 (SD ± 6.7), and mean age was 63 (SD ± 8.6). 80.7% of patients had no signs of radiolucent lines in any of the AKS zones. For radiolucent lines, 15.0% and 3.4% had a maximal depth between 1-2mm, and 2-3mm, respectively. 1.3% had osteolytic lesions, however no osteolytic lesions extending into adjacent zones. PROMs demonstrated high performance for UCLA, AKS knee, and all KOOS subscales scores regarding functionality, and for EQ5D regarding life quality. 3 patients were revised due to sepsis and early instability.
Conclusions: E-vitamin infused polyethylene showed low rate of complications and osteolytic potential at this 3-year follow-up study.

No conflicts of interest reported

Iron deficiency and causes of preoperative anemia in patients scheduled for elective hip- and knee arthroplasty – an observational study

65.

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Background: Preoperative anemia is prevalent in elderly patients undergoing major orthopaedic surgery and has been associated with increased risk of blood transfusion and postoperative morbidity. Current guidelines recommend correcting anemia and iron deficiency prior to surgery. However, the causes of preoperative anemia in hip- (THA) and knee (TKA) arthroplasty are sparsely studied.
Purpose / Aim of Study: Investigating the causes for preoperative anemia prior to THA and TKA.
Materials and Methods: Preoperative hemoglobin and biochemical markers of anemia and iron status were prospectively collected from 900 patients scheduled for elective fast-track THA and TKA. Anemia was defined using WHO criteria (Hb < 12 g/dl in females or < 13 g/dl in males). Iron deficiency (ID) and other possible anemia causes were classified using ferritin, transferrin saturation (TSAT), P-Cobalamine,, P- Folate, C-reactive-protein and creatinine. ID was defined as absolute (ferritin < 30 ng/ml) or functional (ferritin 30-100 ng/ml & TSAT < 20%).
Findings / Results: 96 (10.7%) patients were anemic preoperatively. 329 (37%) had absolute or functional iron deficiency, 44 % vs. 34 % in anemic and non- anemic patients, respectively (p = 0.09). Anemic patients were transfused more frequently, 42 vs. 12 %; p < 0.001). 90 day readmission rate was 24 vs. 17 % in anemic vs. non-anemic patients (p = 0.14). Among anemic patients, 43 (44.8%) had ID; 22 (22.9%) had ID alone and 21 (21.9%) patients had mixed anemia (ID + chronic inflammation or possible nephrogenic anemia). In a further 25 (26.0%) patients without ID, anemia was possibly due to inflammation, renal failure or both. In the remaining 28 (29.2%) patients, the anemia was of indeterminate origin.
Conclusions: Anemia is prevalent prior to THA or TKA with potentially reversible iron deficiency as a possible cause in 45% of anemic patients.

No conflicts of interest reported

What predicts preoperative joint awareness in patients undergoing Total Knee Arthroplasty? 66.

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Background: Low knee awareness, evaluated using Forgotten Joint Score (FJS) has been suggested as the ultimate goal following Total Knee Arthroplasty (TKA). FJS has been validated in several countries and in patients post-operation but knowledge is sparse on preoperative levels of FJS in patients undergoing primary TKA. By identifying factors that predict preoperative FJS levels, the clinician could better prioritize most affected patients and with more precision single out patients who would benefit most from TKA

Purpose / Aim of Study: The aim of this study was to identify factors that predict preoperative FJS levels and evaluate the correlation between preoperative levels of FJS and Oxford Knee Score (OKS) in patients undergoing primary TKA

Materials and Methods: 437 consecutive patients undergoing primary TKA between April 2014 and April 2016 were included in the study. All patients completed a validated Danish version of FJS and a validated Danish version of OKS. Recorded patient demographics included age, gender and BMI. Kellgren-Lawrence (K-L) grade, overall alignment and Joint Space Width (JSW) were evaluated on preoperative x-rays. Multiple regression was run to predict FJS from gender, age, BMI, K-L grade, alignment and JSW. Spearman's rank order testing was done between FJS and OKS

Findings / Results: Gender, age and BMI significantly predicted preoperative FJS ($p < 0.005$). OKS also significantly predicted preoperative FJS ($p < 0.005$) and there was a strong positive correlation between FJS and OKS according to the Spearman's rank order test ($p < 0.005$)

Conclusions: Age, gender and BMI significantly predicted FJS. In addition, FJS has a strong positive correlation to OKS in patients undergoing primary TKA. This information can be used for improved patient selection prior to primary TKA

No conflicts of interest reported

Implementation of value-based healthcare in elective total hipreplacement at Sahlgrenska University Hospital

67.

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Background: During the last decade the annual numbers of primary total hip replacements (THR) have increased by 30% in Sweden. The statutory health care guarantee stipulates the patient a right to treatment within 90 days. The public health system has had difficulties meeting the increasing demand, resulting in an emerging market of private providers of THR. In mid 2012, we initiated a systematic review of the care processes in elective THR at Sahlgrenska University Hospital's (SU) joint replacement unit. As part of this effort, value-based healthcare (VBHC) management was introduced in our unit in late 2013.
Purpose / Aim of Study: To improve quality of care and availability to treatment for patients in need of THR.
Materials and Methods: Starting in mid 2012, THR care processes were gradually overhauled according to the Fast Track concept. A multiprofessional workgroup involved in the treatment of THR patient was assembled. The first step was to identify which outcomes to monitor. Outcomes were subcategorized into three groups: 1) clinical outcomes reported to the Swedish Hip Arthroplasty Register and local databases 2) cost & resource utilization measures and 3) process measures. Available data were analyzed and areas of improvement were identified.
Findings / Results: During years 2011-2015 the number of elective THRs increased from 317 to 498. The cost per patient decreased from SEK 75,000 to 65,000. Length of stay decreased from mean 6.4 days to 3.2 days. Satisfaction with the outcome of surgery one year after THA increased from 76% to 88%. Adverse events decreased from 28% to 10%. Re-operations within 2 years decreased from 2,4% to 1,8%.
Conclusions: Value-based healthcare management and a systematic approach to review THR care processes have contributed to improved quality of care and availability of treatment whilst decreasing cost per patient.

Conflict of Interest
Adina Welander: Project Leader at Boston Consulting Group

6 years minimum followup of an offloading knee brace for unicompartmental knee arthritis

68.

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Background: Offloading knee braces can provide good short-term pain relief for some patients with unicompartmental osteoarthritis. Their cost is relatively small compared to surgical interventions. However, there has not been any study reporting their use over five years
Purpose / Aim of Study: 1. Can wearing the offloading brace delay the need for surgery? 2. is the knee brace a costeffective treatment choicwe?
Materials and Methods: Prospective data was collected for 63 consecutive patients who presented with unicompartmental osteoarthritic pain between 2007-2009; after conservative management with painkillers and physiotherapy, they were offered an offloading knee brace. Patient-reported outcome measures and radiological assessments were performed yearly and the primary endpoint was surgical intervention
Findings / Results: the mean follow up was seven years (6-8). A total of 33.9% (21/62) of patients are still using the offloading brace.There was no significant radiological progression of disease. 38.1% of patients did not have surgery in the six to eight years follow up. The average successful patient wore the brace for 54.9 months. Gender, BMI, age, compartment, or leg did not affect the chance of success. However the longer the patient wore the brace determined the chance of success. 50% of patients who underwent surgery had a total knee replacement, 37% a unicompartmental knee replacement, and 13% a high tibial osteotomy. The EuroQol score showed the brace had a significant effect on quality of life. The offloader brace gained 0.42 QALY's. Cost per QALY is £150.71
Conclusions: Offloading knee braces are a cost- effective management for unicompartmental arthritis, which can significantly reduce pain, anxiety, and increase patient's daily activities. If it can be tolerated for over two years, surgical intervention is highly unlikely.

No conflicts of interest reported

Predictors of pain and physical function at 3 and 12 months after total hip arthroplasty

69.

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Background: Few studies have combined preoperative patient-reported and objective outcome measures to predict outcomes after total hip arthroplasty (THA).
Purpose / Aim of Study: to identify predictors of outcome 3 and 12 months after THA
Materials and Methods: A cohort of 107 consecutive patients with primary hip osteoarthritis responded to Hip dysfunction and Osteoarthritis Outcome Score (HOOS) questionnaires prior to and 3 and 12 months after THA. Preoperative pain intensity; joint space width (JSW), age, gender, and body mass index (BMI) were used to predict changes in pain and physical function after surgery. Preoperative pain level scores were categorized into; none (76-100, reference), mild (51-75), moderate (26- 50) and severe (0-25). Single and multilevel repeated measures random effects linear regression models (MLM) were used
Findings / Results: Preoperative pain levels predicted improvement in postoperative pain in such a way that patients with mild pain improved; 20 points (95% CI: 2.5 to 36.8), while patients with moderate and severe pain improved; 32 (95% CI: 15.5 to 48.7) and 47 (95% CI: 29.3 to 64.3), points, respectively. Preoperative pain also predicted improvements in postoperative physical function scores; mild improved; 18 (-2.6 to 38.3), moderate 26 (6.7 to 46.2) and severe 44 points (23.2 to 64.9), respectively. Age, gender, BMI, and JSW had no predictive value. The patients achieved the same postoperative level of pain and function irrespective of pre- operative score.
Conclusions: Preoperative pain predicted changes in pain and physical function up to one year after THA. Such knowledge should be taken into consideration, when assessing OA patients prior to surgery. This study provides useful insight for clinicians, regarding the overall improvement patients can expect to achieve following their total hip arthroplasty

No conflicts of interest reported

Occupational and environmental risk factors for Hip and Knee Osteoarthritis and gene-exposure interaction: a co-twin control study from the DTR, DHA and DKA

70.

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Background: No previous studies has examined if genetic factors interacts in the relationship between causal risk factors and hip and knee OA
Purpose / Aim of Study: To examine occupational and environmental risk factors for Hip and Knee OA leading to THA and TKA, and if gene-exposure interaction affects the risk factor-outcome relationships
Materials and Methods: In October 2012 all twin pairs alive in the Danish Twin Register (DTR) with at least one in the pair registered in the Danish Hip or the Danish Knee Arthroplasty Registers (DHA/DKA) with a diagnosis of primary OA were sent a detailed questionnaire regarding previous occupation, related exposures and complementary environmental factors. The analyses included cumulated exposures, McNemar`s X2 tests, and conditional logistic regression including gene-exposure-interaction variables.
Findings / Results: 1181 twins responded (rate 58.9 %). Responder analyses did not display any significant difference with non-responders with respect to diagnosis, zygosity and sex. We found a gene-exposure effect modification in hip OA-lifting and lifting-walking with OR`s 17.7 (1.1-280.2) and 10.4 (1.00-107.1), and a clear dose-response relationship between hip OA and prolonged standing-walking. BMI>25 was a significant risk factor in knee osteoarthritis as was kneeling, but no gene-kneeling or gene-BMI interaction was detectable
Conclusions: Gene-exposure effect modification may be important in the development of hip OA in particular exposures to lifting and lifting-walking, but not in knee OA.

No conflicts of interest reported

The effect on knee-joint load of analgesic use compared with neuromuscular exercise in patients with knee osteoarthritis: a randomized, single-blind, controlled trial

71.

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Background: Although pain-reducing pharmacologic agents are widely used treatments for knee osteoarthritis (OA) they also have adverse effects and may increase knee-joint load which has a central role in symptoms and OA progression
Purpose / Aim of Study: To investigate the effect of a NEuro- Muscular EXercise (NEMEX) therapy program compared with instructions in optimized analgesics and anti-inflammatory drug use (PHARMA), on measures of knee-joint load in people with mild to moderate knee OA. We hypothesized that knee joint loading during walking would be reduced more by NEMEX than by PHARMA.
Materials and Methods: Single-blind, RCT comparing NEMEX therapy twice a week with PHARMA. Participants with mild-to-moderate medial tibiofemoral knee osteoarthritis were randomly allocated (1:1) to one of two 8-week treatments. Primary outcome was change in knee load during walking (Knee Index, a composite score from all three planes based on 3D movement analysis) after 8 weeks of intervention. Secondary outcomes were frontal peak knee adduction moment (KAM), Knee Injury and Osteoarthritis Outcome Scores (KOOS) and functional performance tests.
Findings / Results: 93 (57% women, 58 ± 8 years with a BMI of 27 ± 4 (mean ± SD)) were randomized to the NEMEX group (n = 47) or the PHARMA (n = 46); data from 44(94%) and 41(89%) participants respectively, were available at follow- up. We found no statistically significant or clinically relevant difference in the primary outcome knee joint load as evaluated by the Knee Index -0.07 [-0.17; 0.04]. Secondary outcomes largely supported this primary finding.
Conclusions: No difference in joint load modifying effects during walking from a neuromuscular exercise program versus information on the recommended use of analgesics and anti-inflammatory drugs was observed.

No conflicts of interest reported

Early results of cemented Rimfit X3 cup

72.

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Background: Early radiological signs of aseptic loosening of the cup less than 5 years after implantation, together with an increased rate og revision.
Purpose / Aim of Study: To assess te quality of implantation of the cemented RimFit X3 cup with the use of a rim cutter: radiological and clinical results.
Materials and Methods: 375 patients operated from 05.04.2011 to 09.09.2015. TraumaCAD was used to measure thicknes of the cement mantle in DeLee & Charley 3 zones. Radiolucent lines was classified according to Hodgkinson (grade 0 - 4). Inclination of the cup was measured.
Findings / Results: 5 % revision, mostly infection. Cement mantle tickness most pronouced in Zone 2 An increase in radiolucent lines was found.
Conclusions: An elevated rate of revision has resulted in cessation of the use of the Rimfit cup at our department.

No conflicts of interest reported

What do surgeons consider as optimal acetabular component positioning during primary total hip arthroplasty?

73.

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Background: Dislocation is a well-known complication following total hip arthroplasty (THA). The Lewinnek and Callanan "safe zones", respectively, have been widely used to minimize dislocation frequency. However, recent studies have questioned the association between "safe zones" and lower dislocation rates.
Purpose / Aim of Study: The purpose of this study is to investigate (1) if Danish hip surgeons agree on a specific "safe zone" for cup positioning and (2) surgeons' surgical practice patterns concerning recurring instability in primary THA.
Materials and Methods: A survey was performed among attending hip surgeons during the 2015 Annual Meeting of the Danish Orthopaedic Society. The questionnaire contained questions regarding optimal component positioning, operative practice patterns in primary THA, indications for revision THA and surgical techniques used in revisions for dislocation.
Findings / Results: 42 questionnaires were gathered, 2 were excluded, thus leaving 40 for analyses. 97 % of the surgeons indicated optimum cup anteversion within both the Lewinnek and Callanan "safe zones", while 97 % and 83 % reported optimum cup inclination within the Lewinnek and Callanan "safe zones", respectively. Reported range on optimal cup positioning varied from 30-55° of inclination and 15-30° of anteversion. Minimum and maximum accepted inclination and anteversion angles within the Lewinnek "safe zone" were 68 % and 67 %, respectively.
Conclusions: Danish hip surgeons agree that optimum cup positioning should lie within the Lewinnek "safe zone", but do not agree on exact optimal cup positioning concerning inclination and anteversion. Current surgical practice patterns among the majority of surgeons are supported by existing literature. However, as 1/3 of the accepted "safe zones" are outside the Lewinnek "safe zone", behavioural changes through education are advised

No conflicts of interest reported

Risk of pneumonia and urinary tract infection after total hip arthroplasty and the impact on survival

74.

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Background: Pneumonia and urinary tract infection (UTI) are common infections causing increased morbidity and mortality. Both infections are standard complications after total hip arthroplasty (THA).
Purpose / Aim of Study: We examined the risk of postoperative pneumonia and UTI after THA and the impact on survival.
Materials and Methods: We used the Danish Hip Arthroplasty Register to identify THAs due to OA from 2000 to 2013. From administrative databases we collected data about comorbidity, mortality and infections in relation to the primary hospitalization and potential predictive variables. Regression models were used to estimate associations between potential risk factors and infections and between infections and 90-day mortality. The latter presented as relative risk (RR) with 95% confidence intervals (CI).
Findings / Results: In total 84,812 THAs were included. The risk of pneumonia and UTI within 30 days of the primary procedure were 0.47 (CI 0.42 – 0.52) and 0.56 (CI 0.51 – 0.61), respectively. Common patient related risk factors for infections were age of 80 years or more and a comorbidity burden at time of surgery. For pneumonia, individual risk factors were male gender, diabetes and CPD. For UTI, female gender was an individual risk factor. For patients with pneumonia, the RR of 90 days mortality was 13.12 (7.94 – 21.68). For patients with UTI, the RR was 1.23 (0.30 – 4.96).
Conclusions: The risks of pneumonia and UTI within 30 days of the primary procedure were low but when experiencing specially pneumonia the short term risk of dying increased. Age and comorbidity were the most important risk factors for pneumonia and UTI. Individual initiatives to reduce the risk of especially pneumonia in selected patient groups can be essential in the effort to optimize the outcome after THA.

No conflicts of interest reported

Reliability of measurements on x-rays for knee dysplasia and patella height

75.

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Background: Radiographic measurements are frequently used for the assessment of knee dysplasia and patella height especially in patients with patella instability but the literature is scarce on the reliability.
Purpose / Aim of Study: To estimate the reliability of the Dejour Classification (DC), Anterior Translation (AT), Trochlea Depth (TD), Caton-Dechamps Index (CDI), Insall-Salvati Index (ISI), and the Blackburne-Peel Index (BPI).
Materials and Methods: A search for DS830 was conducted in the county database. X-rays were reviewed for applicability and 115 x-rays was acceptable for measurements. 4 raters independently measured the x-rays 2 times with a minimum of 14 days apart according to GRRAS guidelines. The raters were one medical student, two residents, and one consultant in knee arthroscopi. Unweighted kappa statistics was applied and prior to measurements a sample size of minimum 105 x- rays was estimated. The Landis and Koch interpretation of kappa values is <0 poor, 0.01- 0.20 slight, 0.21-40 fair, 0.41-0.60 moderate, 0.61-0.80 substantial, and 0.81-1.00 almost perfect agreement
Findings / Results: Intrarater kappa results ranged from 0.19-0.55 for DC, -0.01-0.70 for AT, 0.31-0.85 for TD, 0.12-0.70 for CDI, 0.63-0.85 for ISI, and 0.24-0.57 for BP. There was a tendency for the medical student in general to have lower kappa values compared to the other raters. Interrater kappa results ranged from 0.07-0.36 for DC, -0.08-0.60 for AT, 0.14-0.70 for TD, 0.10-0.58 for CDI, 0.59-0.71 for ISI, and 0.07-0.30 for BP. There was no tendency for lower kappa values with higher experience.
Conclusions: The only measurement with substantial reliability was ISI. All other measurements seem to be unreliable for use in clinical research.

No conflicts of interest reported

The influence of the anterolateral ligament on knee stability during flexion-internal rotation. A biomechanical cadaver study using dynamic radiostereometric analysis

76.

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Background: Anterior cruciate ligament (ACL) rupture often occurs during internal rotation knee trauma and may be associated with damage to extracapsular knee rotation-stabilizing structures, such as the anterolateral ligament (ALL).
Purpose / Aim of Study: To investigate knee rotation stability with and without ALL reconstruction as a supplement to ACL reconstruction surgery.
Materials and Methods: Eight cadaver knees were recorded with dynamic radiostereometry during a pivot-like dynamic movement simulated by a constant internal tibial rotation during knee flexion (0° to 50°). The cadavers were tested in five successive ligament situations: intact, ACL lesion, ACL+ALL lesions, ACL reconstruction, and ACL+ALL reconstruction. The knee stability was determined by three-dimensional kinematics and articular surface interactions.
Findings / Results: For the entire motion, resecting the ALL caused increased instability ($p<0.014$) for all degrees of freedom. The largest effects of ALL resection were found for external-internal rotation (EI), anterior- posterior translation (AP), and proximal-distal (PD) translation. Reconstruction of the ALL caused increased stability ($p<0.001$) for all degrees of freedom, except varus/valgus. Evaluating knee laxity in 10° ranges of knee flexion for ACL and ALL lesions against ligament intact knees, knee instability was largest for knee flexion below 30° ($p<0.035$). Combined ACL and ALL reconstructions were unable to completely restore native kinematics/stability at flexion angles below 10° (EI,PD) and 20° (AP) ($p<0.02$).
Conclusions: Adjuvant reconstruction of the ALL with ACL reconstruction in a cadaver setting provides internal rotation knee stability similar to knee kinematics with intact ligaments, except in knee flexion between 0° to 20°.

No conflicts of interest reported

The influende of graft fixation methods on revision rates after primary ACL reconstruction.

77.

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Background: The method of graft fixation in primary anterior cruciate ligament (ACL) reconstruction is important for the initial stability of the graft. Poor graft fixation can result in failure of the reconstruction.
Purpose / Aim of Study: This study investigates the early risk of revision depending on graft fixation principle and the most frequently used combinations of graft fixation implants.
Materials and Methods: Revision rates and graft fixation method was extracted from The Danish ACL Reconstruction Registry (DKRR). Analyses included hamstring tendon- (HT) and patellar tendon grafts (BPTB). Revisions after 2 years and multiligament reconstructions were excluded. 14.935 patients were included in the study. Failure outcome was 2-years revision rate. We extracted data from both principle of graft fixation in the femur and all implant combinations represented by more than 175 patients.
Findings / Results: Analysis of fixation principles demonstrated that a non-adjustable suspension technique had a higher higher risk of revision (RR=1,27, P<0,05), while the transfixation technique had a lower risk (RR:0.78). Comparing frequent fixation combinations, Endobutton/Biosure PEEK (RR: 1,36, P<0,05) and Endobutton/Intrafix Bio (RR:1,55, P<0,05) had higher risk for revision (HT). Atlantec metal screw/metal screw (RR: 0,83, P<0,05) and Softsilk/Softsilk (RR:0,73, P<0,05) had a lower risk for revision (BPTB).
Conclusions: A non-adjustable suspension fixation technique has a higher risk, while transfixation has a lower risk of revision within 2 years after a primary ACL reconstruction. For HT reconstructions, the fixation combinations of Endobutton/BioSure PEEK and Endobutton/Intrafix had a higher risk, while for BPTB reconstructions Atlantec metal screw/metal screw and Softsilk/Softsilk screw had a lower risk of revision.

No conflicts of interest reported

Epidemiology of groin injuries in a professional football league

78.

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Background: Football groin injury epidemiology has previously been examined in a single team, or a selection of teams, but not encompassed an entire professional football league.
Purpose / Aim of Study: To investigate the epidemiology and characterize groin injuries sustained in the Qatar Stars league (QSL).
Materials and Methods: All QSL teams were observed prospectively during 2013-15. Time loss injuries, individual training and match play exposure were recorded by club doctors using standardised surveillance methods. Incidence of groin injury per 1000 playing hours was calculated, and descriptive statistics used to determine the prevalence and characteristics of groin injuries. Severity was defined as; minimal (1-3 days), mild (4-7 days), moderate (8-28) days) and severe (>28 days). All groin injuries were categorized using the Doha agreement classification system.
Findings / Results: 606 male footballers from 17 clubs were included. There were 206/1145 (18%) time loss groin injuries sustained by 150 players. Incidence was 1.00/1000 h and prevalence 21% of players (IQR 9-31%) per club per season, equivalent to 6 (IQR 3-9) groin injuries sustained per average club roster. Of the 206 injuries, 15% were minimal, 27% mild, 40% moderate and 18% severe, with a median absence of 10 days/injury (IQR 5-22days). The median numbers of days lost due to groin injury for each team was 88days (IQR 44-215days). Adductor-related groin pain was the most common entity (68%) followed by iliopsoas (12%) and pubic (9%) related groin pain.
Conclusions: Groin injury had high prevalence, significant time loss and adductor-related groin pain was the most common entity. Injury prevention programs should therefore focus on preventing adductor- related groin pain in football.

No conflicts of interest reported

Predicting MRI injury location using clinical examination in athletes with acute groin injuries.

79.

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Background: MRI can be used in the diagnosis of acute groin injuries in athletes, however, as MRI is not readily available for many clinicians, further investigation of the association between clinical examination tests and the presence of MRI injuries and their location is required.
Purpose / Aim of Study: To investigate whether clinical examination tests predict a positive or negative MRI result (MRI+/-), and to assess accuracy of clinical tests to localise injury in MRI+ cases.
Materials and Methods: We consecutively included 81 male athletes with acute groin injuries. Standardized clinical examination (palpation, resistance, and stretch tests) and MRI were performed within 7 days of injury. Diagnostic statistics including positive and negative predictive values (PPV/NPV) were calculated.
Findings / Results: 85 acute injuries were found on MRI in 64 athletes with 17(21%) athletes having MRI- injuries. Palpation had highest NPV (91-96%, [95%CI 69-99]). Three specific adductor examination tests (resisted outer-range adduction, squeeze test - hip neutral and long lever, and passive adductor stretch) showed 80-81% (95%CI 63-91) probability of an MRI+ adductor lesion when positive, all with high accuracy of a correct MRI location (PPV 93-97% [95%CI 76-100]). Hip flexor tests showed poor ability to predict MRI+ lesions (PPV 34-63% [95%CI 20-84]), and low accuracy (PPV 17-71% [95%CI 7-85]).
Conclusions: 21% of athletes had negative imaging and the absence of palpation pain was best at predicting an MRI- result. Specific adductor examination tests were accurate for confirming MRI+ adductor injuries. Hip flexor clinical tests were poor at predicating and localising MRI+ injuries in the hip flexors. Clinical examination therefore appears sufficient to diagnose acute adductor injuries, whereas MRI could assist in accurately locating acute hip flexor injuries.

No conflicts of interest reported

Quadriceps strength and hop test performance following anterior cruciate ligament reconstruction: A prospective cohort study of 123 patients.

80.

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Background: Although quadriceps weakness is a common impairment following anterior cruciate ligament reconstruction (ACLR), there is limited research examining its association with functional outcomes.
Purpose / Aim of Study: The purpose of the study was to determine the proportion of patients with strength deficits at 6 and 12 months and the association between strength outcomes and single limb hop tests.
Materials and Methods: The study was performed as a prospective cohort study following the STROBE guidelines. There were 123 patients (74 male, 49 female). Quadriceps strength and hop test measurements were made at 6- and 12-months following primary ACLR with hamstring grafts. Normal strength and hopping distance were defined as >85% of the contralateral limb.
Findings / Results: At 6- and 12-months 29% and 53% of patients had recovered normal quadriceps strength respectively. The majority of patients who had recovered normal strength also had a normal hopping distance at 6 (91%) and 12 (93%) months. However, at 6- and 12- months 39% and 29% of patients respectively had recovered normal hopping distance without recovering normal quadriceps strength.
Conclusions: Only 1 in 3 patients had recovered normal QF strength 6 month after ACLR, at the time when they are often expecting to resume sporting activity. This had only improved to 1 in 2 at 12 months. Approximately 1 in 3 patients recover normal hopping distance without having normal quadriceps strength.

No conflicts of interest reported

Knee and back pain in patients with symptomatic femoroacetabular impingement before and after hip arthroscopy

81.

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Background: Patients with femoroacetabular impingement (FAI) undergoing hip arthroscopy show reduced hip pain following surgery. However, it is, less well documented how pain levels in the knee and the back are affected by surgery, despite both joints could be affected by altered hip motion due to hip pain and decreased hip range of motion.
Purpose / Aim of Study: The aim of the study was, therefore, to investigate hip, back and knee pain in patients with FAI before and after hip arthroscopy in a consecutively included cohort.
Materials and Methods: Sixty patients (age 36±9, 63% females) with FAI scheduled for hip arthroscopic surgery at Horsens Hospital were included in the study. On a 100-mm visual analog scale (VAS), patients scored their resting hip pain, hip pain during activity, knee pain and back pain during the past 24 hours. Patients scored their pain preoperatively, 3, 6 and 9 months postoperatively. Time development in the scores was investigated with a mixed effects model. Results are presented as medians and quartiles.
Findings / Results: Back VAS pain was present before surgery (16 [5;49] mm) and increased after surgery: 3 months: 15 [2;44] mm; 6 months: 25 [5;61] mm; 9 months: 21 [4;55] mm ($p = 0.04$). Knee VAS pain was present before surgery (19 [1;51] mm) and seemed to decrease over time, but this was not significantly: 3 months: 5 [1;45] mm; 6 months: 4 [0;38] mm; 9 months: 2 [0;18] mm ($p = 0.16$). Preoperative resting hip pain was 19 [7;38] mm and hip pain during activity was 37 [20;62] mm which both decreased significantly after surgery ($p < 0.001$).
Conclusions: Hip arthroscopy can alleviate hip pain in patients with FAI, but some patients experience increased back pain after surgery and some knee pain. To improve pain outcomes for the knee and back after surgery, the underlying causes of pain need to be investigated.

No conflicts of interest reported

Reliability of MRI assessment of acute musculotendinous groin injuries in athletes

82.

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Background: Groin injuries are common in sports medicine as they frequently occur in high intensity team sports, such as football, where they are considered the second most frequent injury location. Most published literature on groin pain in athletes focuses on long-standing symptoms. An assessment system for acute groin injuries is still lacking.
Purpose / Aim of Study: To describe a multi-dimensional MRI assessment approach with a focus on acute musculotendinous groin injuries, and to evaluate scoring reproducibility.
Materials and Methods: Male athletes who participated in competitive sports and presented within 7 days of an acute onset of sports-related groin pain were included. All athletes underwent MRI (1.5 T) according to a standardized groin-centred protocol. From several calibration sessions, a system was developed assessing grade, location and extent of muscle strains, peri-lesional hematoma, as well as other non-acute findings commonly associated with long-standing groin pain. Kappa (κ) statistics and intraclass correlation coefficients (ICCs) were used to describe intra- and inter-rater reproducibility.
Findings / Results: 75 athletes (mean age 26.6 ± 4.4 years) were included in the analyses, and 85 different acute lesions were observed. Adductor longus lesions were most common (42.7%) followed by rectus femoris lesions (16.3%). Kappa values ranged between 0.70 and 1.00 for almost all categorical features for acute lesions, with almost perfect intra- and inter-rater agreement (κ=0.89-1.00) for presence, number, location and grading of lesions. ICCs ranged between 0.77 and 1.00 for continuous measures of acute lesion extent.
Conclusions: A standardized MRI assessment approach of acute groin injuries was described and showed good intra- and inter-rater reproducibility.

No conflicts of interest reported

Danish Hip Arthroscopy Registry: Capsular closing in patients with femoroacetabular impingement (FAI). Results of a matched-cohort controlled study.

83.

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Background: Capsular closure in FAI patients during hip arthroscopy procedures are still debated. The Danish Hip Arthroscopy Registry (DHAR) contains data to perform matched- cohort analyses.
Purpose / Aim of Study: The purpose of this study was to describe data from DHAR after FAI surgery associated with capsular closure, report outcome data and compare these outcome data with a matched-cohort study group. Our primary hypothesis was that patients undergoing hip arthroscopy would not benefit in subjective outcome from capsular closure compared with no closure.
Materials and Methods: We identified FAI patients in DHAR where the capsule was closed during the hip arthroscopy. A matched cohort of patients who did not have capsular closure performed were selected. Matching criteria were age, gender, radiological parameters (lateral centre edge angle and alpha angle). We compared the two groups according to HAGOS, HSAS, EQ-5D and VAS. We identified 247 patients in each group.
Findings / Results: Both groups improved significantly in all postoperative PROMs at one and two year follow-up. When comparing the improvements between the two groups we found a significant better improvement in the capsular closure group in VAS and all HAGOS sub scales at both one and two year follow-up. HSAS demonstrated improvement in the closure group at one year but no difference at two year follow-up. EQ-5D showed difference at two year follow-up.
Conclusions: This study showed that FAI-patients undergoing capsular closure during hip arthroscopy had a significant improvement in outcome when compared to a matched control group at two year follow-up. We also found improvement in physical activity and quality of life scores. We therefore conclude that capsular closure might positively affect the outcome in FAI-patients during hip arthroscopy.

No conflicts of interest reported

Is muscle strength impairments different for male vs. female patients with symptomatic femoroacetabular impingement?

84.

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Background: Clinical and disease specific characteristics for symptomatic femoroacetabular impingement (FAI) may be gender specific. Some studies report muscle weakness in patients with FAI while other studies do not, which may be explained by gender specific impairments.
Purpose / Aim of Study: We aimed to investigate gender differences in maximal hip flexion and extension strength when compared to a matched healthy reference group.
Materials and Methods: 60 patients (36 ±9years, 38 females) scheduled for arthroscopic hip surgery for FAI and 30 age and gender matched reference persons were included in the study. Participants had their maximal hip flexion and extension strength tested using dynamometry. All participants completed two submaximal familiarization trials followed by 3–4 maximum voluntary contraction trials. Tests were performed isometrically at 45° of hip flexion, concentric at 60°/s and eccentric at -60 °/s. Maximal peak torque divided by body mass was the main outcome. Comparisons between genders and patients vs. reference persons were performed with multiple regression analysis. The level of significance was set to < 0.05.
Findings / Results: The affected leg of the patients was significantly weaker than the leg of references persons for all testing conditions (75-91% of reference leg). When analyzing males and females separately, this relationship was only found in the female patients (females: 64-92% of reference vs. males: 98-113% of reference).
Conclusions: These data suggest that, muscle strength of the affected leg of female FAI patients is significantly weaker than reference persons, as opposed to male FAI patients. Further studies should investigate these relationships in larger samples and also relate findings to radiographic parameters.

No conflicts of interest reported

High incidence in acute and recurrent patellar dislocations; A retrospective nationwide epidemiological study involving 24.154 primary dislocations

85.

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Background: Reliable epidemiological data on patellar dislocation is lacking.
Purpose / Aim of Study: The purpose of this study was to investigate the Danish population as a whole from 1994 to 2013 to find the incidence of acute and recurrent patellar dislocation. The risk of acquiring a recurrent dislocation or a dislocation in the opposite knee was investigated with 10 years of follow up after primary dislocation.
Materials and Methods: The study was performed as a descriptive epidemiological study. The Danish National Patient Registry was retrospectively searched from 1994 to 2013 to find the number of acute and recurrent patellar dislocation. National population data were collected at the services of Statistics Denmark.
Findings / Results: From 1994 to 2013 a total of 24.154 primary patellar dislocations were registered. A mean incidence of 72 (95% CI: 63 - 81) per 100.000-person years at risk (PYRS) was found, young females aged 10-17 had an incidence of 108 (95% CI: 101-116). In a 10- year follow up patients had an overall risk of 22.7% (95% CI: 22.2 – 23.2) of suffering a recurrent dislocation, with young girls aged 10-17 athe t highest risk with 36.8% (95% CI: 35.5 – 38.0). The overall risk of suffering a patellar dislocation in the contralateral knee was 5.8% (95% CI: 5.5 – 6.1) and 11.1% (95% CI: 10.4 – 11.7) for patients aged 10-17.
Conclusions: A high incidence rate of primary patellar dislocation was found both as a mean in the population (72/106) but especially in patients aged 10-17 (108/106). The risk of recurrent dislocation in the affected knee (22.7%) and the contralateral knee (5.8%) was high, which could indicate the influence of an underlying pathomorphology.

No conflicts of interest reported

Comparison of soft tissue and bone graft fixation for reconstruction of the medial patellofemoral ligament. A randomized controlled trial.

86.

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Background: Medial patellofemoral ligament reconstruction (MPFL-R) has recently been accepted as the primary surgical treatment for patella instability. Limited knowledge exists concerning which reconstruction technique that gives the best clinical outcome and the least surgical morbidity.
Purpose / Aim of Study: The present study compares clinical outcome and surgical morbidity after MPFL- R with either bone (standard technique) or soft tissue femoral graft fixation in a randomized controlled study.
Materials and Methods: 60 patients were randomized to two MPFL- R techniques: Bone or soft tissue fixation of the graft at the femoral condyle. Patients were operated between 2010 and 2015. Indication for surgery was two or more patella dislocations. Surgical technique bone fixation: Gracilis tendon fixed in a bone tunnel with interference screw. Surgical technique soft tissue fixation. Gracilis tendon was looped around the adductor magnus tendon. Both techniques had patella graft fixation with drillholes in the medial patella edge. Clinical outcome were evaluated with Kujala, KOOS and NRS pain scores preoperatively and at 1-year follow-up. Surgical morbidity was evaluated by pain at palpation along the reconstruction.
Findings / Results: Kujala score was 83 and 84 for bone and soft tissue MPFL-R respectively with no difference between groups. No differences on KOOS and pain scores were found. Surgical morbidity analysis demonstrated that 13 and 12 % had significant palpable pain at the reconstruction for bone and soft tissue MPFL-R respectively. There were no patella redislocations in both groups.
Conclusions: MPFL-R with soft tissue femoral fixation results in similar subjective clinical outcome, patella stability and pain levels as bone fixation. Surgical morbidity was also similar between soft tissue and bone fixation MPFL-R.

No conflicts of interest reported

Alarmingly high failure rate after Medial Patellofemoral Ligament reconstructions. A retrospective nationwide epidemiological study with a 10 year follow up on surgical intervention and 2.572 Medial Patellofemoral Ligament reconstruction surgeries

87.

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Background: No reliable epidemiological data was found in both trends in patellar stabilizing surgery and in the risk of recurrent patellar dislocation.
Purpose / Aim of Study: To evaluate the trends in treatment of patellar dislocations in the Danish population as a whole from 1996 to 2014.
Materials and Methods: This descriptive epidemiological study was performed by retrospectively searching the Danish National Patients Registry from 1996 to 2014. The study investigated the trends in surgery performed on patients with patellar dislocations and the risk of recurrent dislocation with a 10 year follow up. National population data were collected at the services of Statistics Denmark. Risk estimates were calculated by cox proportional hazard models, all analysis was done in R 3.2.2.
Findings / Results: The 10-year overall risk of recurrent dislocation after a Medial Patellofemoral Ligament (MPFL) reconstruction was 21% when investigating 2.572 MPFL- reconstructions performed from 2005 until 2014. The conservatively treated patients had a 31% risk and patients treated with other patellar stabilizing surgery had 36%. From 1996 until 2013 the amount of patellar stabilizing surgery was stable but with a rise in MPFL-reconstruction surgeries from 2005. In 2013 MPFL-reconstruction surgery constituted 75% of all patella stabilizing surgery and was performed on almost 10% of patients with patellar dislocation.
Conclusions: A rapid rise in MPFL-reconstruction was found over time with little effect on risk of recurrent dislocation. The overall risk of recurrent dislocation after MPFL- reconstruction was 21% compared to 31% after conservative treatment and 36% after other stabilizing surgery. These findings could indicate that the underlying pathomorphology for the patella dislocation have to be examined and corrected concomitant to reconstructions of the MPFL.

No conflicts of interest reported

Gait Function Before and After Total Knee Arthroplasty A Randomized Study of Fixed Bearing versus Mobile Bearing Articulation

88.

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Background: Total knee arthroplasty (TKA) is the standard treatment at the terminal stadium of knee arthritis. Good results are achieved based on assessment of pain relief, misalignment correction and improved function.
Purpose / Aim of Study: The purpose of this study was to compare two TKA articulation designs frequently used in the Nordic countries (P.F.C. Sigma fixed bearing (FB) and mobile bearing (MB) design) in an RCT investigating new aspects of gait function and restored function following TKA. The focus points were 1) to compare the FB to MB patients regarding level walking and surface electromyography (EMG) pre-operatively, at 6, and 12 months post-surgical follow-up; and 2) to compare the patients' level walking to a healthy and BMI, gender and age-matched group. Finally we aimed at complementing the objective gait analysis with 3) patient reported outcome measurements.
Materials and Methods: In a prospective, randomized clinical trial we compared 51 osteoarthritis patients operated either with a FB or a MB TKA. Assessments were made using three-dimensional gait analysis, EMG and knee-scores prior to surgery, and at 6 and 12- months follow-up. A reference data set of body mass index, gender and age-matched controls was included in this study.
Findings / Results: Both intervention groups increased their walking speed at 12-months follow-up and decreased asymmetry in single support times. Regarding kinematics and kinetics both intervention groups reached the control group conficence interval. EMG results indicate less co-contraction after 12 months in both groups and knee scores improved with both articulation designs ($p<0.01$).
Conclusions: Both articulation designs demonstrated improved knee scores and favourable changes towards a more normal gait pattern, but neither of the two significantly outperformed the other.

No conflicts of interest reported

Collagenase clostridium histolyticum (Xiapex®) versus percutaneous needle fasciotomy for Dupuytren's contracture in proximal interphalangeal joints. An independent, open-label, randomized controlled trial

89.

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Background: Collagenase clostridium histolyticum injection (CI), a new minimal invasive procedure for Dupuytren's contracture (DC), emerged in 2009-2011 with promising results. Head-to-head comparison with other active treatments has not been performed as of today. We hypothesized that CI would show better long-term results.
Purpose / Aim of Study: To compare percutaneous needle fasciotomy (PNF) to CI with Xiapex®.
Materials and Methods: The study was performed as a single- center, independent, open-label, Randomized Controlled Trial. 50 patients with isolated proximal interphalangeal (PIP) joint DC (≥20 degrees) were enrolled. Patients received either CI according to the manufacturer guideline or our center standardized PNF treatment. Patients were followed for 2 years. Primary outcome was clinical improvement, defined as a reduction in contracture by 50% or more relative to baseline. Several secondary outcomes were evaluated, including change in PIP-joint passive extension deficit (PED), patient satisfaction and Disability of Arm, Shoulder and Hand questionnaire score.
Findings / Results: Clinical improvement was achieved in 8% in the CI-group and 32% in the PNF-group at 2 year follow-up (p=0.05). Secondary clinical outcome parameters and DASH-scores did not differ significantly. Patient satisfaction at 2 years was poorer in the CI group with a median numerical rating scale score (0 worst, 10 best) of 1 vs. 7 in the PNF group (p=0.04). A higher complication rate was found in the CI group.
Conclusions: We conclude that CI offers no advantages over PNF in isolated PIP-joint DC. This is the first head-to-head comparison and the first independent RCT of CI to another active treatment procedure. Confirmation from other independent studies are needed.

No conflicts of interest reported

Achilles Tendon Length, ATRS and Functional Outcomes 5 Years After Acute Achilles Tendon Rupture Treated Conservatively

90.

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Background: Achilles tendon rupture (ATR) may lead to significant functional deficits, which mechanisms are poorly understood.
Purpose / Aim of Study: Primary aim was to investigate if the Achilles tendon (AT) was longer, muscles weaker in the injured leg 4- 5 years post injury. Secondary, to measure foot pressure and to compare functional outcomes with patient reported Achilles Tendon Total Rupture Score (ATRS).
Materials and Methods: We invited all participants from a RCT, of conservatively treated ATR with or without early weight bearing (E-WB, N-WB). Of the original 56, 37 patients participated - 19 from E-WB (1 re- rupture (RR)), and 18 from N-WB (2 RR). Time from injury to follow up was 4.5 years (4.1 to 5.1). AT length was measured using ultrasound. Heel raise work was measured on a 10 degree inclining platform, and the method validated. Foot pressure mapping was measured barefoot, using an EMED platform (novel, DE). T-tests for limb comparisons and linear regression for ATRS correlations were applied.
Findings / Results: We found no differences in any of the variables between the E-WB and N-WB groups. Including RR in the sample did not impact the results. Compared to the healthy limb, the AT was an average of 1,8 (1,2-2,3) cm longer on the injured limb, which produced 40% less work. A smaller calf circumference ($p<0,001$), larger dorsiflexion ($p=0,001$), AT resting angle ($p<0.001$) and delayed heel lift off ($p=0,02$) was found on the injured limb. Lower mean medial forefoot peak pressure in the injured limb was approaching significance ($p=0,08$). ATRS could not be linked to AT length or total work using linear regression.
Conclusions: Conservatively treated ATR were approximately 1,8 cm longer than control limb. The injured limb was persistently weaker, and had delayed heel lift. ATRS does not appear to correlate directly with AT length or loss of total work.

No conflicts of interest reported

Risk of revision and reasons for revision after shoulder replacement for acute fracture of the proximal humerus: a Nordic registry-based study of 6,756 cases

91.

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Background: Stemmed shoulder hemiarthroplasty is a treatment option in comminuted and displaced fractures of the proximal humerus. Within the last decade reverse prostheses have been increasingly popular when fixation of the tuberosities is considered impossible. There is a lack of reporting of risk of revision and reasons for revision for hemiarthroplasty and particularly for reverse shoulder arthroplasty.
Purpose / Aim of Study: Our primary aim was to report revision rates and reasons for revision after shoulder replacement in acute fractures. Our secondary aim was to compare risk of revision, reasons for revision and risk of infection between hemiarthroplasty and reverse prostheses.
Materials and Methods: This study is based on a common data set established through collaboration between the shoulder arthroplasty registries in Denmark, Sweden, and Norway. It contains 6,756 shoulder replacements in acute fractures inserted between 2004 and 2013.
Findings / Results: Hemiarthroplasty was used in 90.4% of acute fractures compared to 8.4% reverse prostheses. A total of 3.3% prostheses were revised. Relative risk for revision of reverse shoulder arthroplasty compared to hemiarthroplasty was 1.07 (p=0.24). In both designs the most common reason for revision was infection. Relative risk for revision due to infection was 3.0 (p=0.001) in reverse shoulder arthroplasty compared to hemiarthroplasty. The relative risk of revision was 2.8 in patients younger than 75 years (p=0.001).
Conclusions: Reoperations after shoulder replacement in acute fractures are rare, but the number of clinical failures might be underestimated if measured by reoperations only. We found no significant difference in revision rate between hemiarthroplasty and reverse arthroplasty. Early infection was more common after reverse arthroplasty.

No conflicts of interest reported

Early Mobilization after Volar Plate Osteosynthesis of Distal Radius Fractures - a Prospective Randomized Study.

92.

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Background: Distal radius fracture is one of the most common fractures in people over 50. Volar locked plating has become the primary choice of treatment. Little is known about the postoperative regime and the influence on outcome and morbidity.
Purpose / Aim of Study: To investigate if early mobilization improved patient reported outcome and did not increase the risk of fracture displacement.
Materials and Methods: The study was performed as a prospective, randomized trial. 100 patients with distal radius fracture treated with volar locked plating were randomized 1:1 to either removable wrist lacer with mobilization from day one or cast for 14 days before mobilization. The primary outcome measure was the DASH-score after 1, 3, 6 and 12 months. The score range from 0 to 100 with 0 being the best possible score. Secondary outcome measure was fracture displacement at x-rays after 14 days. Statistical analysis was done using a repeated measurement ANOVA model of the square root transformed DASH scores. Overall difference between groups was assessed using a maximum likelihood ratio test.
Findings / Results: 83 patients were eligible for analysis after 12 months. The estimated median DASH score in the early mobilization group [n = 41] after 12 months was 7.46, 95% CI [4.74, 10.78] compared to 8.37 [5.28, 12.17] in the late mobilization group [n = 42], p = 0.69. One fracture dislocation occurred after 14 days in the early mobilization group, but can be explained by a wrong use of the volar locking plate.
Conclusions: The study did not find any statistical significant difference between groups though DASH scores at all follow ups were lower in the early mobilization group. Early mobilization with removable wrist lacer is a safe and equal postoperative treatment compared to regular casting.

No conflicts of interest reported

Risk factors influencing the one year postoperative risk of reoperation after arthroscopic meniscal repair: a three year retrospective observational, cohort study.

93.

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Background: Meniscal tears are the most frequent pathology under the auspices of the orthopedic department. As arthroscopic partial meniscectomy increase the risk of degenerative changes in the knee, the focus of meniscal preserving techniques has increased. Yet, Studies reveals that arthroscopic meniscal repair have an increased risk of reoperation compared to arthroscopic partial meniscectomy.
Purpose / Aim of Study: This study investigated whether environmental risk factors, including Body mass index, sex, age and American society of anesthesiology score influenced the one year postoperative risk of reoperation after arthroscopic meniscal repair.
Materials and Methods: In this cohort design patients receiving arthroscopic meniscal repair were retrospectively enrolled, by reviewing medical records through 2011 to 2013. All Patients, older than 18 years of age, with an isolated meniscal tear who underwent arthroscopic meniscal repair in this period were included. Exclusion criteria were: No meniscal lesion, previous knee surgery, or concurrent treatment of injuries in the knee joint including reconstruction of cruciate, collateral or patella femoral ligaments, osteotomy, or treatment of a tibia condyle fracture.
Findings / Results: In total 289 menisci were included. A high BMI increased the risk of reoperation with in the first year from primary operation. The incidence of reoperation increased from normal weight to obese. Sex and age and ASA-score did not have a significant influence on the risk of reoperation.
Conclusions: BMI influences the risk of reoperation indicating that BMI have to be taken into account in the attempt to lower the risk of reoperation in patients receiving an AMR. In addition, ASA-score, age and sex did not have a significant influence on the risk of reoperation.

No conflicts of interest reported

Dynamic radiostereometric analysis for evaluation of hip joint pathomechanics

94.

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Background: Dynamic RSA (dRSA) can track 3D in-vivo motion and describe hip joint kinematics. The method can be used to understand the clinical pathomechanics of femoroacetabular impingement (FAI) and the biomechanical effects of arthroscopic cheilectomy and –rim trimming (ACH).
Purpose / Aim of Study: To evaluate the kinematic changes in the hip joint after ACH.
Materials and Methods: Seven non-FAI affected human cadaveric hips were CT-scanned and CT-bone models were segmented. Tantalum marker beads were placed in the femur and pelvis. dRSA recordings of the hip joints were acquired at 5 fr/sec during flexion to 90°, adduction to stop and internal rotation to stop (FADIR). ACH was performed and dRSA was repeated. dRSA images were analyzed using model-based RSA (MBM) and compared to marker-based RSA (MM) as gold standard. Hip joint kinematics before and after ACH were compared pairwise.
Findings / Results: There was no systematic bias between model-based and marker-based RSA ($p>0.05$). 95% agreement limits were below ±0.44mm and ±0.9mm for translations, and below ±0.7° and ±0.58° for rotations in the femur and pelvis respectively. Mean hip internal rotation increased from 19.1° to 21.9° ($p=0.04$, Δ2.8°, CI:0.3°;5.3°) after ACH surgery. Mean adduction of 3.9° before and 2.7° after ACH surgery was unchanged ($p=0.48$, Δ-1.2° CI:-2.8°;5.2°). Mean flexion angles during dRSA tests were 82.4° before and 80.8° after ACH surgery which was similar ($p=0.18$, Δ-1.6°, CI:-4.1°; 0.9°).
Conclusions: A small increase in internal rotation, but not in adduction, was observed after arthroscopic cheilectomy and –rim trimming in cadaver hips. The hip flexion angle of the FADIR test was nicely reproduced at followup. dRSA kinematic analysis is a new and clinically applicable method for the hip joint and may have good potential for testing of FAI pathomechanics and surgical corrections.

No conflicts of interest reported

Diagnostic value of magnetic resonance imaging on meniscal healing after meniscal repair

95.

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Background: Lack of healing after meniscus repair is seen in 25-30 % of patients. The role of magnetic resonance imaging (MRI) as a diagnostic tool in patients with clinical symptoms after meniscal repair, is not well described.
Purpose / Aim of Study: To compare the diagnostic value of MRI with second-look arthroscopy after meniscus repair in patients with clinical symptoms of an unhealed meniscus.
Materials and Methods: Eighty-two patients (34 women, 48 men, 83 menisci) with a mean age of 24.4 years were included. All patients had primary meniscus repair. MRI and second-look- arthroscopy were performed due to clinical symptoms of an unhealed meniscus. The MRIs were analysed for meniscal healing by a radiologist blinded for clinical data. Second-look arthroscopy recordings were equally examined and used as gold standard. The sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV) of MRI regarding meniscal healing were calculated.
Findings / Results: MRI analysis found 22 (26.5 %) healed menisci and 61 (73.5%) unhealed, whereas second-look arthroscopy found 15 (18.1%) healed menisci and 68 (81.9%) unhealed menisci. Sensivity, specificity, PPV and NPV respectively were calculated for MRI overall: 0.85, 0.80, 0.95, 0.55 and the five most frequently used MRI sequences: sagittal STIR: 0.69, 0.75, 0.95, 0.30; sagittal pd: 0.29, 0.83, 0.89, 0.20; sagittal T2*: 0.33, 1.00, 1.00, 0.26; coronal T1: 0.26, 1.00, 1.00, 0.25; axial STIR: 0.15, 0.88, 0.88, 0.15.
Conclusions: MRI provides an acceptable sensitivity and PPV in diagnosing an unhealed meniscus after repair. Sagittal STIR has the highest sensivity and NPV, whereas sagittal T2* and coronal T1 have the highest PPV.

No conflicts of interest reported

Several reasons for saphenous nerve injuries after gracilis tendon harvesting. A cadaver study.

96.

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Background: Sensory loss in the saphenous nerve domain occurs in up to 74% of patients undergoing ACL reconstruction using medial hamstring autografts. It is well described that the nerve can be damaged during incision. The risk of proximal nerve injury during tendon stripping has received less attention.
Purpose / Aim of Study: The purpose was to examine where the saphenous nerve is at risk during gracilis tendon harvesting. Semitendinosus tendon harvesting was not a focus due to the tendon`s distance from the saphenous nerve.
Materials and Methods: In 17 cadaver limbs donated to the University of Copenhagen the gracilis tendon was harvested according to standard routine. The limbs were then carefully dissected exposing the saphenous nerve and its branches to identify any injuries.
Findings / Results: Dissections revealed a fascia separating the nerve from the gracilis tendon. Lesions in the fascia were detected proximally to the incision in 7 cases (41 %). Nerve injuries in relation to these lesions were observed in 5 cases (29 %). All were partial injuries on the main stem of the saphenous nerve located superficially to the fascia, at the posterior border of the sartorius. Partial or complete incisional injuries to the infrapatellar or medial cutaneous branches were observed in 13 cases (76 %).
Conclusions: The saphenous nerve is at risk in the incision area, but also in an area proximally to the incision. The location of the proximal injuries suggests they occurred during stripping of the tendon, and that they were caused either by the Metzenbaum scissor used to release vinculae of the tendon or by the stripper. We hypothesize that the Metzenbaum scissor is most likely to have caused the observed injuries, and that blunt release of vinculae might lower the risk of nerve injury.

No conflicts of interest reported

Bone Tunnel Enlargement after ACL Reconstruction with Hamstring Autograft Is Dependent on Original Bone Tunnel Diameter

97.

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Background: Bone tunnel enlargement is a well- established phenomenon following ACL reconstruction. Tunnel enlargement is related to soft tissue grafts, suspension fixation devices and resorbable implants. Severe tunnel widening can lead to reconstruction failure. The correlation between bone tunnel enlargement following ACL reconstruction and original bone tunnel diameter has not been elucidated.
Purpose / Aim of Study: The purpose of the present study was to determine whether bone tunnel enlargement after ACL reconstruction with hamstring autograft is dependent on original tunnel diameter established during primary ACL reconstruction.
Materials and Methods: A retrospective review was conducted on 52 patients scheduled for ACL revision surgery who had CT scanning performed as part of their preoperative evaluation. All patients had previous hamstring ACL reconstruction. Patients were divided into three groups according to the original femoral and tibial bone tunnel diameter created during primary ACL reconstruction. Femoral and tibial bone tunnel enlargement was assessed on CT serial sections. Mean values were calculated and analysis of the correlation between original tunnel diameter and bone tunnel enlargement was investigated.
Findings / Results: Mean tibial bone tunnel enlargement is significantly more distinct in original 6-7 mm bone tunnels (+2.07 mm 1,03) compared to original 8,5-9 mm bone tunnels (+0,85 mm 1,03; p=.001).
Conclusions: The results of this study indicate that bone tunnel enlargement following ACL reconstruction is dependent on original bone tunnel diameter with smaller diameter tunnels developing more tunnel enlargement than larger tunnels. The contributing factors remain unclear and need to be further investigated.

No conflicts of interest reported

A novel clinical method for non-invasive quantification and grading of pivot-shift test

98.

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Background: Anterior cruciate ligament (ACL) injury may be complicated with extrinsic ligament injury such as injury to the anterolateral ligament (ALL), which may increase rotational instability. The pivot-shift (PS) test dynamically reproduces knee rotational instability, and positive tests correlate with patients' subjective experience of knee stability, reduced sports activity, and risk of early gonarthritis. However, the PS grading is poorly repeatable between clinicians.
Purpose / Aim of Study: To develop an objective grading system for the PS test that screened for human errors.
Materials and Methods: One examiner graded PS tests performed on eight cadavers exposed to five successive ligament situations: intact, ACL lesion, ACL+ALL lesion, ACL reconstruction, and ACL+ALL reconstruction. Tibial kinematics were assessed using an inertial measurement unit (IMU) and dynamic radiostereometry (dRSA) to evaluate the accuracy of the IMU. An automatic screening algorithm using IMU-features approved 95 PS tests (training: n=76, evaluation: n=19). Based on IMU-features, four different artificial neural networks (ANNs) were developed and trained to grade individual PS tests using the clinical grades (0,1,2,3) given by the examiner as a gold standard.
Findings / Results: The RMSE comparison of the IMU and dRSA showed no difference ($p>0.61$) between rejected (n=18) and approved (n=14) PS tests. The automatic screening algorithm correctly categorized 97% of these 32 PS tests. The two ANNs that used a combined-average strategy had the best accuracy of 84% for grading the 19 PS tests.
Conclusions: ANNs have a great potential for objective individual grading of PS tests, and further it is a low-cost and user-friendly method. Following ongoing in-vivo testing and calibration, it may be used for clinical individual rotation instability grading in patients with knee injuries.

No conflicts of interest reported

Trends in arthroscopic meniscectomy and meniscal repair controlled for age, sex and lesion

99.

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Background: Previous studies have observed a correlation between arthroscopic meniscectomy (APM) and accelerated progression on osteoarthritis, as well as limited benefits of APM compared to arthroscopic meniscal repair (AMR) and physiotherapy. Thus, the incitement for choosing APM as treatment for meniscal lesions is questionable.
Purpose / Aim of Study: To identify the distribution of AMR and APM over a 3-year period. In addition, the association between surgical procedure and the following factors was investigated: age, gender, and traumatic or degenerative lesion.
Materials and Methods: In this Cohort Study medical records of patients who had an APM or an AMR between 2011 and 2013 were evaluated retrospectively. The total number of medical records was 1938 (56.1% men and 43.9% women). Age ranged from 18 to 88 years, mean age 48.6 ± 15.5. The following indicators were extracted from the medical records: age, gender, and whether the lesion was traumatic or degenerative.
Findings / Results: The incidence of AMRs has increased every year from 11.2% in 2011 to 18.1% in 2013. The mean age within the AMR group was 30.3 ± 10.4 and 51.8 ± 13.9 years within the APM group. Both groups were male- dominant, however, the proportion of men were higher in the AMR group compared to the APM group. The majority of the lesions in the AMR group was traumatic (66.7%), whereas the majority of the lesions in the APM group was degenerative (65.5%).
Conclusions: APM is the most dominant surgical approach to meniscal lesions, but the number of AMRs seems to increase every year. However, it remains unclear exactly how certain meniscal lesions should be treated in terms of harms and functional outcome. In conclusion, the long-term outcome and predictors to the outcome need to be evaluated further.

No conflicts of interest reported

One year follow-up after hip arthroscopy with labral repair using a clinical algorithm for decision-making

100.

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Background: The amount of patients referred with longstanding, non-arthritic hip pain is increasing. Hip arthroscopy (HA) can be considered the gold standard in treating intraarticular pathologies of the hip not related to hip dysplasia, acetabular retroversion or osteoarthritis.
Purpose / Aim of Study: In this prospective, cohort study all patients undergoing HA with labral rapair were followed 3 and 12 months after surgery. The purpose of this study was to document the clinical outcome using a standardized clinical algorithm for patient selection
Materials and Methods: From January 2014 to July 2015 39 consecutive patients (19 males, 20 females), average age 35yr (m) and 37yr (f) underwent HA with labral repair. Contraindication for HA was osteoarthritis, hip dysplasia and total acetabular retroversion. The patients were followed prospectively filling out the Copenhagen hip and groin score (HAGOS) with its 6 subdomains symptoms, pain, function in daily living (ADL), function in sport and recreation (Sports/Rec), participation in physical activities (PA) and hip and/or groin- related quality of life (QOL). pre- operatively and again 3 and 12 months after surgery. The data was analyzed in SPSS using paired t-test.
Findings / Results: Both 3 and 12 months after HA with labral repair clinically and statistically significant improvements could be seen in all subdomains of the HAGOS, compared with the preoperative baseline.
Conclusions: Using a standardized clinical algorithm for patient selection we could show significant improvement after hip arthroscopy with labral repair both 3 and 12 months after surgery.

No conflicts of interest reported

Appropriate Methods for Development, Validation, and Use of Patient Reported Outcome Measures

101.

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Background: Patient-Reported Outcome Measures (PROMs) in the form of clinical questionnaires have become a fundamental component of healthcare assessment today. Also in the realm of sports medicine and orthopedics, clinicians and researchers besiege their patients with PROMs, only to be burdened with the extensive administration and interpretation of these measures. From a clinical standpoint, PROMs are important because they measure health from the perspective of the patient. However, in order to understand how a sum score (a number), which has been derived from the responses to a group of questions can be considered a measure of anything, it is necessary to consider the basic principles of what measurement in fact is. Clinicians and clinical researchers using PROMs need to have a basic understanding of the purpose and application of PROMs as measurement scales.
Purpose / Aim of Study: The objective of this paper is to illustrate how Rasch Item Response Theory (IRT) is the most appropriate method for constructing and validating PROMs.
Materials and Methods: We present an in-depth description of how questions that are confirmed to be relevant and comprehensive for the targeted patient group should be generated, and we show how the Rasch model is used to confirm statistically the measurement/scaling properties of these questions.
Findings / Results: Rasch IRT is the only statistical method used to validate PROMs, which satisfies the fundamental mathematical constraints of measurement.
Conclusions: If we are to use instruments to measure non-physical attributes such as pain, self perceived function, or psychosocial consequences as primary outcome measures in comparative studies, then the validation methods must be as stringent as possible and should include Rasch IRT analyses.

No conflicts of interest reported

Measurements of trochlea dysplasia: A literature review with quality assessment of radiological measurements

102.

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Background: A large number of measurements describing trochlear dysplasia have been proposed in the literature.
Purpose / Aim of Study: To make a systematic review with quality assessments of the known measurements used to describe trochlear dysplasia.
Materials and Methods: A systematic literature search was conducted in the databases PubMed and Embase using the search string "trochlea dysplasia OR trochlear dysplasia". Papers were screened for their relevance based on predefined parameters and all measurements showing a statistical association between trochlear dysplasia and patellar instability were presented. Four experts evaluated the quality of the measures using a purpose-made quality scale.
Findings / Results: The search generated 484 papers of which seven were chosen for review. 33 unique measurements were identified and described in order of their date of publication. The lateral trochlear inclination was rated highest by the expert panel. The crossing sign, the trochlear bump, the TT-TG distance, the trochlear depth and the ventral trochlear prominence also had high ratings.
Conclusions: The lateral trochlear inclination was rated highest by the expert panel and is recommended for use in assessment of trochlear dysplasia. The crossing sign, the trochlear bump, the TT-TG, the trochlear depth and the ventral trochlear prominence were also rated well and can be recommended for use. Due to the small size of the expert panel further research and evaluation is warranted.

No conflicts of interest reported

Effect of autograft type on muscle strength symmetry of the knee extensors and flexors in patients with anterior cruciate ligament reconstruction – Preliminary data.

103.

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Background: Muscle strength asymmetry of the knee extensors (KE) and flexors (KF) is seen after anterior cruciate ligament (ACL) reconstruction, which may affect physical performance and risk of re-injury. The effect of different autografts (i.e. quadriceps-autograft (QTB) vs. semitendinosus-gracilis autograft (StG)) on thigh muscle strength symmetry is unclear.
Purpose / Aim of Study: To compare muscle strength symmetry of the KE and KF in patients following ACL reconstruction with either QTB or StG.
Materials and Methods: 49 ACL patients were included and randomized to either StG (n=20) or QTB (n=29) reconstruction. Muscle strength testing was performed one year postoperative to determine maximum voluntary contraction of the KE and KF of both legs using isokinetic dynamometry. Isometric testing was performed at knee angels of 70 and 20 degrees knee flexion for KE and KF, respectively. Isokinetic testing was done at 60 and 180 degrees/s for concentric contractions, and 60 degrees/s for eccentric contractions. Deficits are expressed as limb symmetry index (LSI; operated leg/contralateral leg).
Findings / Results: Both StG- and QTB showed significant ($p<0.05$) strength deficits in KE (LSI 0.82-0.93 and LSI 0.71-0,84, respectively). For StG a significant deficit was seen for KF (LSI 0,83-0,87), while QTB only had strength deficits for eccentric KF (LSI 0.92). A group comparison showed that QTB had significantly lower LSI for all KE outcomes except eccentric KE, while StG had significantly lower LSI for concentric KF.
Conclusions: The StG-group showed muscle strength deficits in both KE and KF, whereas the QTB-group showed deficits in all KE but a deficit only in the eccentric muscle strength of the KF. Comparing LSI between grafttypes QTB had overall lower KE LSI and higher KF LSI than StG.

No conflicts of interest reported

Development and inter-rater reliability of the Basic Amputee Mobility Score (BAMS) for use in patients with a major lower limb amputation

104.

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Background: Early in-hospital rehabilitation following major lower limb amputation is mainly focused at patient's independence in basic mobility activities. Thus, an easily applicable measure for daily assessment of these skills, planning of training, and communication between health care professionals is of great importance.
Purpose / Aim of Study: To develop and examine inter-rater reliability of the Basic Amputee Mobility Score (BAMS) in patients with a lower limb amputation.
Materials and Methods: Four essential basic amputee activities; 1.supine in bed to sitting on the side of the bed and return, 2.bed to chair transfer and return, 3.indoor wheelchair manoeuvring, and 4. One-leg sit-to-stand-to-sit from a chair with arms, were chosen through consensus meetings with experienced amputee physical therapists. Each activity is scored from 0-2 (0=not able to, 1=able to with assistance, and 2=independent), and cumulated to a daily score of 0-8. Inter-rater reliability and agreement was established by 1 experienced and 1 un-experienced user of BAMS, using standardized instructions. Raters were blinded to each others ratings and in charge of sessions in a randomized order.
Findings / Results: Assessments were conducted within the first week of a major dysvascular lower limb amputation in 30 Patients. The mean (SD) of BAMS was 5.6 (2.3) points, while the ICC1.1, the standard error of measurement, and the minimal detectable change were 0.98 (95%CI, 0.96-0.99), 0.32 and 0.89 points, respectively. No systematic between-rater bias was seen (p=0.3). BAMS is fully implemented in the capital region.
Conclusions: The inter-rater reliability of BAMS is excellent, and changes of 1 point (group and individual level) indicate a real change in BAMS. We suggest the score be further used for communication between different groups of health care professionals and settings.

No conflicts of interest reported

Risk of acute renal failure and mortality after surgery for a fracture of the hip

105.

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Background: Fractures of the hip represent a major worldwide public health problem, associated with significant mortality.
Purpose / Aim of Study: We examined risk of developing acute renal failure and the associated mortality among patients aged > 65 years undergoing surgery for a fracture of the hip.
Materials and Methods: We used medical databases to identify patients who underwent surgical treatment for a fracture of the hip in Northern Denmark between 2005 and 2011. Acute renal failure (ARF) was classified as stage 1, 2, and 3 according to the Kidney Disease Improving Global Outcome criteria. We computed the risk of developing ARF within five days after surgery with death as a competing risk, and the short-term (six to 30 days post-operatively) and long-term mortality (31 days to 365 days post-operatively). We calculated adjusted hazard ratios (HRs) for death with 95% confidence intervals (CIs).
Findings / Results: Among 13,529 patients who sustained a fracture of the hip, 1,717 (12.7%) developed ARF post- operatively, including 1,218 (9.0%) with stage 1, 364 (2.7%) with stage 2, and 135 (1.0%) with stage 3 renal failure. The short-term mortality was 15.9% and 5.6% for patients with and without ARF, respectively (HR 2.8, 95% CI 2.4 to 3.2). The long-term mortality was 25.0% and 18.3% for those with and without ARF, respectively (HR 1.3, 95% CI 1.2 to 1.5). The mortality was higher in patients with an increased severity of renal failure.
Conclusions: ARF is a common complication of surgery in elderly patients who sustain a fracture of the hip, and is associated with increased mortality up to one year after surgery despite adjustment for coexisting comorbidity and medication before surgery. Even small change in renal function within five days of surgery for a fracture of the hip has substantial implication on mortality up to one year post- operatively.

No conflicts of interest reported

Methodological differences between studies of clavicular bone shortening - A systematic review

106.

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Background: Clavicular bone shortening is a relative indication for operative treatment of acute clavicular fractures. Although it is a clinically accepted indication, it is still scientifically contested. The reason for this is multifactorial. However, as different measurement methods exist (methods using fragment overlap or side difference) and the possible bias of radiographic magnification; there is a possibility that differences in methodology and magnification bias could have caused these scientific differences. We wanted to investigate the literature for differences in methodologies used and therefore designed a systematic review.

Purpose / Aim of Study: Our objectives were (i) review studies on bone shortening for differences in methodology specifically regarding measurement method used. (ii) Estimate radiographic magnification in studies.

Materials and Methods: To study methodological differences (i) we found 13 studies. For the estimation of radiographic magnification bias, we found (ii) 9 anatomical reference studies and five radiographic index studies.

Findings / Results: We found that (i) measurement method used highly effected the study's results and conclusions. Studies showing adverse effects of shortening had mostly used the fragment overlap method whereas studies that found shortening to be not harmful had used the side difference method. We found that the majority of studies had highly underestimated the bias of radiographic magnification and (ii) bias was estimated to be between 10-25% if not adjusted for magnification.

Conclusions: In conclusion, the scientific controversy of bone shortening seems to be because of differences in methodologies - especially measurement method used, and not only differences in results. Radiographic magnification is much larger cause of bias than previously thought and should routinely be adjusted for.

No conflicts of interest reported

The total blood loss after transfemoral amputations is more than twice the intraoperative loss.

107.

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Background: Underestimation of the actual blood loss in patients undergoing dysvascular Transfemoral Amputation (TFA) can impact negatively on outcome, in these often frail patients with very limited physiological reserves.
Purpose / Aim of Study: To estimate the Total Blood Loss (TBL) after TFA. Secondly, to evaluate the impact of blood loss and transfusions on the 30-days mortality and medical complications.
Materials and Methods: A single-center retrospective cohort study conducted from 2013 to 2015. The TBL was calculated on the fourth postoperative day, and based on the development in hemoglobin levels, transfusions, and the estimated blood volume. Hemoglobin was measured daily until the fifth post- operative day, and transfusions were given at a red blood cell (RBC) level below 9.7 g/dl.
Findings / Results: In all 81 TFA patients were studied. The TBL was calculated to a median of 964ml (IQR: 407-1521). The intraoperative blood loss (OBL) was measured to 400ml (IQR: 250-550), and the difference between TBL and OBL was 688ml (IQR: 180-1156). The patients received RBC transfusions with a median amount of 2 units per patient. Adjusted multivariable analysis showed that the TBL on average was 489 (95%CI, 38 – 940, p=0.034) ml larger in patients suffering from kidney disease prior to surgery. The TBL was not independently associated with increased 30-days mortality or medical complications, nor was transfusions above 2 units.
Conclusions: The TBL after TFA's is significantly greater than the estimated OBL, and significantly increased if kidney disease is present prior to surgery. A high anemia vigilance seems recommendable in the perioperative period and especially after TFA surgery.

No conflicts of interest reported

Efficacy of 6 versus 12 weeks physiotherapy including progressive strength training in patients shortly after hip fracture surgery – a multicenter randomized controlled trial.

108.

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Background: The latest Cochrane review emphasized the need for RCTs to investigate the timing, duration, and intensity of different physiotherapy (PT) interventions in patients with hip fracture (HF). However, such studies have most often been conducted as extended programs following ceased standard PT.
Purpose / Aim of Study: To examine if 12 weeks of community-based PT with progressive strength training is more efficacious than 6 weeks in improving walking distance in patients when commenced shortly after discharge from HF surgery.
Materials and Methods: 100 community-dwelling patients with HF were included from 4 outpatient centers at a mean (SD) of 18 (5.9) days after surgery, and equally randomized in two groups, in this assessor blinded study. Both groups received functional, balance, and progressive lower limb strength training exercises, 2 times a week. The primary outcome was change in walking distance in the 6-minute walk test from baseline to the 6 months follow-up.
Findings / Results: Intention-to-treat analysis showed no significant between-group difference in the primary outcome, versus significant improvements, mean of 3.5 (95%CI; 0.8 to 6.1) seconds for the TUG in favor of the 12-week group. The fractured limb strength deficit % non-fractured was reduced with a mean of 34% in the 12-week group as compared to 24% in the 6-week group. Still, 46% of all patients had not regained their pre-fracture functional level at follow- up.
Conclusions: 12 weeks of PT with strength training was not more efficacious than 6 weeks in improving the walking distance in patients with HF, but a significant improvement was seen for the Timed Up & Go test in favor of the 12-week group. Also, the 12-week program seems superior in reducing the fractured limb strength deficit. However, almost half of all patients still experienced functional deficits after 6 months.

No conflicts of interest reported

Socioeconomic inequality in patient outcome among hip fracture patients: A population-based cohort study

109.

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Background: Socioeconomic status influence the risk of hip fractures, but the evidence is more limited and conflicting regarding the extent to which socioeconomic status will have an impact on quality of in-hospital care received and survival after hip fracture.
Purpose / Aim of Study: We examined the association between socioeconomic status and 30-day mortality, acute readmission, quality of in-hospital care, time to surgery and length of stay.
Materials and Methods: A population-based cohort study using prospectively collected data from the Danish Multidisciplinary Hip Fracture Registry. We identified 25,354 patients ¡Ý65 years admitted with a hip fracture between 2010 and 2013. From Statistic Denmark we assess data on socioeconomic status for all patients including highest obtained education, family mean income, cohabiting status and ethnicity. We performed multilevel regression analysis, controlling for potential confounders.
Findings / Results: Hip fracture patients with highest education had lower 30-day mortality compared to patients with low education (7.3% vs 10.0% adjusted Odds Ratio (OR) = 0.74 (95 % confidence interval (CI) (0.63-0.88)). Highest level of family income was also associated with lower 30-day mortality (11.9% vs 13.0 % adjusted OR = 0.77, 95 % CI 0.69-0.85). Cohabiting status and ethnicity were not associated with 30-day mortality in the adjusted analysis. Furthermore patients with both high education and high income had lower risk of acute readmission (14.5% vs 16.9 % adjusted OR = 0.94, 95 % CI 0.91-0.97). Socioeconomic status was, however, not associated with quality of in-hospital care, time to surgery and length of hospital stay.
Conclusions: Higher education and higher family income was associated with substantially lower 30-day mortality, but it could not be explained by differences in the provision of care during hospitalization.

No conflicts of interest reported

Is the higher mortality among men with hip fracture explained by sex-related differences in quality of in-hospital care? A population-based cohort study

110.

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Background: Mortality after hip fracture is two-fold higher in men compared with women. It is unknown whether sex-related differences in the quality of in-hospital care contribute to the higher mortality among men.
Purpose / Aim of Study: To examine sex-related differences in quality of in-hospital care, 30-day mortality, length of hospital stay and readmission among patients with hip fracture in a population-based cohort study.
Materials and Methods: Using prospectively collected data from the Danish Multidisciplinary Hip Fracture Registry, we identified 25,354 patients ¡Ý65 years (29 % were men). Outcome measures included quality of in-hospital care as reflected by seven process performance measures, 30- day mortality, length of stay and readmission within 30 days after discharge. Data were analysed using multivariable regression techniques.
Findings / Results: In general, there were no substantial sex-related differences in quality of in- hospital care. The relative risk for receiving the individual process performance measure ranged from 0.91 (95 % CI 0.85-0.97) to 0.97 (95 % CI 0.94-0.99) for men compared to women. The 30-day mortality was 15.9 % for men and 9.3 % for women corresponding to an adjusted odds ratio of 2.30 (95 % CI 2.09-2.54). The overall readmission risk within 30 days after discharge was 21.6 % for men and 16.4 % for women (adjusted odds ratio of 1.38 (95 % CI 1.29-1.47)). No difference in length of stay was observed between men and women.
Conclusions: Sex-differences in the quality of in- hospital care appeared not to explain the higher mortality and risk of readmission among men hospitalized with hip fracture.

No conflicts of interest reported

In-Vivo and In-Vitro Evaluation of Vancomycin and Gentamicin Elution from Bone Graft Substitutes

111.

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Background: Antibiotic containing materials are often used for dead space management after surgical treatment of bone infections.
Purpose / Aim of Study: To measure early in-vivo plasma concentrations of Vancomycin and Gentamicin eluted from locally implanted antibiotic-eluting bone graft substitutes (BGS), and to evaluate possible in-vitro elution interactions of combined use.
Materials and Methods: In-vivo plasma concentrations were measured in 5 patients (M/F: 3/2, mean age 67 (52-81) years), who underwent local implantation (range: 10-20 mL) with either a Vancomycin- (n=1), a Gentamicin-eluting BGS (n=3) or a combination of both (n=1). Plasma was collected 1 and 3 hours after implantation and once daily during the first three postoperative days. In-vitro elution profiles of Vancomycin- and Gentamicin-eluting BGS (5 mL each) were compared in 4 different scenarios: Each product individually, both products side-by-side, and mixed together. The ratio between product and medium was kept the same in all tests. Samples (20% of the medium to mimic conditions in a contained bone defect) were collected and replaced on day 1-8, 21, and 28 for analysis.
Findings / Results: Mean blood plasma concentration of Vancomycin was 0.3 mg/L (Range: 0.0- 1.6mg/L) and 0.5 mg/L (Range: 0.0- 2.1mg/L) for Gentamicin. In-vitro release curves of Vancomycin and Gentamicin showed a similar appearance for the 4 different scenarios. Both the in-vivo and in-vitro curves displayed an initial peak, a gradual drop, and sustained lower concentrations during the study period.
Conclusions: Local in-vivo implantation of Vancomycin- and Gentamicin-eluting bone graft substitutes, results in safe low plasma concentrations in the first three days after surgery when used individually or in combination. Further, when tested in-vitro, combined use did not seem to influence their eluting abilities.

Conflicts of Interest
Peter Horstmann: Fundet by BONESUPPORT AB
Hanna Dahlgren: Employee at BONESUPPORT AB
Eva Lidén; Employee at BONESUPPORT AB
Werner Hettwer; BONESUPPORT AB

External Fixation versus two-stage Open Reduction Internal Fixation of distal intra-articular Tibia Fractures: a systematic review

112.

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Background: Distal Intra-Articular Tibia Fractures (DIATF) is challenging to treat and severe loss of physical function affecting working abilities has been reported.
Purpose / Aim of Study: To investigate differences in physical function and complications following DIATF surgery with two-stage Open Reduction Internal Fixation (ORIF) or External Fixation (EF).
Materials and Methods: A search was conducted using PUBMED, Embase, Cochrane Central, Open Grey, Orthopaedic Proceedings and WHO International Clinical Trials Registry Platform. Studies with level of evidence I-IV comparing EF with two-stage ORIF of DIATF in patients (>18 years) were included for review. 3071 studies were identified and screened by two independent authors according to the PRISMA guidelines. Cochrane Risk of bias Tool for RCT and non-randomised studies (ROBIN-1) were used to assess risk of bias.
Findings / Results: One RCT study and four cohort studies with 254 patients, 150 two-stage ORIF and 104 EF, was included. The median follow-up ranged from 12-38 months. The RCT had low risk of bias while the cohort studies had moderate risk. All studies reported decreased physical function. A comparison of results was difficult because a variety of function scores were used. EF had a higher superficial infection frequency due to pinn infection (28% EF vs 9% two-stage ORIF) and a tendency towards higher mal- and non-union frequency (14% EF vs 7% two- stage ORIF; 6% EF vs 3% two-stage ORIF).
Conclusions: Current evidence for physical function and complications following DIATF surgery with either two-stage ORIF or EF is of low quality. However, all present studies report decreased physical function following DIATF operated on with either two-stage ORIF or EF. Number of complications was generally low. A well-designed study with a large sample size is needed.

No conflicts of interest reported

Low Surgical Apgar Score is associated with postoperative complications in lower extremity amputations in dysvascular patients.

113.

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Background: There is an increasing number of high-risk, elderly and severely comorbid patients, scheduled for dysvascular lower extremity amputations (LEA). An easy to apply risk stratification tool would be of great value for individualizing postoperative monitoring and care.

Purpose / Aim of Study: To assess whether the Surgical Apgar Score (SAS, 0-10 points) is a prognostic tool capable of identifying the most vulnerable patients with major complications (including death) following LEA surgery. The SAS score is based on intraoperative heart rate, blood pressure and blood loss.

Materials and Methods: An observational cohort study of 170 dysvascular patients undergoing transtibial (TTA, n=70) or transfemoral (TFA, n=100) amputations from 2013- 2015. Data on perioperative morbidity and mortality was collected retrospectively.

Findings / Results: When the calculated scores were divided into four groups (SAS: 0-4, 5-6, 7-8, 9-10) a logistic regression model showed a significant linear association between decreasing SAS and postoperative complications (all patients: OR = 2.00 [1.33-3.03], p = 0.001). This effect was pronounced for TFA (OR = 2.61 [1.52-4.47], p < 0.001). The AUC from the models were estimated to (all patients = 0.648 [0.562-0.733], p = 0.001), (TFA = 0.710 [0.606- 0.813], p<0.001), and (TTA = 0.528 [0.383-0.672], p = 0.472) pointing at a moderate discriminatory power of the SAS in predicting postoperative complications in TFA patients.

Conclusions: It seems warranted that the SAS provides the medical staff with information regarding the potential development of complications following TFA. The scoring system could prove useful in guiding preventive strategies such as optimizing intraoperative blood pressure or heart rate. The SAS showed no discriminatory power in the TTA sub- group, most likely due to an overall better condition of the patients.

No conflicts of interest reported

Prospective clinical trial for septic arthritis: inflammation is associated with cartilage degradation, up-regulation of cartilage metabolites, but is inhibited by chondrocytes

114.

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Background: Intraarticular infections can rapidly lead to osteoarthritic degradation, but the association of inflammation and cartilage destruction is not yet fully understood.
Purpose / Aim of Study: Aim of this clinical trial was to correlate inflammation severity with parameters of cartilage metabolism.
Materials and Methods: Patients with acute septic arthritis were enrolled in a clinical trial and the effusions (n=76) analyzed. Cytokines and cell function were also investigated using a human in-vitro model of joint infection.
Findings / Results: Higher synovial IL-1â levels were associated with a higher degree of disease severity. Additionally, IL-1â concentrations correlated with infectious serum markers, but not with age or co-morbidity. Both higher serum leucocytes and synovial IL-1â were associated with increased intraarticular collagen type II cleavage products (C2C) indicating cartilage degradation. Joints with pre-infectious lesions had higher C2C levels and were more susceptible to inflammation. Infections led to increased concentrations of typical cartilage metabolites as bFGF, BMP-2, and BMP-7. A subgroup analysis revealed increased synovial IL-1â levels in patients with an arthroplasty, which could be confirmed utilizing the in-vitro model. In contrast to IL-4 and IL-10, FasL levels increased steadily in-vitro, reaching higher levels without chondrocytes (CHDR). Likewise, the viability of synovial fibroblasts (SFB) during infection was higher in the presence of CHDR and associated with increased TGFâ levels.
Conclusions: C2C reliably mark cartilage destruction during septic arthritis, which is associated with up-regulation of typical cartilage turnover cytokines. Chondrocytes exhibit an anti- inflammatory effect, which is associated with an increased resistance of SFB to infections and FAS-mediated cytotoxicity.

No conflicts of interest reported

Long-term fixation and function of cementless and cemented Avanta PIP joint arthroplasty. A randomized clinical RSA study.

115.

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Background: Long-term follow-up studies with surface-replacement (SR) proximal interphalangeal (PIP) finger arthroplasty are sparse.
Purpose / Aim of Study: To compare long-term fixation and function of cementless (CL) versus cemented (C) Avanta PIP arthroplasty.
Materials and Methods: In a prospective, randomized, patient- blinded clinical trial, we included 30 osteoarthritic PIP joints in 30 patients (7 males) at a mean age of 56 years (34-69). Dorsal Chamay approach, and CL (n=15) or C (n=15) fixation of SR PIP joint Avanta arthroplasty, was used in 1 of the 4 ulnar fingers. We present the long-term (7-10 years) follow-up of 23 patients evaluated with implant migration (RSA), radiographic and functional outcome, and patient reported pain and satisfaction.
Findings / Results: The proximal and distal components had similar mean subsidence and mean rotation around the long axis in the two groups (p>0.24). 3 CL and 2 C proximal components, and 1 CL and 2 C components, subsided more than 1mm. 8 CL and 7 C PIP joints had pronounced periarticular calcifications but no functional limitation (mean active ROM of 60°). Functional outcome was similar between groups (p>0.20) with mean active PIP ROM of 46° (range -9° to 55°), grip strength of 22 kg (sd 10), pinch strength of 1.9 kg (sd 0.9), Quick-DASH of mean 24 (sd 26), VAS pain at rest of mean 0.6 (sd 1.4), and VAS pain in loaded activity of 1.7 (sd 2.5). 4 fingers were stiff and 3 were amputated. 1 implant broke and was revised with arthrodesis. VAS satisfaction was 7 (sd 3.6). 70% were willing to repeat SR PIP surgery.
Conclusions: At long-term follow-up functional results, pain relief, and patient satisfaction with Avanta SR PIP arthroplasty was good. Fixation of CL and C components were similar, but 35% of components subsided. 65% of patients had pronounced periarticular calcifications but no functional limitation.

No conflicts of interest reported

Functional outcome comparing a dual mobility cup to a standard cup in total joint arthroplasty of the trapeziometacarpal joint

116.

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Background: Dual mobility cup design in total joint arthroplasty may result in increased mobility and fewer dislocations. In 2013 a dual mobility cup design was introduced to be used with the Elektra stem for total joint arthroplasty of the trapeziometacarpal (TM) joint.
Purpose / Aim of Study: To determine the functional outcome after TM total joint arthroplasty comparing the use of a dual mobility cup to the use of a standard (single mobility) cup.
Materials and Methods: The patients were prospectively included. All patients had Eaton grade 2 or 3 osteoarthritis in the TM joint. Patients operated June 2010 to October 2014 using the Elektra bimetal cementless screw cup (standard cup) were compared to patients operated June 2013 to September 2014 using the Moovis Elektra dual mobility press-fit cementless cup. In bilateral cases only the first operated hand was included. The Disability of the Hand, Shoulder and Arm (DASH) score, pain using a continuous 100-mm visual analog scale (VAS), grip strength, Karpandji score and extension of thumb were registered preoperatively and at 3 and 12 months after surgery.
Findings / Results: 58 patients (12 males/46 females), mean age 56 years (SD 7.0), in the Elektra bimetal group and 46 patients (6 males/40 females), mean age 58 years (SD 6.4), in the Moovis dual mobility group completed the study. Improvement in VAS at activity from preoperative to 12 months was significantly better in the Elektra bimetal group (P=0,024). We found no significant difference in the improvement regarding DASH, VAS at rest, grip strength, Karpandji score or extension of the thumb in the two groups. No dislocations were recorded in the observation period.
Conclusions: Dual mobility cup in total TM joint arthroplasty does not result in better mobility or functional outcome than a standard cup. No difference in dislocation rate was recorded.

No conflicts of interest reported

2 year results with Electra bi-metal screw cup in total trapeziometacarpal arthroplasty evaluated with RSA

117.

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Background: Cup failure is a recognized problem in total trapeziometacarpal (TM) joint prosthesis, which may be related to cup design and bone quality.
Purpose / Aim of Study: To evaluate cup migration and clinical outcome with the Elektra bi-metal TM screw cup.
Materials and Methods: Case-study of the first 50 patients (50 hands, 42 females) with Eaton stage 2-4 osteoarthritis of the TM joint scheduled for surgery with the Elektra bi-material (CoCr/TA6V) metal-on-metal gridblasted hydroxyapatite-coated TM screw cup (Nov 2011 thru June 2014). Bone Mineral Density (BMD) was measured pre-operative in the trapezium. Cup migration (model-based RSA), DASH score and function were measured at baseline, 3 months, 1 and 2 years. Total Translation (TT) of the cup was calculated as square root (x^2+y^2+z^2).
Findings / Results: Patients were mean 57 years (range 43-71). All patients received the planned surgery and there were no intraoperative complications. TT cup migration at 2 years follow-up was mean 0.47 (sd 0.9) mm, and there was no increase in migration from 3 months to 2 years (p>0.19). At 2 years followup 3 cups (8%) had progressive migration above 1mm and might be loose. 4 cups were revised within the follow-up period, 3 due to aseptic loosening of which 2 also had pseudotumour, and 1 due to pain. 1 cup dislocated and had closed reduction. DASH score improved a mean 30 (sd 25) to 1 year (p=0.000). Pre-operative BMD measurements are ongoing.
Conclusions: Elektra bi-metal screw cup fixation was acceptable for most implants (92%) up to 2 years as measured by RSA, and the functional results improved significantly. The cup could be inserted in all patients and there were no intraoperative complications. However 8% were revised within 2 years and of these 2 had pseudotumour.

No conflicts of interest reported

Good 2 year results with the new conical press-fit cup design and dual-mobility articulation in total trapeziometacarpal arthroplasty

118.

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Background: Cup failure is a recognized problem in total trapeziometacarpal (TM) joint prosthesis, which may be related to cup design and bone quality.
Purpose / Aim of Study: To evaluate cup migration and clinical outcome with a new large conical press-fit TM cup design with dual- mobility articulation.
Materials and Methods: Case-study of the first 50 patients (50 hands, 43 females) with Eaton stage 2-4 osteoarthritis of the TM joint scheduled for surgery with the Moovis Elektra press-fit dual-mobility TM cup (June 2013 thru June 2014). Bone Mineral Density (BMD) was measured pre-operative in the trapezium. Cup migration (model-based RSA), DASH score and function were measured at baseline, 3 months, 1 and 2 years. Total Translation (TT) of the cup was calculated as square root (x^2+y^2+z^2).
Findings / Results: Patients were mean 56 years (range 43-69). Only 44 out of planned 50 Moovis cups were inserted because 3 trapeziums were too small, 2 trapeziums fractured and 1 was too soft. Pre-operative BMD was mean 0.67 (range 0.42 – 1.04) g/cm2. TT cup migration at 2 years followup was mean 0.39 (sd 0.6) mm, and there was no increase in migration from 3 months to 2 years (p>0.20). At 2 years followup 2 Moovis cups (6%) had progressive migration above 1mm and might be loose, but no cups dislocated or were revised by 2 years followup. There was no correlation between pre- operative BMD and cup migration (p>0.43). DASH score improved a mean 22 (sd 24) to 1 year (p=0.000).
Conclusions: Moovis Elektra cup fixation was acceptable for most implants (94%) up to 2 years, no implants dislocated or were revised, and the functional results improved up to 1 year. The cup was too large to fit the trapezium in 3 patients, but instead a smaller cup design (Electra Bimetal) could be utilized. 3 patients had intraoperative trapezium fracture, which may be related to the large cup size.

No conflicts of interest reported

Incidence of heterotopic ossification following total joint replacement of the trapeziometacarpal joint

119.

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Background: Heterotopic ossification (HO) is a frequent complication after surgery of the hip and the pelvis, however the pathophysiological entities responsible for the formation of HO remain largely unclear.
Purpose / Aim of Study: The incidence of heterotopic ossification (HO) following total joint replacement of the trapeziometacarpal (TMC) joint is unknown, and the purpose of this study was to study the incidence of HO 12 months after TMC total joint replacement, and the impact of HO on self reported functional outcome.
Materials and Methods: All patients who had TMC total joint replacement during the period 2004-2014 were prospectively included in the study with radiographs 12 months after the operation, and classified using the Brooker classification adapted to the TMC joint. Self reported functional outcome was measured with the Disabilities of the Arm, Shoulder and Hand score (DASH score), and pain at rest and activity using a continous 100- mm visual analog scale (VAS).
Findings / Results: A total of 329 TMC joints with implants were egelible for the study, but 19 joints were excluded because of missing radiographs or due to loss of follow-up leaving 310 joints for evaluation. The incidence of Brooker grade 3+4 calcifications was 27% (85/310) at 12 months. Implant fixation type (cemented vs cementless) did not influence the incidence of HO, but a significant higher incidence of HO in metal on metal compared to metal on polyethylene articulation was found. We did not find any association between HO and DASH or VAS at 12 months.
Conclusions: HO is observed with the same frequency after TMC joint total replacement as in hip replacement, and articulation with metal on metal seems to increase the risk of HO. However HO seems not to influence patient reported outcome or pain at 12 months after the operation.

No conflicts of interest reported

Which Colles' fracture requires an operation?

120.

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Background: The Danish guidelines regarding distal radius fractures (DRF) (AO type 23-A2-3, 23-C1-3) warrant operation, if one of the following 5 criteria is met after closed reduction: dorsal tilt >10 degrees; ulnar variance >2 mm; articular step-off >2 mm; incongruence of the distal radioulnar joint (DRUJ); substantial comminution of the dorsal cortex. Many DRF classification systems exist and their inter-rater agreement varies widely, however the inter- rater agreement of the Danish DRF guidelines has not yet been determined.
Purpose / Aim of Study: To estimate the inter-rater agreement of the Danish DRF guidelines.
Materials and Methods: A trauma consultant and a medical officer independently rated 176 radiographs of Colles' fractures after closed reduction according to the 5 criteria. All 176 cases were operated at our institution between 2009 and 2013. Kappa statistics were applied.
Findings / Results: The inter-rater agreement regarding acceptable reduction (yes/no) was "poor", because in only 49/176 cases the raters agreed on all five criteria. The agreement was "good" for dorsal tilt (kappa=0.67) and 120 patients were operated based on this indication. The observers agreed in 149/176 cases regarding articular step-off >2mm; 144/176 incongruence of DRUJ; 127/176 ulnar variance >2mm; and 90/176 substantial dorsal bone loss.
Conclusions: Careful consideration is necessary when one decides, which Colles' fracture requires operation. For patients with high functional demands, the Danish DRF guidelines stipulate indications for ORIF. In the present study, unacceptable dorsal tilt was the primary indication for ORIF. However, in cases with less than 10 degrees dorsal tilt or if the observers did not agree about the dorsal tilt, the poor inter-rater agreement of the remaining 4 indications, highlights the subjective decision-making.

No conflicts of interest reported

Efficacy of acute in-hospital physiotherapy with versus without knee-extension strength training in reducing strength deficits in patients with a hip fracture: a randomised controlled trial

121.

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Background: Patients with a hip fracture (HF) experience knee- extension strength deficit in the fractured limb of more than 50% and impaired physical function immediately after HF surgery. This is likely to contribute to the long term loss of physical function, change of residence and high mortality after HF.
Purpose / Aim of Study: To determine whether daily acute in-hospital physiotherapy (PT) with progressive knee-extension strength training (10RM) of the fractured limb using ankle weight cuffs in 3 sets of 10 repetitions, is more efficacious in reducing knee-extension strength deficit at follow-up compared to PT without strength training in patients with a HF.
Materials and Methods: A randomized, assessor-blinded study of 90 patients (mean age 79.6 (7.5) years, 69 women, 52 with a trochanteric fracture) admitted to the Hip Fracture Unit at Hvidovre Hospital. The primary outcome was the change in maximal isometric knee-extension strength in the fractured limb in % of the non- fractured limb from 1-3 days after surgery (baseline) to postoperative day 10 or discharge (follow-up).
Findings / Results: In the intention-to-treat analysis of between-group differences, the primary outcome improved 8.1%, CI (-2.3; 18.4) by additional strength training from baseline to follow-up versus a significant improvement by 10.5%, CI (0.3; 20.7) in the per- protocol analysis of non-missing data.
Conclusions: In-hospital PT with strength training was not more efficacious, although in favor, compared to PT without strength training in reducing the knee- extension strength deficit at follow-up in patients with HF, and the participants had a substantial strength deficit at follow-up despite targeted PT. It is debatable whether larger improvements than the observed can be expected given that only five exercise sessions, on average, were completed. Trial identifier: NCT00848913

No conflicts of interest reported

Reoperations in patients with pertrochanteric fractures treated with a short or long intramedullary nail: A register study

122.

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Background: 50 % of elderly patients admitted with a hip fracture have a pertrochanteric fracture and are often treated with an intramedullary nail. In Denmark we have no consensus among orthopaedics in the choice of intramedullary nails.
Purpose / Aim of Study: To examine the incidence of reoperation and difference in failures for short gamma nail (SGN) and long gamma nail (LGN)
Materials and Methods: Patients with a pertrochanteric fracture treated with a Gamma 3 nail in 5 different hospitals in Southern Denmark in 2012 were included. Data was received from Dansk Tværfagligt register for hoftenære Lårbensbrud. All patients included were treated with either SGN or LGN. For all patients we received CPR, operation date, diagnose and if relevant reoperation date and treatment. All radiographs were examined to divide the patients into the two groups SGN and LGN and to classify the fracture. TAD and diathesis were measured on post operative x-rays. If the patient were reoperated the failure and the choice of treatment were found in the medical journal with 2 years follow up.
Findings / Results: 216 out of 250 fractures were included. Patients excluded did not have a pertrochanteric fracture, another treatment then Gamma 3 nail, another treatment or x-ray was not available. We found 12 reoperations, 5 and 7 in the SGN and LGN group. 3 cut out in each group. 1 patient with LGN sustained ipsilateral fracture after a second fall, but no patients with SGN had a secondary fracture. 1 patient with SGN had a hairline fracture seen on the post operative x-ray. 1 patient in each group had a total hip arthroplasty because of arthrosis. 1 with LGN had a non union and 1 with LGN had the nail removed because of pain.
Conclusions: There is no difference between SGN and LGN in the type of failures or the incidence of reoperations.

No conflicts of interest reported

Evaluation of a Fracture Liaison Service with osteoporosis-nurses screening hospitalized hip fracture patients for later follow-up in the osteoporosis outpatient clinic

123.

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Background: Hip fracture (HF) patients have a high risk of sustaining other fractures already within the first postop. year, but early initiation of osteoporosis treatment might reduce the risk. Literature often describes sub-optimal osteoporosis evaluation and treatment initiation following HFs, with only around 10-15% of HF-patients starting anti-osteoporotic treatment.
Purpose / Aim of Study: We hypothesized that our Fracture Liaison Service (FLS) resulted in a higher rate of osteoporosis treatment.
Materials and Methods: Our FLS consists of two nurses from The Osteoporosis Clinic visiting the HF- Unit, located as a separate ward within the Dep. of Orthopaedics. All patient records are evaluated by the two FLS- nurses bi-weekly with use of a developed FLS-algorithm evaluating mental status, age and co-morbidities. Relevant patients are then bedside by the two FLS-nurses offered an outpatient clinic visit in the Dep. of Osteoporosis scheduled within 3-6 months postop. Here DXA-scans and blood samples are taken before the osteoporosis specialists examine and treat the patients.
Findings / Results: All 524 consecutive HF-patients admitted during 2014 were evaluated by the two FLS-nurses, who found 75% (393/524) to be candidates for an invitation to a follow-up visit in the osteoporosis outpatient clinic, 59% (312/524) accepted the invitation and were scheduled for a follow-up visit. 34% (178/524) met for examination in the outpatient clinic, where 22% (113/524) were given anti-osteoporotic treatment. This latter increased from 16% in 2013.
Conclusions: With this FLS-model, we reached a slightly higher rate of anti-osteoporotic treatment than most often described among HF-patients. The large group of invited patients not showing up in the outpatient clinic is a challenge and new actions are required to further increase the osteoporosis treatment subsequent to HFs.

No conflicts of interest reported

Metacarpophalangeal joint arthrodesis of the thumb – a minimum of eight months follow up

124.

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Background: Disorders of the thumb metacarpophalangeal (MCP) joint can lead to significant loss of function, and pain. Thumb MCP arthrodesis following traumatic injuries is inadequately described and recent studies have questioned the results follow this treatment.
Purpose / Aim of Study: The purpose of this study was to report outcome and disability following thumb metacarpophalangeal (MCP) joint arthrodesis due to traumatic injuries with chronic instability and pain.
Materials and Methods: A retrospective review of 26 patients operated with MCP joint arthrodesis, median follow-up 42 months (8- 104months). Subjective outcomes were assessed using the Disabilities of the Arm, Shoulder, and Hand- questionnaire (DASH). In addition, patient satisfaction, pain, stiffness, and impairment of activities of daily living were assessed on a Visual Analogue Scale (VAS) followed by a question on whether they would have undergone the same procedure again.
Findings / Results: Two patients (7.7%) needed re- operation due to continuous instability and pain. Four patients (15.4%) needed hardware removal. Median DASH-score was 18 (25-75% range 6- 47), with lower DASH scores being better. Scores were significantly worse than in gender and age matched individuals ($p<0.05$). Median VAS for pain was 3.7 (range 0-8). More than 50% of patients reported mild, moderate or severe pain but all patients reported that they were willing to undergo the same procedure again.
Conclusions: Our data suggests that patients with post-traumatic thumb injuries managed with thumb MCP joint arthrodesis perform worse than gender and age matched individuals. Many lived with pain, but all reported that they were willing to undergo the same procedure again. We suggest that the disability scale by the National Board of Industrial Injuries should be reconsidered for patients operated with thumb MCP artrhodesis.

No conflicts of interest reported

Lateral vs. posterior approach to the hip in patients with hip fractures treated with hemiarthroplasty. A systematic review with meta-analysis.

125.

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Background: Register studies have advocated for the use of the lateral approach (LA) to the hip instead of the posterior approach (PA) when performing hemiarthroplasty surgery in order to reduce subsequent hip dislocation.
Purpose / Aim of Study: The aim was to conduct a systematic review with meta-analysis to compare LA with PA in terms of major and minor complications (register studies not included).
Materials and Methods: On October 16th 2015 an electronic search of PubMed, Embase and Cochrane databases was performed. Two authors independently screened 4802 articles by title, abstract, and finally full text of 28 eligible articles was read. Data on demographics and complications was extracted by two authors and re-checked by further two authors. Complications were grouped into minor (no surgery) or major (open surgery) complications. The quality of studies was assessed according to Risk of Bias Assessment Tool for Nonrandomized Studies. Meta-analysis was only performed for dislocation due to lack of reporting for other complications.
Findings / Results: Six studies compromising 3348 patients, LA 1969 and PA 1379, was included thereof one RCT. The median follow-up ranged from 6-28 months. The quality of the cohort studies was in general low with high risk of bias. The risk ratio (95 % CI) for LA was 0.27 (0.17;0.41) for dislocation compared to PA. Only 2 studies had information on the major complications. One study was a cohort study showing difference in total revisions due to periprostethic fractures but included old cemented and uncemented stem designs. The other was the RCT which showed no differences in any parameter between LA and PA, and was the only study using a piriformis preserving approach.
Conclusions: LA demonstrates a 27 % reduced risk of dislocation, but in a RCT no difference was seen, which may be due to a piriformis preserving technique.

No conflicts of interest reported

Effect of preoperative Explosive-type Resistance Training on Patients with Hip Osteoarthritis after Total Hip Arthroplasty – a randomized controlled trial

126.

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Background: Progressive explosive-type resistance training (RT) improves physical function and muscle strength in hip OA patients prior to THA. The potential postoperative effect following THA of preoperative RT has not previously been reported
Purpose / Aim of Study: To investigate the postoperative effect of preoperative RT in hip OA patients scheduled for THA on i) self-reported outcomes and ii) muscle strength and physical function
Materials and Methods: Eighty patients (age 70.4 ± 7.6 years, 70% females (n=52)) diagnosed with hip OA and scheduled for primary THA were randomized into two groups: 1) The intervention group (IG) received RT (4 exercises of 3 series each (~80% of 1 repetition max)) twice a week for 10 weeks prior to surgery 2) The control group (CG) received 'care as usual'. Primary endpoint was Hip Osteoarthritis Outcome Score (HOOS) ADL (12 months), Secondary; other HOOS subscales, muscle strength and function (gait speed, stair-climb, sit-to- stand). Between group changes at follow-up (3 and 12 months) were analyzed using mixed model analysis.
Findings / Results: For all HOOS subscales (including ADL), functional tests (except stair climb; $p<0.017$) and muscle strength no between group differences were observed at 12 months At 3 months statistical significant between-group difference in HOOS 'Sport/Rec' was observed, where IG scored 10.5 points 95%CI [1.4;19.6] higher compared to CG. Furthermore, IG had higher muscle strength (knee extension; $p<0.001$) and better function ($p<0.02$) compared to CG
Conclusions: Preoperative RT does not affect one year postoperative ADL function. Between group differences in secondary outcomes at 3 month indicate that preoperative RT may accelerate postoperative recovery of strenuous activities during early rehabilitation. More strength requiring functions as stair climbing may benefit of RT in the longer term

No conflicts of interest reported

Can Surgeons Reduce Risk For Dislocation Following Primary THA Performed Using Posterolateral Approach?

127.

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Background: Multiple patient- as well as surgery-related parameters have been identified as contributing to the risk of dislocation following primary THA, however the role of component positioning is still controversial
Purpose / Aim of Study: In this study, we investigated if surgery-related factors are independent risk factors for dislocation following primary THA performed through a posterolateral approach
Materials and Methods: We identified 1326 consecutive hips receiving primary uncemented THA. All patients were operated using a standardized posterolateral approach. Patient demographics, including age, gender, ASA score and BMI were recorded. Surgery related factors including femoral head size, off-set restoration, leg length restoration and cup positioning were also recorded. All dislocations were identified. Logistical regression analysis was used to identify independent risk factors for dislocation
Findings / Results: Mean follow-up was 701, range (1-1674) days. 59 (4.5%) dislocations were identified. Hips with dislocations were significantly older (75.5 vs 67.9 years, p <0.001), had higher ASA score (p=0.03), significantly less anteverted acetabular components (14.1 vs 17.3, p=0.007). Increasing age (OR 1.06; 95%CI(1.02-1.10)), BMI < 25 (OR 2.65; 95%CI(1.26-5.57), BMI >30 (OR 2.47; 95%CI(1.07- 5.71)) and post operative shortening of the leg >5 mm (OR 2.54; 95%CI(1.02-6.33) were independent risk factors for dislocation
Conclusions: Placement of the acetabular component outside target zone defined as 30º-45° abduction and 5º-25° anteversion does not lead to increased risk for early dislocation following a primary THA performed with a posterolateral approach, however hips with dislocations tend to be less anteverted. Failing to restore or increase leg length lead also leads to increased risk for dislocations

No conflicts of interest reported

The impact of information of expected length of stay after primary total hip arthroplasty

128.

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Background: Background: Since 2002 patients having a total hip arthroplasty(THA) at Vejle Hospital have followed a fast- track concept. From 2009 to 2013 patients were informed of an expected length of stay (LOS) between 2 and 4 days. The information was given by all staff members involved in the patient treatment and care (surgeons, physiotherapists and nurses). In addition, the patients received the same information in a leaflet
Purpose / Aim of Study: Objectives: We aimed to investigate if a change in the preoperative information about expected LOS from 2-4 days to 1 day could reduce LOS without decreasing patient safety
Materials and Methods: Methods: A prospective comparative study on patients undergoing elective, primary unilateral THR was carried out.122 patients were consecutively included in the control group from April to August 2014. 122 patients were consecutively included in the intervention group from October to December 2014. All patients received the same standardized fast-track treatment and care. Both groups received identical information except the information related to the expected LOS: Expected LOS between 2-4 days (control group) and 1 day (intervention group). Patients in both groups stayed at hospital until they met the discharge criteria
Findings / Results: Results: Median LOS in the control and intervention groups was 2 (interquartile range (IQR), 1-3) and 1 (IQR 1-2) days ($p<0.001$). Within the first 90 days after THA, 7 (5.7%) patients from the control group and 10 (8.2%) patients from the intervention group were readmitted due to potentially surgery-related factors ($p=0.45$). No patient died within the first 90 days after surgery
Conclusions: Discussion: Our study shows that by changing the information regarding expected LOS, it is possible to reduce LOS without compromising patient safety within the first 90 days after primary THA

No conflicts of interest reported

One-year incidence of prosthetic joint infection in total hip arthroplasty: a cohort study with linkage of the Danish Hip Arthroplasty Register and Danish Microbiology Databases

129.

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Background: To examine the change in rate of prosthetic joint infections (PJI) following primary total hip arthroplasty (THA) during the period 2005-2014 and the antimicrobial resistance of the bacteria causing these infections.
Purpose / Aim of Study: To examine the change in rate of prosthetic joint infections (PJI) following primary total hip arthroplasty (THA) during the period 2005-2014 and the antimicrobial resistance of the bacteria causing these infections.
Materials and Methods: We identified a population-based cohort of patients in the Danish Hip Arthroplasty Register (DHR) who had primary THA and received their surgery in Jutland or Funen between 2005 and 2014. We followed the patients until revision, death, or up to one-year of follow-up. Data from the DHR were combined with those from microbiology databases, the National Register of Patients, and the Civil Registration System. We estimated the cumulative one-year incidence of PJI for two 5-year periods; 2005-2009 and 2010- 2014. The hazard ratio of PJI as a measure of relative risk after adjusting for multiple risk factors was calculated.
Findings / Results: Of 48,867 primary THAs identified, 1,120 underwent revision within one year. Of these, 271 were due to PJI. The incidence of PJI was 0.53% (95% CI: 0.44; 0.63) during 2005-2009 and 0.57% (95% CI: 0.49; 0.67) during 2010-2014. The adjusted relative risk was 1.05 (95% CI: 0.82; 1.34) for the 2010-2014 period versus the 2005-2010 period. The most common micro-organisms identified in the 271 PJI were Staphylococcus aureus (36%) and coagulase-negative staphylococci (33%); Antimicrobial resistance to beta-lactams and gentamicin did not change during the study period.
Conclusions: The risk of PJI within one-year after primary THA and the antimicrobial resistance remained unchanged during the 2005-2014 study period.

No conflicts of interest reported

5 year Radiostereommetry, Bone Mass Density, and Whole Blood Cr Co levels in Resurfacing (RHA), Large Diameter Head (LDH) and Standard THA. Results from Randomized studies

130.

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Background: Most Metal-on-metal hips were abandoned due to high clinical failure rates likely caused by metal wear products.
Purpose / Aim of Study: We report 5 year results of a randomized study of RHA, LDH-THA and THA with implant micro motion, Cr & Co ions and BMD. Links between outcome measures is investigated
Materials and Methods: 19 RHA 17 THA and 15 LDH-THA for 5 year follow-up All were followed with Bone mass density RHA and THA had prospective Co and Co ions, LDH-THA only at 5 y. Marker based RSA of both RHA components. Cup only for LDH-THA. We used a total translation measure: TT= Đã (x2+y2+z2). Data collected at baseline, 8 w, 6 m 1, 2 and 5 y Statistical tests: Pearson correlations. ANOVA and MANOVA
Findings / Results: Presented as: median (mean (s.e)) and quartiles RSA: The 5 y TT results were 1.1(1.3 (0.2))1.0 to 1.7 mm for the LDH-THA Cup, 0.6 (0.7(0.1)) 0.3 to 0.8 mm for the RHA Cup and 0.5 (0.8(0.3)) 0.3 to 0.6 mm for the RHA head. The migration between the cups differed at 5 but not at 2 years ($p<0.05$) Co ions were; RHA: 1.1(2.8 (0.7)) 0.8 to 4.9, THA: 0.2 (0.4 (0.1)) 0.1 to 0.4 and LDH-THA: 1.2 (1.4(0.3)) 0.7 to 2.9 ppb. Similar levels for Cr. LDH-THA and RHA ions did not differ at 5 year, Co was higher than THA ($p<0.01$) We found better preservation of the acetabular BMD in the LDH-RHA group ($p<0.05$) and an advantage of the RHA in the femoral Gruen zones 6 and 7 ($p<0.01$) TT migration correlated negatively with BMD in the femoral collum and proximal femur ($p<0.05$), but had no link to acetabular BMD or metal ions
Conclusions: In contrast to registered revision rates, we found significantly larger movement for the LDH-THA cup than the RHA cup. Despite this, the LDH-THA cup maintained the acetabular BMD best at 5 years. Movement of the implant may adversely affect the femoral BMD, but - in this study - does not increase metal ion release

No conflicts of interest reported

Posterior or anterolateral approach in hip joint arthroplasty - impact on frontal plane moment. 131.

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Background: Anterolateral (AL) surgical approach in hip joint arthroplasty (HJA) necessitates division of the hip abductor muscle complex, which may compromise normal postoperative gait observed in the frontal plane moment (FPM).
Purpose / Aim of Study: To compare FPM during early and late stance after HJA by either AL or posterior (POST) surgical approach, and clarify if pain is a potential cause of decreased FPM.
Materials and Methods: 28 patients were prospectively included and randomized to AL (ad modum Watson) or POST (ad modum Moore) surgical approach with HJA. 3D gait analysis (Vicon) was performed before surgery (BL) and 3 and 12 months postoperative. Ground reaction force (GRF) was sampled at 2000 Hz using an OR6-7 AMTI force plate (FP). Peak GRF was extracted for early and late stance, respectively, after which FPM and lateral trunk inclination (TI) corresponding to peak GRF was defined. Patients self-reported pain (VAS) was obtained during clinical examinations related to the gait analysis. The overall difference between surgical approaches was tested with a linear mixed model.
Findings / Results: An overall different effect of surgical approach on FPM for the affected leg was found during early stance (p=0.006). From BL to 3 months, average FPM decreased by 125 Nmm/kg in the AL group (CI -213;-37.4), while no significant change of FPM was seen in the POST group (CI -81.6;78.4). From 3 to 12 months, the change of FPM in the AL group was not significant (CI -34.2;148), whereas FPM in the POST group increased by 136 Nmm/kg (CI 56.3;216). VAS scores did not differ between approach groups (p=0.69).
Conclusions: Hip FPM during early stance was decreased after HJA utilizing AL compared to POST surgical approach. No effect was found during late stance phase. There was no indication of postoperative pain being the cause of decreased FPM in early stance.

No conflicts of interest reported

Intraoperative and early postoperative periprosthetic femoral fractures after total hip arthroplasty

132.

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Background: The use of uncemented fixation in total hip arthroplasty (THA) is increasing. Register studies have suggested an increased risk of revision of uncemented implants due to early periprosthetic femoral fractures.
Purpose / Aim of Study: To describe the incidence, consequences and potential risk factors associated with intra- and early postoperative (¡Ü 90 days) periprosthetic femoral fractures after THA.
Materials and Methods: Observational prospective study in 8 dedicated high-volume centers from February 2010 to November 2013. 90- days follow-up from the Danish Patient Registry and patient records. Intraoperative information from the Danish Hip Arthroplasty Register and surgical notes.
Findings / Results: In 7169 primary THA, 5482 (76.5%) were performed using uncemented femoral components. The total incidence of periprosthetic femoral fractures ¡Ü 90 days postoperatively was 2.1% (n=150). 70 (1.0%) fractures were intraoperative (46 required osteosynthesis and 14 limited weight bearing), 51 (0.7%) postoperative fractures occurred without trauma (42 re-operated) and 29 (0.4%) were postoperative fall-related fractures (27 re-operated). 134 (2.4%) fractures were found in uncemented vs 16 (0.9%) in cemented femoral components (p<0.001). 1674 (55.0%) uncemented femoral components were implanted in patients >70 years with a fracture incidence of 3.3% (n=56) vs 0.8% (n=11) in cemented components (p<0.001). Uncemented femoral component (OR 4.7, p<0.001), medically treated osteoporosis (OR 3.9, p<0.001) and female gender (OR 1.9, p=0.027) were associated with increased risk of periprosthetic femoral fracture in patients >70 years when analysed using multiple logistic regression.
Conclusions: Uncemented femoral components may increase the risk of early periprosthetic femoral fractures, especially in the elderly, osteoporotic and female patients.

No conflicts of interest reported

Eighteen-year trends in comorbidity and subsequent mortality in total hip or knee arthroplasty patients: A Danish nationwide, population-based cohort study, 1996-2013

133.

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Background: The incidence of total hip and knee arthroplasty (THA and TKA) has increased over the last decades. This increase may be explained by the aging of the population and an improved safety of the procedures, which has expanded the indications for surgery. Patients with several comorbid conditions are now considered suitable candidates for THA and TKA.
Purpose / Aim of Study: We examined changes in comorbidity over time and their impact on mortality following primary THA and TKA in patients with OA.
Materials and Methods: We used the Danish Arthroplasty Registers to identify THA and TKA patients from 1996 to 2013. From administrative databases we collected data on comorbidities, which were used to calculate the Charlson Comorbidity Index. Patients were divided into four comorbidity groups (none, low, moderate, high). We calculated the relative risk (RR) of mortality within 90 days post-surgery with a 95% confidence interval (CI) stratified by year of surgery.
Findings / Results: In total, 99,886 THAs and 63,718 TKAs were included. The proportion of THA patients with low, moderate and high comorbidity burden increased 3-4% during the period of interest. Compared to patients with no comorbidity, THA patients with low, moderate and high comorbidity burden had an RR of 90-day mortality of 1.9 (CI: 1.6-2.4), 1.9 (CI: 1.4-2.5), and 3.3 (CI: 2.6-4.2), respectively. Similar increases in proportions and RRs were observed in TKA patients with moderate and high comorbidity burden.
Conclusions: The number of THA and TKA procedures performed on patients with comorbidities increased over the past 18 years. The mortality risk was dependent of the comorbidity burden. Patients with moderate or severe comorbidity burden had an increased risk of dying within 90 days post-surgery regardless of year of surgery.

No conflicts of interest reported

The impact of age on patient experienced outcome after total hip and knee arthroplasty

134.

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Background: Hip and knee arthroplasty are common surgical procedures with respectively 9.500 and 8.500 operations performed annually in Denmark. These operations are considered effective and successful in relation to complications, mortality and prosthesis survival. However using patient reported outcome measures up to 20 % of the patients are not satisfied with their outcome of the operation. To be able to act on this, it is important to find out why some patients experience impaired outcome after operation.
Purpose / Aim of Study: The purpose of the study was to investigate the impact of age on health related quality of life (HRQoL) after total hip athroplasty (THA), total knee athroplasty (TKA) and unicompartmental knee arthroplasty (UKA).
Materials and Methods: A cohort study was conducted with follow-up at 3-4 and 12 months. Data were collected from September 2008 to December 2013. 1283 THA, 736 TKA and 257 UKA were available for analysis. HRQoL was measured using the EQ-5D. Analysis were carried out with multiple linear regression and adjusted for relevant variables available in data.
Findings / Results: A significant positive association was found between age and HRQoL outcome for patients operated with THA at both 3-4 and 12 months of follow-up. A clinically relevant change was achieved with an increase of age at approximately ten years. Estimates for TKA and UKA were not found statistically significant regarding the association between age and HRQoL. However no statistically significant difference was found between estimates for THA, TKA and UKA.
Conclusions: Increasing age was associated with increasing HRQoL outcome for patient operated with THA. This association was not found for TKA and UKA. Contrary to expectations increasing age did not seem to have a negative impact on HRQoL outcome for any of the three types of operations.

No conflicts of interest reported

Differences in characteristics and patient-reported questionnaire responses in patients who choose non-surgical versus surgical treatment for severe hip osteoarthritis

135.

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Background: Preoperative patient characteristics may influence patient choice for participating in RCT's.
Purpose / Aim of Study: This study aimed to compare patient characteristics, level of pain, physical function and joint space width in patients with severe hip osteoarthritis (OA) who accepted or refused to participate in a RCT.
Materials and Methods: In this prospective cohort study a total of 137 patients with primary hip OA were asked to choose between surgical or non- surgical treatment. We then compared the characteristics of each patient cohort (demographics, pain level and duration, analgesic use, exercise habits), the radiographic hip OA state and their responses to Hip dysfunction and Osteoarthritis Outcome Score (HOOS, 0-100) and European Quality of Life Scale (EQ-5D-5L) questionnaires.
Findings / Results: The between-group HOOS scores were significantly different in three out of the five HOOS subscales analyzed; HOOSpain 6.1 (95% CI: 0.3 to 12.5), HOOSADL 8.3 (95% CI: 2.3 to 14.4) and HOOSsport/rec 8.6 (95% CI: 3.2 to 13.9) with higher scores recorded in the non-surgical patient cohort indicating less symptoms. Overall health status (EQ-5D-5L) showed surgical patients had more problems in all the dimensions except for the EQanxity/depression responses. The surgical patients had significantly reduced joint space width (1.2 ± 1.0 mm vs. 1.8 ± 1.2 mm, p = 0.004) and both cohorts had values below the defined 2 mm cut-off (Jacobsen et al.).
Conclusions: Patients, who choose surgical treatment had preoperatively more pain, reduced physical function, lower health status and joint space width compared with patients who choose non-surgical treatment.

No conflicts of interest reported

Treatment of infected Exeter prosthesis with two stage revisions and cement in cement implantation

136.

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Background: The standard treatment of chronic PJI in THA is removal of the alloplastic material together with the cement.
Purpose / Aim of Study: The purpose of this study was to examine the post-operative outcome of 8 patients, treated from 2012 until 2016, which had prosthetic joint infection(PJI) from their primary cemented THA with Exeter prosthesis, were 2 stage revisions were performed and the cement mantle in the femoral canal conserved. A positive diagnosis of late PJI was considered when 2 or more biopsies revealed a positive bacterial count.
Materials and Methods: Clinical and operative data were evaluated retrospectively. Age, sex, time from primary hip to revision, time from 1st to 2nd stage revision, followup and results of microbiological cultures was registered. The median age at the firsts tage revision procedure was 74(68 to 78). The median followup period was 14 months(12 to 40). At followup a radiological evaluation together with a clinical evaluation of pain and ability to walk, hip disability and osteoarthritis outcome score was obtained. Complications concerning soft tissue and antibiotic treatment was also registered. After the 1st stage revision antibiotics were administrated. The 1st 2 weeks intravenously followed by at least 4 weeks of per oral treatment. Patients had to be infection free before the 2nd stage revision for 4 to 6 weeks.
Findings / Results: From the 8 patients treated from 2012 until 2016, 7 were treated with successful eradication of the PJI, 1 required one soft tissue revision followed by 5 weeks of antibiotic treatment after the 2nd stage revision and one died from cardiac failure after the 1st stage revision.
Conclusions: 2stage revision with retention of femoral cement mantle in treatment of infected THA is an effective methood of treating infected cementet THA that show promising results.

No conflicts of interest reported

Digitally reconstructed radiograph based radiostereometric analysis: A novel method validated on the hip joint

137.

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Background: Dynamic radiostereometric analysis (dRSA) can track 3D in-vivo movements of bones or implants, but analysis is time consuming. Current marker based RSA (MM) requires bone markers to be inserted and traditional model based RSA (MBM) requires models to be manually matched on each radiograph. We propose a novel digitally reconstructed radiograph based method (DRR) for automated analysis of RSA recordings of the hip joint.
Purpose / Aim of Study: To evaluate precision of DRR compared with MBM (MM as gold standard).
Materials and Methods: Seven human cadaveric hips were CT- scanned and preprocessed for analysis. Tantalum beads were inserted in the femur and pelvis. dRSA images were acquired at 5 fr/sec during flexion, adduction and internal rotation. All images were analyzed by DRR, MBM and MM. Migrations were calculated with respect to MM in 6 degrees of freedom. Precision was assessed as systematic bias (mean difference) and random variation (Pitman's test) with respect to MM as gold standard.
Findings / Results: In total 288 dRSA images were analyzed. Systematic bias for MBM and DRR with respect to MM in translations (Δ<0.018mm) and rotations (Δ<0.009°) were approximately zero and no difference between MBM and DRR (p>0.46) was found. Random variation was lower (p<0.00) in all degrees of freedom for DRR compared to MBM. For the femur translations DRR had 40% better (Δ0.07mm) precision, and for femur rotations DDR precision was 60% better (Δ0.25°) compared to MBM. For the pelvis translations DRR had 6 fold better (Δ0.40mm) precision, and for pelvis rotations DDR had 2 fold better precision (Δ0.34°) compared to MBM.
Conclusions: DRR is a novel method for analysis of dRSA and can be used clinically for kinematic based diagnostic studies. It is automated, noninvasive, not user-dependent and more precise in comparison with MBM for analysis of the hip joint.

No conflicts of interest reported

Introduction of open reduction for severe Slipped Capital Femoral Epiphysis using the sub capital realignment procedure after surgical dislocation of the hip joint

138.

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Background: Slipped Capital Femoral Epiphysis (SCFE) is a condition that affects the hips in older children and adolescents. Current treatment is primarily based on in situ fixation using a single cannulated screw. The sub capital realignment osteotomy of the neck of femur for severe SCFE is gaining increasing acceptance. Anatomical realignment is performed after surgical dislocation of the affected hip joint. The procedure carries a risk for inducing avascular necrosis of the femoral head

Purpose / Aim of Study: To present early experience with a new setup for treating severe SCFE using new techniques for osteotomies of the proximal femur at Department of Children's Orthopaedics, Aarhus University Hospital

Materials and Methods: Two osteotomies were performed in the following cases; severe acute on chronic SCFE in a 10 year girl and severe chronic SCFE in a 12 year girl. The sub capital realignment procedure was performed in both cases as described above. Perfusion of the femoral head was documented by either SPECT scan (Bonescan) or intraoperative monitoring of blood flow in the femoral head using a Codman Intra Cranial Pressure (ICP) probe

Findings / Results: The 10 year old girl, who was treated for severe acute on chronic SCFE had no AVN on postoperative SPECT scan. She was fully weight bearing 3 months after surgery without pain and ROM was almost restored at this stage. The final case underwent surgery 13 June 2016. We were able to perform intraoperative monitoring of blood flow in the femoral head using the ICP probe during the procedure. The femoral head was perfused throughout the procedure

Conclusions: These are early positive results of a new surgical procedure. Internationally there is a trend towards restoration of the hip anatomy for severe SCFE. We recommend that further use of this surgical procedure takes place in a national prospective study

No conflicts of interest reported

Accuracy of custom pelvic tumor resection and reconstruction with patient-specific resection guides and matching implant scaffolds

139.

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Background: Adequate resection and reconstruction of pelvic tumors can be very challenging. Complex anatomy and limited exposure can make safe and appropriate placement of resection lines difficult and subsequent endoprosthetic reconstruction demanding. Recent technological advances now permit virtual planning and production of complex patient- specific resection guides and patient- specific implant scaffolds prior to the intervention.
Purpose / Aim of Study: To report our experience with 5 cases of periacetabular tumors where resection and reconstruction were accomplished utilizing pre-operatively manufactured, specifically designed resection guides and corresponding composite implants consisting of a precisely matching and defect specific titanium scaffold as well as integrated plates to provide for immediate stable fixation and subsequent opportunity for ingrowth into the residual bone.
Materials and Methods: Accuracy for each osteotomy plane was determined by direct intraoperative measurement and independent assessment of histopathological margin status. VIrtual analysis of postoperative CT scans was performed in two cases.
Findings / Results: We report our experience with 5 cases of periacetabular tumors where resection and reconstruction were accomplished utilizing pre-operatively manufactured, specifically designed resection guides and corresponding composite implants consisting of a precisely matching and defect specific titanium scaffold as well as integrated plates to provide for immediate stable fixation and subsequent opportunity for ingrowth into the residual bone.
Conclusions: This technology appears to afford high intraoperative accuracy, surgeon confidence and decreased operative time and is certain to develop into a promising treatment option for complex pelvic tumors in the future.

Conflicts of Interest
Werner Hettwer; BONESUPPORT AB

Life threatening PVL-positive MRSA sepsis with tibial osteomyelitis and septic arthritis of the knee in a previously healthy 13-year-old boy: a case report

140.

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Background: The incidence and severity of PVL-positive MRSA infections are increasing and can cause patient hospitalization with high mortality and morbidity, and are difficult to treat.
Purpose / Aim of Study: To share our patient case to increase awareness and understanding of severe infections in interdisciplinary patients and improve the course of treatment
Materials and Methods: We describe the first case of PVL-positive MRSA septicemia with bilateral pneumonia, arthritis of the knee and osteomyelitis of the tibia in a child in Scandinavia.
Findings / Results: We describe our interdisciplinary treatment efforts with frequent surgical debridement, choices of antibiotics and radiological investigations and interpretations, which in our case resulted in a healthy patient without complications, a favorable outcome unlike those earlier described in the literature.
Conclusions: This case underlines the necessity of increased focus and close interdisciplinary cooperation on children with septic arthritis and osteomyelitis, especially in cases with initial treatment failure, and illustrates the paramount importance of surgical debridement.

No conflicts of interest reported

Controversies in imaging measurements and normal values of Wibergs CE angle in the hip of young adults

141.

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Background: One of the most commonly required radiological measurements of the hip is the Wiberg center edge (WCE) angle. In the literature and by national orthopedic hip surgeons it has been claimed, that CE angles < 25° represent hip dysplasia.
Purpose / Aim of Study: To obtain evidence based national recommendations of measurement technique and normal values of the CE angle.
Materials and Methods: Literature review of studies regarding the normal values of the WCE angle; also, assessment of references used in the literature justifying recommendations of cut-off WCE angels of 25°.
Findings / Results: Two different landmarks on the acetabulum have been used for measurements. The most lateral edge of the acetabulum, is giving the lateral center edge (LCE) angle and the most lateral point of the acetabular sourcil, is giving the original WCE. The LCE angle has wrongly been referred to Wiberg. Based on a small material, Wiberg suggested a cut-off value of 20°. Using the LCE angle, several studies have confirmed normal cut-off values of 20°. Few have measured the WCE angle in a larger population of normal young subjects. The best documented material consists of 2,038 19-year-old Norwegians and the 2.5 percentile value for the WCE angle was 18° and 17° in males and females respectively. Using a cut-off angle of 25° for the WCE angle more than 25% of the Norwegian population was calculated to have dysplastic hips. In most publications using a cut-off angle of 25° in clinical studies of hip dysplasia, hip impingement and osteoarthritis there is a reference to Wiberg or references, which in second hand referred to Wiberg.
Conclusions: The WCE angle indicating hip dysplasia is below 17° - 19°. The commonly suggested cut-off value of 25° is not confirmed scientifically. Adequate measurements of the WCE angle require knowledge about normal imaging anatomy and pitfalls.

No conflicts of interest reported

Pain reduction after periacetabular osteotomy in the treatment of symptomatic acetabular hip dysplasia.

142.

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Background: Periacetabular osteotomy (PAO) corrects underlying anatomical anomalies, reduces pain and may postpone onset of osteoarthritis in patients with symptomatic hip dysplasia. Existing evidence is based on immediate post-operative pain levels, but knowledge on pain levels corresponding to time after PAO is scarce and the association between post-operative pain levels and the degree of anatomical correction is unknown.
Purpose / Aim of Study: To examine the pain level related to different time points before and after surgery using VAS-score. Furthermore, to investigate the association between post-operative pain levels and degree of anatomical correction.
Materials and Methods: Prospective data on 426 patients operated from June 2012 to November 2015 were analysed. 285 were included. Patients were invited to answer standardized questionnaires pre-operatively, at 6 months and 2 years post-operatively. VAS-score at rest and at activity were applied as pain measurements. Paired t-tests were applied to the pre- and postoperative pain levels, and multiple regression analysis to the association between postoperative pain levels and degree of anatomical correction.
Findings / Results: We found a significant reduction of pain from pre-operative levels compared to 6 months post-operatively both at rest from 36.30 to 13.13 by 23.16 points [95% CI 20.31:26.02] ($p<0.000$) and during activity from 71.24 to 38.02 by 33.22 points [95% CI 29.50:36.93]) ($p<0.000$). No further reduction in pain was found from 6 months to 2 years follow-up. There was no significant association between post-operative pain levels and degree of anatomical correction ($p=0.39$).
Conclusions: Patients undergoing PAO can expect a significant reduction in pain both at rest and activity as early as 6 months after PAO surgery. No further pain reduction may be expected the following 2 years after surgery.

No conflicts of interest reported

Efficacy of ultrasound-guided Saphenous and Obturator Nerve Blocks after primary Knee Arthroplasty. A double-blind, randomized clinical study

143.

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Background: Pain treatment following TKA often combines systemic analgesic with peripheral nerve Blocks and local infiltration analgesia (LIA).
Purpose / Aim of Study: Wee hypothezed that a single-shot, low-volumen saphenous nerve block would improve pain and ambulation scores and reduce opioid consumption compared with placebo Blocks without LIA, and that addition of an obturator (posterior branch) nerve block would potentially confer additional benefits
Materials and Methods: 75 patients were randomized in a 1:1:1 ratio to either an ultrasound-guided saphenous nerve block (S Group), a combined saphenous/obturator nerve block (SO Group), or placebo Blocks using isotonic saline (P Group).The primary outcome was pain at 45 degree passive flexion of the knee joint in the first 24 hours after surgery. Secondary autcomes included pain at rest, morphine demand, nausea and vomiting, ambulation scores, length of stay. The nerve Blocks was add-ons to a regimen consisting of naproxem, gabapentin, zolpidem and morphine iv PCA.
Findings / Results: 74 patients were included. The S Group had less pain on movement ($p<0.001$) compared to placebo. This was replicated in the SO Group ($p<0.05$). Pain at rest and morphine demand was significantly reduced in the S Group in the first 6 hours, but the SO Group was similar to the placebo Group. Althoug nonsignificant, patients were discharged earlier in the active Groups ($p=0.019$ and $p=0.154$). There were no difference in ambulation between Groups. 28 patients had in- hospital complications, 9 of which were severe (Pneumonia, opioid intox, GI bleeding)
Conclusions: The addition of a low-volumen saphenous nerve block significantly reduced pain on movement, pain at rest and opioid demand after primary TKA, but failed to offer benefits for ambulation and length of stay. The value of adding an obtorator block remains questionable

No conflicts of interest reported

Supervised neuromuscular exercise prior to hip and knee replacement: 12-month clinical effect and cost-utility analysis alongside a randomised controlled trial

144.

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Background: Few studies on cost-effectiveness of exercise intervention in osteoarthritis
Purpose / Aim of Study: To analyse 12-month clinical effect and cost-utility of supervised neuromuscular exercise prior to total hip replacement (THR) and total knee replacement (TKR).
Materials and Methods: The study was conducted alongside a randomised controlled trial including 165 patients randomised to standard THR or TKR with or without a twice weekly, 8-week preoperative supervised neuromuscular exercise program (Clinical Trials registration no.: NCT01003756). Clinical effect was measured with Hip disability and Osteoarthritis Outcome Score (HOOS) and Knee injury and Osteoarthritis Outcome Score (KOOS). Quality adjusted life years (QALYs) were based on EQ-5D-3L and Danish preference weights. Resource use was extracted from national registries and valued using standard tariffs (2012-EUR). Incremental net benefit was analysed to estimate the probability for the intervention being cost effective for a range of threshold values. A health care sector perspective was applied
Findings / Results: HOOS/KOOS quality of life [8.25 (95% CI, 0.42 to 16.10)] and QALYs [0.04 (95% CI, 0.01 to 0.07)] were statistically significantly improved. Effect-sizes ranged between 0.09-0.59 for HOOS/KOOS subscales. Despite including an intervention cost of Đ326 per patient, there was no difference in total cost between groups [Đ132 (95% CI -3942 to 3679)]. At a threshold of Đ40,000, preoperative exercise was found to be cost effective at 84% probability
Conclusions: Preoperative supervised neuromuscular exercise for 8 weeks was found to be cost-effective in patients scheduled for THR and TKA surgery at conventional thresholds for willingness to pay. One-year clinical effects were small to moderate and favoured the intervention group, but only statistically significat for quality of life measures

No conflicts of interest reported

Allograft usage results in higher re-revision rate for revision anterior cruciate ligament reconstruction

145.

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Background: Allograft (AL) for anterior cruciate ligament reconstruction (ACL-R) can result in increased failure rates due to inferior biomechanical properties compared to autograft (AU) for primary ACL-R. AL is primarily used for revision ACL-R and the outcome of AL usage is poorly investigated. The Danish ACL Reconstruction Registry (DKRR) has monitored the development in ACL reconstructions since 2005.
Purpose / Aim of Study: This registry study compares clinical outcomes and re-revision rates for revision ACL-R using AL or AU.
Materials and Methods: 1619 revisions ACL-R were identified in the DKRR. These were 1315 AU procedures and 221 AL procedures. Clinical outcome after 1 year was reported using the Knee Injury and Osteoarthritis Outcome Score (KOOS), as well as Tegner function score (TFC) and objective knee stability (OKS) measurement using instrumented sagittal knee laxity side to side difference. Failure was determined as re-revision after minimum two years follow-up.
Findings / Results: At one-year follow-up the KOOS subscores for (symptoms, pain, ADL, Sport, QOL) were 67, 76, 84, 49, 46 for AL and 67, 78, 84, 51, 48 for AU with no difference between groups. OKS was 1,9±2mm for AL and 1,7±1,9mm for AU. The re-revision rate was significantly higher for AL of 12,7% compared to 5,4% for AU.
Conclusions: In this observational population-based study the re-revision rate was 2,3 times higher for AL compared to AU. However, subjective clinical outcome and knee stability were not inferior for AL patients, these results might indicate that AU is a safer graft choice for revision ACL-R.

No conflicts of interest reported

High two-year revision rates after primary knee arthroplasty – causes and implemented interventions for improvement

146.

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Background: Data from the Danish Knee Arthroplasty Register (DKR) has revealed high 2-year revision rates after primary knee arthroplasty performed in 2012 and 2013 in Copenhagen University Hospital Bispebjerg.
Purpose / Aim of Study: To investigate causes of early revisions in order to implement a strategy for improvement of outcome after primary knee arthroplasty.
Materials and Methods: A retrospective single center investigation of all primary knee arthroplasties performed in 2012 and 2013. During the first 15 months the Zimmer NexGen CR-Flex (n=225) was used as the standard primary knee prosthesis and in the remaining 9 months the DePuySynthes SIGMA (n=158) was used. 17 uni- compartmental prosthesis were implanted.
Findings / Results: 197 primary knee arthroplasties were performed in 2012 and 21(10.7%) were revised within 2 years, whereas 203 were performed in 2013 and 22 (10.8%) were revised within 2 years. The main cause of early revision was instability (n=20) resulting in 10 liner exchanges, 3 revisions of femoral component to posterior stabilized and 7 total revision procedures. 6 of the instability cases were fall-related and the remaining 14 were surgical procedure related. Other main causes of early revision were aseptic loosening of the tibial component (n=10) and secondary insertion of patella component (n=4).
Conclusions: Some of the early revisions (liner exchanges) due to instability could be explained by the learning curve after change of the standard prosthesis and a decrease in these revisions are expected with an increased intraoperative focus on balancing. The revisions due to aseptic loosening have led to a change in cementation technique of the tibial component. Finally, patella resurfacing is now performed as a standard procedure. With implementation of these interventions the early revision rate is expected to decrease significantly.

No conflicts of interest reported

The Danish Hip Arthroscopy Registry: Baseline patient reported outcomes and surgical characteristics

147.

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Background: The Danish Hip Arthroscopy Registry (DHAR) started in 2012 to assist in quality assurance of hip arthroscopy in public and private hospitals.
Purpose / Aim of Study: To describe selected patient reported outcomes (PROMs) at baseline and surgical characteristics.
Materials and Methods: Patient reported data includes the Copenhagen Hip and Groin Outcome Score (HAGOS) the international Hip Outcome Tool – short version (iHOT12), both scoring 0-100, worst to best. Activity level was assessed by the Hip Sports Activity Scale (HSAS). Surgical characteristics include: hip operated on, reoperations, duration of surgery, alpha angle, labrum lesions and cartilage lesions according to the ICRS and Becks classifications.
Findings / Results: As of March 2016, 2508 patients were registered having received hip arthroscopic surgery. Mean age was 37 (range 9-80), 49% were females and 4% were elite athletes while 70% did no or minimal physical activity. From February 2012 to March 2016, a total of 544 (22%) patients were registered having received more than one operation of which 443 (18%) were reoperations. The right to left ratio was 1.17:1. Patient reported outcomes were registered by 1683 patients (67%) and 43 did not consent to entering data. Mean HAGOS subscales were; Pain 49 (SD=19), Symptoms 51 (18), ADL 48 (24), Sport/rec 65 (23), Physical Activity 79 (24) and QoL 71 (16). Mean IHOT12 was 49 (22). Mean duration of surgery was 83 minutes (range 33-145), mean alpha angle 66, 87% had labral lesions, 29% had cartilage lesions according to ICRS and 98% according to Becks classifications.
Conclusions: Currently 70% of operated patients provide data to the DHAR. The population is young to middle-aged, has on average moderate pain and is largely physically inactive at baseline. The majority of patients have labral and cartilage lesions related to the acetabulum.

No conflicts of interest reported

Agreement and reliability of acetabular Bone Mineral Density measurements in total hip arthroplasty using Single and Dual energy computed tomography with 3-dimensional segmentation

148.

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Background: Periprosthetic bone loss is considered a predictor of aseptic loosening of the acetabular component in total hip arthroplasty. However, no studies have shown this association. This may be explained by imaging methods used. Dual energy CT (DECT) has previously shown better delineation of the interface between bone and prosthesis and may be beneficial in quantitative analysis of bone loss close to the implant as compared to single energy computed tomography (SECT).
Purpose / Aim of Study: To test the agreement and reliability of bone mineral density measurements (BMD) in close proximity of the acetabular cup using SECT and DECT images and 3D segmentation software.
Materials and Methods: 12 un-cemented and 12 cemented cups were inserted in porcine hip specimens ex vivo. A femoral stem was attached to each specimen and imaging was performed with SECT and DECT. The specimens were repositioned and scans repeated to obtain double measurements. For each scan BMD was measured in a hemispherical volume around the acetabular cup using in-house segmentation software.
Findings / Results: In the uncemented concept mean BMD difference between the double measurements in SECT was 8 mg/cm3 (p=0.64) and 2 mg/cm3 in DECT (p=0.596). ICC was 0.90 for SECT and 0.91 for DECT. In the cemented concept the differences were 41 mg/cm3 (p=0.055) and 11 mg/cm3 (p=0.013), respectively, and ICC was 0.74 for SECT and 0.91 for DECT. In both concepts the Bland Altman limits of agreement were wider in SECT (uncemented: -95 to 111; cemented: -107 to 189) compared with DECT (uncemented: -28 to 23; cemented: -20 to 42).
Conclusions: There were no statistically significant reliability differences between SECT and DECT, but results suggest that the agreement of DECT is better than SECT, and both scan modes perform better in the un-cemented concept compared with the cemented concept.

No conflicts of interest reported

Assessment of pelvic tilt and acetabular parameters in patients with retroversion of the acetabulum using conventional X-rays and the EOS 2D Imaging System.

149.

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Background: Retroversion of the acetabulum is a subgroup within hip dysplasia (HD). For diagnosing several X-rays of the pelvis are required. The EOS 2D Imaging System may be an option. To our knowledge no studies have compared EOS-images of the pelvis with conventional radiographs in a population with retroversion of the acetabulum.
Purpose / Aim of Study: 1) To compare conventional AP-radiographs and EOS of the pelvis with regard to pelvic tilt and acetabular parameters describing acetabular retroversion. 2) To evaluate changes in these parameters when changing from standing to sitting position using EOS.
Materials and Methods: A cohort of 34 subjects with retroversion of the acetabulum on standing AP- radiographs, were included. Two EOS- images of the pelvis in standing and sitting position were obtained. Radiographs and EOS-images were all assessed for radiographic signs of retroverted acetabulum (cross-over-sign, posterior-wall- sign, ischial-spine-sign), center-edge-angle < 25°, acetabular-index > 10°, pelvic tilt, rotation and sagittal pelvic parameters.
Findings / Results: 1) Standing AP-radiographs versus EOS- images showed a significant difference in AP-pelvic tilt due to magnification ($p<0001$). No difference in any of the other parameters between the two modalities were found. 2) EOS-images showed that the pelvis tilted backwards when subjects were repositioned from standing to sitting. The presence of radiographic signs of retroversion was significantly reduced ($p<0.0001$) but no significant difference in number of patients with center-edge-angle < 25° or acetabular- index > 10° between the two positions was seen.
Conclusions: Standard X-rays and EOS showed no significant difference. Using EOS pelvic tilt changed significantly from standing to sitting. In perspective: EOS may have the potential to be used to assess acetabular orientation and HD.

No conflicts of interest reported

Substrate and Surface Guidance of Human Chondrocytes In Vitro

150.

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Background: The nature of the surface on which chondrocytes are cultured ex vivo plays an important role for proliferation and differentiation in the field of cartilage regeneration.
Purpose / Aim of Study: We aimed to investigate the behaviour of human chondrocytes on different substrates and surface chemistry.
Materials and Methods: Human chondrocytes were isolated from cartilage biopsies collected from 3 patients. Chondrocytes were seeded with 2,500 cells/cm2 on polystyrene (rigid) or polydimethylsiloxane (soft) with surface chemistry of oxygen plasma (PL) or fibronectin (FN) and cultured for 1, 4, 7, and 10 days. Proliferation, cell viability, cell size, and gene expression were performed using methylene blue staining, XTT assay, actin staining, and RT-qPCR, respectively.
Findings / Results: We found similar proliferative capacity over time for all substrates and surface chemistry. Cell viability was significantly higher on the polystyrene compared with PDMS. For surface chemistry, PL and FN, cell viability was highest in chondrocytes cultured on FN surfaces. The cytoskeleton of chondrocytes on FN was associated with chondrocyte size > 2000 µm2 compared with PL where chondrocyte sizes were < 1000 µm2. For substrates, we found significantly higher expression of SOX9 and COL2A1 in chondrocytes cultured on PDMS compared with polystyrene. For surface chemistry, chondrocytes cultured on PL had significantly higher SOX9, COL2A1, ACAN expression compared with FN.
Conclusions: Cultivation of human chondrocytes on soft PMDS coated with PL resulted in chondro- inductive conditions having the lowest cell viability, smallest cell size, and the highest expression of cartilage specific genes. Constituting further investigations aiming at elucidating the role of a softer culture substrate when culturing human chondrocytes ex vivo.

No conflicts of interest reported

Strength testing following anterior cruciate ligament reconstruction. A prospective cohort study investigating redundancy of tests.

151.

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Background: Restoration of muscle strength after anterior cruciate ligament (ACL) tear is considered important in order to safely return to sport, but comprehensive strength testing protocols are often very time-consuming.
Purpose / Aim of Study: The purpose of the study was to improve the efficiency of a strength testing protocol by investigating if some tests are redundant and could be omitted when evaluating outcomes at 6 and 12 month following ACL reconstruction.
Materials and Methods: The study was performed as a prospective cohort study following the STROBE guidelines. The following 4 strength tests were performed using a HUMAC NORM Dynamometer: 1. Isokinetic concentric strength at 60°/s, 2. Isokinetic concentric strength at 180°/s, 3. Isometric strength, and 4. Isokinetic eccentric strength at 60°/s. The redundancy of strength tests was investigated by fitting a linear regression model to the data. An R-squared value above 0.75 was chosen to indicate redundancy.
Findings / Results: The cohort consisted of 123 patients (74 male, 49 female) who completed 6 and 12 months follow up after ACLR. The comparison of concentric peak force at 60deg/s and 180deg/s showed redundancy at both 6 and 12 months when looking at the limbs separately (R2=0.775 to 0.861). The comparison of isometric and isokinetic peak force and concentric and eccentric peak force often showed borderline redundancy (R2=0.574 to 0.806). No analyses of limb symmetry index showed redundancy.
Conclusions: At 6 and 12 month following ACL reconstruction little extra information was generated by testing concentric strength at both 60deg/s and 180deg/s, as the measurements showed considerable redundancy with one explaining approximately 90% of the other. To achieve a more time-efficient testing protocol only one concentric speed should be included.

No conflicts of interest reported

Possible causes for lack of 1-year follow-up in national ACL-registry

152.

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Background: Arthroscopic reconstruction of the anterior cruciate ligament (ACL-R) is an established treatment for rupture of the ACL. In Denmark there are more than 2200 primary ACL-R each year. At the 1-year postoperative follow-up one performs a series of measurements in order to assess the progress of the patients and their symptoms. To have a uniform follow-up, all centres report to the Danish National ACL- registry. A quality indicator is 1-year follow- up and the cut-of is a 60% minimum. Many centres, including HEH, have problems living up to this indicator. At HEH the numbers were 52,9% in 2012 and 63,0% in 2013.
Purpose / Aim of Study: The aim of this study is to examine the 1- year follow-up at HEH and possible reasons for lack of achieving this goal. Our hypothesis is that the patient's follow-up is possibly lost due to poor registration, rebooking, cancellation, reoperation or no- show.
Materials and Methods: Reviewing local ACL-R patient registry examining our follow-up (2012-14).
Findings / Results: We included 180 patients (2012-14) that had a primary ACL-R. We found that 149 patients (82.8%) were seen for 1-year follow-up. 21 patients (14%) had been registered wrongly as they had been examined by a surgeon instead of a physiotherapist. Thus they were not registered in the ACL-registry. 31 patients (17.2%) were not seen for 1-year follow-up. 16 (8,8%) because they were not called in. 15 (8.3%) got called in but did not show up either due to rebooking, cancellation, reoperation or no-show.
Conclusions: We have highlighted possible causes for missing 1-year follow-up for our ACL-R patients and why we do not score higher in the registry on this indicator. The results show that with an optimization in the registration and booking of these patients, we will be able ensure that more patients are assessed at their 1-year follow-up.

No conflicts of interest reported

Long-term clinical results of patients treated for posterolateral elbow joint instability using an ipsilateral triceps tendon graft.

153.

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Background: Recurrent Posterolateral Elbow Instability (PLI) is the most common type of chronic elbow joint instability. Recurrent elbow dislocations is caused by insufficiency of the lateral ligaments. Different surgical procedures has been described to reconstruct the LCL. The studies reports almost the same results. None of the studies have a mean follow up time more than 6 years.
Purpose / Aim of Study: The aim of the present study was to report the long-term clinical outcome following surgical LCL reconstruction.
Materials and Methods: We included 18 consecutive patients prior treated for posterolateral elbow instability in the period 1993- 1999 and prior in 2003 evaluated for clinical result. 12 of 18 patients were reexamined in 2015 at a clinical follow-up. The mean follow-up of 230 months. We performed the clinical follow-up with clinical examination of stability, ROM, Pain VAS score, Mayo elbow performance score, functional elbow score and Danish version of Oxford elbow score. Furthermore a conventional x-ray of the elbow was performed to evaluate osteoarthritis.
Findings / Results: None of the patients reported pain during rest. During activity the patients had a VAS mean of 2,8. Few patients had a reduction in ROM. All the patients had a stable elbow. 2 patients had apprehension to the pivot-shift stress test. None had apprehension during "chair stand up" test. Functional elbow score gave unchanged results. The mean Mayo elbow score was 86 (9 point decrease). The mean Oxford Elbow score was 45 ("satisfying elbow function"). Osteoarthritis was seen on X-ray in 41%.
Conclusions: In conclusion we observed a high percentage of patients with radiographic arthrosis but without clinical symptoms. The results reported in 2003 seem durable over time. The technique reported by Olsen & Søjbjerg in 2003 gives good long-term results.

No conflicts of interest reported

Surgery for Congenital muscular Torticollis

154.

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Background: Congenital muscular torticollis can lead to face asymmetry and neck pain. Mild torticollis is often treated by positioning of the head of the infant and/or physiotherapy and Botullinum toxin. In cases with persisting torticollis, surgery can be necessary.
Purpose / Aim of Study: The present study describes the outcome of a cohort of patients treated surgically for congenital muscular torticollis.
Materials and Methods: Thirty-two patients operated for congenital muscular torticollis at Rigshospitalet 2008- 2015 were included. Retrospectively data from charts, including complications or need for additional surgery were used.
Findings / Results: No complications were found. Nine patients needed additional surgery. Mean age at initial surgery for patients who later needed additional surgery were 12 years.
Conclusions: Other authors found that surgery should be performed before the age of 5, to prevent need for additional surgery. The present study shows a need for early referral of the patients.

No conflicts of interest reported

Long-term effect of surgery for wrist extension in adolescent cerebral palsy patients

155.

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Background: Cerebral palsy of the hand can be a seriously debilitating illness, especially hand activities demanding the use of two hands can be affected. Being able to extend the wrist allows for better visual apprehension, when manipulating objects. Increased tension of finger flexors permits improved grip strength.
Purpose / Aim of Study: To evaluate the long-term effect of tendon transfer with flexor carpi ulnaris (FCU) transferal to the extensor carpi radialis brevis (ECRB)
Materials and Methods: Twenty-five patients with cerebral p palsy was surgically reconstructed with f flexor carpi ulnaris (FCU) transferal to t the extensor carpi radialis brevis ((ECRB) and other surgery as needed, i including correction of thumb and p pronation. Age 15,3(9,8-29,2) years. Wrist extension was classified using Zancolis classification of wrist and f finger deformity pre- postoperatively. In a addition, DASH and grip strength, was a also measured prepostoperatively.
Findings / Results: On follow up after 588 days (512-680) eleve eleven of Twenty-five patient showed impro improvement in Zancolli classification. Anoth Another 11 remained unchanged and 3 patie patients degraded one level. Zancolli befor befor 2,4(0,3) (avg(sem)), on followup 1,6(0,2) (0,2) ($p<0,05$). DASH was improved 10 points (-21-40). From From 57(3) to 47(3) ($p< 0.01$) on followup. All but 3 patients showed improved grip str strength on average 2,9, from 5.4(1.4) to 8.2 8.2(1.6) ($p< 0.01$).
Conclusions: In carefully selected adolescent children with cerebral palsy wrist function and grip strength can be improved with tendon transfer with flexor carpi ulnaris (FCU) transferal to the extensor carpi radialis brevis (ECRB). DASH score shows improvement, although statistical significant, improvement of 10 point is not consider clinical relevant.

No conflicts of interest reported

Descriptive demographic and clinical data on 647 post-treatment crps patients

156.

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Background: Complex regional pain syndrome is a challenging condition including a broad spectrum of sensory, autonomic and motor features predominantly in extremities recovering a trauma. Surgical and non- surgical treatments are known risk-factors. Few large-scale studies have addressed occurrence of and factors associated with CRPS following orthopedic treatment.
Purpose / Aim of Study: The present study aimed to identify factors associated to post-treatment development of CRPS.
Materials and Methods: Using the Danish Patient Compensation Association's database (DPCA), we identified 647 patients with post-treatment CRPS (DM89.0), between January 1, 1992 and March 5, 2015. Age, gender, initial diagnosis, treatment, debut date of CRPS, severity of CRPS and size of compensation were extracted. A multiple logistic regression was performed to assess variables with association to approval of the claim made to DPCA. In the cases of CRPS in patients with carpal tunnel syndrome we analyzed bilateral vs. unilateral symptoms and whether neurophysiological changes prior to treatment were seen.
Findings / Results: The following variables were excessively represented; woman gender 4:1, primary diagnosis to the upper limb 2½:1 and surgical treatment 3:1. Mean age was 47.5±13.7, no difference between gender. Colles' fracture (12%) and carpal tunnel syndrome (9%) were the most common diagnoses. Conservative treatment was negatively associated with approval of the claim (OR 0.29). Among CTS patients with unilateral symptoms 71.4% had normal neurophysiology prior to surgery.
Conclusions: Female gender, surgical treatment and treatment to the upper limb were risk factors. Elective surgery accounted for a large amount of patients with post- treatment CRPS. Among CTS patients with carpal tunnel syndrome, a normal neurophysiological examination is common.

No conflicts of interest reported

Diabetic and non-diabetic patients report equal symptom relieve after arthroscopic capsular release of frozen shoulder

157.

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Background: Frozen shoulder is a painful shoulder joint disease. Patients with diabetes seem to have worse clinical symptoms and surgery in this patient population is believed to be more common. Despite previous studies indicating, that operation is less effective in this patient population our experience is, that diabetic patients actually are quite satisfied after the procedure.
Purpose / Aim of Study: We wanted to clarify if diabetic patients are as equally satisfied as non-diabetics, and by that if we should differentiate our preoperative counseling or continue our current practice.
Materials and Methods: 93 patients were included. All had remained unresponsive to conservative treatment for at least 6 months. The patients were retrospectively divided in two groups based on diabetes status: Group 1 consisted of patients with type 1 or type 2 diabetes (18) and group 2 consisted of the remaining patients (75). Evaluation was performed prior to arthroscopic capsular release and at 6 months follow-up. The web-based questionnaire consisted of 2 different evaluation forms: An Oxford Shoulder Score (OSS) and a visual quality scale (VQS).
Findings / Results: Both groups had a statistically significant improvement in both evaluations. OSS in group 1 improved by 11.5 [95 % CI: 6.2 ; 16.4] and by 15.8 [95 % CI: 13.6 ; 17.9] in group 2. Although the improvement was larger in group 2, it was not statistically significant ($p = 0.09$). The VQS improved 39.6 in group 1 and 44.5 in group 2, ($p = 0.50$).
Conclusions: Our study indicates that diabetic and non- diabetic patients report equal symptom relieve after arthroscopic capsular release of frozen shoulder when patients are selected for operation with no regards of diabetic status. We will continue to select patients for arthroscopic release without differences in preoperative counseling between diabetics and non-diabetics.

No conflicts of interest reported

Surgical repair of acute distal biceps tendon rupture with one-incision technique and EndoButton – A follow up study

158.

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Background: Repair of distal biceps tendon ruptures include one- or two-incision techniques. Among various fixation techniques, biomechanical studies have shown that endobuttons have the highest load-to-failure strengths.
Purpose / Aim of Study: We hypothesize that the use of a single incision and endobutton would provide reliable fixation with good functional result and few complications. Accordingly, the aim of the study was to report our results using this technique.
Materials and Methods: Patients operated during 01.01.10 –01.11.15 were identified by ICD-10 & NOMESCO codes. Patient records were studied and questionnaires incl. ROM and DASH score were sent by mail. Non-responders were reminded after 3 weeks by phone.
Findings / Results: 30 patients were identified; 1 were lost to follow-up. 5 did not respond despite reminder. 24 patients remained (23 males) with a mean age of 49 years (38-67). Median delay to surgery was 7 days (1-58) and median follow-up time was 25 months (6-58). The median DASH score was 22.5 (0-84.17). Compared to the uninjured side, the mean loss of ROM was: extension 15° (0-50°), flexion 6° (0-40°), supination 18° (0-55°) and pronation 11° (0-50°). 1 re-rupture occurred, but was successfully reoperated using the same technique. No patient had deep infection. 6 patients had neurological symptoms at the latest clinical control: 3 non- specific, 1 had symptoms specifically related to the superficial branch of the radial nerve and 2 had symptoms related to the lateral antebrachial cutaneous nerve. No patients had motor palsy.
Conclusions: Surgical repair of distal biceps tendon rupture with one-incision technique and endobutton fixation had a low rate of mechanical failure. Most patients had only slightly reduced ROM, but there was a relatively high rate of neurological complications. The average DASH score was higher than previously reported.

No conflicts of interest reported

Physiotherapy after Volar Plate Osteosynthesis - which factors are predictive

159.

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Background: At our clinic, all patients with an operatively treated distal radius fracture are evaluated by an Occupational Therapist who plans the rehabilitation. Some patients are referred to further rehabilitation at a Physiotherapist. We wanted to investigate which factors predicts referral to physiotherapy.
Purpose / Aim of Study: To investigate factors associated with increased odds of being referred to physiotherapy.
Materials and Methods: Data was gathered from 100 patients enrolled in a randomized study investigating postoperative treatment. We used these data retrospectively for this study. Data was available for 84 patients. The patients was grouped to additional physiotherapy 4 weeks post-operatively or not. Data was collected on: Age, sex, fracture type using AO classification, time-to-surgery, cast or removable cast post- operatively, DASH-score at 4 weeks. Uni- and multivariate analysis was conducted with adjustment for all included variables in the latter and referral to physiotherapy as outcome.
Findings / Results: Patients in the group receiving physiotherapy had a significant higher median DASH-score (50 vs. 63.39 – p=0.002), and higher prevalence of Type C fractures (72 % vs. 43.64 % - p=0.002) The univariate analysis showed that patients suffering from a high DASH-score at 4 weeks (OR 1.67 per 10 unit – p=0.003) or Type B (OR 7.19 – p=0.03) or C fracture (OR 8.63 – p=0.01) had increased odds of being referred to physiotherapy. This association was still significant for Type C fractures (OR 8.96 – p=0.04) and DASH-score (OR 1.57 per 10 unit – p=0.02) after adjustment for age, sex, time-to- surgery, DASH-score at 4 weeks and postoperative use of wrist-laser.
Conclusions: Our study shows that patients with a high DASH- score at 4 weeks or a Type-C fracture had increased odds of being referred to physiotherapy.

No conflicts of interest reported

Boston Brace treatment in Adolescent Idiopathisc Scoliosis

160.

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Background: Boston brace treatment has been used for conservative treatment of Adolescent Idiopathic Scoliosis, since the 1970´ies. The treatment has been shown to stop the progression of the deformity, in several long time studies.
Purpose / Aim of Study: The purpose of this retrospective study was to examine the curve characteristics in patients, who progressed during brace treatment.
Materials and Methods: 153 AIS patients were treated with Boston braces, at Rigshospitalet from 1983-1990. A retrospective study was performed, of the radiological characteristics of the brace treated patients. Curves were classified according to the King Moe classification, and apex was described. Curve magnitude is described by Cobb measurement, The Harrington factor was calculated and Spinal rotation was described using Pedriolle.
Findings / Results: 138/153 patient completed their brace treatment and was included in this study. Mean age when brace treatment was initiated was 14.1 y (+/- 1.6 y), Time in brace 2.6 y (+/- 1.0 y) and Mean Cobb before treatment 39° +/- 10°. Brace treatment did not alter the spinal rotation ($p > 0.3$), age at start Brace treatment ($p>0.8$) or Age at menarche ($p>0.05$) was not correlated with progression during brace treatment. The curve correction was significant better in curves, with apex between Th11 and L1 ($p< 0.0001$). A correlation was seen in between the in brace correction and Cobb angel during side bending films pre- treatment ($p< 0.002$). The Harrington Factor seems to correlate with progression during brace treatment ($p< 0.001$) and no patients with a Harrington Factor less than 5 ° progressed during Brace treatment.
Conclusions: Boston braces are effective in the conservative treatment of AIS. Curves should be evaluated prior to brace treatment and close attention is recommended if risk factors are identified.

No conflicts of interest reported

Predictors of perioperative blood transfusion in surgical treatment of adolescent idiopathic scoliosis – one-center experience in 150 patients

161.

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Background: Surgical management of adolescent idiopathic scoliosis (AIS) involves a risk of substantial perioperative bleeding despite the use of cell salvage as well as infusion of antifibrinolytic agents. Avoidance of allogeneic blood transfusion is of importance considering the cost, the infection risk and the risk of autoimmunization.
Purpose / Aim of Study: To investigate potential predictors of blood transfusion following instrumented fusion for AIS in a center with well-defined transfusion guidelines.
Materials and Methods: A retrospective cohort study was carried out on all patients undergoing posterior instrumented fusion for AIS in the period May 1st 2011 through December 31st 2015. Data was extracted from medical records and surgical charts. A logistic regression analysis was conducted with transfusion of red blood cells before discharge as outcome variable. Predictor variables were chosen a priori.
Findings / Results: The study included 149 patients. Mean age was 16.3±2.4 years and 83% were female. Fifty patients (34%) received transfusion and this group had significantly higher preoperative Cobb angle, longer operation time, lower body mass index (BMI) and a lower preoperative hemoglobin (hgb) than the non- transfusion group ($p < 0.014$). Multiple logistic regression including these factors as well as fusion length and mean arterial pressure showed that only BMI (OR: 0,77, 95% CI: 064-089) and preoperative hgb (OR: 0,26; 95% CI: 0,12-0,50) were significantly associated with risk of transfusion. Nine out of ten patients with a preoperative hgb level of less than 7.5 mmol/l required transfusion.
Conclusions: Preoperative hgb was the strongest predictor of patients requiring transfusion following surgery for AIS. Adopting a preoperative minimum level of 7.5 mmol/l may be considered.

No conflicts of interest reported

Surveillance for development of lung metastases after primary surgical excision of soft tissue sarcomas of the extremities and trunk wall

162.

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Background: Current routine follow-up policy for soft tissue sarcomas (STS) lacks evidence. Early detection and surgical removal of lung metastases (LM) is associated with improved survival. In Jan. 2010 we introduced a new follow-up program in which intermediate- and high-grade malignant STS the first 2 years post surgery were followed 4 times a year alternating between clinical examination (CE) preceded by focal MRI plus low-dose chest CT-scan without contrast (CT) and a CE with regular chest X-ray (XR).
Purpose / Aim of Study: To evaluate the new surveillance program for identification of LM in intermediate- and high-grade STS within the first 2 years postoperatively.
Materials and Methods: We retrospectively assessed the medical files of all patients (n=116, mean age 59 (18-87) years, F/M=57/59) with STS of the extremities and trunk wall, who underwent surgery from 2010-2013. We extracted information on how LM were detected during the first 25 months post-surgery. Statistics: Kaplan Meier survival analysis and 2x2 contingency table with chi2-test.
Findings / Results: 19/116 patients experienced LM within the first 25 months post-surgery (25 months-LM free rate 87%). Compared to XR, CT led to a larger amount of suspicions of LM (23/285 versus 6/278, $p<0.002$). Furthermore the suspicions on CT seemed more accurate than on XR (16/23 affirmed versus 2/6 affirmed, $p<0.103$). The only cases where an XR finding of LM was correct were in 2 cases where an XR was the first chest examination after surgery and radiotherapy. CT (n=285) found a larger number of LM than XR (n=278) did (16 (5.6%) versus 2 (0.7%), $p<0.001$). Three patients suspected LM themselves, 1 of them was affirmed.
Conclusions: Bi-annual CT the first 2 postoperative years after surgical treatment of STS, seemed to detect LM better than plain WR, and therefore render regular WR between these CT unnecessary.

No conflicts of interest reported

Patient-reported outcome and revision rate off 137 Copeland resurfacing hemiarthroplasties in patient with degenerative shoulder disease performed from 2008 to 2013 at Koege Hospital – a retrospective cohort study

163.

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Background: The Copeland resurfacing hemiarthroplasty (RHA) has been used to treat patients with degenerative shoulder disease since the mid 1990's. The Copeland prosthesis has been linked to high revision rates and inferior patient-reported outcome

Purpose / Aim of Study: We investigated the 1 year post-operative patient-reported outcome after Copeland RHA with or without AC-joint resection and the overall revision rate

Materials and Methods: We include all patients who had surgery with the Copeland prosthesis at Koege Hospital Orthopaedic department in a 6 years period from January 2008 to December 2013. The Danish Shoulder Arthroplasty Registry (DSR) was crosschecked to identify all patients with Copeland RHA surgery at our department in that period and to gain WOOS score one year post-operatively. The WOOS score at one year was used to evaluate the patient-reported outcome Revision rates were obtained from the DSR and cross-checked with the National Patient Register in january 2016

Findings / Results: In total 137 consecutive Copeland RHA in 131 patients were evaluated. The mean follow-up time was 4.0 years. The cohort included 48 (35%) males and 89 (65%) females. The mean age was 69.2 (± 8.8) years at surgery. AC-joint resection was performed in 51 (37%) shoulders. In the 89 patients who returned the WOOS questionnaire at one year the median WOOS score was 89.5 There was nió difference between those who har an ac resektion and those without. 7 patients had a revision and 19 patients died prior to December 2015.

Conclusions: The cohort had a high patient-reported outcome after one year and a low revision rate. We found no difference in patient-reported outcome for patients with and without AC-joint resection. We conclude that the Copeland prothesis is an unpredictable prothesis yeilding varied results i differeret series.

No conflicts of interest reported

Percutaneous Needle Toe Flexor Tenotomy of Hammer, Mallet and Claw Toes in the Diabetic Patient

164.

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Background: Diabetic foot ulcer is a costly complication, prevention and prompt treatment is important to reduce the risk of infection, minor and major amputations.
Purpose / Aim of Study: The aim of the study was to examine the effectiveness of a modified minimally invasive flexor tenotomy technique performed with needle, to prevent and heal toe ulcers in diabetic patient with claw, hammer and mallet toe deformities, seen in our multidisciplinary outpatient clinic.
Materials and Methods: Patients referred from podiatrist to orthopedic surgeon between 17 Th Feb. 2015 and 23 Th Feb. 2016 that underwent percutaneous needle tenotomy of the deep and superficial flexor tendons of the toes. The surgical procedure was performed in local anesthetics. The tenotomy was Performed with a needle, with a diameter of 1,2 mm, and length of 40mm. The needle was introduced through the skin immediately proximal to the web level, in the toe chosen for tenotomy, corresponding to the placement of the deep and superficial flexor tendons. All patients were offered therapeutic sandals and seen at 2 and 7 days post intervention.
Findings / Results: 42 patients had 135 toes treated by percutaneous tenotomy, 16(12%) toes with ulcers and 119(88%) toes with impending ulcerations were treated. Average age was 66.02 years (41-89 years), 30 (71%) were males, average diabetes duration was 24,69 years (6-70 years), 28 patients had type 2 diabetes (66,6%), average BMI were 29,9 kg/m2 (18,9-41,6 kg/m2), HbA1c 63,23 mmol/mol (33-96 mmol/mol), total cholesterol 4,7 mmol/L (1,4-9,4 mmol/L) and blood pressure 135/75 mmHg (97- 200/56-96 mmHg), 4 patients were smokers (10%). Total loss of vibration sense (>50 volt) was observed in 57% off right and 55% of left feet, palpable foot pulses were found on right foot in 36 patients (86%) and 38 on left foot (90%). Retinopathy was present in 5 patients (12%). Ualbcrea ratio was 92,4 (3-920) All surgical incisions healed uneventfully, 41 patients after 2 days (98%), and one patient after 7 days (2%). No complications, e.g. bleeding or pain were recorded. There were 12 neuropathic (75%), 3 neuro-ischemic (19%) and 1 ischemic ulcer (6%). The average duration of ulcer before tenotomi was 6,5 weeks (1- 26 weeks), all ulcers (16) healed in the observation period, in a mean of 24 days (2-105 days). There was no recurrence of toe ulcer in the period. No infection was recorded and no amputations performed due to the procedure. Eight patients had transfer complication (19%), with a total of 12 toes affected. 4 toes had transfer ulcers (33%), and 8 incurred pressure signs (67%) after the primary tenotomy. One patient underwent re-tenotomy due to insufficient primary procedure (2%). Mostly the tenotomy was performed on right foot 90 toes (67%). The tenotomies performed were distributed on: first toe 22 (17%), second toe 37 (27%), third toe 34 (25%), fourth toe 23 (17%) and fifth toe 19 (14%). 6 patients (14%) needed assistance from home nurse to change the dressing or wound observation after the procedure. 28 patients (67%) were treated with handmade shoes with rocker bottom to prevent future ulcers.
Conclusions: Needle tenotomy is a simple, safe and effective procedure for preventing and/or treating ulcers of claw, mallet and hammertoe deformities in diabetic patients. This off-loading surgery should be offered all patients at-risk of ulcers of a hammer, mallet or claw toe. The procedure can result in transfer ulcers if not performed on all toes of one foot at same primary intervention. Flexor tendon tenotomy of the first toe can present a challenge, likely due to the caliber of the tendons, and relation to the sesamoids. The follow-up period was relatively short, and further investigation is needed, and will be carried out at our center.

No conflicts of interest reported

Two cases of surgical excision of symptomatic os talus secundarius

165.

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Background: Accessory ossicles is a frequent development variant. Os talus secundarius(OTS) is a rare accessory ossicle located on the lateral side of the talus, with a prevalence of 0,1%.
Purpose / Aim of Study: In current litterature only 5 cases of OTS with symptomatic problems has been described. Only 3 prior cases with surgical removal dating back from 1972 and 1953.
Materials and Methods: 2 cases including diagnostics, excision and follow-up 6 months after surgery. MRI done pre-surgery and at follow-up after 6 months.
Findings / Results: Two patients, male 29 and 48, presented with pain in the ankle more than 6 months. No former trauma. One felt instability and a feeling of walking on the outside of the foot. The other primarily pain lateral and unable to work. MRI and X-rays showed OTS and adjacent edema. Surgical removal was performed in both cases. One showed OTS with synchondrosis toward the calcaneus and synostosis toward the talus at the sinus tarsi. Tightening of lig. calcanofibulare and lig. talofibulare ant. was performed. Post operative static walker was used for 6 weeks with full weight bearing. The other had an OTS of approximately 1.5 x 1.5 cm with clear osteoarthritis at the articular surface against the talus, and no articulation to the calcaneus or fibula. Lig. talofibulare ant. and lig. calcanofibulare unaffected. Postoperative use of static walker, with weight bearing, for 2 months. After 6 months both patients experienced significant less pain and no complaints of instability. MRI showed regression of edema in adjacent bones and diminished intraarticular fluid.
Conclusions: Accessory ossicles in the foot are not only important in relation to differentiation from normal anatomy when interpreting radiographs, but they may also in themselves give rise to various problems, such as impingement, synovitis and degenerative conditions.

No conflicts of interest reported

Aggressive early mobilization and weight-bearing in non-operative treatment of acute Achilles tendon rupture may increase the risk of rerupture – a retrospective cohort study

166.

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Background: The best treatment of acute Achilles tendon rupture remains unclear. Even within non- operative treatment regimes, it remains uncertain when mobilization and weight- bearing can be instituted without increased risk of rerupture.
Purpose / Aim of Study: In the present retrospective cohort study, two non-operative treatment regimens were compared in terms of rerupture risk
Materials and Methods: Between 2008 and 2014 the standard treatment protocol at Horsens Regional Hospital in Denmark for an acute Achilles tendon rupture was nonoperative. February 1st 2012, this protocol was changed from Treatment A (non-weightbearing equinus cast for the first three of 8 weeks) to Treatment B (non-weightbearing equinus boot for the first two of 8 weeks). The treatment protocols were otherwise mainly alike. From the diagnostic coding of Achilles tendon rupture and surgical coding in the digital patient records, the patients with an acute Achilles tendon rupture/rerupture and their treatment were identified. Based on the time of diagnosis, the Relative Risk for rerupture was calculated for the two different treatment protocols A and B.
Findings / Results: Between 2008 and 2014, 389 patients were registered with an acute Achilles tendon rupture at Horsens Regional Hospital. Treatment A was given to 183 patients from 2008-2012. Treatment B was given to 179 patients from 2012-2014. Twenty-seven patients opted for primary surgery (Treatment C). Treatment A had 1 rerupture and 1 tendon malunion versus Treatment B with 8 reruptures and 2 tendon malunions (RR=4,9, p=0,039), most of which were treated with secondary surgical reconstruction. Treatment group C had 0 reruptures and 0 tendon malunions.
Conclusions: Aggressive early mobilization and weight- bearing in non-operative treatment of acute Achilles tendon rupture may increase the risk of Achilles tendon rerupture.

No conflicts of interest reported

Identifying a possible change in the complication rate when treating dislocated distal radius fractures over a period of 6 years by open reduction and internal fixation using volar plating

167.

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Background: Recent studies have shown a complication rate between 8-27% when treating Dislocated Distal Radius Fractures (DDRF) using Open Reduction and Internal Fixation (ORIF) and a volar plate. This kind of osteosynthesis is a relatively new treatment and initiatives must be identified and implemented to reduce this rate of complications.
Purpose / Aim of Study: We wanted to investigate whether the complication rate changed over time between the period 2008 to 2010 and 2013 to July 2014 at a single institution.
Materials and Methods: We compared two cohorts of patients, who had their DDRF treated with volar plating at the same institution in the above-mentioned periods. There were two differences between the two cohorts: in the latter period more operations were supervised and the surgeons had gained more experience in the latter period. The possible complications were: carpal tunnel syndrome, tendon irritation/rupture, insufficient osteosynthesis, reduced ROM, infection, complex regional pain syndrome and skin healing problems. The complications were only registered as a complication if an intervention was deemed necessary.
Findings / Results: 88% of the operations in the last group were performed or supervised by a qualified orthopaedic surgeon versus 79% in the first group ($p < 0,01$). The overall complication rate was reduced from 18% to 13% ($p<0,01$). The rate of two kinds of complications was reduced significantly: Tendon irritation/rupture was reduced from 5% to 1% ($p=0,02$) and insufficient osteosynthesis rate was reduced from 7% to 2% ($p<0,01$).
Conclusions: The overall complication rate was reduced significantly from 18 to 13%. We believe, the reduction of complications is mainly because of increased supervision and because the qualified orthopaedic surgeons became more familiar with this procedure.

No conflicts of interest reported

Outcome following suprapatellar approach to tibia nailing.

168.

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Background: Intramedullary nailing of the tibia using a suprapatellar approach (SPI) has become more popular in the past years. Advantages of the technique is easier nailing of the proximal and distal fractures and easier positioning of the patient. Few studies have yet evaluated the outcome.
Purpose / Aim of Study: The aim of this prospective study was to evaluate the operative experience, clinical and patient's subjective outcome following SPI nailing.
Materials and Methods: Forty-five consecutive patient with tibia fractures and treated with SPI nailing using were included. Eight patient were admitted as poly-trauma, and five patients were habitual mobilized in wheelchair. After a minimum follow-up of 1 year all alive patients were asked to complete a questionnaire. Lysholm score, EQ-5D and VAS pain score were used to evaluate functional outcome and health status.
Findings / Results: Twenty-eight patients were treated with Trigen Tibial Nail (Smith & Nephew) and 17 with T2 Tibial Nail (Stryker). Patients average age was 55 (range: 17-91). Seven fractures were OTA-AO type A, 32 type B and 6 type C. Ten fractures were open, including 4 Gustilo grade III. Mean operating time was 100 minutes (range: 28-295). There were no intraoperative complications. One patient in anticoagulant therapy developed haemarthrosis postoperatively. One fracture had delayed union and healed after change of locking screws. Four patients died before follow-up and among 41 eligble 25 completed the questionnaire with a mean followup time of 749 days. Average pain analogue score while walking (if walking) was 3.18, Lysholm score = 69 (CI: 59-78) and EQ-5D = 60 (CI: 49-72).
Conclusions: In this heterogen population the results indicate that SPI is a useful and safe procedure for treating tibial fractures, and patient outcome is comparable to studies evaluating infrapatellar nailing.

No conflicts of interest reported

Barthel-100 and the Cumulated Ambulation Score are superior to the de Morton Mobility Index for the assessment of mobility in patients with acute hip fracture

169.

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Background: An increasing number of settings organize their treatment of acute hip fracture patients (HF) in orthogeriatric or geriatric units. This means that e.g. data of functional capacity of HF patients is reported to the Danish hip fracture database using the Cumulated Ambulation Score (CAS), but also to the corresponding Danish database of geriatrics using the Barthel-100 and 30-s Chair- Stand-Test (CST). Further, a new score for assessing mobility; de Morton Mobility Index (DEMMI) was recently added to the geriatric database and thereby also used for patients with acute HF, although not validated in that context.
Purpose / Aim of Study: To examine the validity of DEMMI in patients with HF in comparison with the existing Barthel-100, CST and CAS.
Materials and Methods: 222 consecutive patients (57 nursing home residents) with HF admitted to a Geriatric Department following surgery were assessed with the 4 measurements on day 1 and at discharge (mean LOS post-surgery 9 days (SD 5.1)).
Findings / Results: 98% and 89% of patients were not able to perform the CST at baseline and at discharge (large floor effect), respectively. Corresponding floor effects were 39% and 31% for DEMMI, 12% and 5% for Barthel-100, and 22% and 6%, respectively for CAS. Convergent validity was strong between DEMMI and CAS (r=0.76, 95% CI 0.69-0.81), and moderate between DEMMI and Barthel (r=0.58, 95% CI 0.48- 0.66). Responsiveness, as indicated by the Effect Size was 0.76 for DEMMI, 1.78 for Barthel-100 and 1.04 for CAS. Baseline scores of DEMMI, Barthel and CAS showed similar properties in predicting discharge destination of patients from own home.
Conclusions: Dealing with 4 outcome measures in short hospital stays is time-consuming. The value of using DEMMI and CST in patients with acute HF seems limited in comparison with Barthel-100 and CAS, and therefore should be re-evaluated.

No conflicts of interest reported

Ultrasonography of the ligaments after ankle sprain

170.

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Background: The acute lateral ankle sprain accounts for 85% of all sprains. The lateral sprain associated with other ligament injuries, such as medial and syndesmosis sprain. In the long-term approximately 20% of the acute lateral sprain develops chronic lateral ankle instability (CLAI). The definition of the chronic ankle instability is persistent pains, repeatedly ankle sprains and episodes of ankle giving away.
Purpose / Aim of Study: The aim of this study was to correlate the clinical examination to ultrasonography (US) after ankle sprain.
Materials and Methods: Through 15 october to 26 november 2016 patients who were diagnosed with an ankle sprain were included. We evaluated with high frequency (15-6 MHz) ultrasonography the lateral ligament injury (anterior talofibular ligament (ATFL), calcaneofibular ligament (CFL), syndesmosis (anterior intertibiofibular ligament (AiTFL)) injury) and medial ligament injury (deep posterior tibiotalar ligament (dPTL), tibiocalcaneal ligament (TCL)).
Findings / Results: 16 women and 10 men and the mean age was 26.7 years, and the mean BMI was 26.6 (17.2-41.3) participated. Two clinical signs statistically correlated with US and multiple logistic regression analysis confirmed the results. The US confirmed ATFL partial rupture and normal CFL. Positive palpated tenderness AiTFL predicted with partial ruptured ATFL and secondly reported pain during active plantar flexion of ankle predicted with normal confirmed US CFL.
Conclusions: The study predicted patients with partial rupture of ATFL clinical present with tenderness at AiTFL point and patients presented with intact CFL reported pain during active plantar flexion. The overall clinical signs and physical examinations were unreliable factors to predicate lateral (ATFL, CFL), syndesmosis injuries (AiTFL) and medial ligament injuries compared with the US findings.

No conflicts of interest reported

Hip Fracture Surgery and New Oral Anticoagulants – An Increasing Problem?

171.

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Background: Early surgery has been shown to be associated with lower mortality and complication rates in patients experiencing a hip fracture. New Oral AntiCoagulants (NOACs) have been approved since 2008; 20% of Danish patients receiving antithrombotics medicate with NOACs. NOACs are prescribed to prevent thrombo- embolic events in patients with atrial fibrillation and as prophylaxis after surgery. The rising consumption of NOACs is an increasing problem for trauma surgeons due to a half-life of 7-17 hours with normal renal function and increasing risk of uncontrolled bleeding. NOAC treatment can lead to postponement of acute surgery.
Purpose / Aim of Study: The aim of this study is to analyse the percentage of hip fracture patients admitted in 2015, who received NOACs or other antithrombotics, and if surgery was delayed due to NOACs.
Materials and Methods: Chart review from 1 January 2015-31 December 2015, using ICD-10 codes DS72.0-DS72.2. We excluded re- operations, periprosthetic fractures and contralateral hip fracture within the same year.
Findings / Results: We found 451 patients admitted with a hip fracture, 435 were included. 185 (42.5%) patients received antithrombotic treatment. 44.7% were treated with acetylsalicylic acid, 24.4% with Clopidogrel, 12.7% received Vitamin K-antagonist and 4.1% Adenosine re-uptake inhibitor. 27 patients (13.7%) were treated with NOACs. Nine received Dabigatran, 11 Rivaroxaban and seven Apixaban. In 24 of 27 patients receiving NOACs, surgery was delayed 1-3 days because of NOAC treatment. During 2015, 6.2 % of all hip fracture patients in our department received NOACs. Surgery was postponed in 89 % of these patients.
Conclusions: We see an increasing consumption of NOACs in Denmark, our data reveals the necessity that orthopedic surgeons are professionally updated on perioperative complications associated with NOAC treatment.

No conflicts of interest reported

Re-rupture rate of conservatively treated Achilles tendon ruptures

172.

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Background: Recently the algorithms for treating primary closed Achilles tendon ruptures (ATR) have drifted towards non operative treatment. After subacute foot and ankle surgery was appointed to one person, he noted more re-ruptures than expected.
Purpose / Aim of Study: Our primary aim was to investigate the re- rupture rate of conservatively treated ATR in the year since the treatment was referred to a dedicated foot and ankle surgeon (year A), to describe the reconstructions and patient demographics. Secondary aims were to compare it to the previous year (B), and if any difference was found, to investigate if a difference was to be found in the treatment algorithms or demographics.
Materials and Methods: A search on DS860 and DT935B was performed on ER and outpatients. Age, sex, primary treatment, re-ruptures and type of reconstructions was registered. Summary statistics and 2 group proportion tests used.
Findings / Results: We treated 107 true ATR in year B. Of those, 3 had an open rupture, 34 were not primarily treated at HVH and 3 had primary surgery. In year A, 133 had ATR, 39 not primarily treated at HVH and 2 had primary surgery. Leaving 67 and 92 for analysis (78% men/ 22% women, mean age 46). No difference between A and B. Weight bearing details on conservative treatment were lacking. In year B, 2 patients had a re-rupture following conservative treatment, corresponding to 3% and 12 patients in year A=13% which was significant with p=0.03. The re-rupture surgery needed 6 elongations, 1 flex hall transfers, 4 vendebro plasties.
Conclusions: We found re-rupture rates in line with the literature but higher in year A. Comparable patient demographics but conservative regime will require further investigation to explain the increased re-rupture rate. Generally re-rupture surgery required more extensive surgical interventions than an end-to-end.

No conflicts of interest reported

Abstract withdrawn

173.

Impact of body mass index on risk of acute renal failure and mortality in elderly patients undergoing hip fracture surgery

174.

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Background: Fractures of the hip represent a major worldwide public health problem, associated with significant mortality.
Purpose / Aim of Study: To examine risk of postoperative acute renal failure (ARF) and subsequent mortality, by body mass index (BMI) level, in hip fracture surgery patients aged 65 and over.
Materials and Methods: Regional cohort study using medical databases. We included all patients who underwent surgery to repair a hip fracture during 2005-2011 (n=13,529) at hospitals in Northern Denmark. We calculated cumulative risk of ARF by BMI level during 5 days post-surgery, and subsequent short-term (6-30 days post-surgery) and long-term (31-365 days post- surgery) mortality. We calculated crude and adjusted hazard ratios (aHRs) for ARF and death with 95% confidence intervals (CIs), comparing underweight, overweight, and obese patients with normal-weight patients.
Findings / Results: Risks of ARF within 5 postoperative days were 11.9%, 10.1%, 12.5%, and 17.9% for normal-weight, underweight, overweight, and obese patients, respectively. Among those who developed ARF, short-term mortality was 14.1% for normal-weight patients, compared to 23.1% for underweight (aHR 1.7 (95% CI: 1.2-2.4)), 10.7% for overweight (aHR 0.9 (95% CI: 0.6-1.1)), and 15.2% for obese (aHR 0.9 (95% CI: 0.6-1.4)) patients. Long-term mortality was 24.5% for normal-weight, 43.8% for underweight (aHR 1.6 (95% CI: 1.0- 2.6)), 20.5% for overweight (aHR 0.8 (95% CI: 0.6-1.2)), and 21.4% for obese (aHR 1.1 (95% CI: 0.7-1.8) ARF patients.
Conclusions: Obese patients were at increased risk of ARF compared with normal-weight patients. Among patients who developed ARF, overweight and obesity were not associated with mortality. Compared to normal-weight patients, underweight patients had elevated mortality for up to one year after hip fracture surgery followed by ARF.

No conflicts of interest reported

Platelet-rich plasma leads to new matrix formation around articular cartilage chips embedded in fibrin glue in vitro

175.

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Background: Cellular outgrowth and formation of cartilaginous tissue around articular cartilage explants has been described in a number of recent experimental studies.
Purpose / Aim of Study: We aimed to investigate the effect of platelet-rich plasma (PRP) on new tissue formation around articular cartilage chips in vitro.
Materials and Methods: Full thickness cartilage biopsies were isolated from the femoral condyles of three skeletally mature Göttingen minipigs. The biopsies were prepared into 1mm3 cartilage chips. Cartilage chips were embedded in fibrin glue and cultured in cell culture inserts up to 21 days in 1) control media (Dulbecco's Modified Eagle's Media/F12, 10% fetal calf serum and 1% penicillin- streptomycin), 2) control media with 10% autologous PRP or 3) 10% autologous platelet- poor plasma (PPP) supplementation. Toluidine blue pH 4, alcian blue pH 1 and hematoxylin & eosin (H&E) stainings were performed to characterize newly formed matrix.
Findings / Results: Cartilage chips were viable in all groups after 21 days of tissue culturing. No pericellular clearing in H&E slides were observed. There were no definite signs of chondrocytes from the chips in any of the groups. Histologic evaluation revealed formation of negatively charged aggregates at the wound edges of the cartilage chips in the PRP group compared with the control and PPP groups. The majority of the cells found in these aggregates had a rounded shape. The highly acidic alcian blue stain of the extracellular matrix indicated the presence of glycosaminoglycans.
Conclusions: The addition of PRP to fibrin glue-embedded cartilage explants in vitro leads to formation of a glycosaminoclycan-rich and cell containing aggregate surrounding the cartilage surfaces. This suggests a potential role of PRP in new tissue formation when using cartilage explants embedded in fibrin glue.

No conflicts of interest reported

Re-operation Rates after Femoral Neck Fractures Treated with Cannulated Screws.

176.

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Background: The conventional treatment for femoral neck fractures is screw fixation in patients ¡Ü 70 years regardless of fracture classification and in patients > 70 years with fractures classified as Garden 1-2.
Purpose / Aim of Study: To determine the re-operation rate of patients with femoral neck fractures treated with 3 cannulated screws. Furthermore, to investigate whether national guidelines were followed.
Materials and Methods: A descriptive retrospective single center study on patients with femoral neck fractures treated with cannulated screws from Jan 1, 2014 to Dec 31, 2015. Fractures are classified according to Gardens Classification (1-4). Information about re-operations are found from The Danish National Patient Register.
Findings / Results: 148 patients were included. The re- operation rate of the total cohort was 27.7 % (n=41). Causes of re- operations were caput necrosis (16), non-healing (7), pain (3), osteosynthesis failure (6), fall-related (4) and removal of the screws (5). 76 patients were ¡Ü 70 years and 27 (35.5%) were later re-operated compared to 14 (19.4%) re-operations in patients > 70 years (n=72). 10 patients (6.7%) were not treated according to national guidelines (>70 years and Garden 3-4) and were treated with cannulated screws due to co-morbidities. 4 (40.0%) of these were later re-operated. The remaining 138 patients (93.3%) were treated according to the national guidelines and 37 (26.8%) were later re-operated. Final poster will present data on patient characteristics.
Conclusions: The re-operation rate after femoral neck fracture treated with cannulated screws was 27.7 %. Higher re- operation rates were found in patients ¡Ü 70 years and in the few patients (6.7%) not treated according to national guidelines.

No conflicts of interest reported

Long-term outcome of arthroscopically assisted Elmslie-Trillat tibial tubercle osteotomy

177.

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Background: There is a wide range of different techniques in the treatment of patella luxation. The Elmslie-Trillat procedure is one of the methods, which have earlier been used to stabilize the patella by correcting the mechanical axis. There is however, a lack of knowledge in how this works for patients in the long run.
Purpose / Aim of Study: The purpose is to investigate the level of knee function and satisfaction among patients after the Elmslie-Trillat- procedure.
Materials and Methods: 100 patients were treated with the Elmslie-Trillat procedure at Aalborg University Hospital in the period 2000 to 2012. Data retrieval by systematically going through all charts with the procedure codes KNGE09, KNLG89, KNGH72, KNGK79 and KNGK59. 27 patients were present at follow up in 2015. A physical examination was performed and questionnaires were answered. The applied score-systems were: Kujala, IKCD, Tegner, Lysholm, SANE.
Findings / Results: 27 patients were present at the time of follow up; 20 females and 7 males. Average age at the time of the procedure was 20,2 years, and average age at follow up was 29,9 years. The Kujala-score showed "excellent" or "good" results with 18,5% of the patients, The Lysholm-score showed "excellent" or "good" results with 22,2% of the patients. The IKDC-average-score was 54,4. The Tegner-score was 6,34 before the procedure and 8,04 after the procedure, hereby 1,70 points higher, meaning a reduced level of function. The SANE-average-score was 6,23. 74,1% had a satisfaction- score above 5 and would go through the same procedure again. 37,0% had experienced reluxation by the time of the follow up.
Conclusions: The Elmslie-Trillat procedure has a relatively high satisfaction level according to the patients. Clinical outcome and knee function were however lower than expected.

No conflicts of interest reported

Hip fractures - experiences from the Patient Compensation Association and suggestions to improvements in treatment

178.

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Background: Proximal femoral fractures are one of the most common type of fractures worldwide, and are also a large portion of claims in the Patient Compensation Association (PCA)
Purpose / Aim of Study: The purpose of the study was to investigate the claims an desicions on proximal femoral fractures made to the PCA from 2006-13. We wanted to examine whether there were an association between types of fractures, severity of the complications, experience level of the physician and the awarded compensation.
Materials and Methods: The PCA database of was searched for ICD-10 diagnoses DS70.0, DS72.0, DS72.1 and DS72.2. All age groups were included. A root cause analysis was performed on the data.
Findings / Results: The number of claims was 723 with a male:female ratio of 1:3. The average age was 65.9 years. The distribution was 3.5:1.5:1:1 for Collum (CF), pertrochanteric (PF) , subtrochanteric (SF) and 'contusion' fractures. The main complications were improper or insufficient treatment or missed diagnosis. Pseudoarthrosis was overrepresented for fractures initially diagnosed as contusion, infection for PF, and CF had cases of nerve and vessel injury. Based on DPA data, the level of competence was distributed between staff members and junior residents in the ratio 5:1. One third of all claims were acknowledged with a distribution of Lex Maria into two almost equal groups; no or light to moderate damage. 7% suffered severe damage or death. A total of 3,94 mio EUR was awarded with an avaerage of 12.300 EU .
Conclusions: The acknowledged claims indicate a need for education on all levels of competence, as the highest level of experience was over represented. One should have: Special attention for the STF, as missed diagnosis was largely over represented, and increased attention in surgical technique for CF due to severe iatrogenic damage.

No conflicts of interest reported

Proteomic analysis of early cartilage repair in a chronic cartilage defect model in minipigs

179.

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Background: The early regenerative processes are believed to be important determinants for cartilage repair outcome.
Purpose / Aim of Study: The aim was to investigate the mechanisms in early cartilage repair using microfracture with and without platelet-rich plasma (PRP) in a chronic cartilage defect model in minipig knees.
Materials and Methods: Six skeletally mature Göttingen minipigs received two cylindrical full-thickness cartilage defects (Ø=6mm) in the trochlea in each knee. The defects were allowed to become chronic for 5 weeks before they were treated with microfracture with autologous 2mL PRP supplementation (Zimmer Biomet) or saline. Animals were followed for 3 (n=3) and 12 (n=3) days. Normal cartilage, debrided cartilage from chronic defects, and repair tissue at sacrifice were collected for histological, immunohistochemical, and protein mass spectrometry (MS) analyses. Peptides were analyzed by liquid chromatography (LC) tandem MS. Cluster 3.0, Java Tree View and Panther were used for clustering, visualization and analysis.
Findings / Results: Four days post-treatment a blood clot was formed with red blood cells, loose matrix, and very few nucleated cells. Twelve days post-treatment a vascularized, denser extracellular matrix with high cellularity had replaced the blood clot. Of the 1213 proteins identified, 475 were expressed in all samples. Protein clustering grouped samples from the same time-points to highest degree (higher expression similarity). Proteins selectively expressed in the PRP group were predominantly involved in metabolic processes. The collagen composition in early cartilage repair (day 12) included types 1A1, 3A1, 6A1-3, 12A1 and 18A1 (endostatin) compared with types 2A1, 9A1 and 11A1 in normal cartilage.
Conclusions: Complex processes in early cartilage repair can be identified and visualized using repair tissue proteome analyses.

No conflicts of interest reported

Patients' self-perceived well-being and satisfaction with everyday life 5 years after knee replacement.

180.

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Background: In Denmark 8,500 primary knee replacements (KR) are inserted annually for a total cost of 700 million dkr. Data is collected on these patients (ptt), but not on the patients self-perceived everyday life or their satisfaction with the level of functioning and well-being.
Purpose / Aim of Study: The aim of this study was to explore the well-being and self-perceived satisfaction on everyday life of KR ptt 5 years after a primary KR.
Materials and Methods: 34 KR ptt, av age 69.9 (55-85) were contacted from a hospital in region H, of which 28 participated, 14 men; 20 retired /7 working. Ptt were consecutively included based on operation dates from 1.feb. 2011 onwards. Ptt completed the WHO5 well-being index followed by an interview with the Canadian Occupational Performance Measure (COPM). WHO5 well-being index scores the general well-being and the degree of positive experiences over the past two weeks. COPM is an interview-based measurement, where ptt identify occupational problems (OP) in their everyday live within Self-care, Productivity and Leisure. The ptt score the OP on 1-10 point scales regarding importance, performance and satisfaction with performance.
Findings / Results: 24 of the included ptt had a satisfactory daily life and high well- being.15 scored both the performance and satisfaction of their OP low, while their WHO5 score was on indicating a good well-being. More than ½ of the 109 reported OP were in the category of self-care with 24% within Functional mobility, whereas the sub-category with fewest identified OP was Work. The av. score of performance and satisfaction on Functional mobility was low, however, rated as the least important while Work was rated as the most important. 2 ptt rated low or very low well-being as well as very low performance and satisfaction.
Conclusions: In order to understand the effect of KR, COPM is effective.

No conflicts of interest reported

Orthogeriatrics Didn't Improve Mortality in Patients with a Hip Fracture Admitted from Nursing Homes

181.

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Background: Important predictors for death in frail hip fracture patients are anemia, cognitive impairment, prolonged delirium, post- operative infections and age ≥ 85 years. Admittance from a nursing home, a high- ASA score, and frailty have also been shown to be independent predictors of mortality.
Purpose / Aim of Study: The purpose of this study is to evaluate the effect of Orthogeriatrics at nursing home residents admitted with a hip fracture. Primary outcome is mortality in-hospital and after one, three and 12 months.
Materials and Methods: This is a retrospective clinical cohort study. The intervention group consists of all patients admitted from December 1, 2009 to December 1, 2011 (n= 993). The historic control group was admitted from June 1, 2007 to June 1, 2009 before the implementation of orthogeriatrics (n=989). If patients were admitted twice during the study period due to bilateral fractures, second admission was not included. There were no other exclusion criteria or any randomization.
Findings / Results: Our data show significantly increasing ASA scores over time reflecting increasing frailty and comorbidity among the hip fracture patients. In our intervention group, a multivariate analysis correcting for age, gender, and ASA score shows significantly reduced mortality as well in-hospital (OR 0.35), as after 30 (OR 0.66) and 90 days (OR 0.72) and 1-year (OR 0.79) despite only 50% of the group having received geriatric assessment. Patients from nursing homes had no significant decreasing mortality at any time. Our intervention population consists of 23% (218/928) nursing home residents.
Conclusions: There has been a tradition to discharge nursing home residents early, but the increasing comorbidity among these patients and decreasing skills at the step down facilities call for a change in management for these weak patients.

No conflicts of interest reported

Scand-Ankle – Effect of alcohol intervention among acute ankle fracture surgery (RCT)

182.

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Background: Patients with high alcohol consumption have increased risk of postoperative complications. Preoperative alcohol cessation intervention has been shown to halve the frequency of postoperative complications. However, it still remains unexplored whether alcohol cessation during and after surgery has an impact on the prevalence of postoperative complications.
Purpose / Aim of Study: The aim of this study was to evaluate the effect of a new gold standard program for alcohol cessation intervention in the peri- and postoperative period.
Materials and Methods: The present study is designed as a randomized clinical multi-center study. A total number of 70 patients with an ankle fracture witch requires osteosynthesis and a excessive alcohol intake were included and randomly allocated to either standard care or a 6-weeks gold standard program with the aim of alcohol abstinence peri- and postoperatively. The structured patient education program involved weekly intervention at the orthopedic outpatient clinic. Furthermore, patients were provided with thiamine and B-vitamins, prophylaxis and treatment for alcohol withdrawal symptom and disulfiram to support abstinence. Biochemical validation of alcohol intake was done at the weekly intervention meetings and follow-up visits after 6 weeks and 3, 6, 9 and 12 months. The main outcome measures were postoperative complications, alcohol intake and cost-effectiveness.
Findings / Results: The results on postoperative complications, alcohol consumption and cost-effectiveness will be presented at the conference.
Conclusions: The study will show if the 6-weeks gold standard program can reduce postoperative complications after emergency surgery. The results will be of relevance for the individual patient as well as for the society at large.

No conflicts of interest reported

Fatigue and pain limits independent mobility and physiotherapy after hip fracture surgery

183.

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Background: The patient's ability to complete their planned physiotherapy session after hip fracture (HF) surgery has been proposed as an independent predictor for achieving basic mobility independency upon hospital discharge. However, knowledge of factors limiting is sparse.
Purpose / Aim of Study: To examine patient reported factors limiting ability to complete planned physiotherapy sessions as well as limitations for not achieving independency in basic mobility early after HF surgery.
Materials and Methods: 204 consecutive patients with a HF (47 admitted from a nursing home); mean age of 80 years, and treated in accordance with a multimodal enhanced program. The Cumulated Ambulation Score (CAS) was used to evaluate the patient's independency in three basic mobility activities: getting in and out of bed, sit-to-stand-to-sit from a chair with arms and indoor walking with an aid. Limitations for patients not achieving a full CAS score or inability to complete their planned physiotherapy sessions were noted by physiotherapists on postoperative day 1-3.
Findings / Results: More than 85% and 42% of patients, respectively, did not achieve an independent CAS level and did not fully complete their planned physiotherapy on all three days, and with fatigue and hip fracture-related pain as the most frequent reported reasons. At hospital discharge (median [IQR] day 10 [6-14]), only 54% of patients had regained their pre-fracture CAS level.
Conclusions: Based on the patient's perception, fatigue and pain are the most frequent limitations for patients not achieving independent basic mobility and not completing physiotherapy, early after hip fracture surgery, despite following an enhanced recovery program. This raises questions whether multimodal perioperative hip fracture programs can be further optimized to enhance the early recovery of these frail patients.

No conflicts of interest reported

Re-operations and mortality after major lower extremity amputations

184.

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Background: Re-operation rates after below-knee (BKA), through-knee and above-knee amputations (AKA) within 90 days has been reported to be 30%, 34% and 9% respectively in our institution (feb.2009-feb.2013) (Sode 2013). 90 days mortality rates were 36% and 40% after through knee and AKA (Buch 2013).These results led to change in practice, with restricted indications for the through-knee amputation procedure.
Purpose / Aim of Study: To investigate re-operation rates and mortality of the major lower extremity amputations performed in our institution after change of practice.
Materials and Methods: Cases were included in the period Jan 1, 2014 to Dec 31, 2015. Mortality and re-operations within 90 days of the index amputation were registered through examination of medical records.
Findings / Results: 116 amputations in 115 patients were performed. 95 AKA and 21 BKA and no through-knee amputations. Mean age was 69 years for BKA and 78 years for AKA. 85.7% of the BKA and 59% of the AKA were male. 52% of the BKA patients and 67% of the AKA patients were current or previous smokers. Mean Charlson comorbidity score was 4.8 in the BKA patients and 4.2 in the AKA patients. The re-operation rate after BKA was 33.3% (CI 17-55) (6 soft tissue revisions and 1 re-amputation) caused by necrosis (n=4) and infection (n=3). The re-operation rate after AKA was 6.3% (CI 3-13) (2 re-amputations, 4 soft tissue revisions) caused by necrosis (n=2) and infection (n=4). The 90-days mortality rate was 0% after BKA and 44% (CI 35-54) after AKA.
Conclusions: The re-operation rate of 33% after BKA is at the same level as before change of practice and the re-operation rate of 6.3% after AKA is slightly lower. Most of patients previously offered a through-knee amputation are now offered an AKA with a lower re-operation rate. However, the mortality rate of 44% after AKA is the major challenge.

No conflicts of interest reported

Medium to long term follow-up after primary and revision arthroscopic Bankart repair with a knotless anchor. Do the results last?

185.

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Background: With increasing evolution of techniques, implant strength, suture quality, and proper patient selection, the results of arthroscopic Bankart repair are more promising. In a previous study on the same cohort with a median follow-up of 20 months the recurrence rate was 5.4 %. It is known from other studies that there is an increase in failure rate with time.
Purpose / Aim of Study: The aim of this study was to evaluate the results of primary and revision arthroscopic Bankart repairs in an active population with minimum 3 years follow-up.
Materials and Methods: Sixty-five consecutive patients underwent arthroscopic Bankart repair from 2008-2014. Of these 36 (55%) were available for a follow-up evaluation at a median of 75 months (38-92) follow-up. There were 23 males and 13 females (median age 31 (14-58) years). Duration of symptoms was median 26 (1-144) months. 29 were primary repairs while 7 were revision cases (median 3 previous procedures (1-4)). There were 23 athletes and 13 non-athletes. A knotless anchor (Pushlock, Arthrex) was used together with a FibreWire #2 (Arthrex). The median number of anchors used was 2 (1-3). One surgeon performed all operations. Follow-up evaluation was performed by registration of recurrent instability besides use of the patient reported outcomes Western Ontario Instability Score (WOSI) and Oxford Shoulder Score (OSS).
Findings / Results: 36 patients were available at a median of 75 months (38-92) follow-up. There were 23 males and 13 females (median age 31 (14-58) years) of which 23 were athletic active. Duration of symptoms was median 26 (1-144) months. 29 patients had primary repairs while 7 were revision cases (median 3 previous procedures (1-4)). Six patients (16.7 %) had an experience of recurrent instability. Four of these (13.8 %) occurred in primary repairs and two in revision cases (28.6 %). One patient(2.8 %) had a poor result due to chondrolysis. Moreover, the follow-up scores of WOSI and OSS was median 84 (28-99.8) % and 16 (12- 28), respectively.
Conclusions: The rate of failure after arthroscopic Bankart repair with a knotless anchor increases with time, but the results of primary arthroscopic Bankart repair is acceptable at a median of 6.5 years follow-up in a relative active population. Though, as expected, the risk of recurrence is greater in revision cases.

Conflict of Interest
Klaus Bak; Arthrex

The use of blood test S-100b as biomarker for intracranial haemorrhage in adult patients with mild head injury in Danish Emergency Departments

186.

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Background: Traumatic head injuries account for frequent visits in Danish Emergency Departments (ER) with more than 20.000 visits yearly and 25 daily hospital admissions. An estimated 90 per cent have mild head injury (MHI) with GCS 14-15. The diagnostic approach has been notoriously challenging especially regarding the use of CT-C. In 2013 the blood test S-100b was introduced in the revised guidelines regarding management of these patients. S- 100b is designed to rule out intracranial haemorrhage in selected adult patients with MHI thereby possibly avoiding excessive use of CT-scans. The test is widely used in many European countries. However, it remains unclear to what extent it is being used in Danish ERs.
Purpose / Aim of Study: An observational study was conducted to quantify the number of Danish ERs using S- 100b. In addition, the yearly number of requested tests was found.
Materials and Methods: During March 2016 the major ERs in Denmark (n=30) were contacted regarding their ability to use S-100b. The departments that were able to use S-100b were subsequently contacted concerning how many tests were made during 2015.
Findings / Results: Response rate was 100 per cent. 20 per cent (6/30) of the ERs were able to do in- house analysis of blood work for S-100b. Some 16,7 per cent (5/30) were able to request the test and have it transported to larger nearby hospitals for analysis. However, this opportunity was not used. On average the six ERs that were able to use S-100b requested 335 tests during 2015.
Conclusions: The results indicate that Danish ERs do not routinely use S-100b despite recent recommendations. The ERs able to request the test use it to a limited extent. The reasons for this reluctance should be further investigated. More studies are yet to be made to clarify whether the use of S-100b results in less CT-scans and admissions in a Danish setting.

No conflicts of interest reported

Surgical treatment of STT osteoarthritis with the STPI implant

187.

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Background: Pain from the wrist can have different causes, one of these being scapho- trapezio-trapezoid (STT) joint osteoarthritis. Treatment for this disorder is typically conservative, but a vast number of surgical treatments also exist. One of the available surgical options is the use of an implant as a spacer. Some of these implants are made of Pyrolytic carbon with the scaphoid trapeziodeum interposition implant (STPI) being one of these.
Purpose / Aim of Study: The aim was to evaluate the outcome of surgical treatment of STT osteoarthritis with the STPI implant.
Materials and Methods: In this prospective study, patients treated with the STPI between January 2003 and December 2009 were identified and followed over 72 months
Findings / Results: Most patients were satisfied with the results of the procedure. The VAS score at rest decreased, but not at activity, and the grip and pinch strengths increased. However the range of motion (ROM) as well as the modified Mayo wrist score did not improve after the procedure.
Conclusions: Surgical treatment of STT osteoarthritis with implantation with a STPI implant results in a high patient satisfaction and a reduction of pain at rest, but not at activity, as well as an increase in grip and pinch strength, without any change in ROM. Thus, our results suggest that the STPI should be considered as an option to treat STT osteoarthritis.

No conflicts of interest reported

Surgical approach for elastic stable intramedullary nail (ESIN) in pediatric radius shaft fracture – A systematic review

188.

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Background: When using elastic stable intramedullary nailing (ESIN) in children's forearm shaft fractures the surgical approach in the distal radius can either be lateral or dorsal.
Purpose / Aim of Study: The aim was to conduct a systematic review with meta-analysis to compare the lateral approach (LA) and dorsal approach (DA) in terms of complications when treating pediatric radius shaft fractures.
Materials and Methods: On October 14th 2015 an electronic search of PubMed, Embase and Cochrane databases was performed. Two authors independently screened 2234 articles by title, abstract and finally full text of 104 eligible articles was read. Data on demographics and complications was extracted by one author and checked by a second author. Complications were grouped into minor (temporary) or major (permanent or additional surgery) complications. The quality of studies was assessed according to Risk of Bias Assessment Tool for Nonrandomized Studies. Due to the lack of studies directly comparing the two approaches, a meta-analysis could not be performed.
Findings / Results: Sixteen studies (1502 patients) used LA while six studies (416 patients) used DA. There were four prospective studies, 18 retrospective, and the median follow-up ranged from 4.5-54. The quality of the included studies was in general low with high risk of bias and many studies lacked reporting of complications. Concerning major complications deep infection was 0.3% for LA and 6.3% (1 study) for DA, 0.3% permanent nerve palsy for LA, and 2.6% tendon rupture for DA. Concerning minor complications superficial infection was 2.6% for LA and 1.9% for DA, transient nerve palsy 2,9 % for LA and 5.3% for DA.
Conclusions: When deciding between LA and DA for radius shaft fractures treated with ESIN one should consider a 0.3% permanent nerve palsy for LA compared to 2.6% tendon rupture for DA.

No conflicts of interest reported

Can active warming blankets prevent hypothermia during total hip replacement surgery? 189.

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Background: Perioperative hypothermia, defined as body core temperature below 36 degrees, is associated with complications such as bleeding, wound infection, and myocardial ischaemia. Forced air warming during surgery is not always sufficient to avoid hypothermia in patients undergoing total hip replacement (THR).
Purpose / Aim of Study: To assess the effect of preoperative and postoperative use of active warming blankets on patient core temperature during and after surgery for primary THR.
Materials and Methods: Prospective study of twenty-seven patients undergoing primary THR surgery at Horsens Regional Hospital from April to June 2016. Body temperature was measured rectally on admittance and pre- and postoperatively. Patients receiving pre- and postoperative active warming blankets (Barrier® EasyWarm®) as a supplement to the intraoperative forced air warming (group 1) were compared to patients receiving intraoperative forced air warming only (group 2).
Findings / Results: Nineteen patients (group 1) and so far eight patients (group 2) were included. Preliminary data showed no differences in mean body core temperature or temperature changes pre- and postoperatively between the two groups. Both groups experienced a core temperature decrease from admittance to the immediate preoperative temperature recording. Four patients in each group fell below 36 degrees at the immediate postoperative recording.
Conclusions: The addition of active warming blankets did not contribute significantly to increase the preoperative temperature of these patients, and temperatures below 36 degrees postoperatively were not prevented. More aggressive use of passive and active warming devices should be tried to prevent hypothermia.

No conflicts of interest reported

The Critical Shoulder Angle is Associated with Osteoarthritis in the Shoulder but not Rotator Cuff Tears. A retrospective case control study

190.

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Background: In 2013 Moor et al introduced the concept of the critical shoulder angle (CSA) and suggested that an abnormal CSA was a leading factor in development of Rotator Cuff Tear (RCT) and Osteoarthritis of the shoulder (OA).
Purpose / Aim of Study: The purpose of the study was to test if the CSA was associated with RCT and OA. The study hypothesis being that people having a CSA > 35° were at increased risk of developing RCT and people with a CSA < 30° were at increased risk of developing OA.
Materials and Methods: The study was performed as a retrospective case-control study following the STROBE guidelines. 97 patients with RCT and 87 patients with OA constituted the two groups of cases. The controls were matched 3:1, by age and sex, from a population of 795 patients with humeral fractures. The CSA was measured as described by Moor et al. in 2013. Sample size calculation showed a need for 71 cases and 213 controls. Analysis of the relation with CSA for RCT and OA was done by logistic regression. Models were fitted separately for RCT and OA and used the controls matched to the respective cases.
Findings / Results: The mean CSA in the RCT group was 33.9° and in the matched control group 33.6°. The Odds Ratio for developing RCT for people with a CSA above 35° was 1.12 (p=.63). The mean CSA in the OA group was 31.1° and in the matched control group 33.3°. The Odds Ratio for developing OA for people with a CSA below 30° was 2.25 (p=.002).
Conclusions: This study did not find any association between CSA and RCT but did show association between CSA and OA with a 2.25 Odds Ratio of developing OA given the patient had a CSA below 30°. The results does not support the suggested praxis of shaving away the lateral border of the acromion in order to make the CSA smaller as it might increase the risk of developing OA without decreasing the risk of developing RCT.

No conflicts of interest reported

Alarming Increase in Degenerative Shoulder Lesions in Denmark in the period 1996 to 2013

191.

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Background: Degenerative shoulder lesions are common and a challenge to diagnose. They often result in significant disability for the patient and are an economic burden to society. From recent studies, an increasing incidence has been reported.
Purpose / Aim of Study: The purpose with this study was to investigate and map the incidence of degenerative shoulder lesions in Denmark from 1996 to 2013 with focus on sex, age and geographical area.
Materials and Methods: The National Patient Registry was retrospectively searched to find the number of degenerative shoulder lesions in Denmark during the period 1996– 2013. Regional population data were retrieved from the services of Statistics Denmark. Incidence rates were analyzed using poison regression models, all analysis was done in R 3.2.2, p-values of less than 0.05 were considered statistically significant.
Findings / Results: During the 18-year period, 244.519 individual contacts with a DM 75 diagnosis were registered. Male:female ratio was 51:49, median age was 51. Most frequent were impingement related lesions (DM 75.1-DM 75.5) with a mean incidence rate of 313.3 (CI 241.8-384.8) per 10^6 person years at risk (PYRS). A statistically significant increase in overall incidence rate from 149.4 per 10^6 PYRS in 1996 to 715.3 per 10^6 PYRS in 2013 was found ($p<0.001$). Incidence was highest for men aged 51-70 (1085.1 per 10^6 PYRS in 2013). Rural areas had a 1.3 fold higher mean incidence rate than urban areas. There was no significant difference in incidence between sexes.
Conclusions: The incidence of degenerative shoulder lesions rapidly increased mainly due to an increase in the older population +50. There were no significant differences in incidence between sexes. Rural areas had a 1.3 fold higher incidence rate than urban areas.

No conflicts of interest reported

2 years Retrospective Follow-up of Posterior Dynamic Stabilization (Dynesys®) in lower back pain without olistesis using patient reported outcomes.

192.

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Background: Surgical Treatment of lower back pain in the younger patients usually includes some kind of rigid fixation. Even some studies have shown a near 100% fusion rate there have only been reported an average of 70% satisfactory rates according to patient surveys. Fusion surgery has additionally some disadvantages including stress and degeneration of the adjacent segments. In our institution we have used semirigid dynamic fixation system (Dynesys®, Zimmer) in younger patients with lower back pain without olistesis. The goal is to offer pain relief without solid bone fusion.
Purpose / Aim of Study: Using SF-36, ODI and EQ-5D we monitored the patient satisfaction 1 and 2 years after surgery. Futhermore we examined the reoperation and complication rate.
Materials and Methods: From 2009 to 2013, 254 patients had a spinal fusion in our institution. 88 patients had dynamic stabilization, 46 men and 42 females with a mean age of 46 (20-72). None of the patients had any comorbidity. The patients received the SF-36, EQ-5D, Oswestry lower disability questionnaire and form asking about walking distance, usage of pain medication, work/pension status and pain evaluation back. The questionnaire where sent preoperatively, 1 and 2 years postoperatively.
Findings / Results: 67 of the 88 patients answered the questionnaires. In the 88 patients 9 had additional surgery. All patient reported outcomes improved significantly after surgery.
Conclusions: Patient satisfaction is at the same level as other studies. Complication rates are identical. Re operations are within actable levels. No major complications. 2 patients had adjacent level degeneration requiring surgery and 3 had a secondary rigid fixation of the same level. The method is less traumatic to the posterior joints and soft tissue, and gives satisfactory results in this young and healthy patient population.

No conflicts of interest reported

Quantitative Bone Mineral Changes Evaluated by DEXA after Bone Defect Reconstruction using a Biphasic Bone Graft Substitute after Intralesional Curettage in Benign Bone Tumors or Cysts

193.

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Background: Non-invasive evaluation of changes in mineralization after curettage is not always easy using conventional x-rays. Precise and quantitative measurements of bone mineral density (BMD) and bone mineral content (BMC) at various skeletal sites can be performed using DEXA.
Purpose / Aim of Study: To document early changes in BMD in patients receiving bone defect reconstruction with a biphasic (60% calcium sulfate/ 40% calcium phosphate) bone graft substitute (BGS) after intralesional curettage in benign bone tumors and cysts.
Materials and Methods: We prospectively reviewed 8 patients (F/M: 3/5, mean age 40 (18-68) years) who underwent intralesional curettage of 9 benign bone tumors or cysts with subsequent bone defect reconstruction with a biphasic BGS (CERAMENT™|BONE VOID FILLER) or a biphasic gentamicin eluting BGS (CERAMENT™|G) at our orthopedic oncology center with a minimum of 6 months follow-up.
Findings / Results: The most commonly treated lesions were uni- or multicameral bone cysts (n=3) and enchondromas (n=3) with an average size of 17 (6-33) mL. The most commonly affected regions were the proximal femur (n=3), and the proximal humerus (n=2). CERAMENT™|BVF was used in 6 cases and CERAMENT™|G was used in 3 cases with an average amount of 17 (4-56) mL. The mean postoperative BMD was 2.70 g/cm2 (CI95%: 2.11- 3.30), 1.44 g/cm2 (CI95%: 1.14-1.76) at 6 weeks, 1.28 g/cm2 (CI95%: 0.94- 1.61) at 3 months, and 1.21 g/cm2 (CI95%: 0.84-1.58) at 6 months.
Conclusions: In this small prospective series of 8 patients receiving bone defect reconstruction with a biphasic bone graft substitute (60% calcium sulfate/ 40% calcium phosphate), we found that the BMD at the defect site decreases in the first three months, probably corresponding to the resorption of calcium sulfate, without any further significant decrease from 3 to 6 months.

Conflicts of Interest
Peter Horstmann; funded by BONESUPPORT AB
Werner Hettwer; BONESUPPORT AB

Notes

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