

ACUTE ACHILLES RUPTURES IN PRO ATHLETES

Speed return-to-play



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 **quirónsalud**
La salud persona a persona

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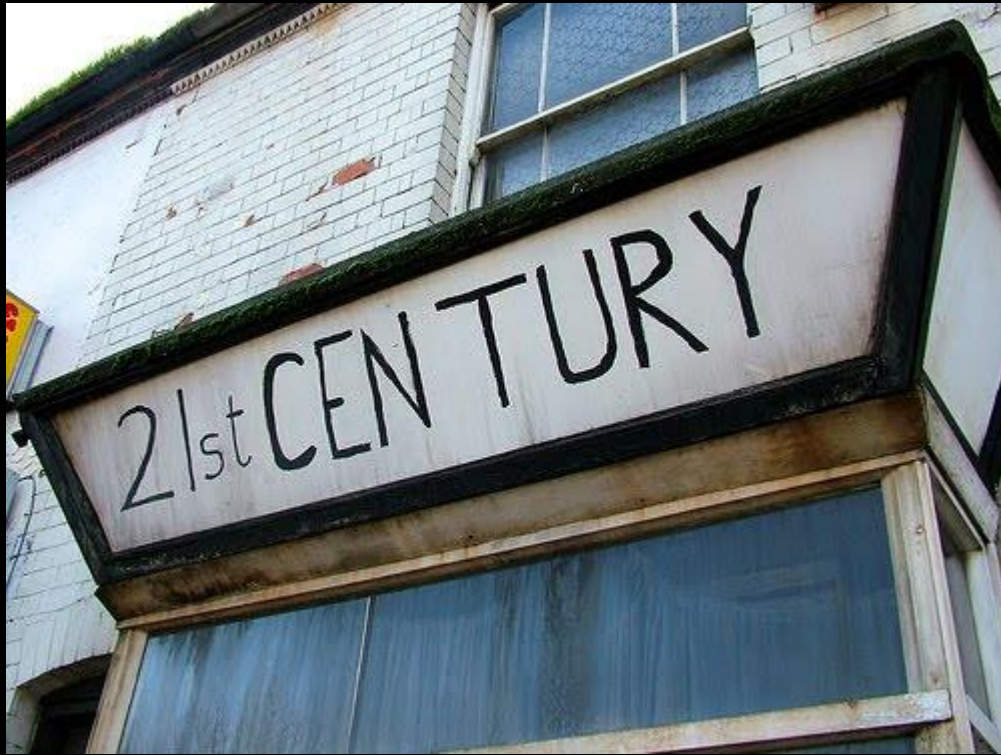
THE SIXTIES

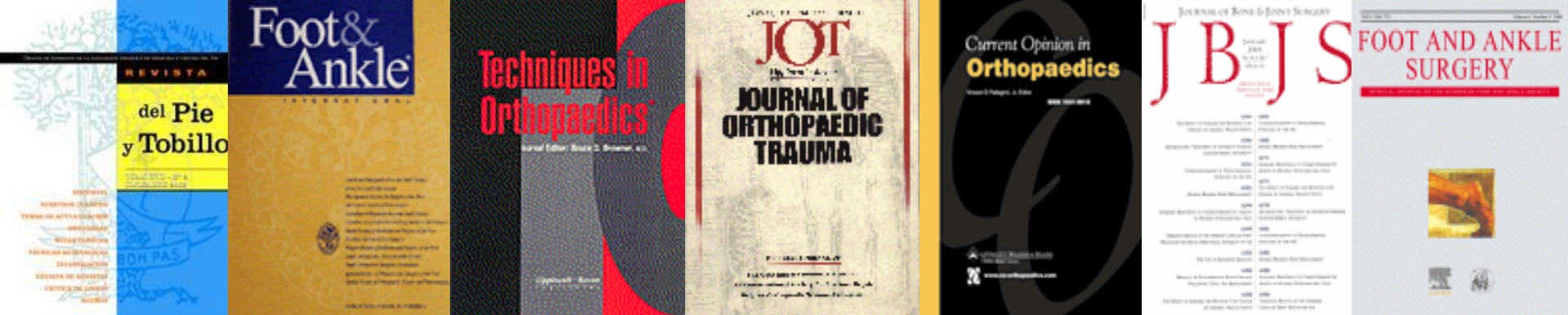




THE EIGHTIES







“Mini-open” repair of acute tendo Achilles ruptures—The solution?

C. Mukundan MRCS, M. El Husseiny MRCS, F. Rayan MRCSEd*, J. Salim FRCS, A. Budgen FRCS
 York Hospitals NHS Foundation Trust, York Hospital, Wigginton Road, York, YO31 8HE, United Kingdom

CONTROVERSY IN TA ACUTE RUPTURES

The Influence of Early Weight-Bearing Compared with Non-Weight-Bearing After Surgical Repair of the Achilles Tendon

By Amar A. Suchak, MD, Geoff P. Bostick, PT, Lauren A. Beaupré, PhD, PT, D’Arcy C. Durand, MD,
 and Nadr M. Jomha, MD, PhD, FRCS(C)

Investigation performed at the University of Alberta, Edmonton, Alberta, Canada

NON-OPERATIVE vs OPERATIVE

NON-OP = SHORT LEG CAST + NWB FOR 4-12
WEEKS (72 HOURS FROM RUPTURE)

Rerupture rate 8-21%

OPERATIVE = OPEN REPAIR + SHORT LEG
CAST NWB 4-8 WEEKS

Rerupture rate 2-5%

Infection/wound complications 0-5%

EARLY WEIGHTBEARING AND MOBILIZATION



Twaddle AJSM 2007, Suchak JBJS(Am) 2008

HEALING AND REPAIR

Phases: Swelling - repair - remodelling

Fibroblasts: GOLDEN MONTH POSTRUPTURE
2nd a 6th weeks

TENSION, MOVEMENT and WEIGHTBEARING
Investing in "TA healing/repair quality" ...



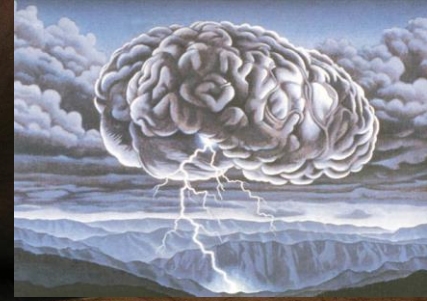
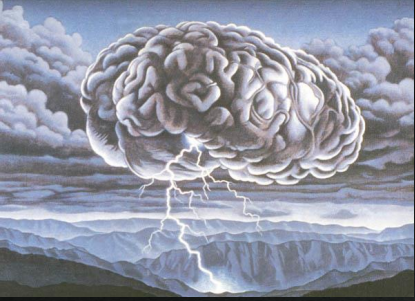
Intracellular biogenesis of collagen fibrils in 'activated fibroblasts' of tendo Achillis

AN ULTRASTRUCTURAL STUDY IN THE NEW ZEALAND
RABBIT

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INITIAL APPROACH?





META-ANALYSES

52 MA PUBLISHED ON
ACUTE ACHILLES RUPTURES

9/52 META-ANALYSES MET CRITERIA



VS



RERUPTURE RATES

7/9 STUDIES

SURGERY LESS RERUPTURES



COMPLICATIONS

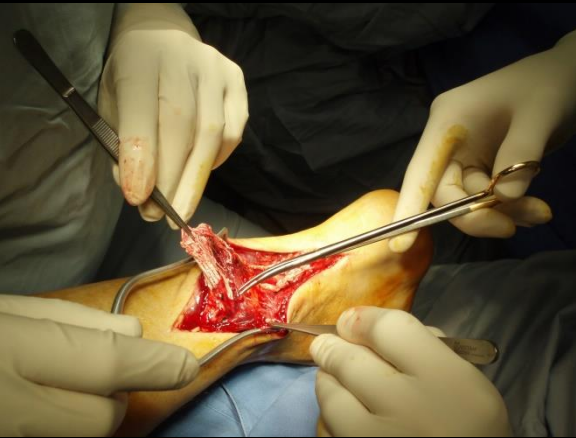
8/9 STUDIES
SURGERY MORE COMPLICATIONS



OPEN vs MINIINVASIVE APPROACH

NO DIFFERENCES IN:

RERUPTURES
TISSUE ADHESION
DEEP INFECTION



OPEN vs MINIINVASIVE APPROACH

BUT MINIINVASIVE APPROACH:



LESS SUPERFICIAL WOUND INFECTIONS
LESS SKIN COMPLICATIONS

3/9 STUDIES HIGHEST LEVEL OF EVIDENCE



VS



2/9 STUDIES HIGHEST LEVEL OF EVIDENCE

SURGERY:



LOWER RERUPTURE
RATE

HIGHER RATE MINOR
AND MODERATE
COMPLICATIONS

1/9 STUDIES HIGHEST LEVEL OF EVIDENCE

SURGERY:

LOWER RERUPTURE
RATE WHEN COMPARED
WITH NON-OP NON-
FUNCTIONAL REHAB

NO DIFFERENCE vs
NON-OP WITH
FUNCTIONAL REHAB



Willits JBJS(Am) 2010

NON-OP IS AS EFFECTIVE AND SAFE AS OPERATIVE TREATMENT



VS





Olsson AJSM 2013



Level 1, RCT, Op vs Non-op, 1y f/u

Non-op: WBAT x8 weeks
(no ROM for first 8 weeks)

10% reruptures

Op: WBAT x6 weeks
(ROM at 2 weeks)

0% reruptures, 12% superficial infections
Better function at 12m in the op group



Level 1, RCT, Non-op – WBAT (day #1) vs NWB (6 weeks), 1y f/u

Early ROM both groups at 2 weeks

No differences in outcome

Barfod JBJS (Am) 2014



9% reruptures (3/26 WB, 2/25 NWB)

40-50% strength deficit at 1 year

Only 16% returned to pre-injury level



Level 1, RCT, Non-op – WBAT (day #1) vs NWB (8 weeks), 2y f/u

2 groups, both non-op:

Young JBJS (Am) 2014

NWB x8 weeks vs early WB

Reruptures: 3% early vs 5% NWB (no diff)

**MAYBE RANGE OF MOTION IS NOT
THAT IMPORTANT**



EVIDENCE IS NOT CLEAR IF IT IS EARLY
WB OR EARLY ROM THAT GIVES
NON-OP TREATMENT GOOD RESULTS



SYSTEMATIC REVIEW OF RCT POST-OP PROTOCOLS



Immediate FWB = higher
pt satisfaction and earlier
RTW and RTP

All functional parameters
favor FWB but no
statistical significance

HOW ABOUT THE PATIENT?



RECREATIONAL vs PROS

HOW ABOUT THE PATIENT?



PHYSICALLY ACTIVE PATIENTS

SURGERY LESS RERUPTURES
LESS CHANCE OF ELONGATION



NON PHYSICALLY ACTIVE PATIENTS

NON-OPERATIVE
LESS CHANCE OF COMPLICATIONS OTHER
THAN RERUPTURE



FUNCTIONAL REHABILITATION?



PATIENT'S COMPLIANCE?

NON-OPERATIVE
ELONGATION?



HOW ABOUT US?

LACK OF DEFINED UNIVERSALLY ACCEPTED
OUTCOME MEASUREMENTS

MANY DIFFERENT OPERATIVE TECHNIQUES
MANY DIFFERENT REHAB PROTOCOLS



Conservative treatment for acute Achilles tendon rupture: survey of current practice

Donald Osarumwense, Jonathan Wright, Kikachukwu Gardner, Laurence James
University Hospital Lewisham, London, United Kingdom

were enquired about.
Results. 62 of 86 respondents treated Achilles tendon ruptures conservatively by below-knee casts (n=51), above-knee casts (n=5), or functional braces (n=6). The most common immobilisation regimen (n=7) was to keep the foot in a sequence of an equinus position,



CIRUGÍA PERCUTÁNEA Y REHABILITACIÓN PRECOZ EN LAS ROTURAS DEL TENDÓN DE AQUILES. PROTOCOLO Y ESTUDIO PROSPECTIVO

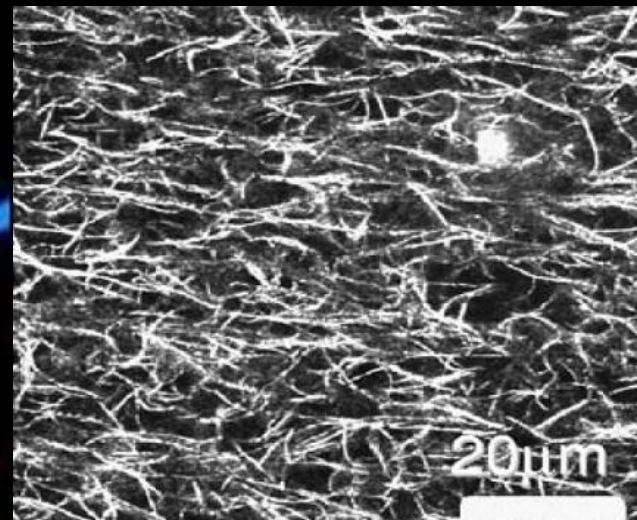
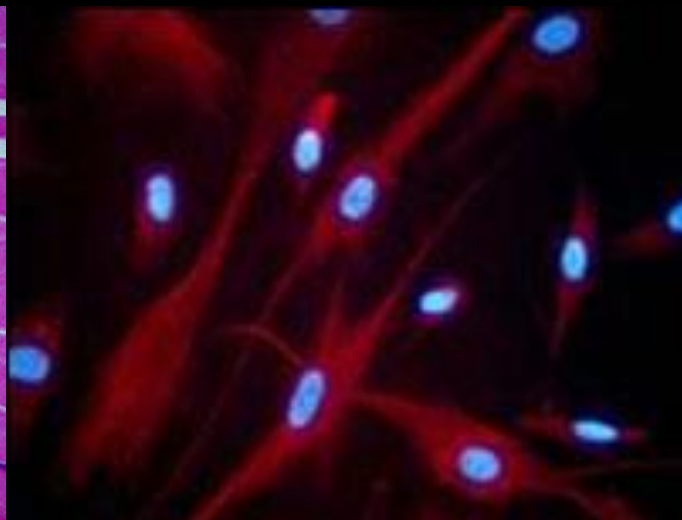
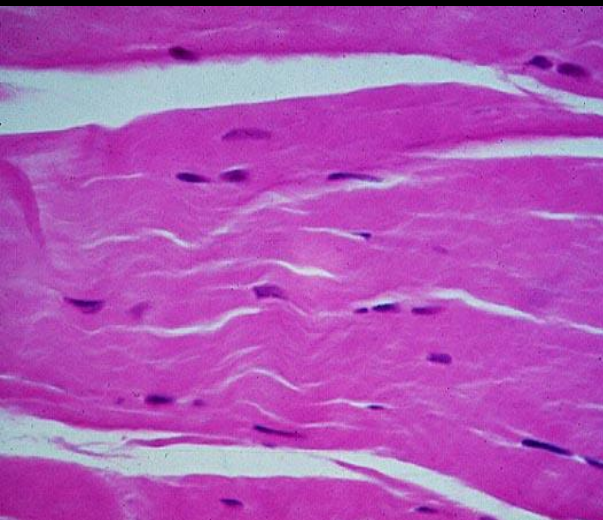
Dres. M. Monteagudo de la Rosa^(1,2), M.J. Rodea Butragueño⁽¹⁾

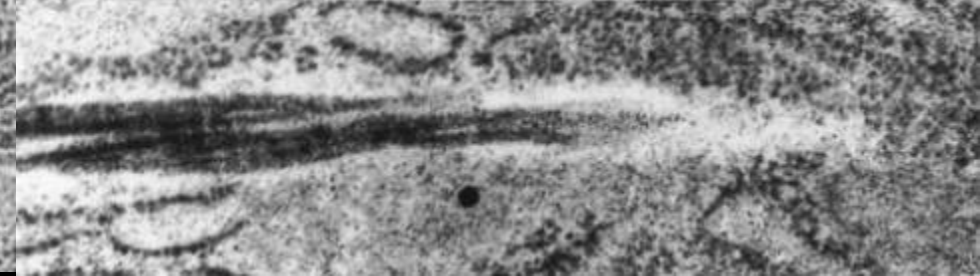
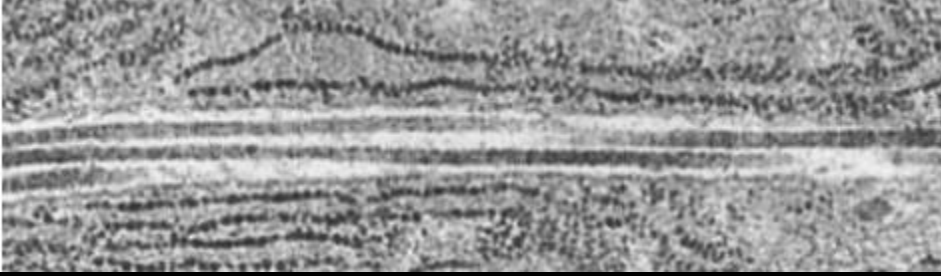
(1) Unidad de Cirugía Ortopédica y Traumatología. Fundación Hospital Alcorcón. Madrid.

(2) Departamento de Especialidades Médicas. Cátedra de Histología y Embriología General. Facultad de Medicina. Universidad de Alcalá. Madrid.

HEALING AND REPAIR

- Inflammatory response + mechanical stimuli
- It IS POSSIBLE to accelerate and modulate healing capacity of the Achilles tendon





Intracellular biogenesis of collagen fibrils in 'activated fibroblasts' of tendo Achillis

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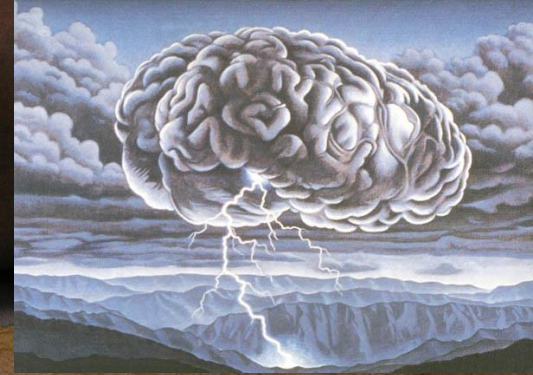
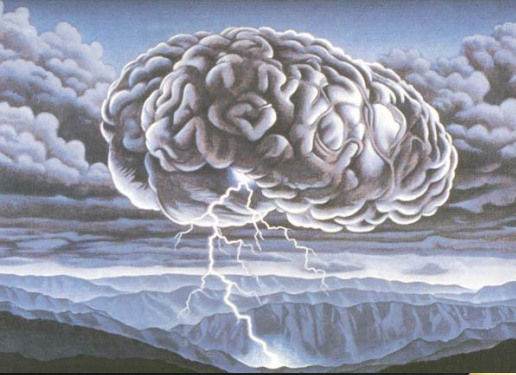
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BRAINSTORMING



PROTOCOL - PROSPECTIVE STUDY

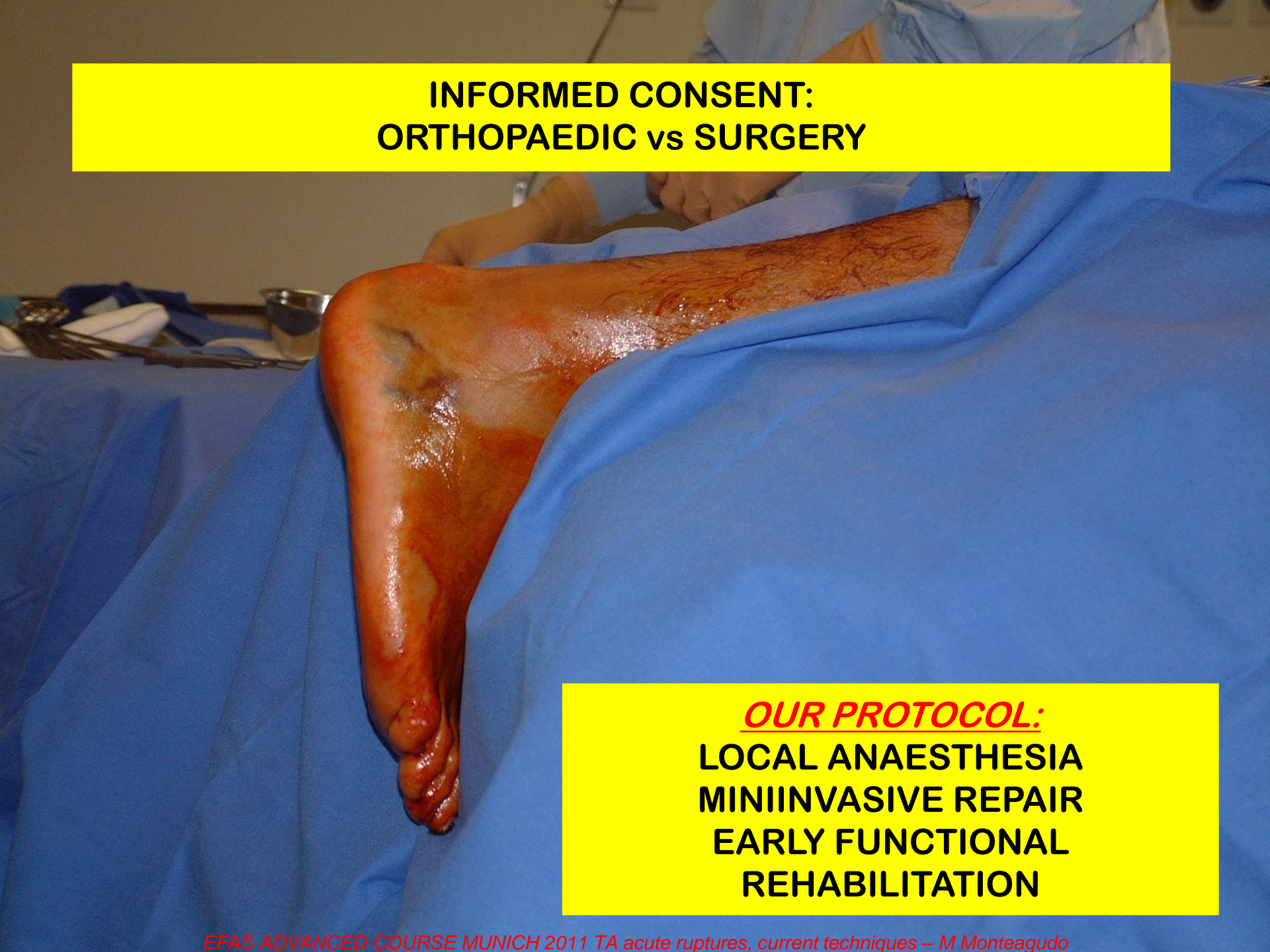


BRAINSTORMING:

Preseries of patients - year 2000

- Lower rerupture rates
- Lower complications (sural neuroapraxia 23%)
- Lower cast/non weightbearing period
- Lower time to return to work and return to sport practice
- Lower costs
- For any patient of any age
- Universal, at any region, country, continent

INFORMED CONSENT: ORTHOPAEDIC vs SURGERY



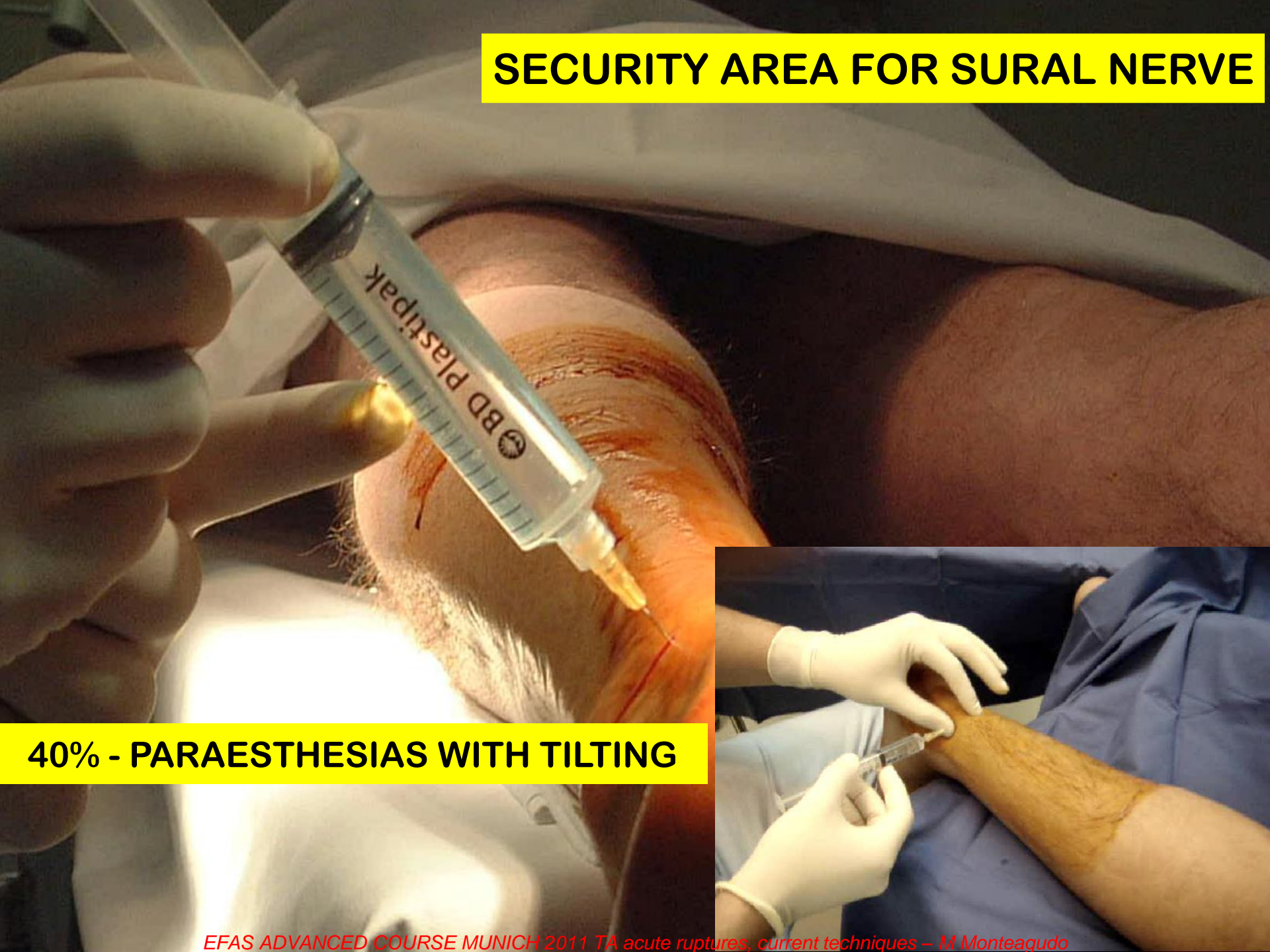
OUR PROTOCOL:
LOCAL ANAESTHESIA
MINIINVASIVE REPAIR
EARLY FUNCTIONAL
REHABILITATION

LOCAL ANAESTHESIA :

- 1. SURAL NERVE CONTROL**
- 2. PATIENT ACCEPTANCE AND COMFORT**

- 3. INTRAOPERATIVE SUTURE TESTING**
- 4. LESS COMPLICATIONS THAN SPINAL OR GENERAL**
- 5. NO HOSPITAL ADMISSION**
- 6. COST EFFICIENCY**
- 7. EASIER ACCESS TO OPERATING THEATRE**

SECURITY AREA FOR SURAL NERVE



40% - PARAESTHESIAS WITH TILTING

SURGICAL TECHNIQUE



5 STAB INCISIONS + MINI OPEN + NO TOURNIQUET



MODIFIED KESSLER TECHNIQUE

SINGLE-STRAND SUTURE – 1 PDS II (Ethicon, Johnson&Johnson)

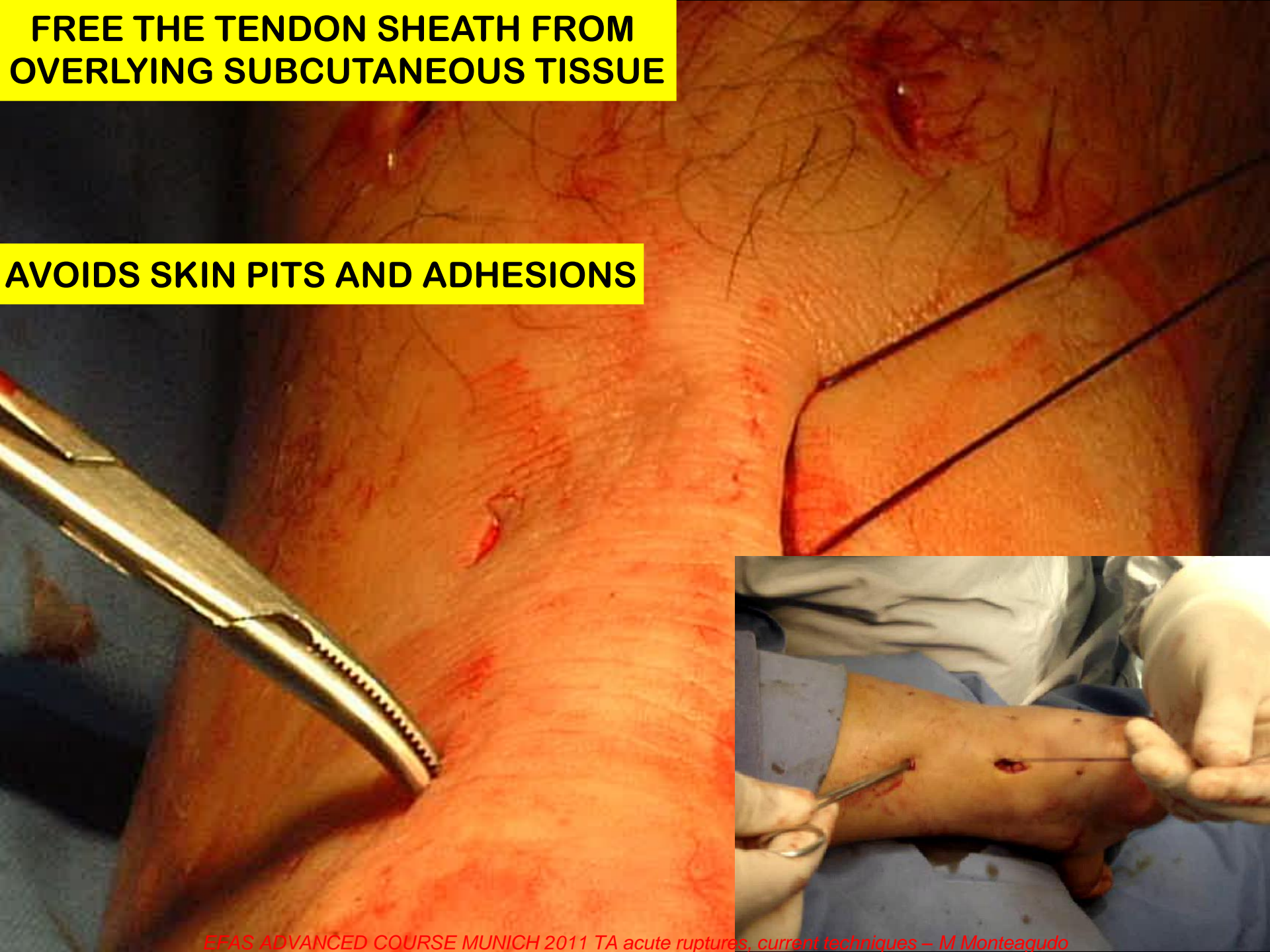


N°2 POST-MORTEM NEEDLE (Aesculap)



**FREE THE TENDON SHEATH FROM
OVERLYING SUBCUTANEOUS TISSUE**

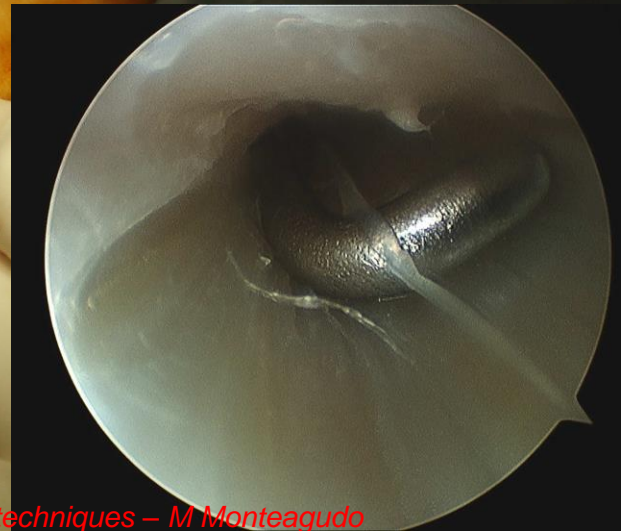
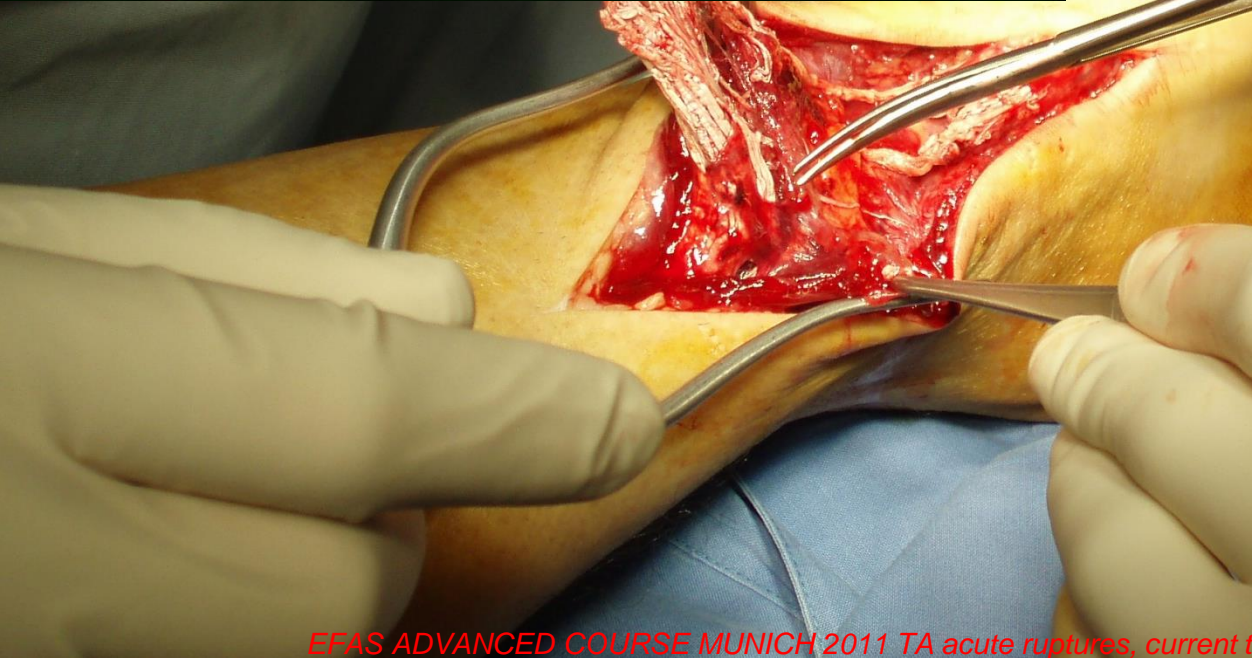
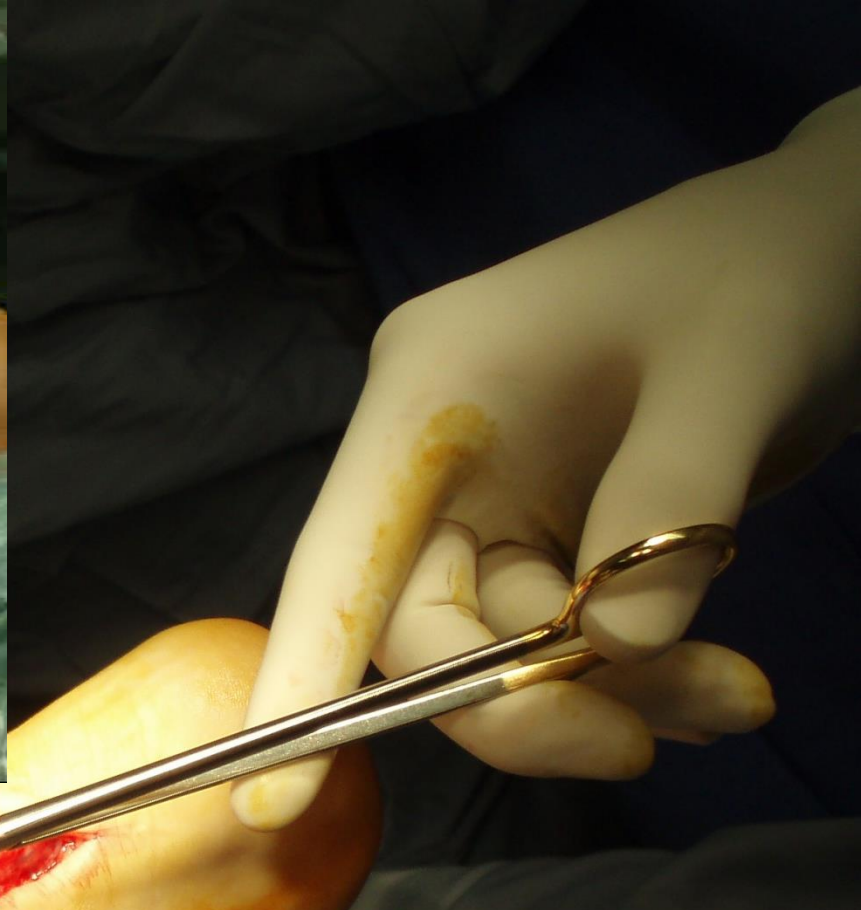
AVOIDS SKIN PITS AND ADHESIONS



INTRAOPERATIVE TA TENSION TESTING



OVERTIGHTEN SUTURE IF FUNCTIONAL POSTOP



PARATENON REPAIR OVER KNOT (4-0 Vicryl)

**SKIN CLOSURE
(3-0 Prolene)**

**BELOW-THE-KNEE
POSTERIOR SPLINT
IN GRAVITY EQUINUS**



POSTOP – OUTPATIENT CLINIC FOLLOW-UP



24-48 h – Wound inspection, gentle mobilization, isometric exercise



1st and 2nd week – Wound inspection, gentle mobilization (10 minutes), sutures out



2nd week – Splint removal and partial weight bearing on a heel supported shoe or orthosis, wound massage to prevent adhesions

2-4th week – Plantigrade weight bearing as tolerated, abandon crutches

4-6 weeks – Swimming and cycling encouraged



7-8 weeks – Initiate heel raise



2 months – Jogging, toe-standing



3-4 months – Jump sports, single-limb hops

GAIT 5 WEEKS POSTOP







OUR SERIES 2000-2010



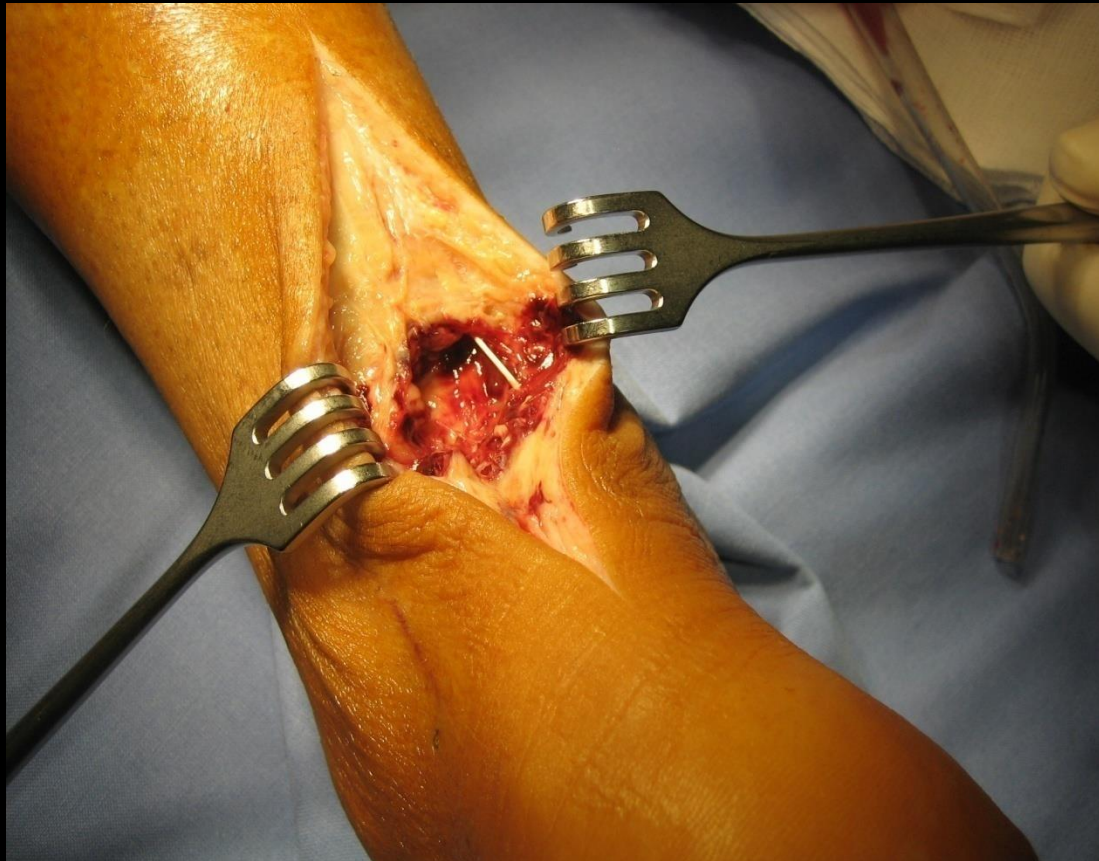
- 275 acute TA ruptures following protocol
- One single surgeon
- Goals achieved
- Cumulative cost savings in excess of 300,000 €
- Major complications – one rerupture
- Minor complications – 15 cases

COMPLICATIONS



OUR SERIES with 3 year follow-up: Case 152

One rerupture
(at 4 weeks postop, husband of Anaesthesiologist)



OUR SERIES with 3 year follow-up: Cases 89, 161

2 sural nerve neuroapraxias (one self-resolved in weeks, one needed surgical release)



NO TOURNIQUET – LOCAL ANAESTHESIA – RELIEVE ...

OUR SERIES with 3 year follow-up: Case 50

1 wound dehiscence
(outpatient wound care - resolved uneventfully)



OUR SERIES with 3 year follow-up: Case 67

1 deep venous thrombosis DVT

(19 yo patient with LMWH and bleeding disorder
previously unknown congenital pathology)



CURRENT CONCEPTS IN MANAGEMENT OF ACUTE ACHILLES TENDON RUPTURES PROFESSIONAL vs RECREATIONAL ATHLETES



RECREATIONAL vs PROS

RESULTS - EPIDEMIOLOGY

25 recreational – 25 professional

Mean age 27yo (18 – 35)

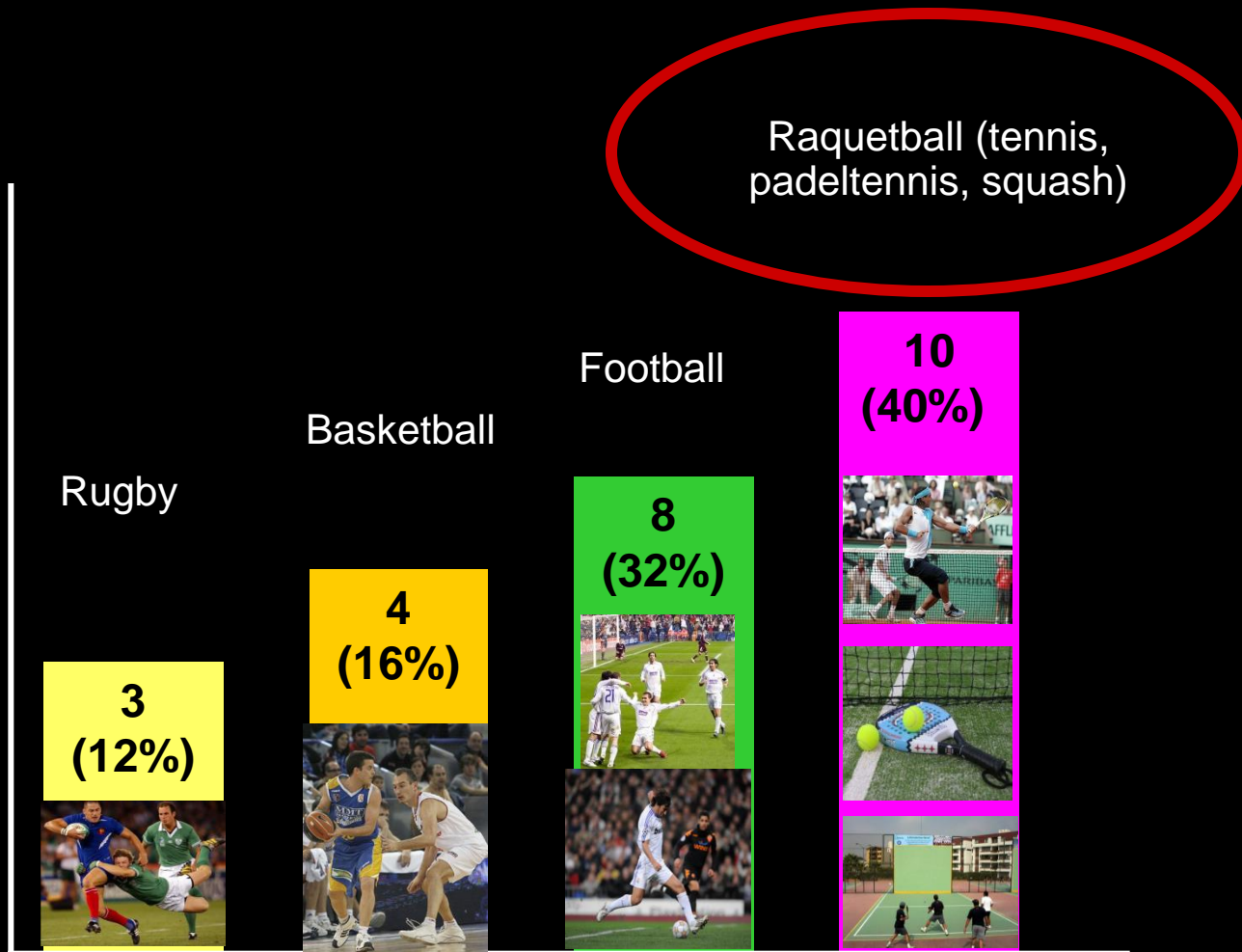
38 left TAs – 12 right TAs

Mean Follow up 2.1 years
(mininum 12 months)

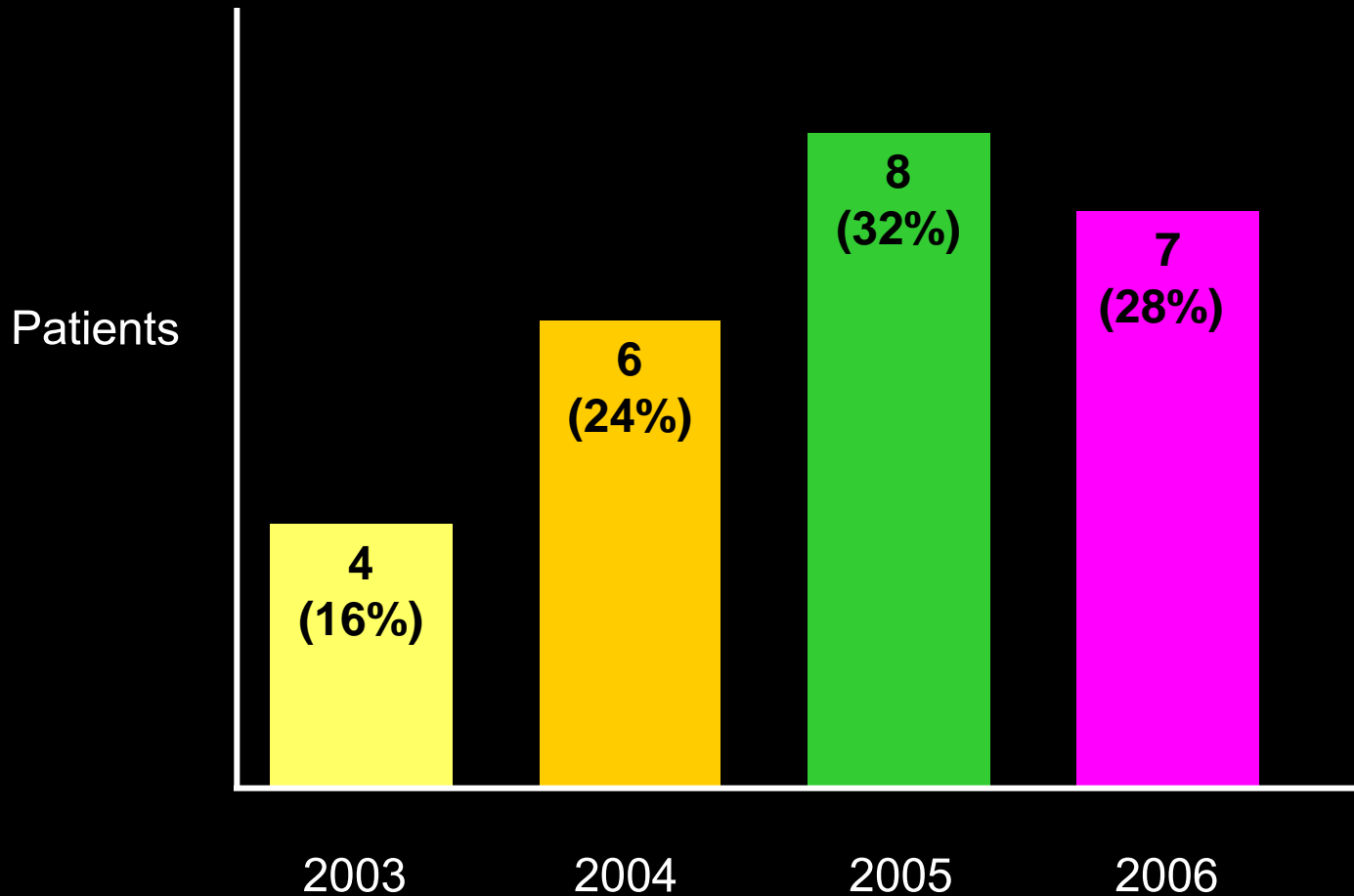
22 ♂ and 3 ♀

SPORT PRACTICE AT INJURY

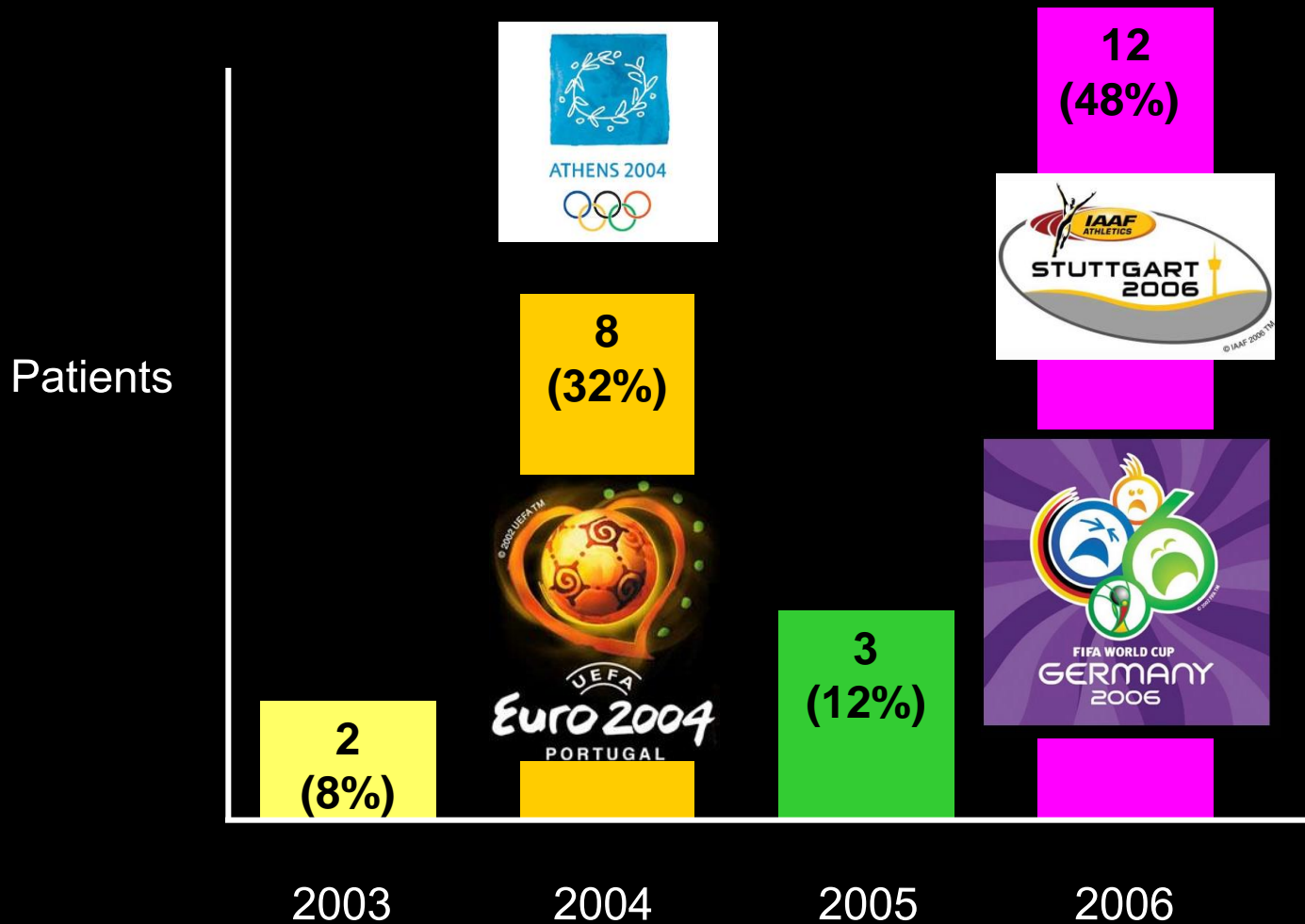
Patients



YEAR DISTRIBUTION - Professionals



YEAR DISTRIBUTION - Recreational



Peak incidence in August – September

90% patients operated within 48 hours from rupture



Mean procedure time (anaesthesia, surgery, splint): 12 minutes

Full range of movement – 4.45 weeks



No limping gait – 12.45 weeks on average

BOTH
SCURFS

Calf atrophy – 6 months





Single heel raise – 14.5 weeks
(11 weeks in Pros)

One minute unsupported
toe-standing test
+ one minute single-limb hops –
20 weeks (12 weeks in Pros)



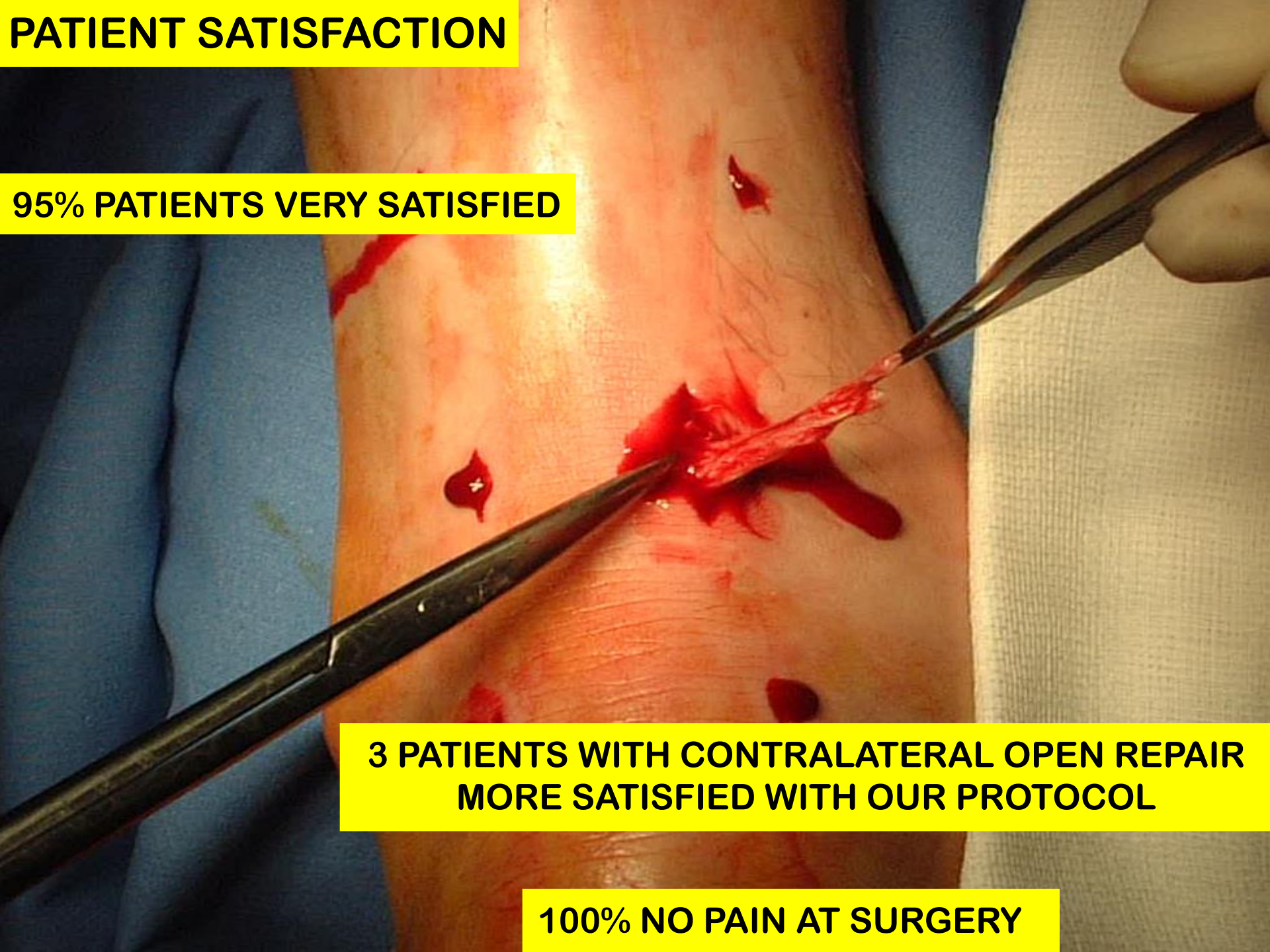
AOFAS ankle-hindfoot score:

80 at 6 months (95 in Pros)

98 at 12 months (99 in Pros)

Return to previous sport practice:

22 weeks (5.5 months) recreational vs 16 weeks (4 months) pros



PATIENT SATISFACTION

95% PATIENTS VERY SATISFIED

**3 PATIENTS WITH CONTRALATERAL OPEN REPAIR
MORE SATISFIED WITH OUR PROTOCOL**

100% NO PAIN AT SURGERY



TAKE HOME MESSAGE

Danish Foot and Ankle Society
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INCIDENCE ON THE RISE

MORE DEMANDING PATIENTS

FROM BIOLOGY TO SURGERY
AND POSTOP

GOLDEN MONTH FOR
WEIGHTBEARING





TAKE HOME MESSAGE

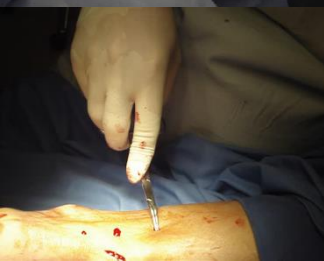
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LOCAL ANAESTHESIA AND LESS
INVASIVE TECHNIQUES

OVERTIGHTEN IF FUNCTIONAL

BUT WHATEVER YOU DO ...

EARLY MOVEMENT AND
WEIGHTBEARING PREVENTS
RERUPTURES AND
COMPLICATIONS



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TAKK



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