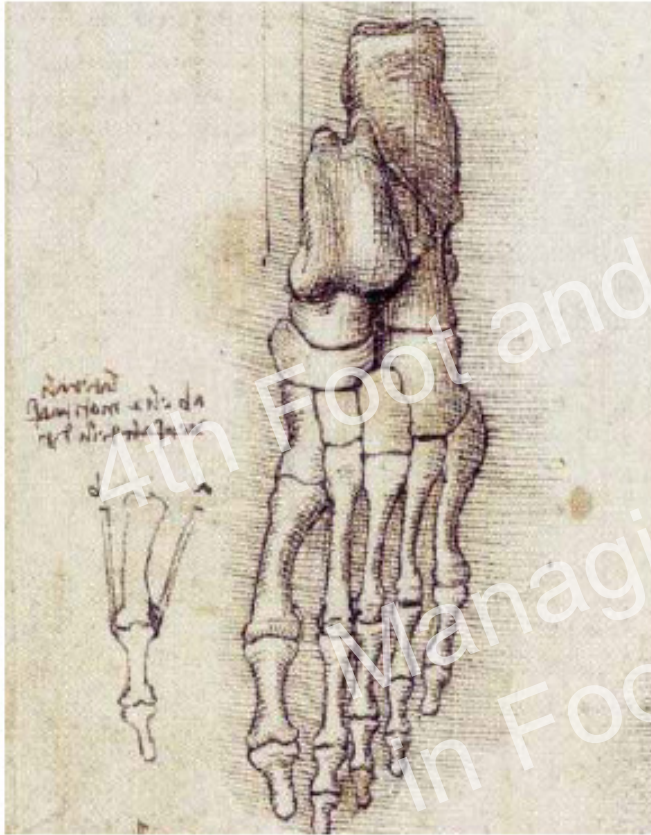


Drawing by Leonardo da Vinci «The noblest pleasure is the joy of understanding»



uniklinik  
EXPERTISE IN MOTION  
balgrist

# CHRONIC ACHILLES TENDON TEARS AND TENDINOPATHY



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September 20th/21st 2012

4th Foot and Ankle Symposium

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**CHRONIC TENDINOPATHY  
CHRONIC TENDON RUPTURES**

**INSERTIONAL  
TENDINOPATHY**

Y



**NON-INSERTIONAL TENDINOPATHY**



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# INSERTIONAL TA TENDINOPATHY: MANAGEMENT CONSIDERATIONS

FREQUENT ASSOCIATION WITH  
RETROCALCANEAL BURSITIS

EXPLAIN THE PATIENT THE EXPECTED  
POSTOP OUTCOME AND TIMING

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# INSERTIONAL TA TENDINOPATHY



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# ADVANTAGES OF POSTERIOR APPROACH

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# TENDINOPATÍA AQUÍLEA INSERCIONAL

## Cirugía

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R  
A-P  
R  
A-P

BIPEDESTACION

C 2048  
A 4095

# DEGENERATIVE INSERTIONAL TENDINOPATHY





# DEGENERATIVE TA DETTACHMENT



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**NON-INSERTIONAL TENDINOPATHY**

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# CHRONIC NON-INSERTIONAL TA TENDINOPATHY

INCIDENCE ON THE RISE

MORE DEMANDING PATIENTS

AMATEUR vs PROS

MAKE TAKE MONTHS ...




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# CHRONIC NON-INSERTIONAL TA TENDINOPATHY

Journal of Biomechanics 42 (2009) 2702–2707

Contents lists available at ScienceDirect

 **Journal of Biomechanics**

journal homepage: [www.elsevier.com/locate/jbiomech](http://www.elsevier.com/locate/jbiomech)  
[www.JBiomech.com](http://www.JBiomech.com)



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**Biomechanical characteristics of the eccentric Achilles tendon exercise**

Marius Henriksen<sup>a,\*</sup>, Jens Aaboe<sup>a</sup>, Henning Bliddal<sup>a,c</sup>, Henning Langberg<sup>b</sup>

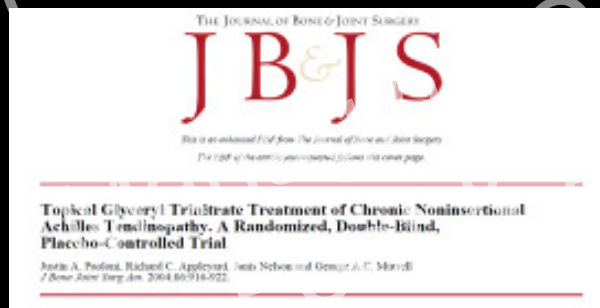
<sup>a</sup> *Clinical Motor Function Laboratory, The Parker Institute, Frederiksberg Hospital, Denmark*  
<sup>b</sup> *Institute of Sports Medicine, Bispebjerg Hospital, Denmark*  
<sup>c</sup> *Center for Sensory-Motor Interaction, Aalborg University, Denmark*



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# CHRONIC NON-INSERTIONAL TA TENDINOPATHY

ECWT



HIGH VOLUME INJECTIONS



# CHRONIC NON-INSERTIONAL TA TENDINOPATHY

## SCLEROSING INJECTIONS

Knee Surg Sports Traumatol Arthrosc (2008) 18:887–890  
DOI 10.1007/s00167-008-0568-0

SPORTS MEDICINE

### Sclerosing injections in midportion Achilles tendinopathy: a retrospective study of 25 patients

Martin Clementson · Ingemar Lorén ·  
Leif Dahlberg · Mats Åström

Clin Orthop Relat Res (2008) 466:1625–1632  
DOI 10.1007/s11999-008-0254-z

SYMPOSIUM: MOLECULAR AND CLINICAL DEVELOPMENTS IN TENDINOPATHY

### Successful Management of Tendinopathy With Injections of the MMP-inhibitor Aprotinin

John Orchard MD, PhD, FACSP, FACSM, FESEM (UK),  
Andrew Massey MB BCh BAO BSc(Hons),  
Richard Brown MBBS BSc(Med) (Hons) FRACGP FACSP,  
Adeline Cardon-Dunbar, Jamie Hofmann MD



PRPs

**JAMA**<sup>®</sup>

Online article and related content  
current as of November 28, 2010.

### Platelet-Rich Plasma Injection for Chronic Achilles Tendinopathy: A Randomized Controlled Trial

Robert J. de Vos; Adam Weir; Hans T. M. van Schie; et al.

JAMA. 2010;303(2):144-149 (doi:10.1001/jama.2009.1986)

<http://jama.ama-assn.org/cgi/content/full/303/2/144>

# CHRONIC NON-INSERTIONAL TA TENDINOPATHY

SURGERY:

ADHESIONS

PLANTARIS

VOLUME INJECTION

SLIDING TENDON



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# CHRONIC NON-INSERTIONAL TA TENDINOPATHY

ADDRESS GASTROC TIGHTNESS



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# CHRONIC NON-INSERTIONAL TA TENDINOPATHY

LESS SATISFACTORY RESULTS WHEN  
GASTROC TIGHTNESS  
ASSOCIATE GASTROC RECESSION

FOOT & ANKLE INTERNATIONAL  
Copyright © 2008 by the American Orthopaedic Foot & Ankle Society  
DOI: 10.3113/FAL.2008.0620

## **Gastrocnemius Recession as Treatment for Refractory Achilles Tendinopathy: A Case Report**

Christopher E. Gentchos, MD; Donald R. Bohay, MD; John G. Anderson, MD  
Grand Rapids, MI

# CHRONIC NON-INSERTIONAL TA TENDINOPATHY

SURGERY

TENDOSCOPY

+/-

GASTROC PROXIMAL RELEASE

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# TA TENDINOPATHY AND TENDOSCOPY

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An arthroscopic view of a joint, likely the ankle, showing tendons and ligaments. The image is circular and shows a reddish, fleshy interior with various structures. A bright spot is visible in the upper center, possibly a surgical site or a specific anatomical feature. The overall appearance is that of a surgical field viewed through an endoscope.

# TA TENDINOPATHY AND TENDOSCOPY

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# GASTROC PROXIMAL RECESSION



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# GASTROC PROXIMAL RECESSION FOR NON-INSERTIONAL TA TENDOPATHY



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# END STAGE NON-INSERTIONAL TENDINOPATHY

SIMILAR SETTING TO THAT OF CHRONIC RUPTURE

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# END STAGE NON-INSERTIONAL TENDINOPATHY

10-15% PATIENTS

CONSIDER SURGERY AS IN CHRONIC  
RUPTURE

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**CHRONIC ACHILLES TENDON RUPTURES**

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# CHRONIC RUPTURES OF THE ACHILLES TENDON

## BACKGROUND

AS MUCH AS A FIFTH OF ACUTE ACHILLES  
TENDON RUPTURES CAN BE MISSED

HIGH DEGREE OF SUSPICION

Ballas MT, Tytko J, Mannarino F. **Commonly missed orthopedic problems.**  
*Am Fam Physician* 1998; 57: 267-274.

# NEGLECTED CHRONIC ACHILLES TENDON RUPTURES



# ACUTE ACHILLES TENDON RUPTURES

MININVASIVE REPAIR WITH EARLY  
MOVEMENT AND WEIGHT BEARING

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# 3 WEEKS TO CONSIDER OPEN SURGERY



A RERUPTURE NEEDS TO BE  
MANAGED AS A CHRONIC  
RUPTURE

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# IS THERE A PLACE FOR CONSERVATIVE MANAGEMENT?

1953

10/18 patients satisfactory results ... over years

Compared poorly with those managed surgically

Christensen L. Rupture of the Achilles tendon: analysis of 57 cases.  
*Acta Chir Scand* 1953; 106: 50-60.

# SURGICAL MANAGEMENT OF CHRONIC ACHILLES TENDON RUPTURES

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# SURGICAL MANAGEMENT OF CHRONIC ACHILLES TENDON RUPTURES

NO EVIDENCE-BASED GUIDELINES FOR CHOOSING TYPE OF SURGERY

TWO CLASSIFICATION SYSTEMS (MYERSON AND KUWADA) TO CONSIDER ... BUT HAVE NOT BEEN ASSESSED NOT EVEN BY THEIR AUTHORS



# END TO END REPAIR

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# OTHER REPAIR TECHNIQUES

## SYNTHETIC GRAFTS INTERPOSED SCAR TISSUE PERONEUS BREVIS

Pérez Teuffer A. Traumatic rupture of the Achilles tendon. Reconstruction by transplant and graft using the lateral peronus brevis. *Orthop Clin North Am* 1974; 5: 89-93.

Yasuda T, Kinoshita M, Okuda R. Reconstruction of chronic Achilles tendon rupture with the use of interposed tissue between the stumps. *Am J Sports Med* 2007; 35: 582-588.

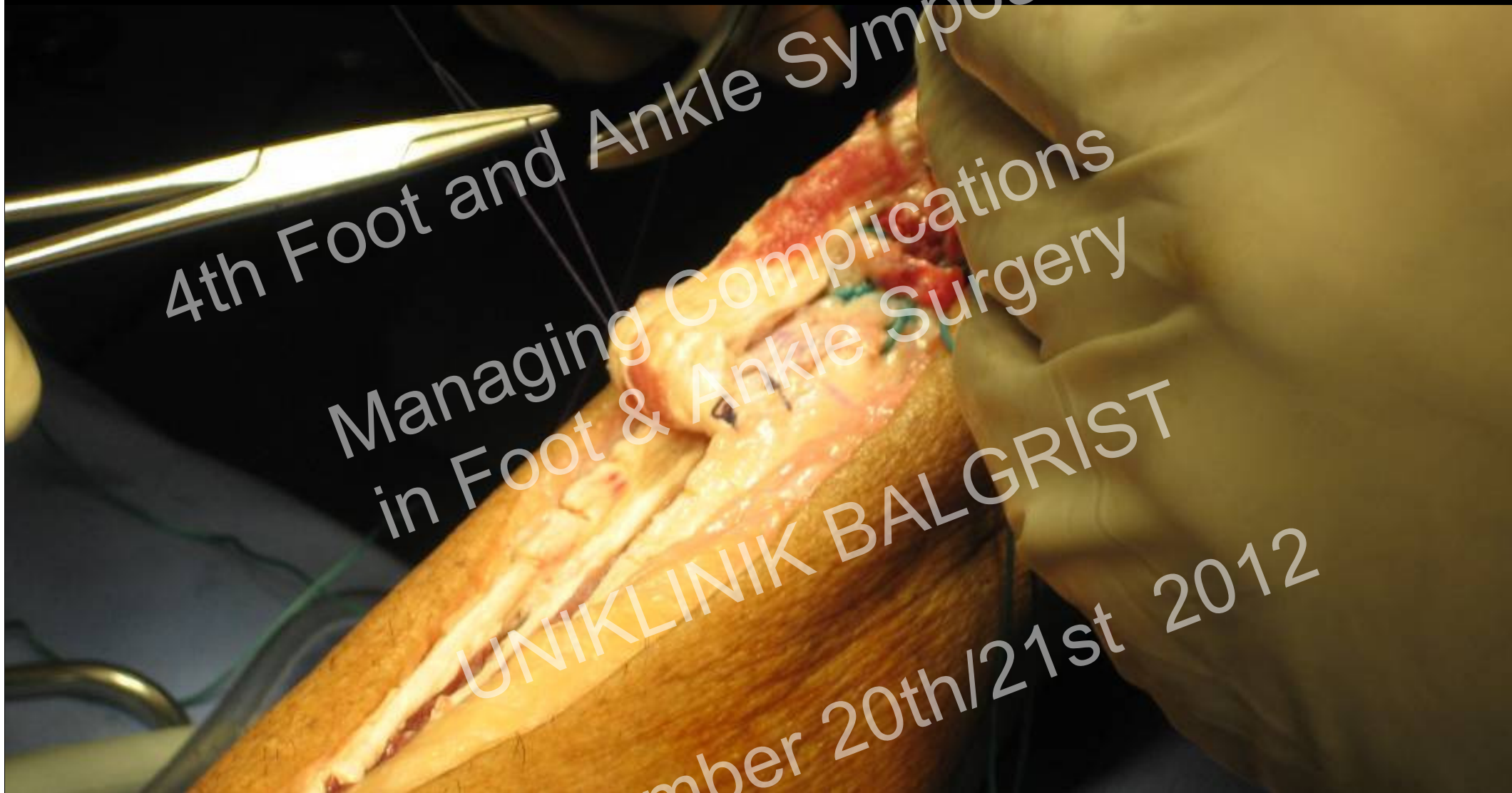
Bugg EL, Boyd BM. Repair of neglected rupture or laceration of the Achilles tendon. *Clin Orthop Relat Res* 1968; 56: 73-75.

# TURNDOWN FLAPS



Christensen I. Rupture of the Achilles tendon: analysis of 57 cases.  
*Acta Chir Scand* 1953; 106: 50-60.

# TURNDOWN FLAPS



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Christensen I. Rupture of the Achilles tendon: analysis of 57 cases.  
*Acta Chir Scand* 1953; 106: 50-60.

# TURNDOWN FLAPS



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Christensen I. Rupture of the Achilles tendon: analysis of 57 cases.  
*Acta Chir Scand* 1953; 106: 50-60.

# V-Y TENDON ALIGNMENT

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90% CASES IN MY PRACTICE

UP TO 10-12 CM INTRAOP GAP

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Abraham E, Pankovich AM. *Neglected rupture of the Achilles tendon. Treatment by V-Y tendinous flap.* *J Bone Joint Surg Am* 1975; 57: 253-255.



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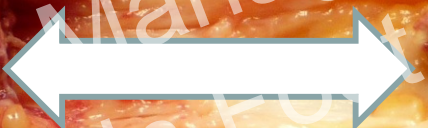




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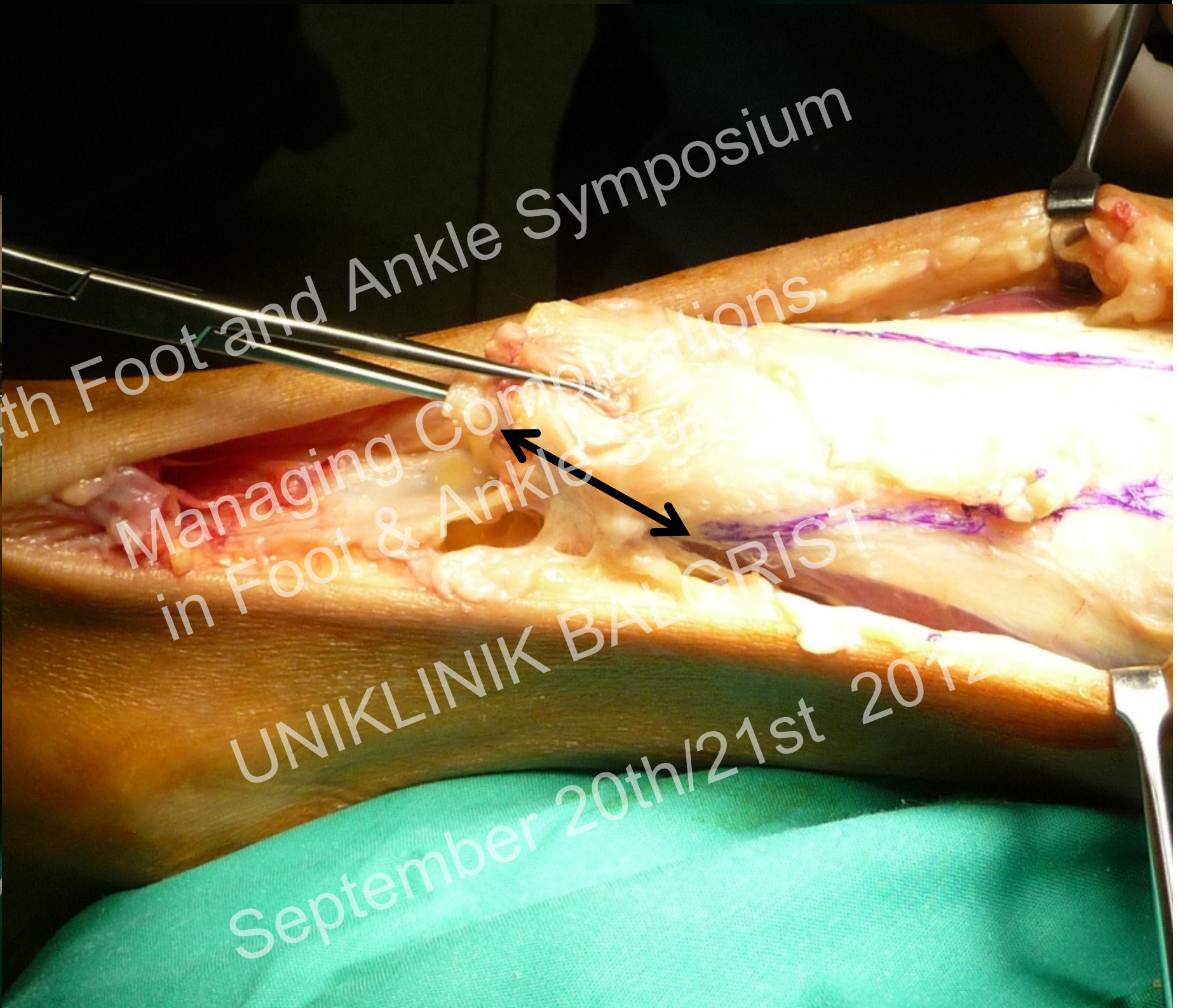
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# HIGHER MORBIDITY RATES



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# HIGHER MORBIDITY RATES



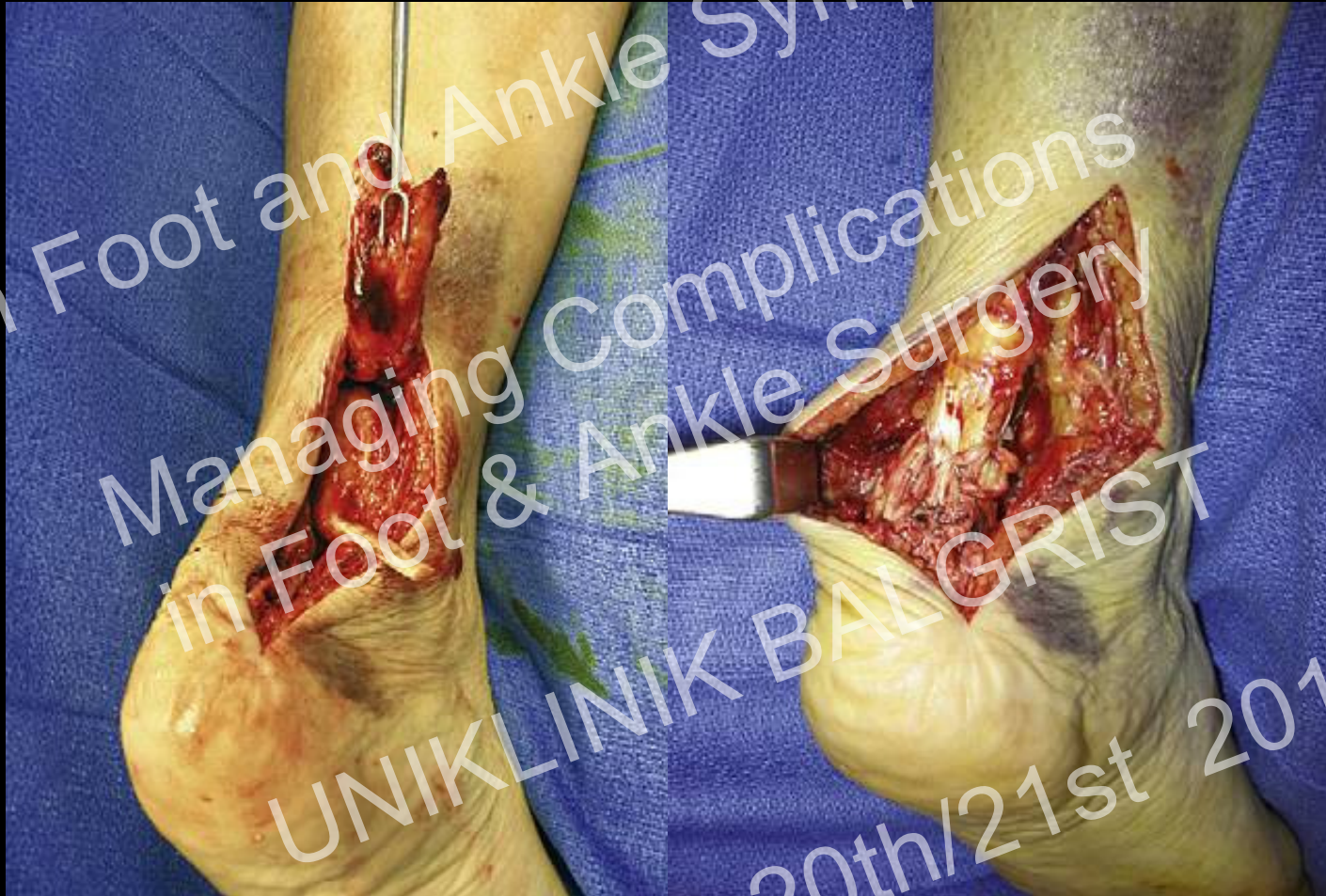
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# FLEXOR HALLUCIS LONGUS



Mann RA, Holmes GB, Seale KS, Collins DN. **Chronic rupture of the Achilles tendon: a new technique of repair.** *J Bone Joint Surg Am* 1991; 73: 214-219.

# ALLOGRAFTS



Nellas ZL, Loder BG, Wertheimer SJ. Reconstruction of an Achilles tendon defect utilizing an Achilles tendon allograft. *J Foot Ankle Surg* 1996; 35: 144-148.

# POSTOPERATIVE MANAGEMENT

LEARN FROM ACUTE RUPTURES

EARLY MOVEMENT

EARLY WEIGHTBEARING

SKIN IS THE LIMIT – FROM 2<sup>ND</sup> WEEK POSTOP



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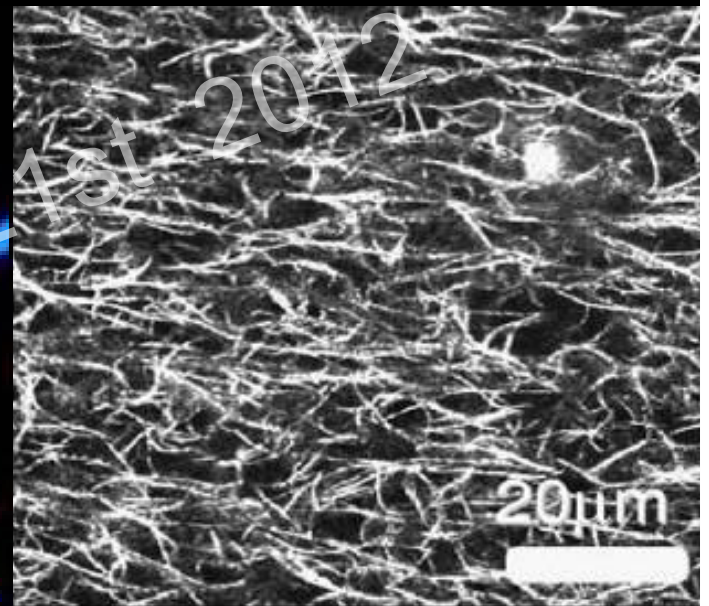
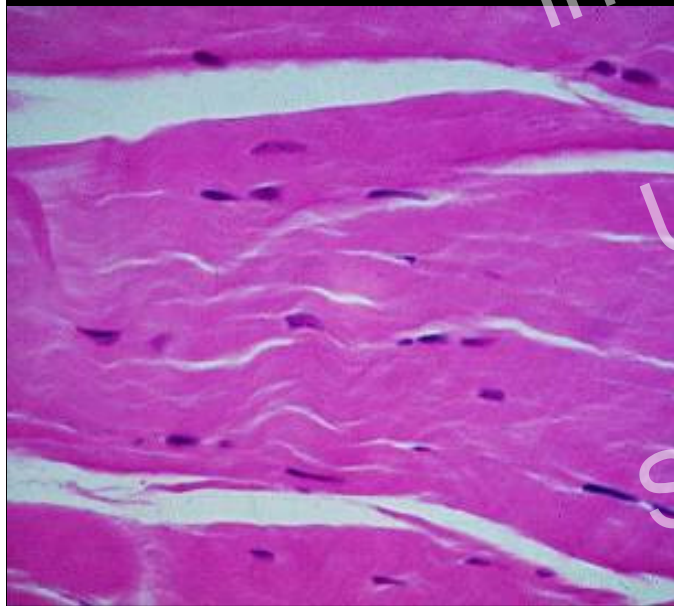
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# TA REPAIR FOLLOWING SURGERY

- Inflammatory response is sensible to external mechanical stimuli (or the absence of stimuli)
- It is possible to modulate and accelerate TA repair depending on postop protocol



# TA REPAIR FOLLOWING SURGERY

Phases: Swelling - repair - remodelling

Fibroblasts: GOLDEN MONTH from 2<sup>nd</sup> and 6<sup>th</sup> weeks from surgery

TENSION, MOVEMENT and WEIGHTBEARING

Invest in “quality repair” of TA” ...



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

AN ULTRASTRUCTURAL STUDY IN THE NEW ZEALAND RABBIT

R. González Santander, M. A. Plasencia Arriba, G. Martínez Cuadrado, A. Lopez Alonso, M. González-Santander Martínez, F. J. Martínez Alonso, M. Monteagudo, M. V. Toledo Lobo

*From the University of Alcalá de Henares, Madrid, Spain*

# (SKIN PERMITTING) FOLLOW FUNCTIONAL POSTOP PROTOCOL





# (SKIN PERMITTING) FOLLOW FUNCTIONAL POSTOP PROTOCOL



# GAIT AT 8 WEEKS



# TAKE HOME MESSAGE

TENDOSCOPY + PROXIMAL GASTROC  
RECESSION FOR CHRONIC NON  
INSERTIONAL TENDINOPATHY

VY ALIGNMENT IS A VERSATILE TECHNIQUE  
IN MOST CHRONIC RUPTURES

EARLY MOVEMENT AND WEIGHTBEARING

**THANK YOU**



**Manuel  
Monteagudo**

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