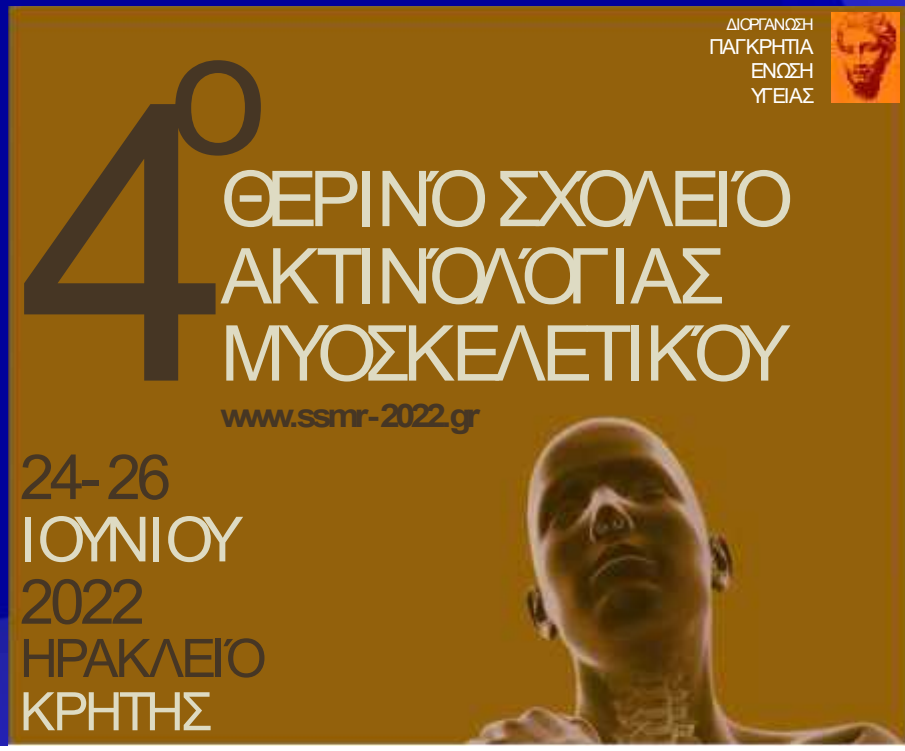
Μεταταρσαλγία: απεικονιστική διερεύνηση και θεραπεία

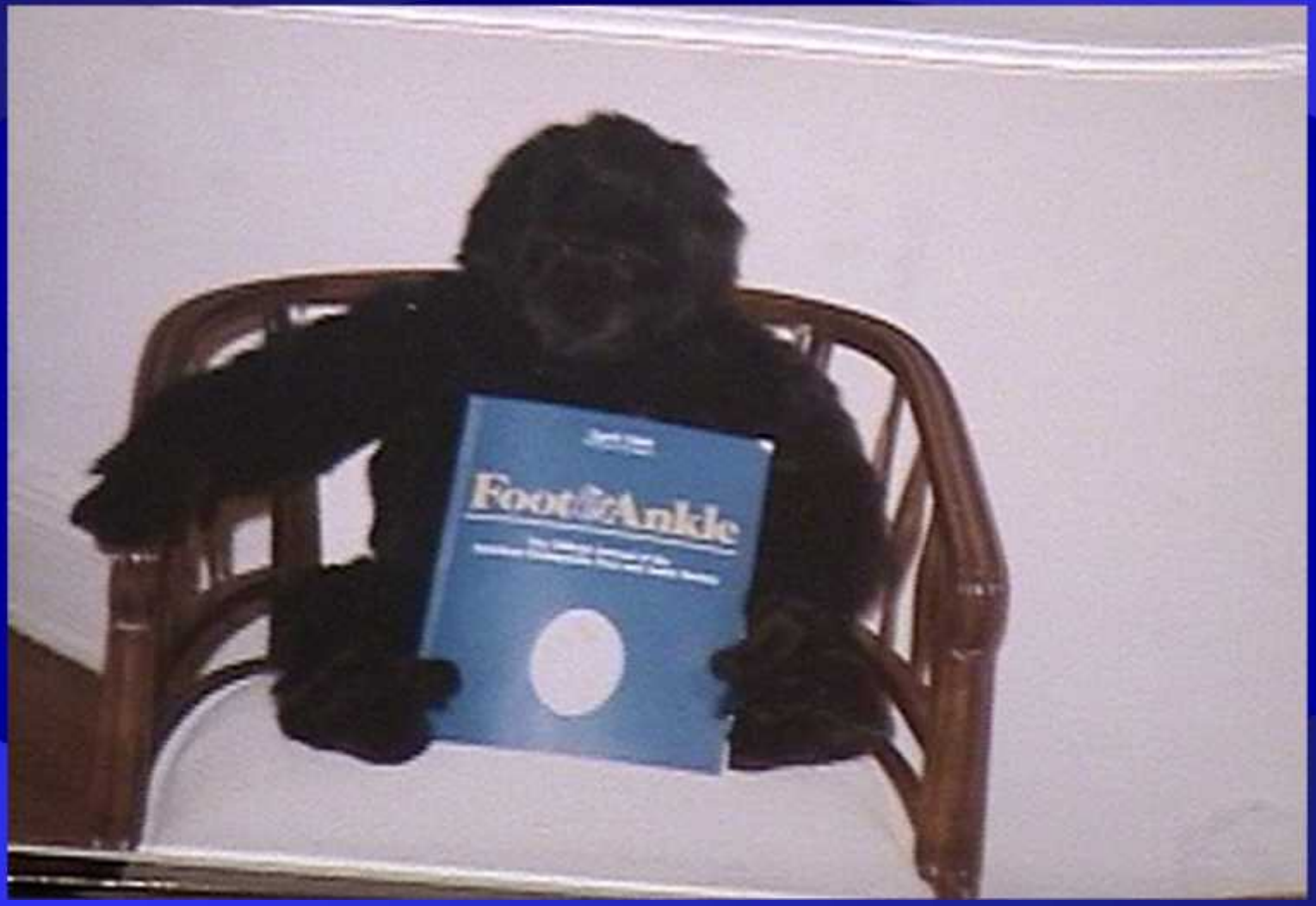
Δρ Εμμανουήλ Σταμάτης, FACS
Διευθυντής Κλινικής Επανορθωτικής Χειρουργικής Ποδιού και Ποδοκνημικής
Mediterraneo Hospital

Mediterraneo Hospital




Τι μπορεί να μας πει για την Μεταταρσαλγία?

Το πρόβλημα? Η «κλασική» γνώση!!!!!



Πτώση Κεφαλών Μεταταρσίων????

- **Αδιευκρίνιστη οντότητα της Ελληνικής Ορθοπαιδικής μυθολογίας**

  (βλ. Μινώταυρος)
- **Δεν απαντάται στην Αγγλική βιβλιογραφία**
- **Περιγράφει μεταταρσαλγία που δεν έχει (ακόμα) αιτιολογηθεί**

ΜΕΤΑΤΑΡΣΑΛΓΙΑ

Σύμπτωμα και όχι παθολογία!!!!!

"Pain arising from the metatarsal heads, MTP joints and surrounding soft tissues due to a wide spectrum of clinical entities".

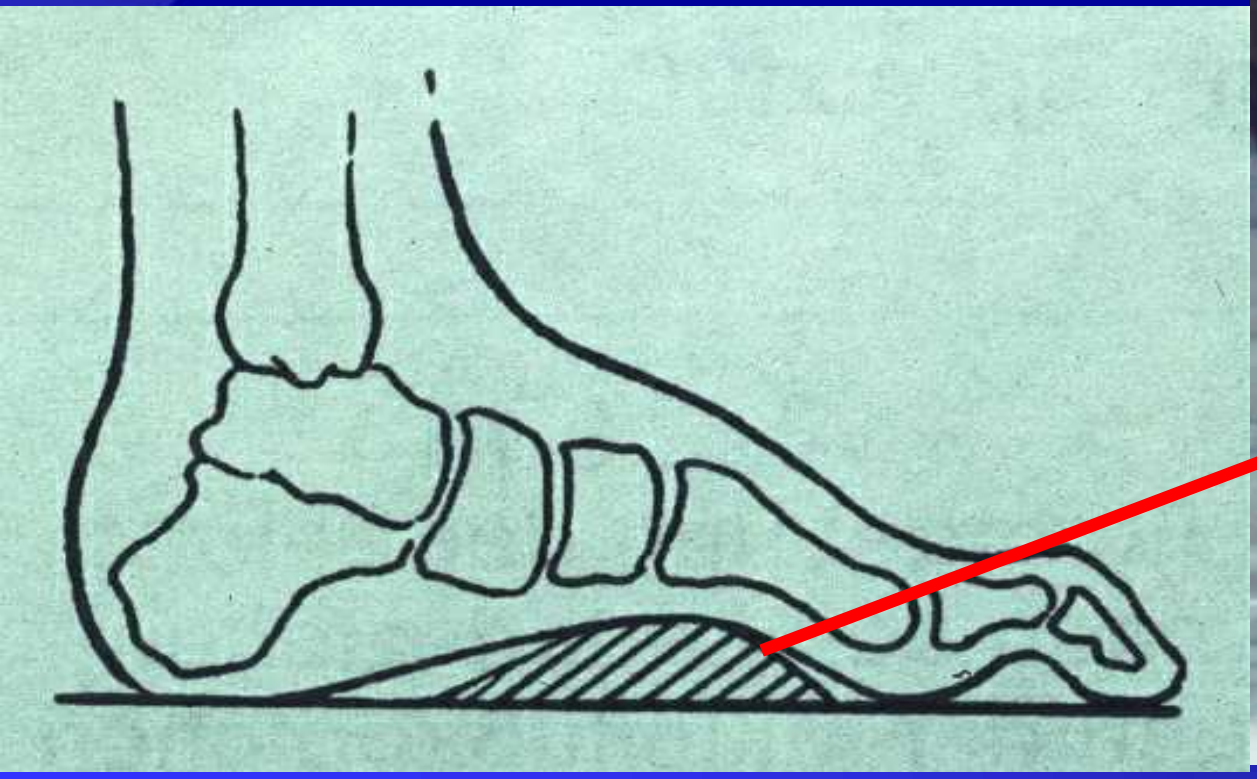
Αιτιολογία

….η ακριβής γνώση του εχθρού είναι το καλύτερο όπλο…..

- ***Εκφυλισμός λιπώδους σώματος***
- ***Λειτουργική ανεπάρκεια 1ης ακτίνας***
- ***Παθολογία των ΜΤΦ***
- ***Ανωμαλίες μήκους κάμψης μεταταρσίων***
- ***Παθολογία κεφαλών μεταταρσίων***
- ***Συστηματικά νοσήματα***
- ***Μεσοδακτύλιος νευραλγία***
- ***Ιατρογενείς βλάβες***
- ***Εξεργασίες πέριξ των ΜΤΦ***
- ***Ρίκνωση αχιλλείου-Ιπποποδία***
- ***Referral pain (Ταρσαίος σωλήνας)***

Εκφύλιση λιπώδους σώματος

Θεραπεία ΠΑΝΤΑ συντηρητική

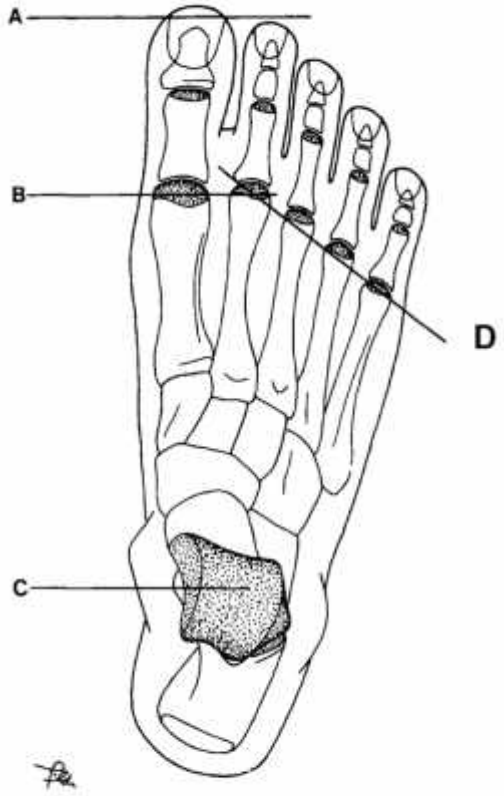


Ανεπάρκεια 1ης ακτίνας

Βλαισός μέγας δάκτυλος

Δύσκαμπτος μέγας δάκτυλος

Υπερκινητικότητα 1ης σφηνοειδομεταταρσίου (??)



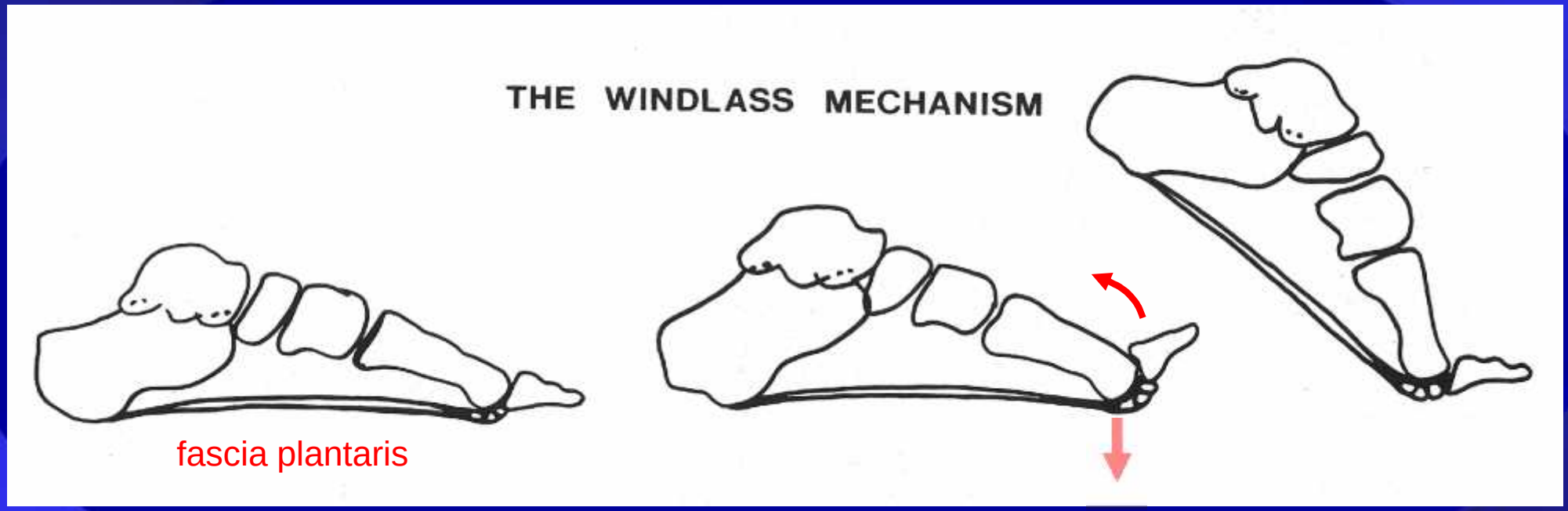
A. Κορυφή μεγάλου δακτύλου

B. Εγκάρσιο επίπεδο κοινού άξονα περιστροφής των μεταταρσοφαλαγγικών αρθρώσεων, στην ραχιαία έκταση.

C. Επίπεδο ποδοκνημικής άρθρωσης

D.Οβελιαίο επίπεδο κοινού άξονα περιστροφής των μεταταρσοφαλαγγικών αρθρώσεων, στην ραχιαία έκταση.

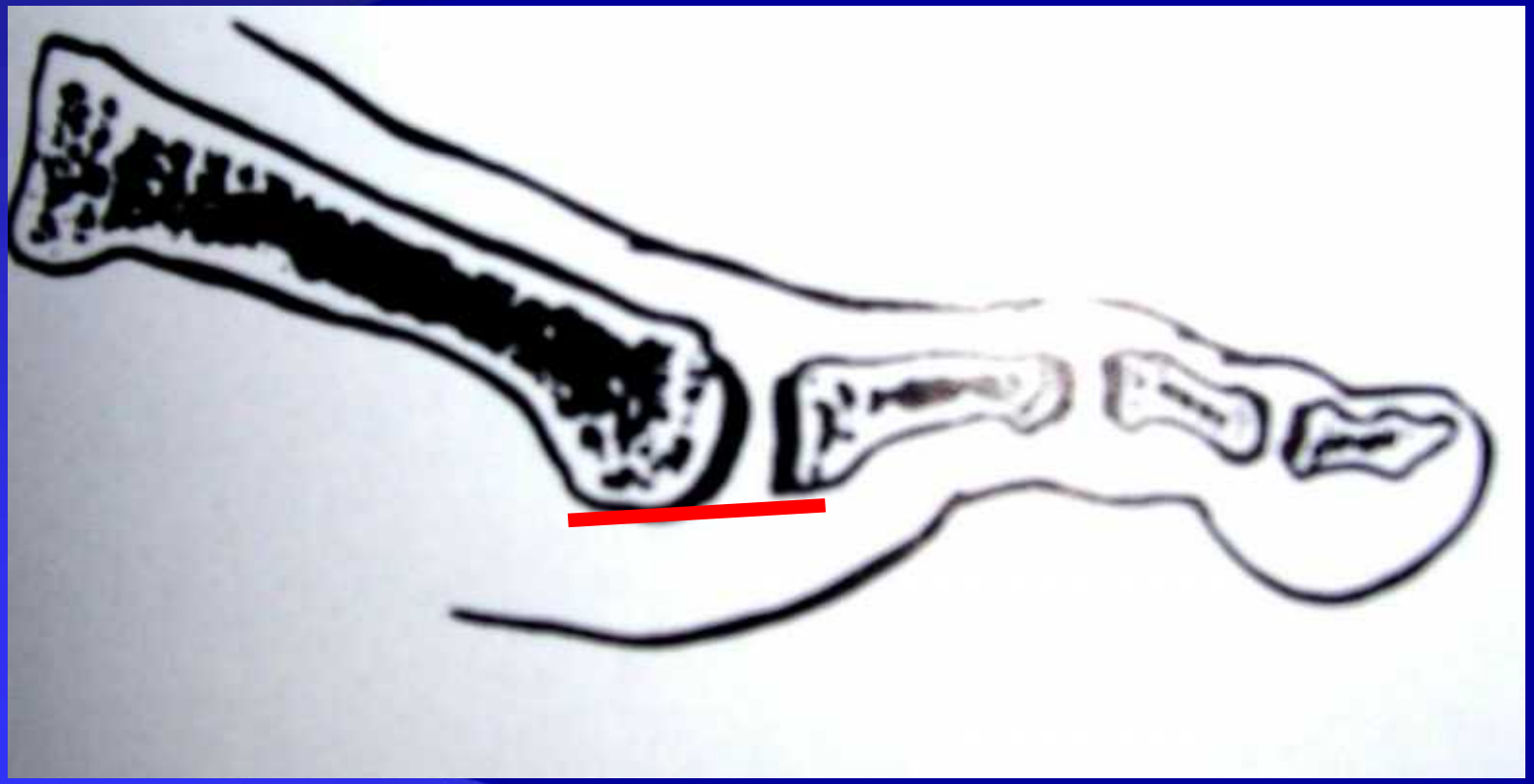
Εικόνα 1. *(Από Finn BM, Clin Orthop Rel Res, 1979)*

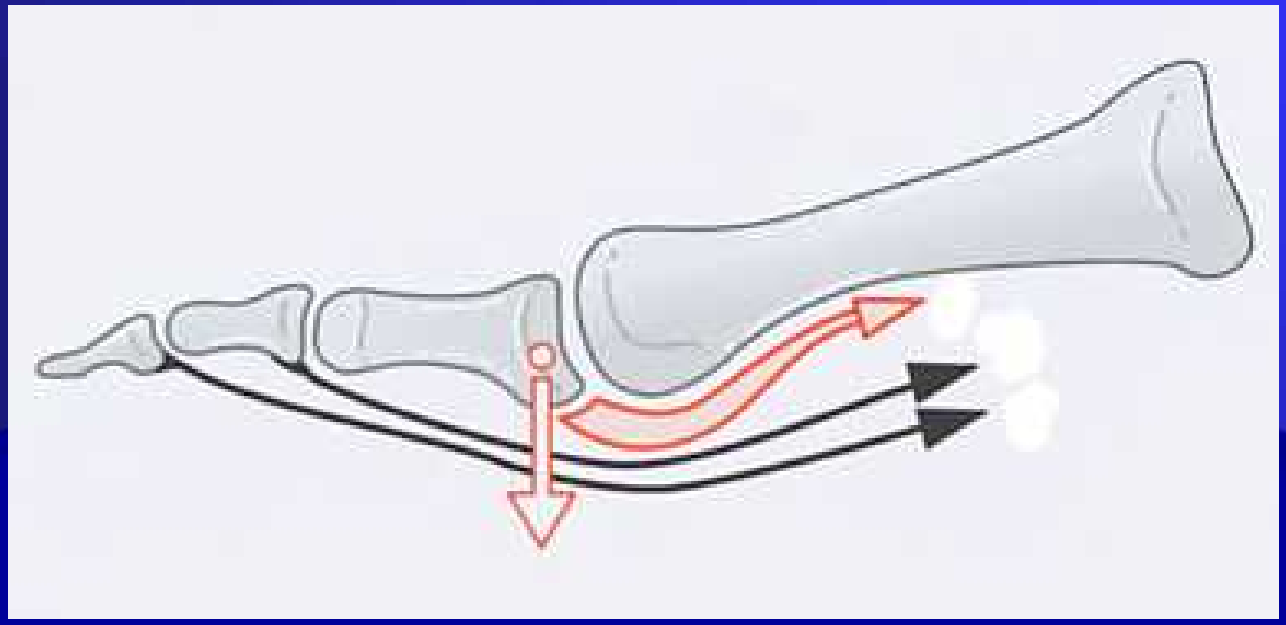

THE WINDLASS MECHANISM
fascia plantaris

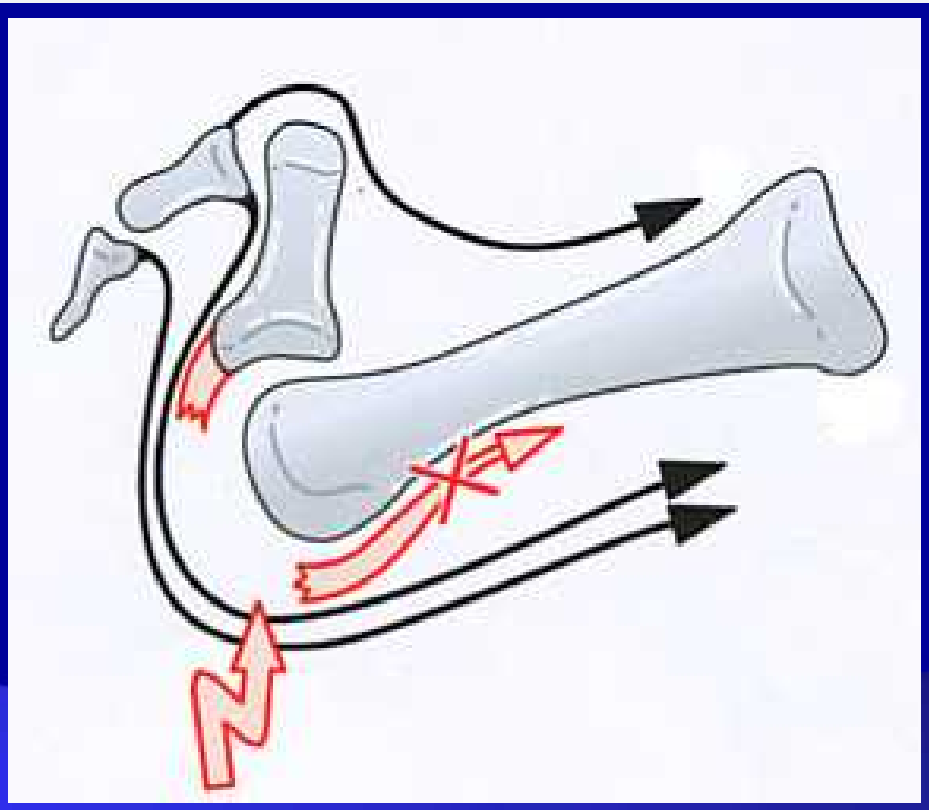

MEDITERRANEO HOSPITAL ΓΛΥΦΑΔΑ
CR
4280 x 3520 10 Bit
Zoom 42%
WC 540 WW 1024

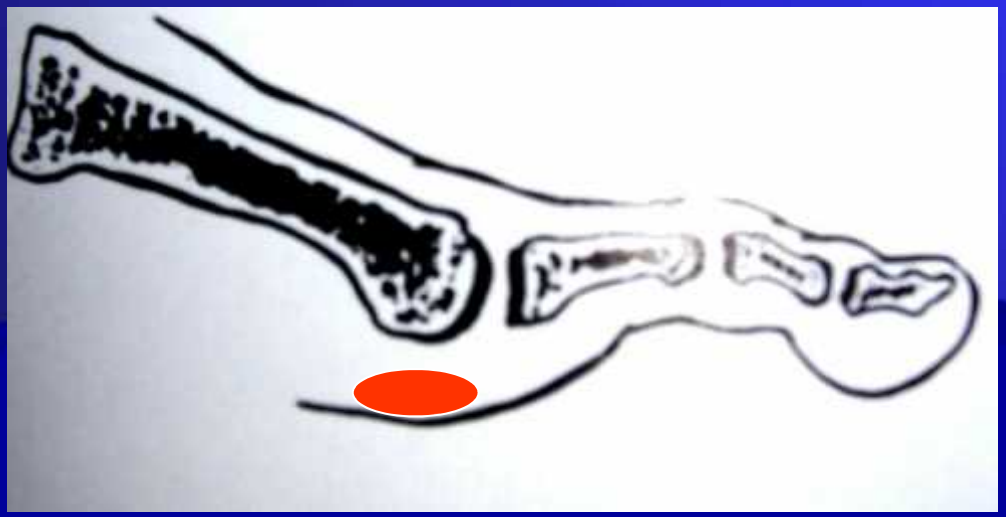
Παθολογία των ΜΤΦ (Αστάθεια της ΜΤΦ)

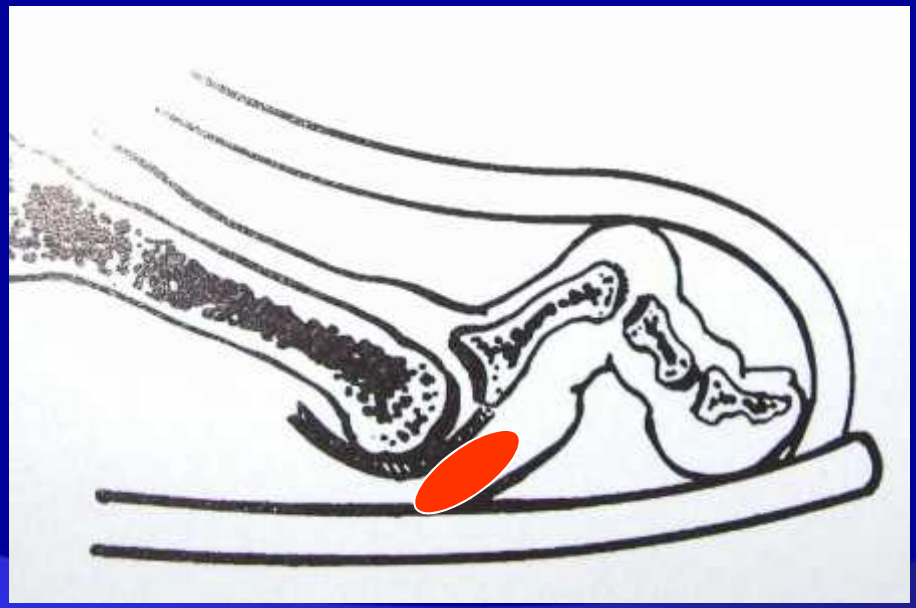
Εκφυλιστική παθολογία του πελματιαίου πετάλου











GRADE I: Υμενίτιδα-αδιόρατη παραμόρφωση

Επώδυνη άρθρωση
Διογκωμένη
Θετικό drawer test
Πόνος στην ήπια παθητική υπερέκταση
Πόνος στην τρίτη φάση βάδισης

*Η διάγνωση με **μαθηματική ακρίβεια** χάνεται για πολλούς μήνες*

GRADE II: Ραχιαία ή ραχιαία έσω απόκλιση (Cross over)

Απόκλιση κυρίως ορατή στο Push up ή load stimulation test
Προσοχή στις ακτινογραφίες


10 8:29AM


10 8:28AM

Load stimulation test

Εικόνα 4

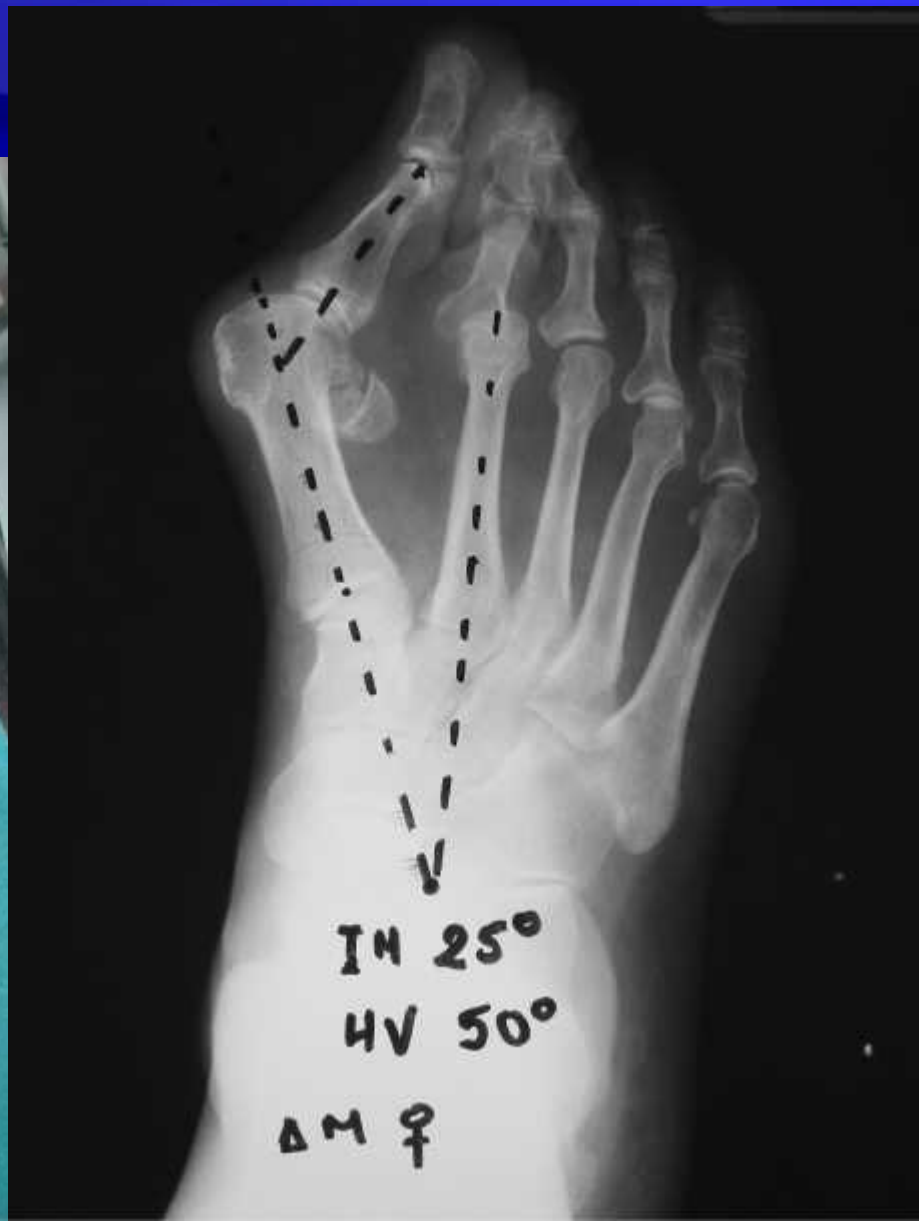

Εικόνα 5

GRADE III: Ραχιαίο ή ραχιαίο έσω υπεξάρθρημα (Cross over)


23 7:57AM


23 7:55AM

GRADE IV: Εξάρθρημα



ΘΕΡΑΠΕΙΑ

Συντηρητική

Grade II-IV: Malpractice???

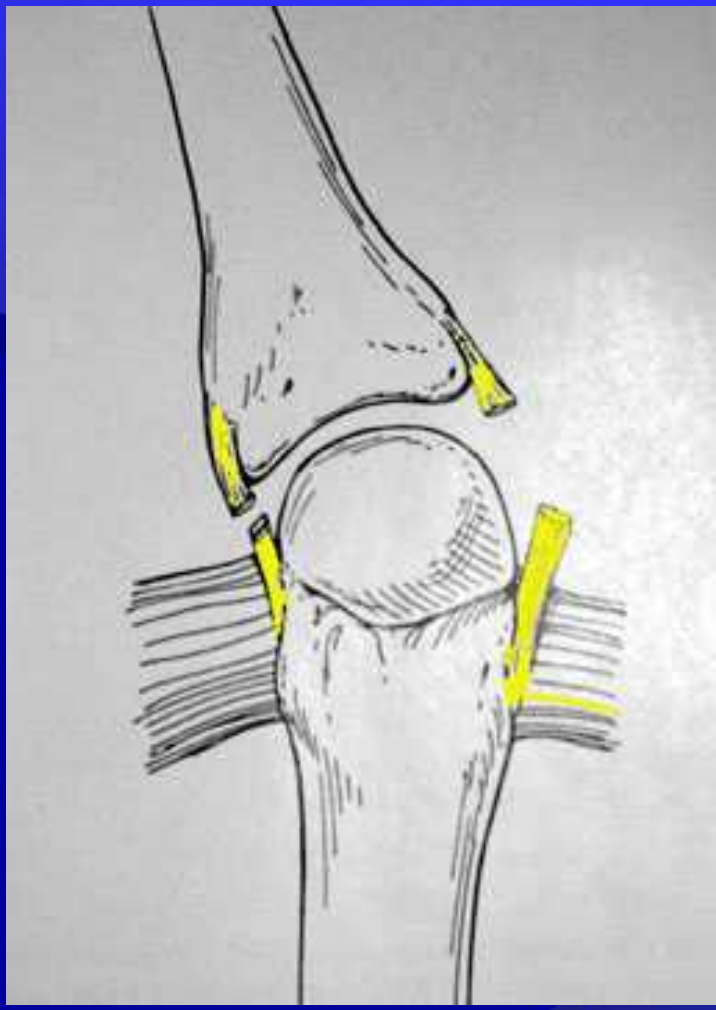
Grade I:

Σκληρή άκαμπτη σόλα
Σόλα Rocker
Budin splint
Έγχυση κορτικοειδούς

ΧΕΙΡΟΥΡΓΙΚΗ

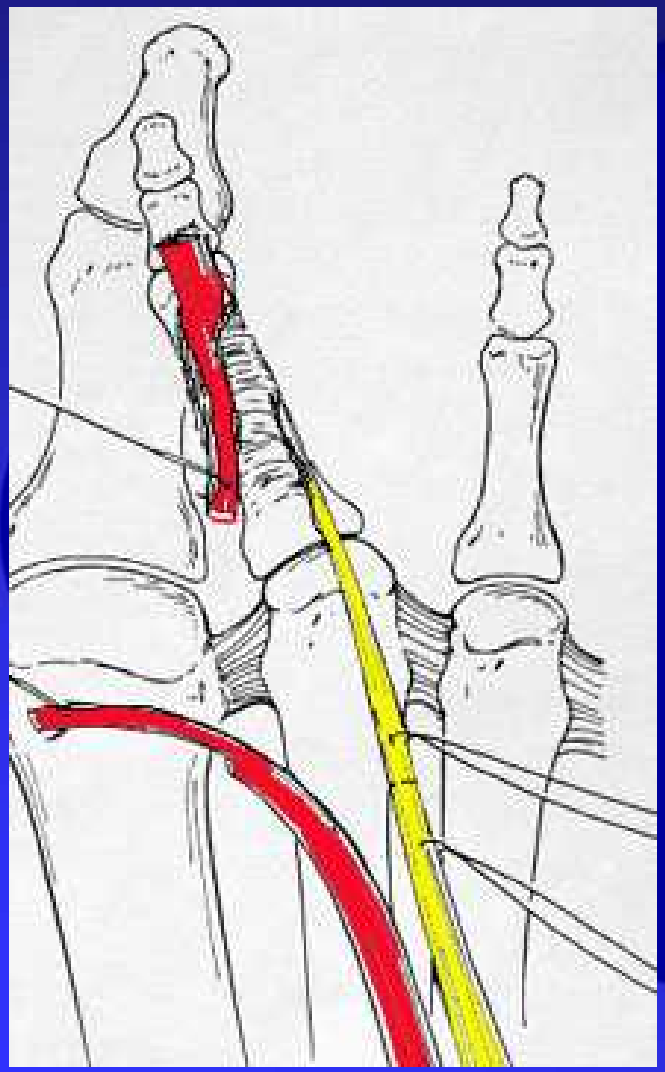
Διατομή ραχιαίου θυλάκου
EDL &EDB- Επιμήκυνση ΄Z’
Διατομή πλαγίων και αυτοχθόνων
Αποκόλληση του plantar plate

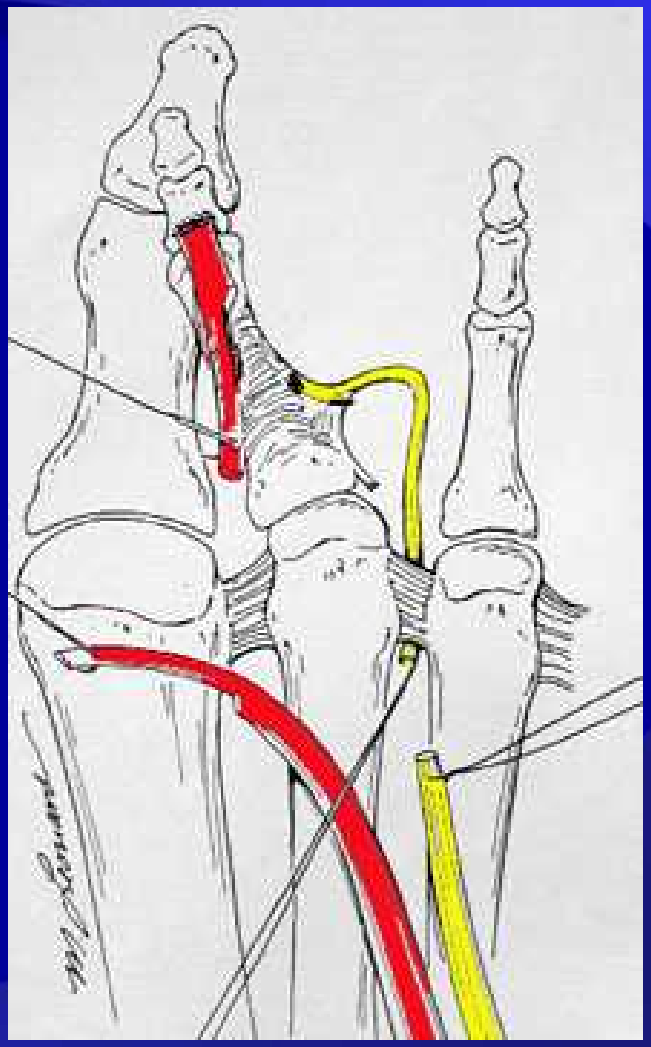
ΕΠΙΣΚΕΥΗ ΕΠΙΣΦΑΛΗΣ



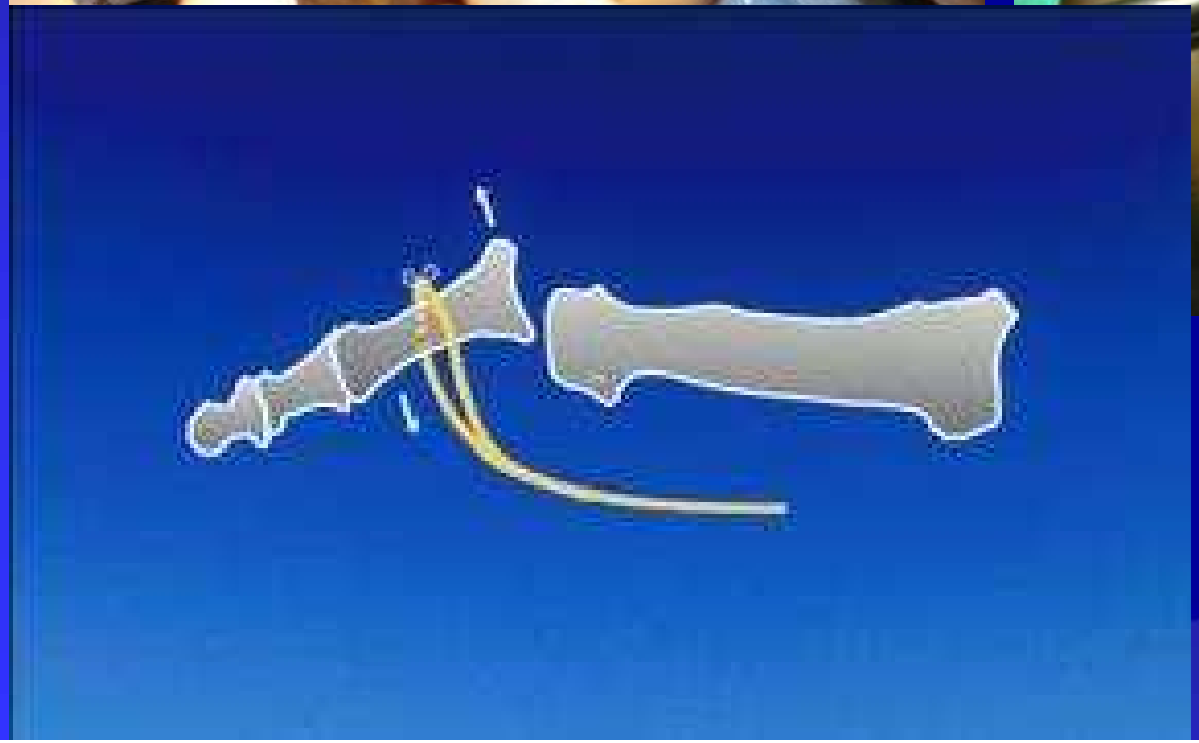
Ford et al, J Foot Ankle Surg, 1998
Peter Jolly, personal communication

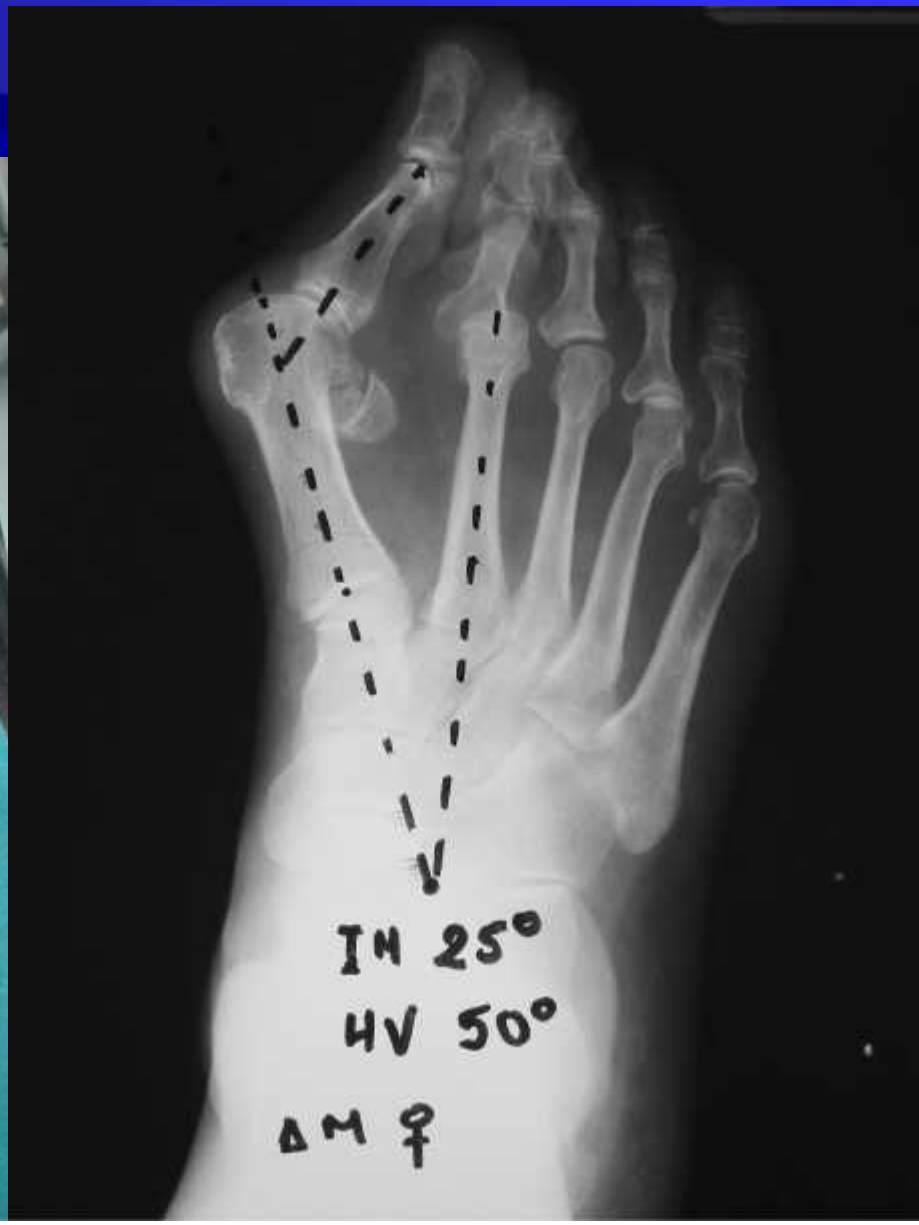
Τενοντόδεση ή τενοντομεταφορά?????





Τενοντόδεση ή τενοντομεταφορά?????




IM 25°
HV 50°
AM ♀


2 years
3 18:02


20 10:43


23 7:57AM


23 7:55AM


1 year
post op
16 11:40


16 11:41

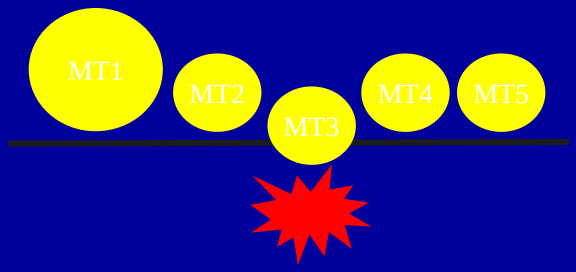
ΑΝΩΜΑΛΙΕΣ ΜΗΚΟΥΣ ΚΑΜΨΗΣ ΜΤΤ

Διαταραχή μήκους 2ου μεταταρσίου

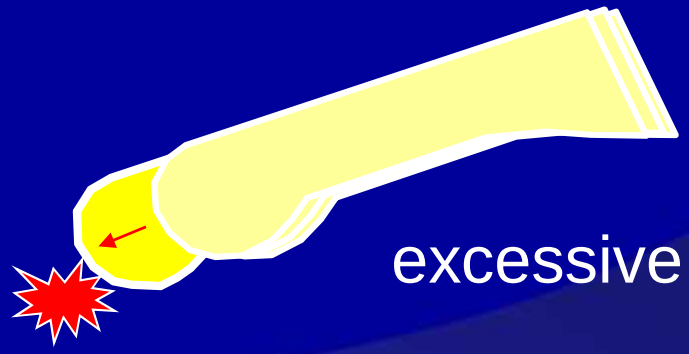
Διαταραχή μήκους 1ου μεταταρσίου (Morton's Foot)

Ευμεγέθης έξω κόνδυλος κεφαλής 2ου μεταταρσίου

Πελματιαία κάμψη 1ου-2ου-3ου μεταταρσίων



excessive flexion



excessive length

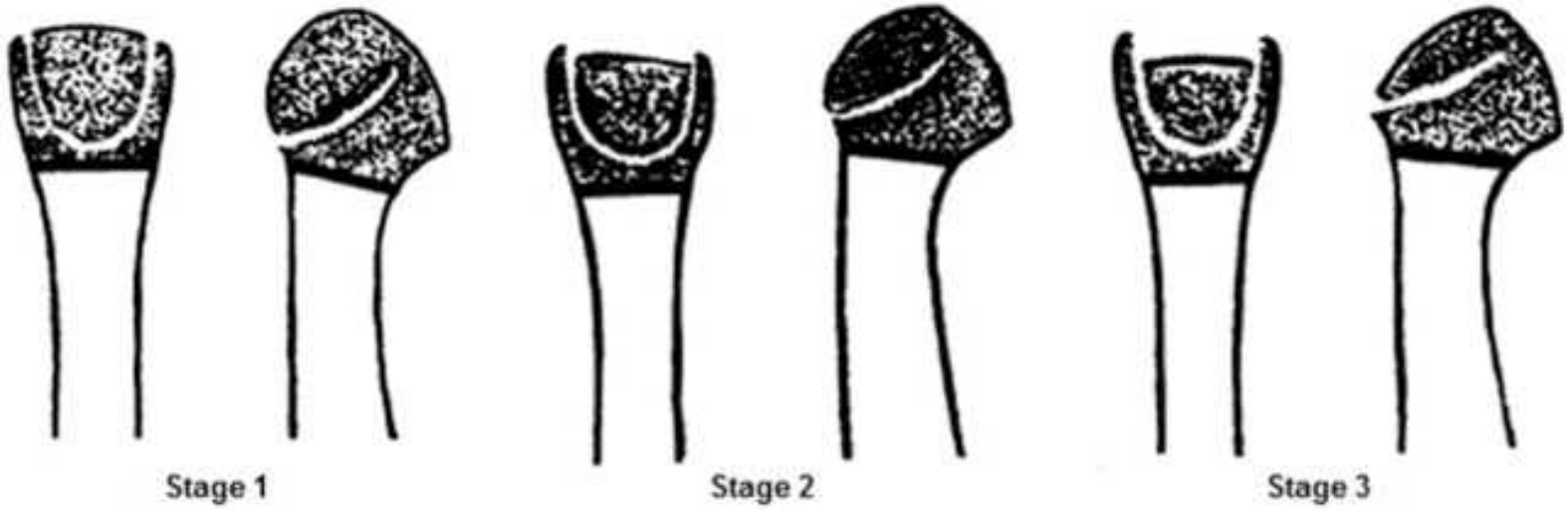

Forefoot cavus
5 15:18

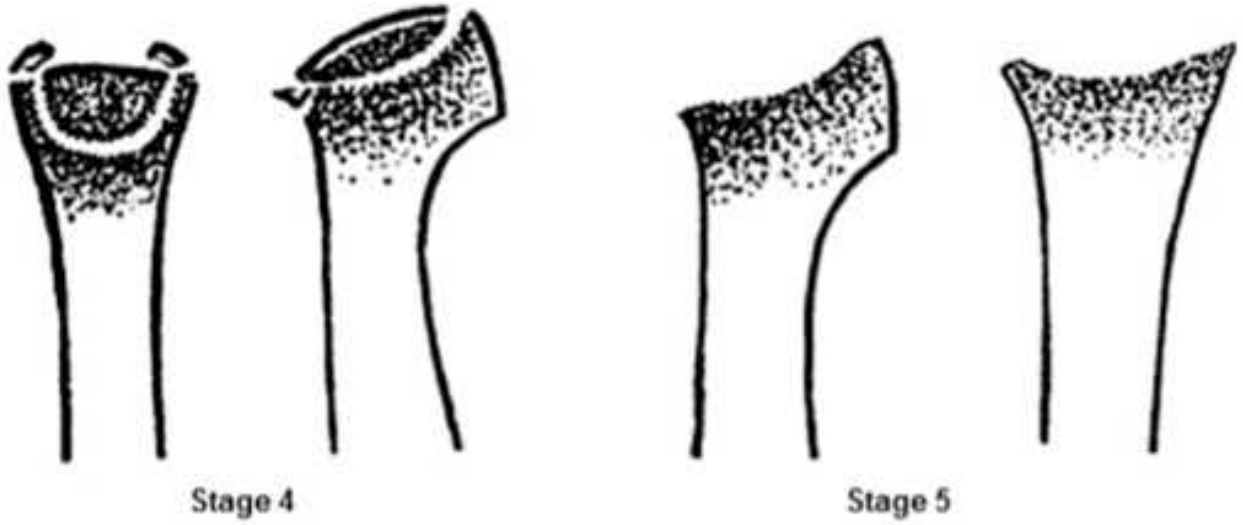

19
1
9 16:28


3
(08:54)


09:26)

ΠΑΘΟΛΟΓΙΑ ΚΕΦΑΛΩΝ ΜΤΤ





Smillie's classification

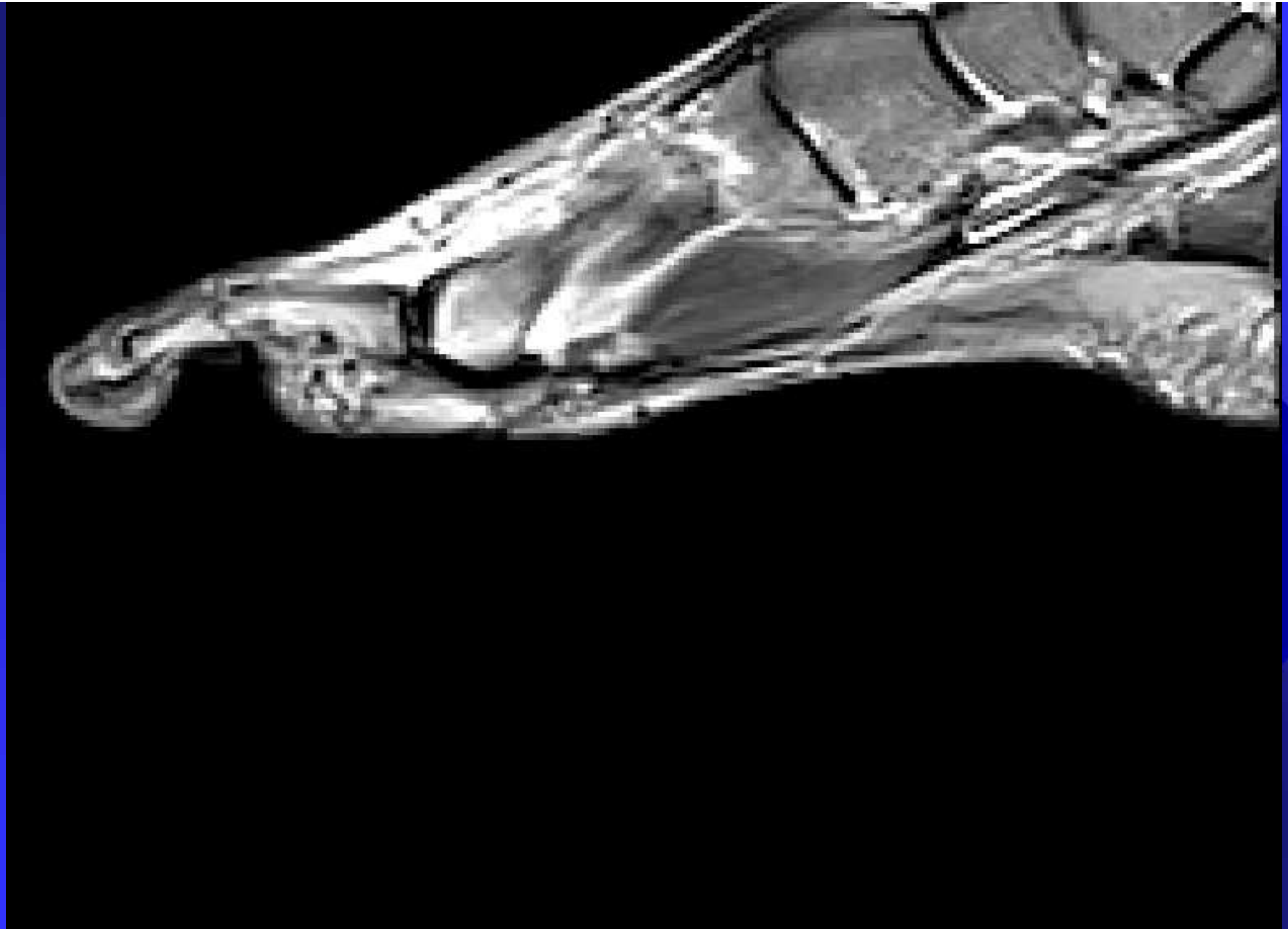
Stage 1: Fissure in epiphysis with sclerosis between cancellous surfaces.

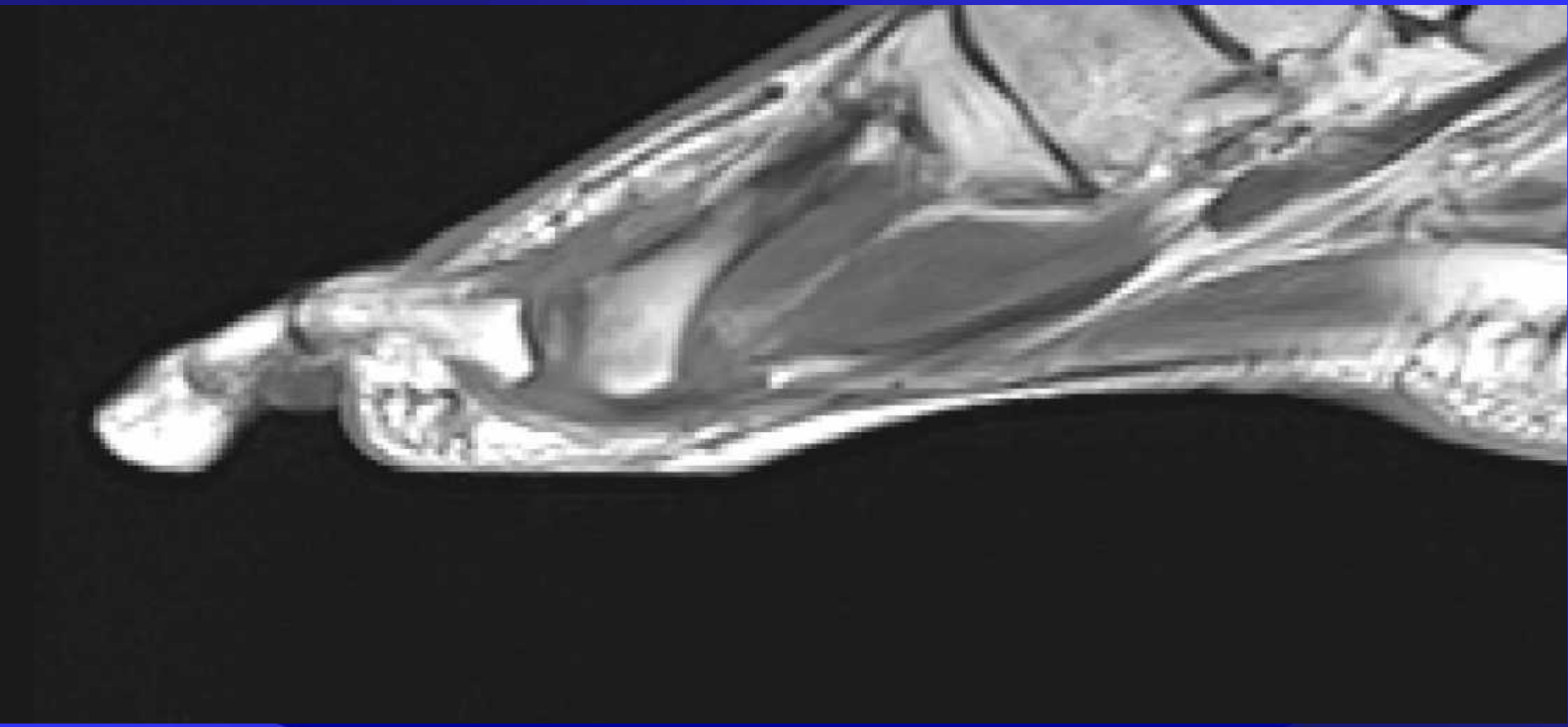
Stage 2: Absorption of cancellous tissue on the proximal side with sinking of the articular cartilage dorsally.

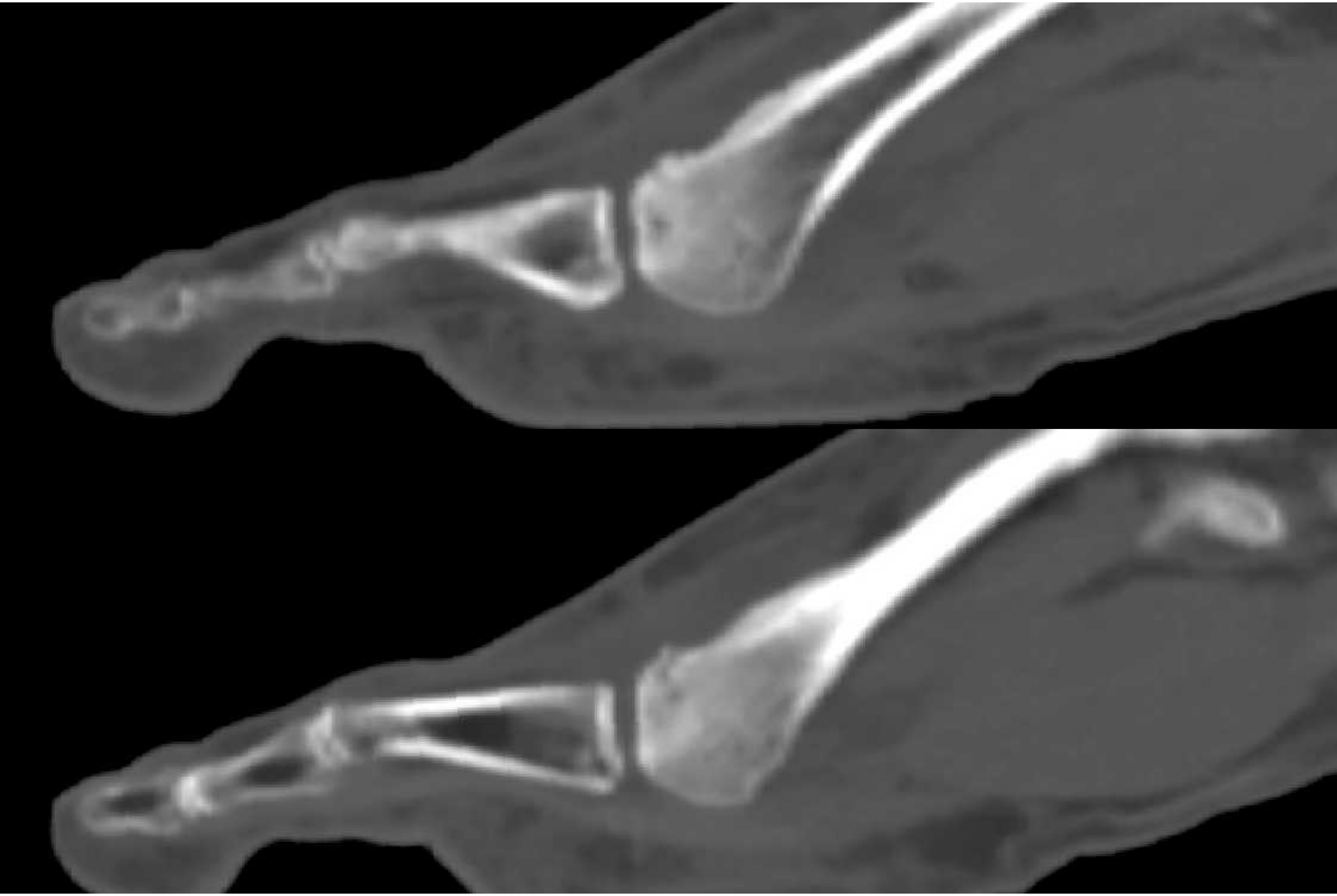
Stage 3: Further absorption and sinking of the articular surface with bony projections medially and laterally.

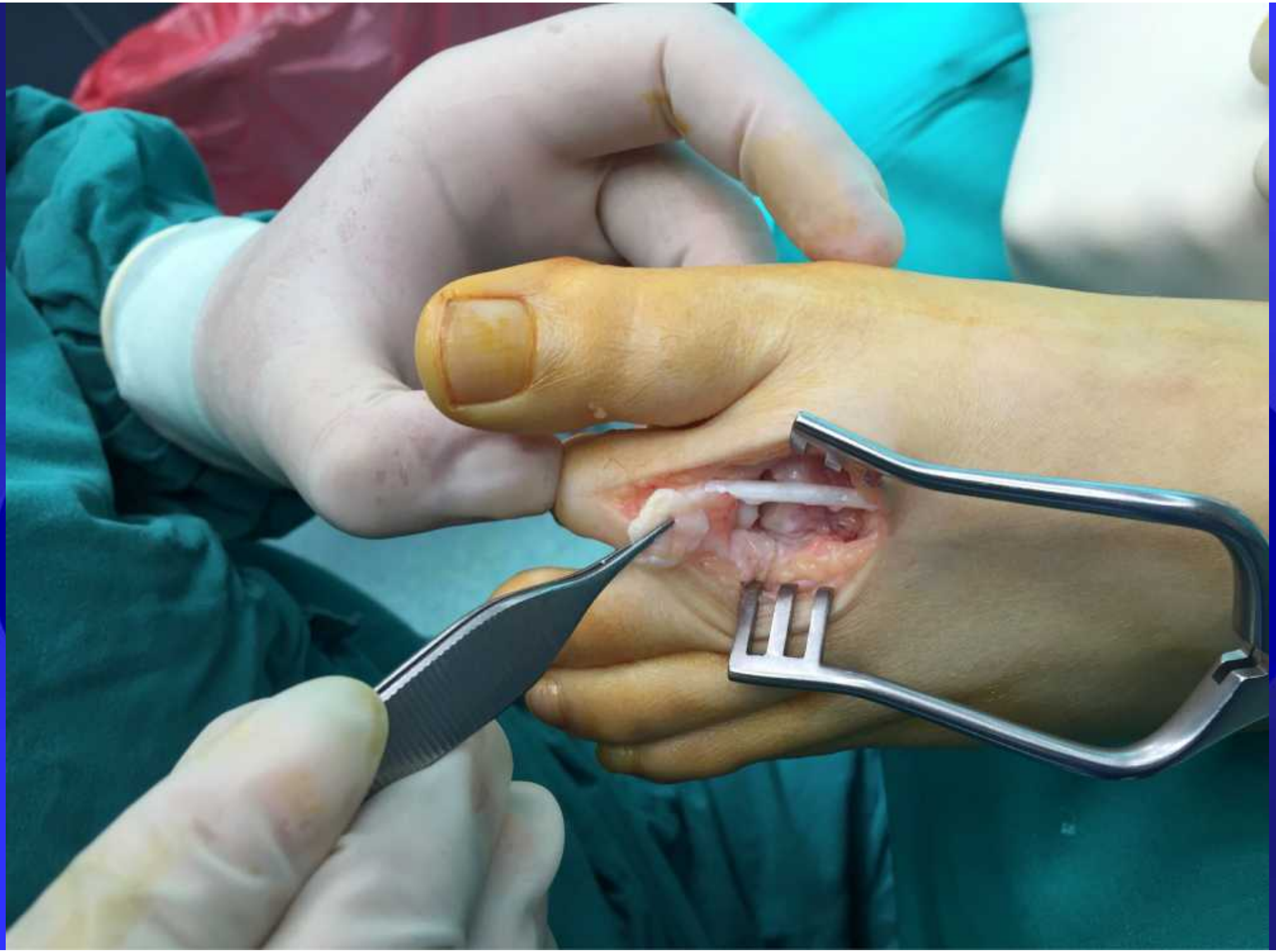
Stage 4: Articular surface has sunk so far that restoration of normal anatomy has passed.

Stage 5: Arthrosis with flattening and deformity of the metatarsal head.









ΣΥΣΤΗΜΑΤΙΚΑ ΝΟΣΗΜΑΤΑ


ΑΠΟΣΤΟΛΟΠΟΥΛΟΥ ΜΑΡΙΑΝΝΑ

EFAS Advanced Forefoot Symposium

11th - 12th December 2009, Le Meridien Brussels, Brussels, Belgium

15:30-15:45 Rheumatoid forefoot reconstruction without excision arthroplasty

J.W. Louwerens

Foot Ankle Surg. 2010 Sep;16(3):117-21.

Reconstructing the rheumatoid forefoot.

van der Heide HJ, Louwerens JW.

….the mean AOFAS-forefoot score was 69.80 (SD=11.8) at a mean of 40 months (SD=15.6 months) postoperatively. In cases with no operation on the hallux, the AOFAS score was 42.2 (SD=18.8) (p=0.001).


Я

Μεσοδακτύλιος νευραλγία

Thomas Morton's Disease: A Nerve Entrapment Syndrome

A New Surgical Technique

G. GAUTHIER

Number 142
July-August 1979

During the last part of the stance phase of gait, the nerve can be squeezed between the plantar soft tissue and the anterior edge of the plantar fascia. This occurs at each step and thus becomes repetitive trauma.

subsequent development of a neuroma. Instead of performing a resection of the neuroma, with its attendant risk of loss of sensation or of normal sweat production, we prefer to release the intermetatarsal ligament. There is also no possibility that a neuroma will develop from the proximal part of the divided nerve. With this simple method, we obtained an 83% incidence of good as well as permanent results.

Morton's Toe

Clinical, Light and Electron Microscopic Investigations in 133 Cases

G. LASSMANN

Number 142
July-August 1979

(1) sclerosis and edema of the endoneurium; (2) thickening and hyalinization of the walls of the endoneural vessels caused by multiple layers of basement membranes; (3) thickening of the perineurium; (4) deposition of an amorphous eosinophilic material built up by filaments of tubular structure; (5) demyelinization and degeneration of the nerve fibers without signs of Wallerian degeneration and local initial hyperplasia of unmyelinated nerves followed by degeneration.

Comparing histograms of the myelinated and unmyelinated fibers of our material with the alterations in the carpal tunnel or ulnar nerve compression syndromes[1, 12, 24, 25, 31, 34, 48] it is tempting to classify Morton's metatarsalgia under the group of entrapment neuropathies. This view is also supported by the clinical results of Gauthier and Dutertre.[14] Nevertheless, the

Interdigital nerve compression syndrome

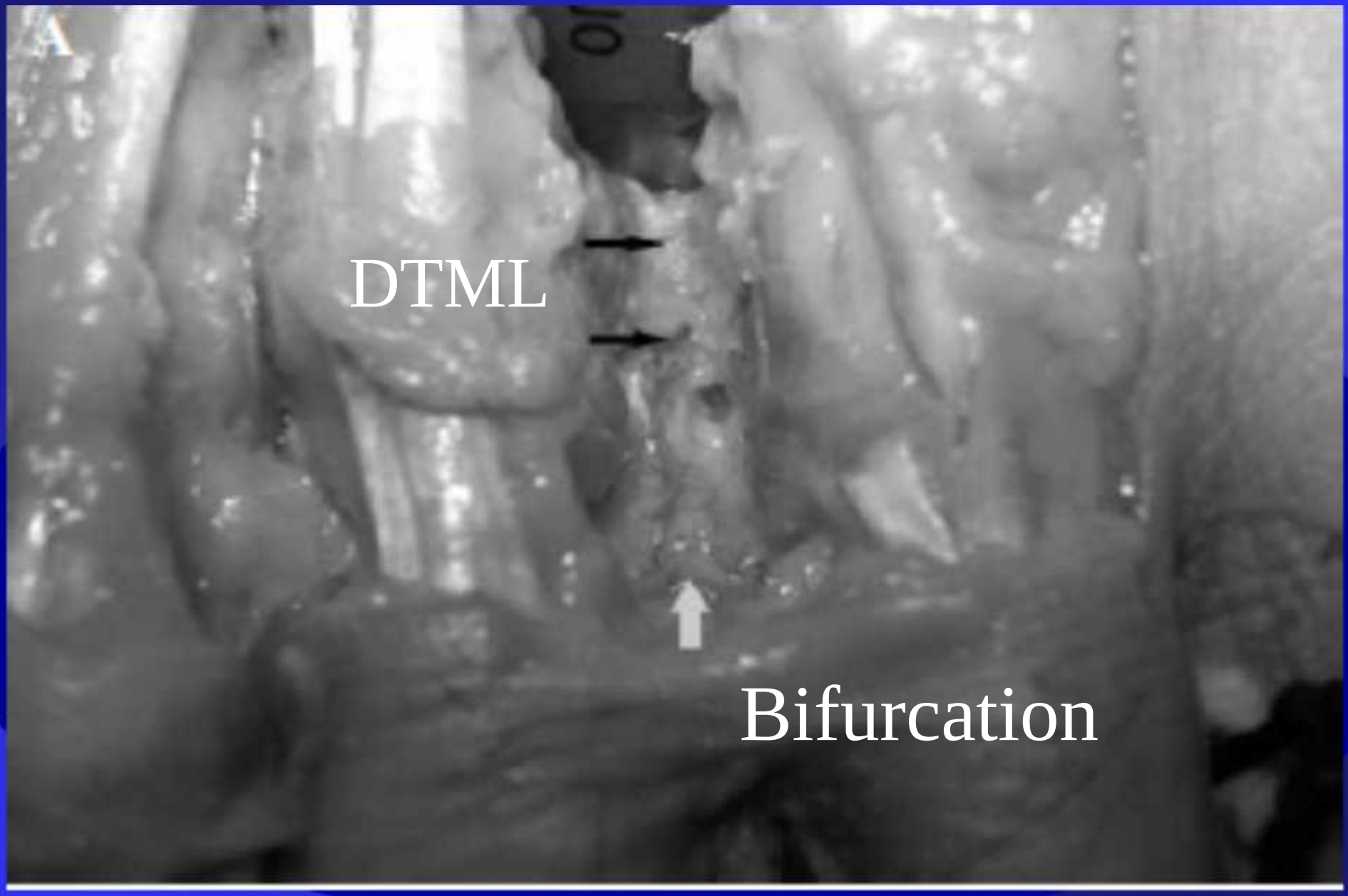
FOOT & ANKLE INTERNATIONAL

DOI: 10.3113/FAI.2007.1007

An Anatomical Study of Morton's Interdigital Neuroma: The Relationship Between the Occurring Site and the Deep Transverse Metatarsal Ligament (DTML)

J-Young Kim, M.D.; Jae Hyuck Choi, M.D.; Jungmin Park, M.D.; Joonho Wang, M.D.; Inmook Lee, M.D.
Seoul, South Korea

the distal half of metatarsal head. The mean length of the neuromas was 7.5 (6 to 11) mm. Six neuromas were located


DTML
Bifurcation

checked. The distance was measured at two positions during walking in both the mid-stance and the heel-off positions: at 60 degrees dorsiflexion of the metatarsophalangeal (MTP) joint and 15 degrees dorsiflexion of the ankle. The foot was

mm and 10.6 mm, respectively. The mean distances of the second and third interdigital nerves from the bifurcation of the common digital nerve to the anterior margin of the DTML were 16.7 mm and 15.1 mm at the mid-stance position and 15.9 mm and 14.6 mm at the heel-off position, respectively.

the distal half of metatarsal head. The mean length of the neuromas was 7.5 (6 to 11) mm. Six neuromas were located

heads and the MTP joint during walking. Our results indicate that Morton interdigital neuroma does not occur under or at the DTML, but instead at the level of the MTP joint, which is located more proximally. Because there appears to be no pulling effect against the DTML during walking, the commonly-used tunnel compression theory should be rethought.

Μα…. Έχω αφαιρέσει ένα σωρό νεύρα
Και η βιοψία ήταν θετική για νεύρωμα!!

FOOT & ANKLE INTERNATIONAL

Morton's Intermetatarsal Neuroma: Morphology and Histological Substrate

Morscher E*, Ulrich J**, Dick W*
From the Orthopaedic Department and the Institute of Pathology** of the University of Basel*

the cause of the patient's pain. Our study demonstrates histological pathologies in 25 nerves excised at autopsies of patients not suffering from metatarsalgia, which were identical to those of 23 nerves excised because of metatarsalgia. Therefore, these histological changes are probably unrelated to the patients' pain.

Since histomorphological findings in intermetatarsal neuroma (so far accepted as the gold standard for confirmation of that diagnosis) were the same as findings in autopsied (normal) specimens, the value of postoperative histological examination is questioned. It merely proved that the nerve has been resected.

From these results it must be concluded that diagnostic MRIs or ultrasonography, are unnecessary for decision-making about operative treatment and are not superior to exploratory local anaesthesia.


Surgery

FOOT & ANKLE INTERNATIONAL

DOI: 10.3113/FAI.2008.0574

Long-Term Evaluation of Interdigital Neuroma Treated by Surgical Excision

John W. Womack, MD; David R. Richardson, MD; G. Andrew Murphy, MD; E. Greer Richardson, MD; Susan N. Ishikawa, MD

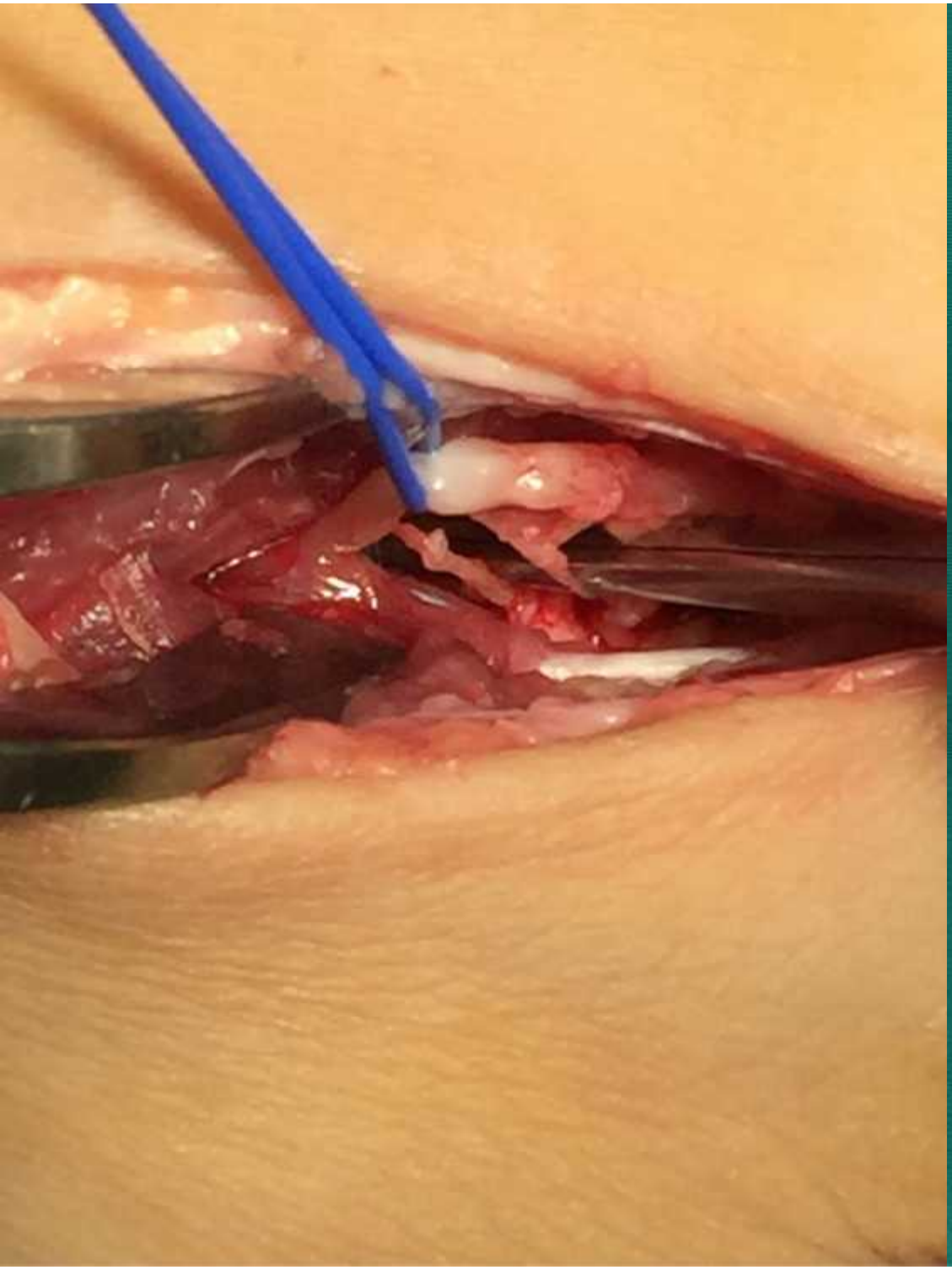
Memphis, TN

Table 1: Interdigital neuroma clinical evaluation score

Parameter	Score
Pain	
None	20
Mild	10
Severe	0
Maximal walking distance	
Without limitation (>6 blocks)	20
Some limitation (2–6 blocks)	10
Severe limitation (<6 blocks)	0
Sensitivity	
Normal	20
Numbness	10
Dysestheisa	0
Footwear requirement	
Fashionable conventional shoes	20
Comfort shoes or shoe insert	10
Difficulty with any shoes	0

From Giannini, S; Bacchini, P; Cecarelli, F; Vannini, F: Interdigital neuroma: clinical examination and histopathologic results in 63 cases treated with excision, Foot Ankle Int. 25:79, 2004.

patients contacted, 120 (52%) returned
s. The average Giannini neuroma score was 53: 61 feet (51%) had good or excellent results, 12 (10%) had fair results, and 48 (40%) had poor results. The average finding may be that outcomes of neuroma excision do not appear to be as successful at long-term followup as previously reported



Treatment of recurrence of symptoms after excision of an interdigital neuroma

A RETROSPECTIVE REVIEW

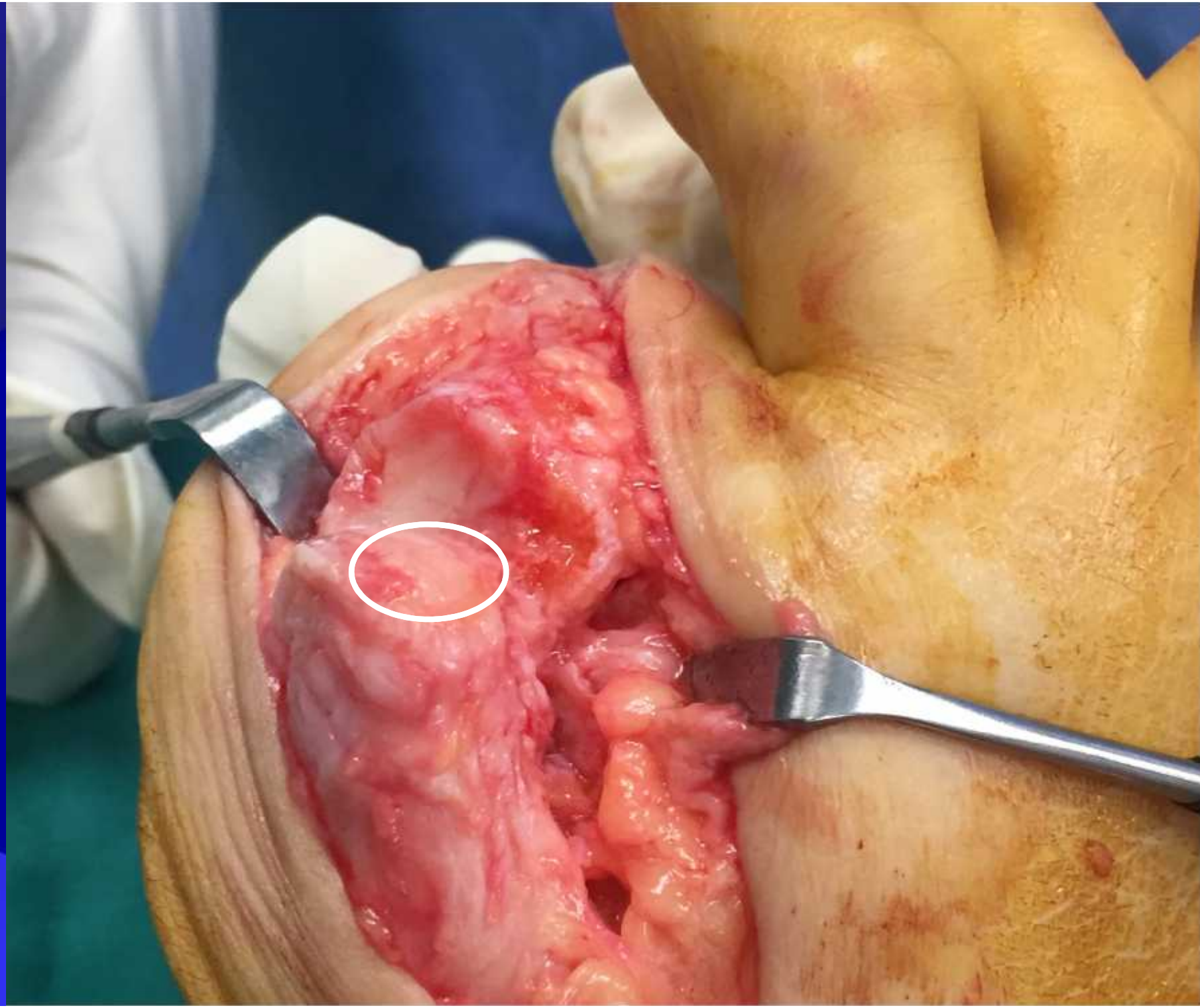
E. D. Stamatis, M. S. Myerson

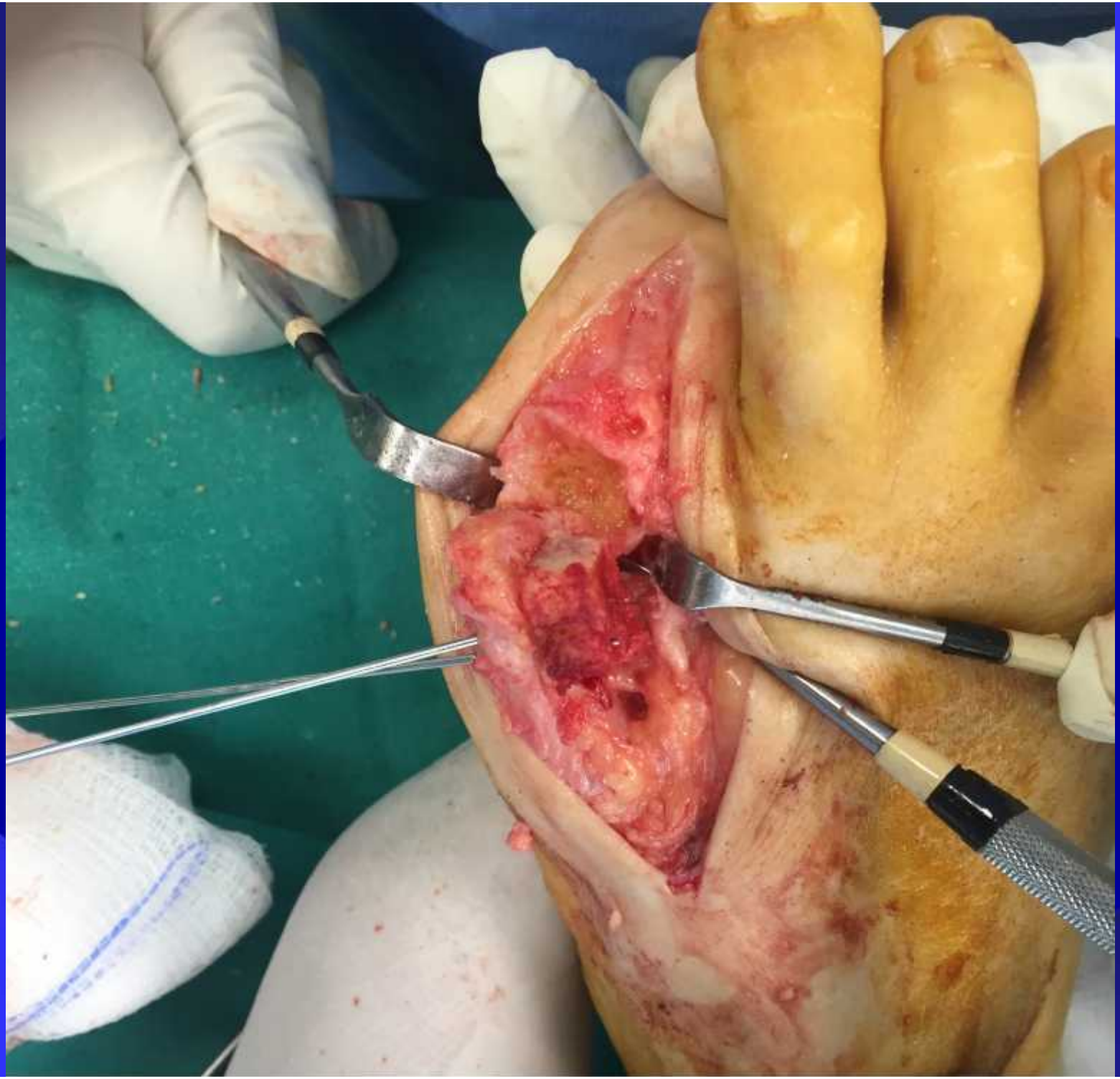
From the Union Memorial Hospital, Baltimore, USA

ΙΑΤΡΟΓΕΝΕΙΣ ΒΛΑΒΕΣ

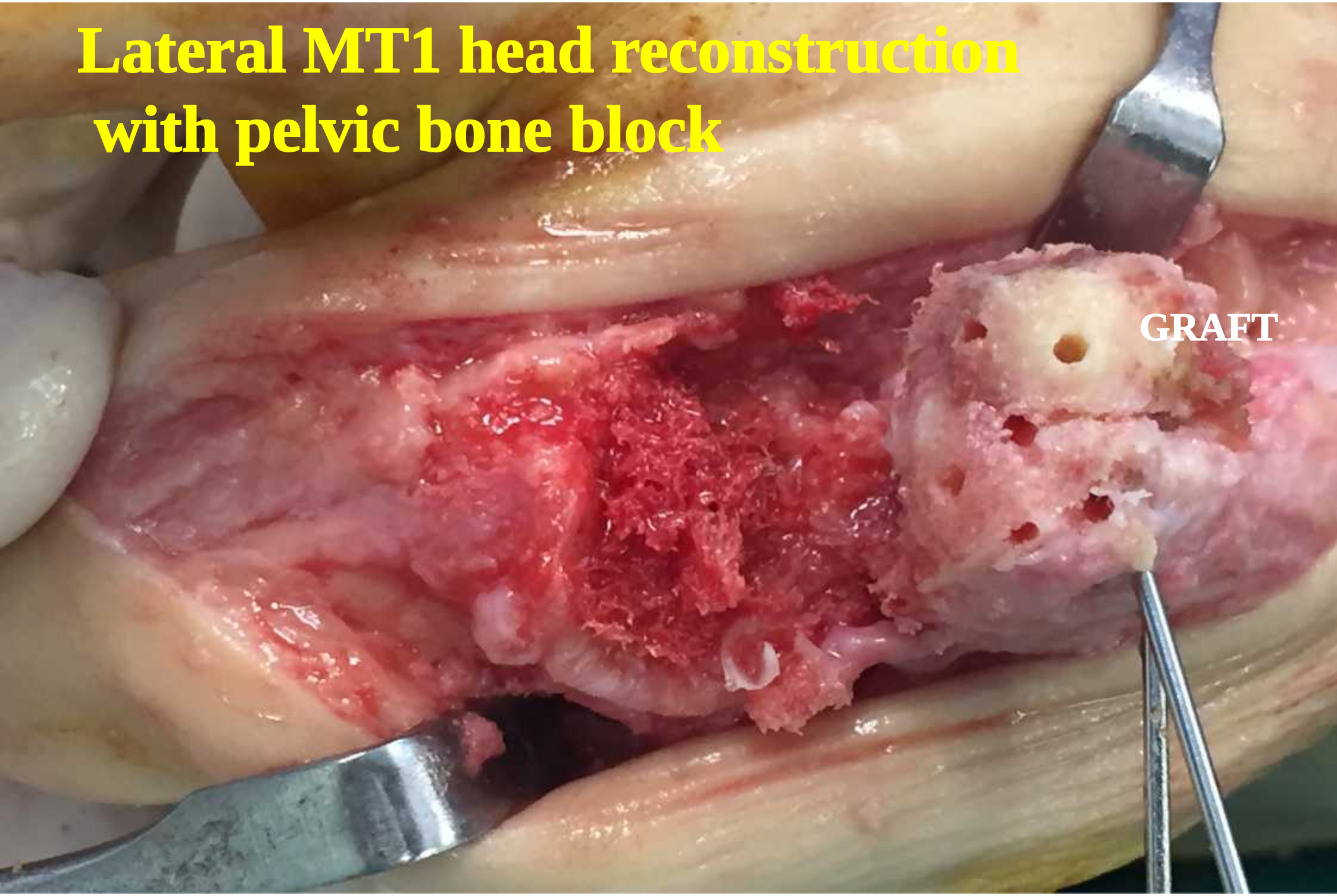

12 11:17


Severe Varus
interphalangeus



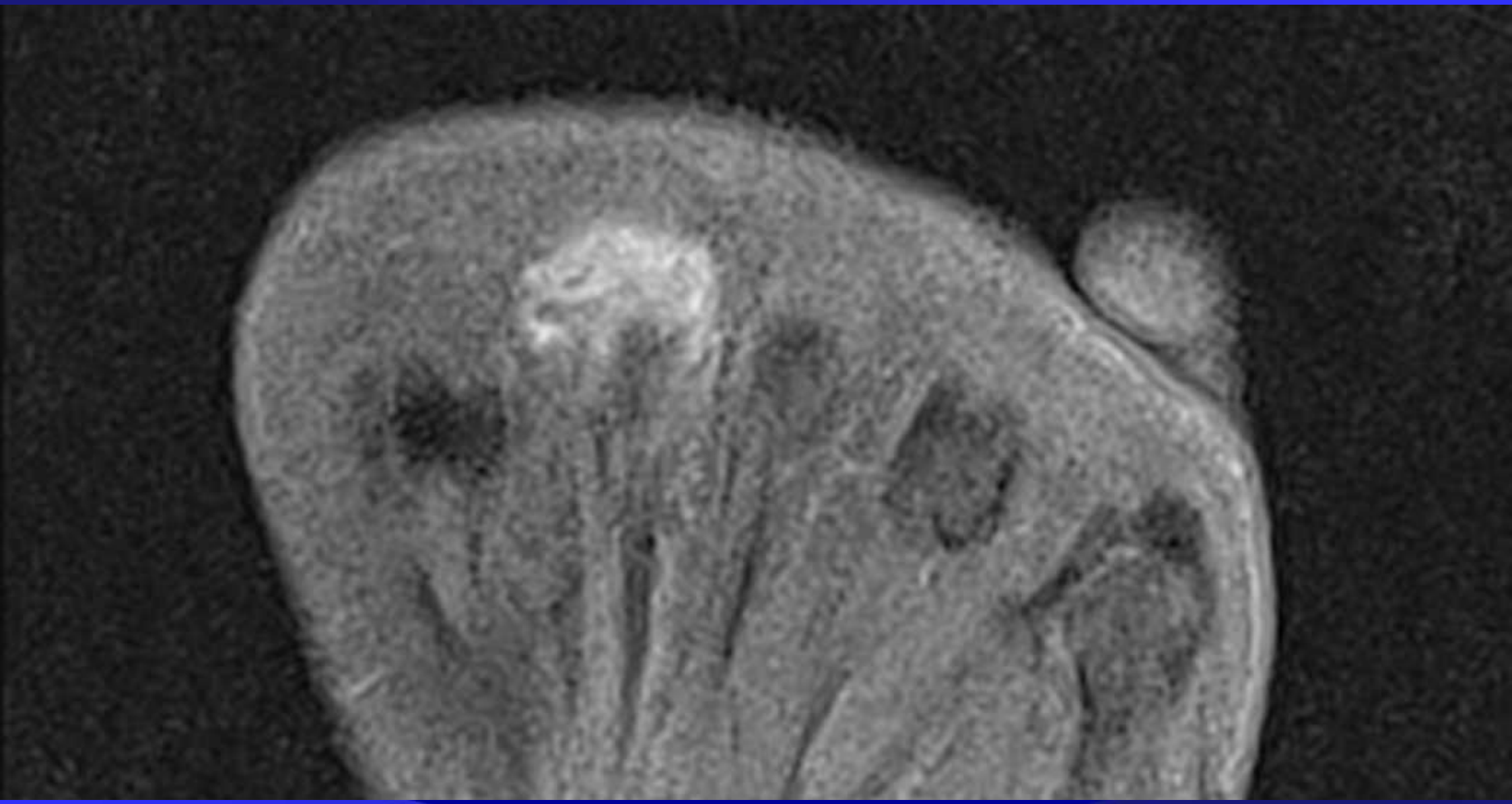


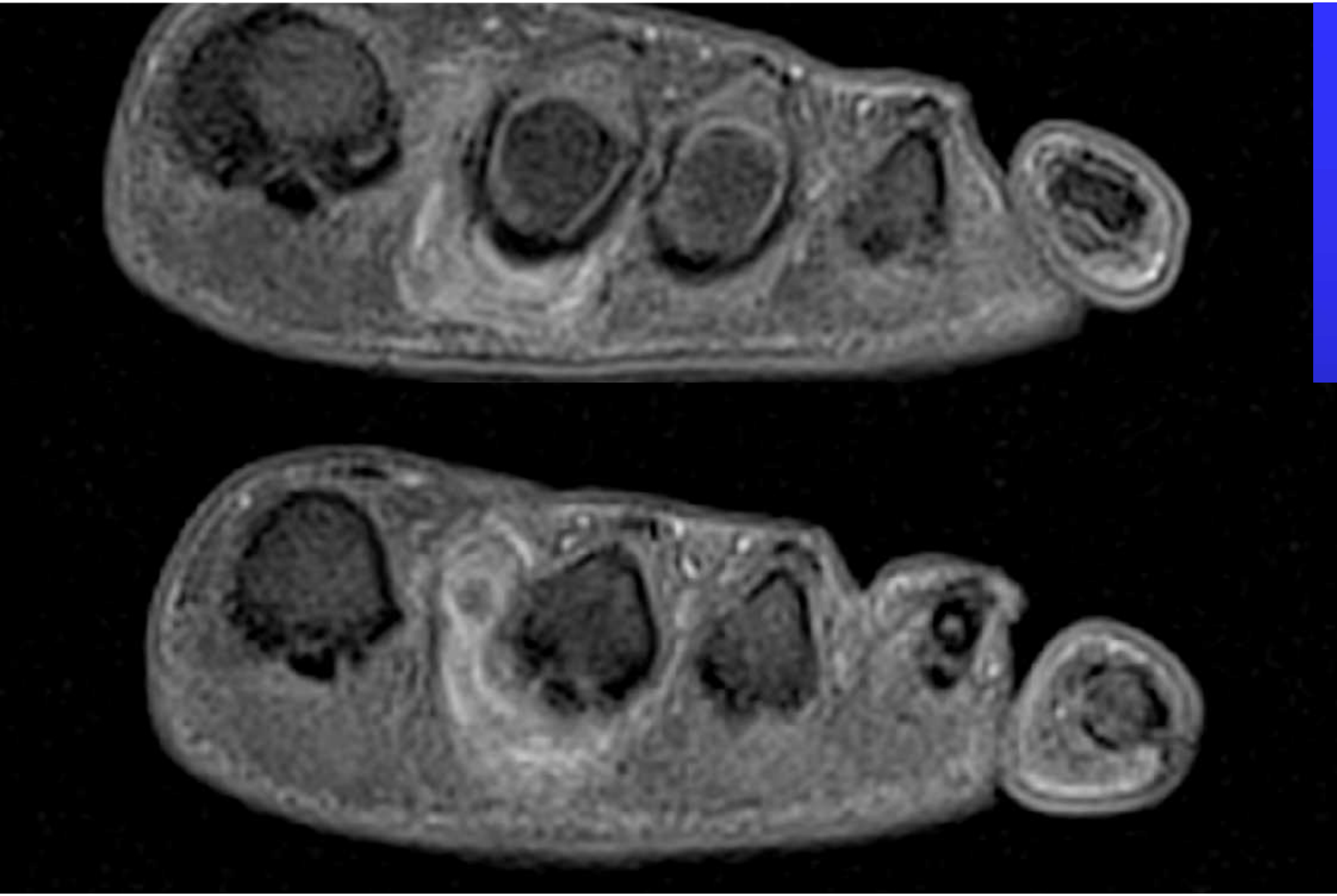
Lateral MT1 head reconstruction with pelvic bone block

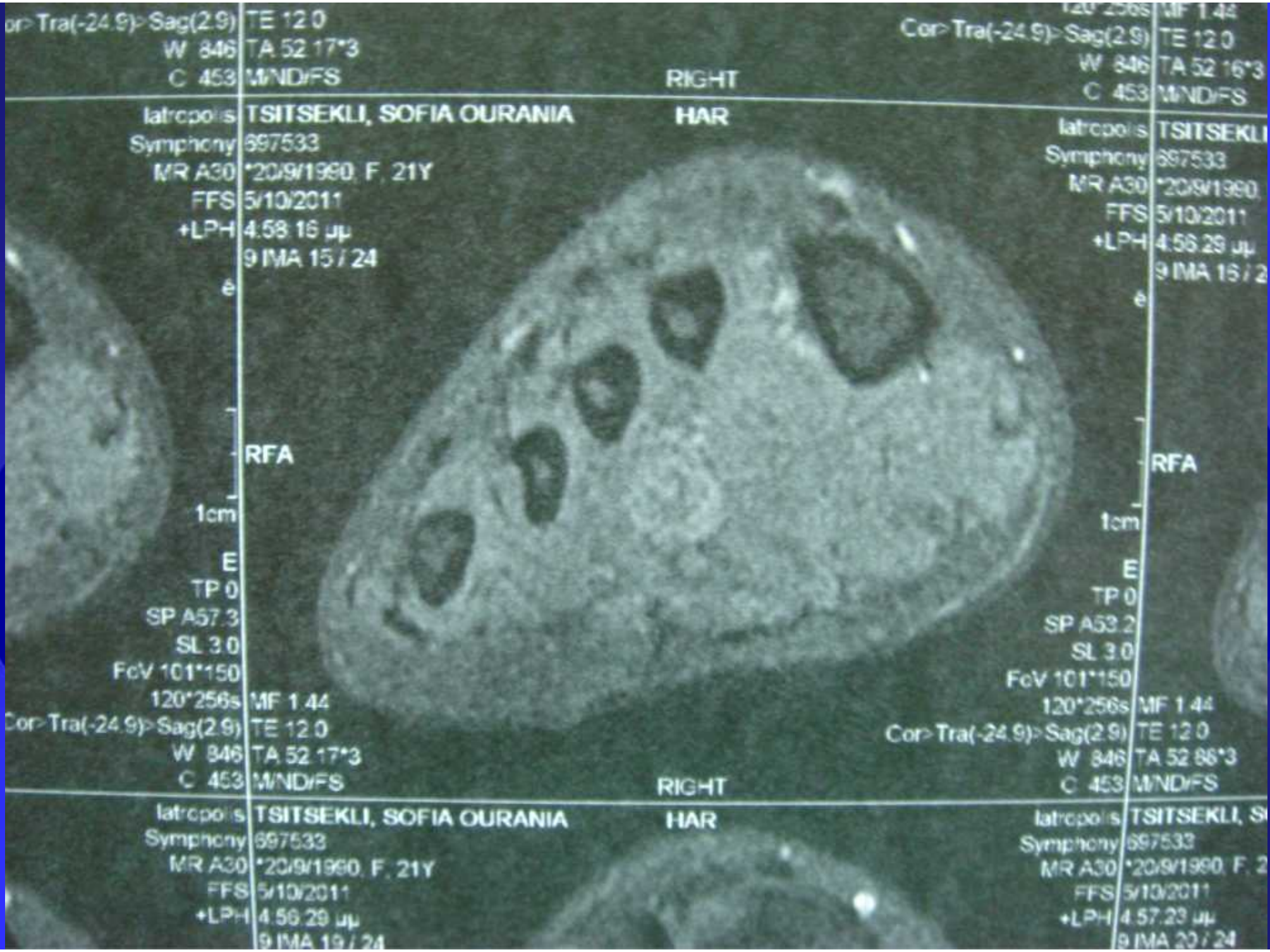


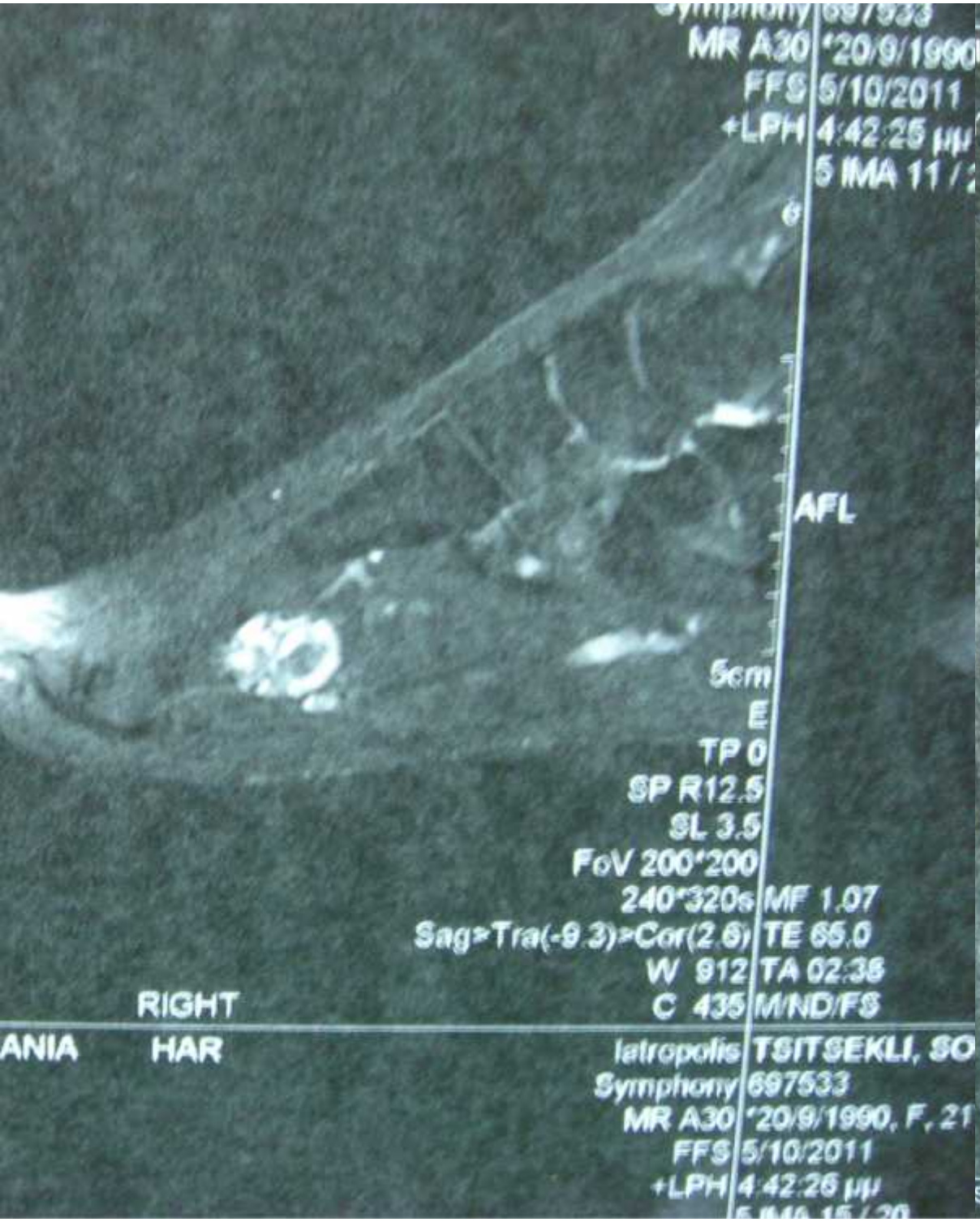

GRAFT

ΕΞΕΡΓΑΣΙΕΣ ΠΕΡΙΞ ΤΩΝ ΜΤΦ

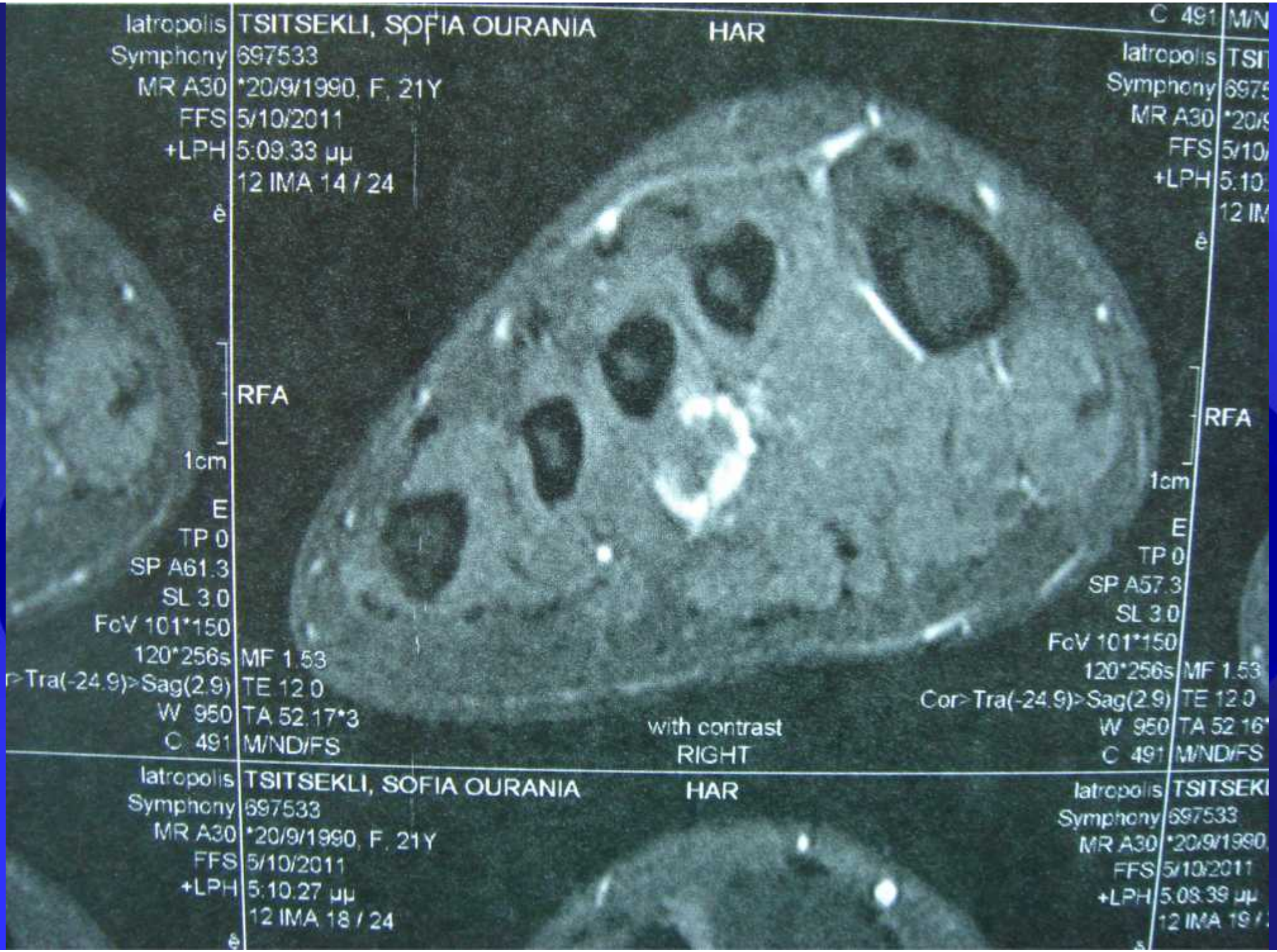


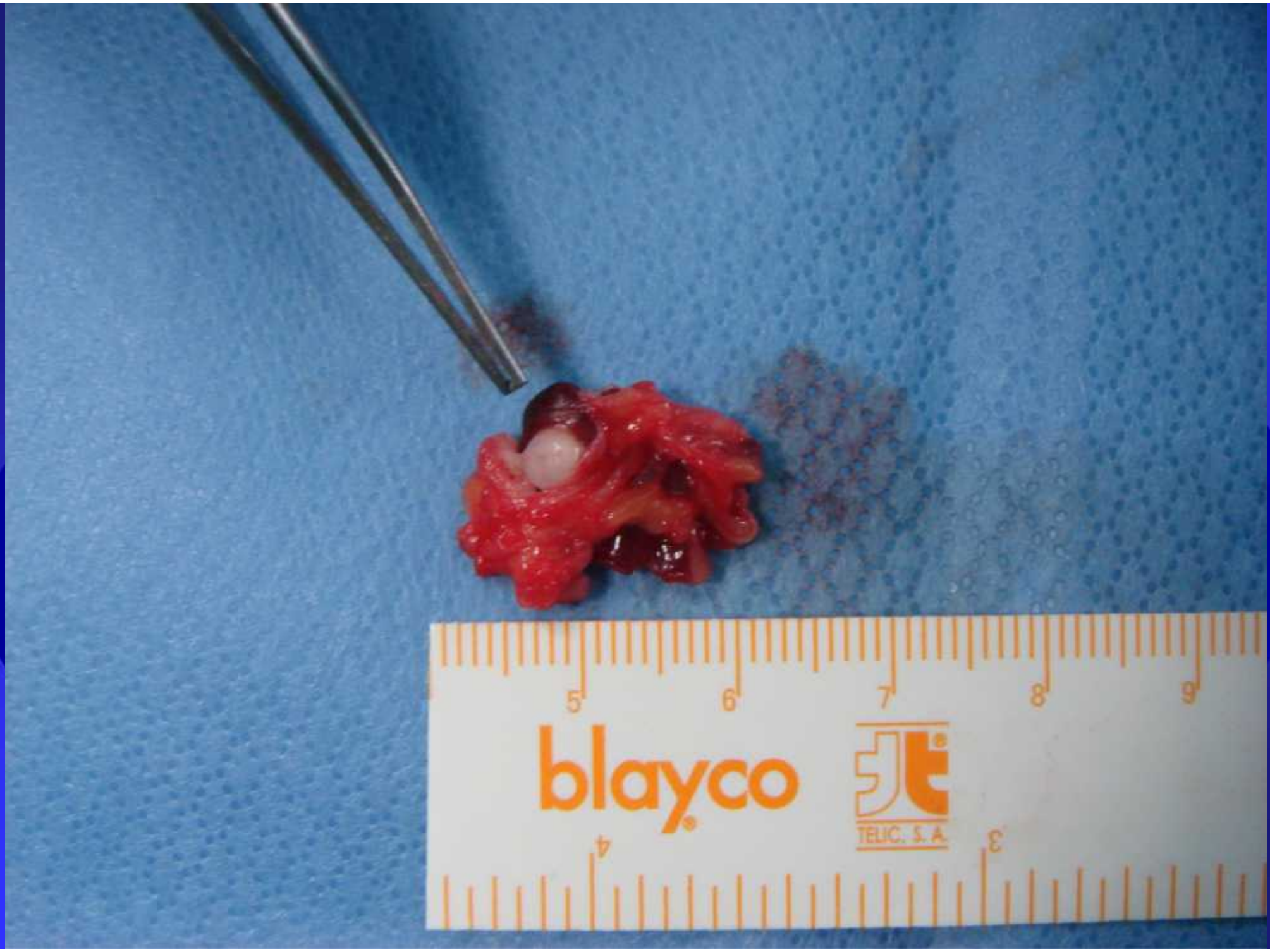



or>Tra(-24.9)>Sag(2.9)
W 846
C 453
TE 12.0
TA 52 17*3
M/ND/FS
RIGHT
Cor>Tra(-24.9)>Sag(2.9)
W 846
C 453
MF 1.44
TE 12.0
TA 52 16*3
M/ND/FS
Iatropolis
Symphony
MR A30
FFS
+LPH
TSITSEKLI, SOFIA OURANIA
697533
*20/9/1960, F, 21Y
5/10/2011
4.58.16 μμ
9 IMA 15 / 24
HAR
RFA
1cm
E
TP 0
SP A57.3
SL 3.0
FcV 101*150
120*256s
MF 1.44
TE 12.0
TA 52 17*3
M/ND/FS
RIGHT
Cor>Tra(-24.9)>Sag(2.9)
W 846
C 453
TA 52 86*3
4.56.29 μμ
4.57.23 μμ

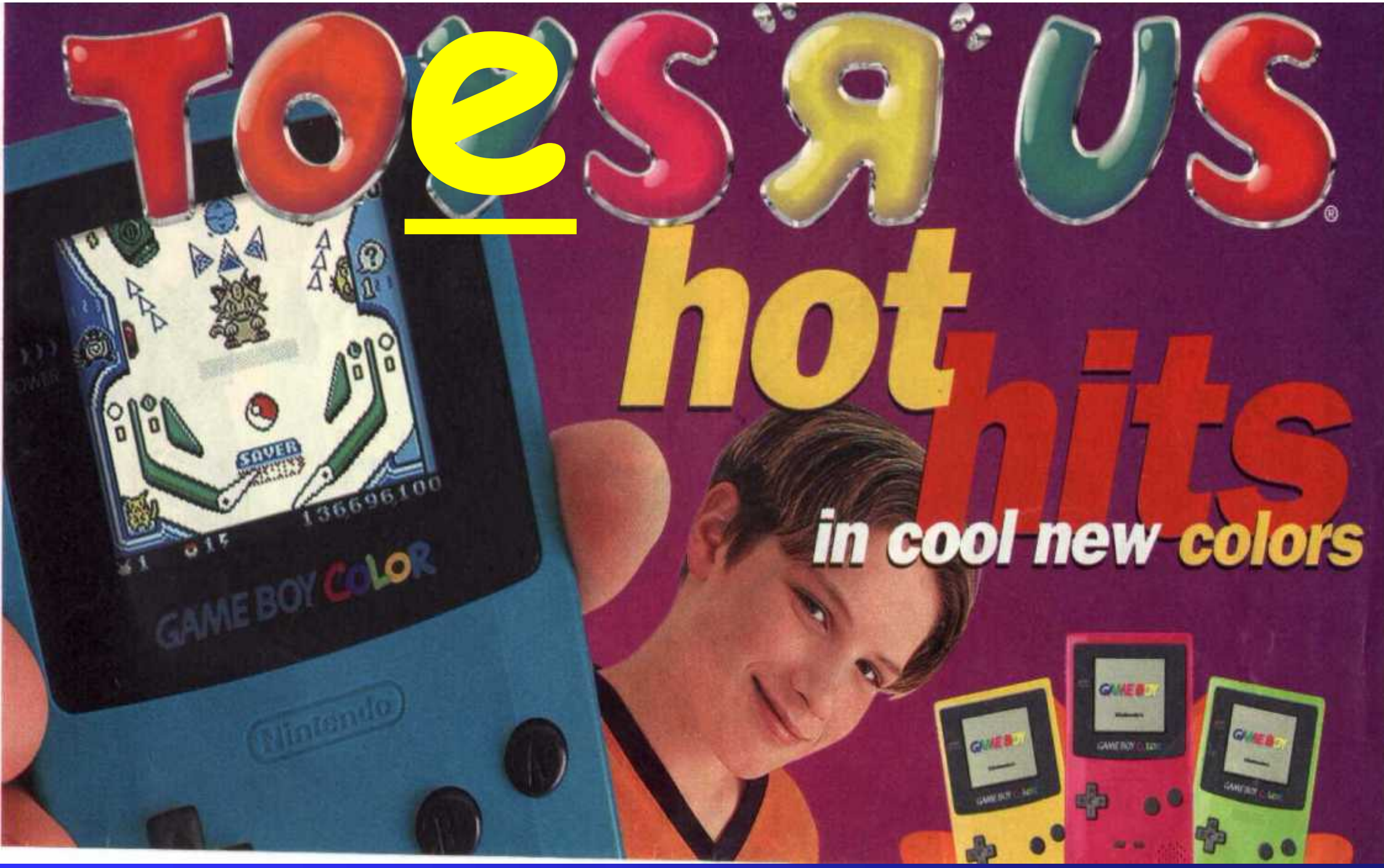

MR A30 *20/9/1990
FFS 5/10/2011
+LPH 4:42:25 µµ
5 IMA 11 /
AFL
5cm
E
TP 0
SP R12.5
SL 3.5
FoV 200*200
240*320s MF 1.07
Sag>Tra(-9.3)>Cor(2.6) TE 65.0
W 912 TA 02:38
C 435 M/ND/FS
RIGHT
ANIA HAR
Iatropolis TSITSEKLI, SO
Symphony 697533
MR A30 *20/9/1990, F, 21
FFS 5/10/2011
+LPH 4:42:26 µµ


C 274 M/ND/FS
IA OURA... AF
Iatropolis TSITSEKLI,
Symphony 697533
MR A30 *20/9/1990, F
FFS 5/10/2011
+LPH 5:01:48 µµ
11 IMA 8 / 20
RFP
5cm
E
TP 0
SP H7.9
SL 3.0
FoV 170*170
224*320 MF 1.46
Tra>Cor(28.7)>Sag(9.4) TE 65.0
W 552 TA 02:28
C 274 M/ND/FS
RIGHT
SOFIA OURA... AF
Iatropolis TSITSEKLI, SOFIA


Iatropolis
Symphony
MR A30
FFS
+LPH
TSITSEKLI, SOFIA OURANIA
697533
*20/9/1990, F, 21Y
5/10/2011
5:09.33 μμ
12 IMA 14 / 24
HAR
C 491
RFA
1cm
E
TP 0
SP A61.3
SL 3.0
FoV 101*150
120*256s
Tra(-24.9)>Sag(2.9)
W 950
C 491
MF 1.53
TE 12.0
TA 52.17*3
M/ND/FS
with contrast
RIGHT
Iatropolis
Symphony
MR A30
FFS
+LPH
RFA
1cm
E
TP 0
SP A57.3
SL 3.0
FoV 101*150
120*256s
Cor>Tra(-24.9)>Sag(2.9)
W 950
C 491
MF 1.53
TE 12.0
M/ND/FS
Iatropolis
Symphony
MR A30
FFS
+LPH
TSITSEKLI, SOFIA OURANIA
697533
*20/9/1990, F, 21Y
5/10/2011
5:10.27 μμ
12 IMA 18 / 24
HAR
Iatropolis
Symphony
MR A30
FFS
+LPH
697533
*20/9/1990
5/10/2011
5:08.39 μμ


blayco
TELIC. S. A.

Πτώση κεφαλών μεταταρσίων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