



Collège Hospitalier et Universitaire
de Chirurgie Pédiatrique

DESC de Chirurgie Pédiatrique

Session de Septembre 2009 - PARIS

Le pied bot varus équin congénital

Philippe Wicart, Raphaël Seringe

ETIOLOGIE

- GENETIQUE
- POSITIONNELLE INTRA-UTERINE
- MUSCULAIRE
- MALFORMATION DU TALUS
- ASYMETRIE DE CROISSANCE FIBULA-TIBIA
- ARRET DE DEVELOPPEMENT



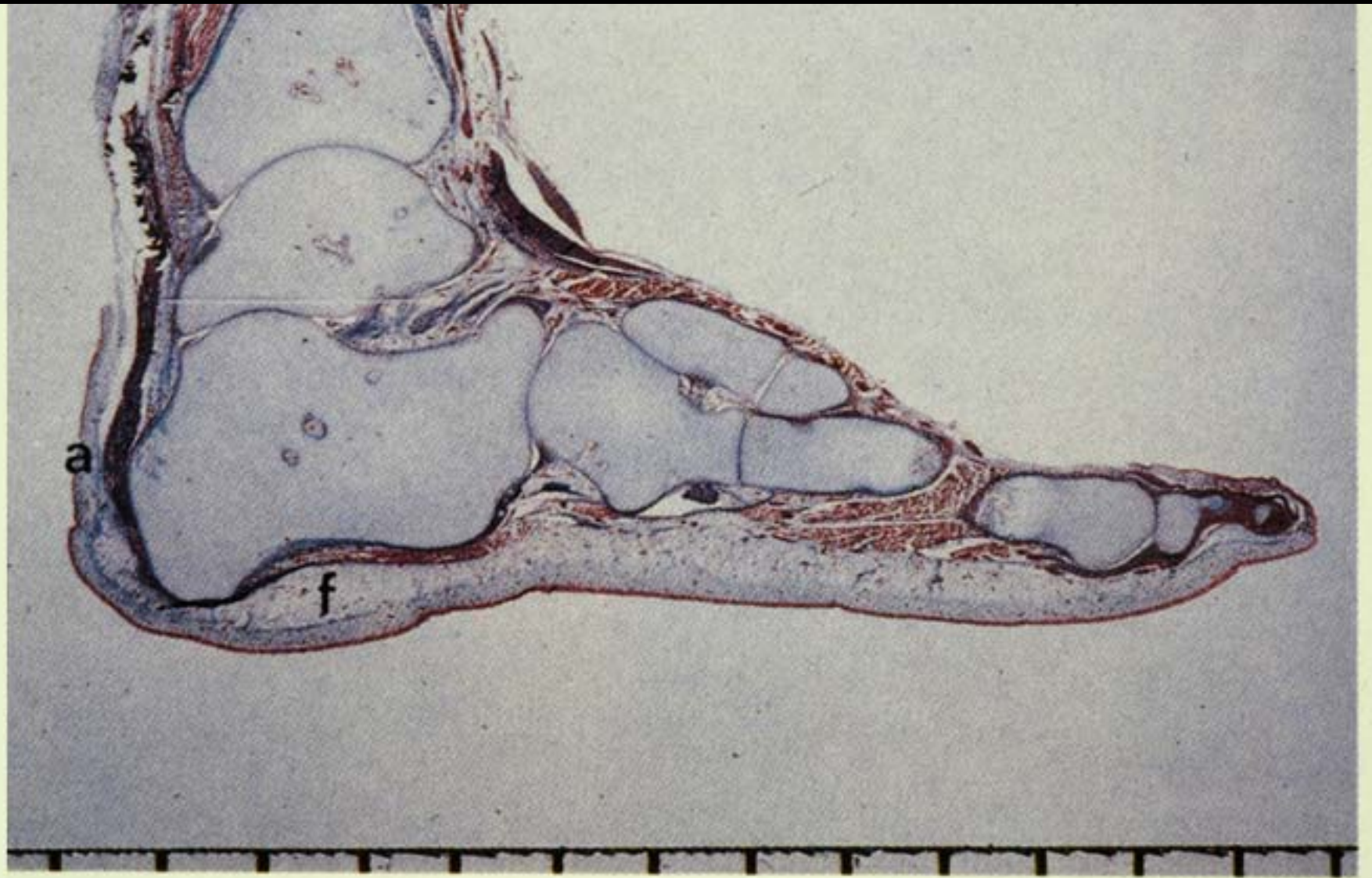
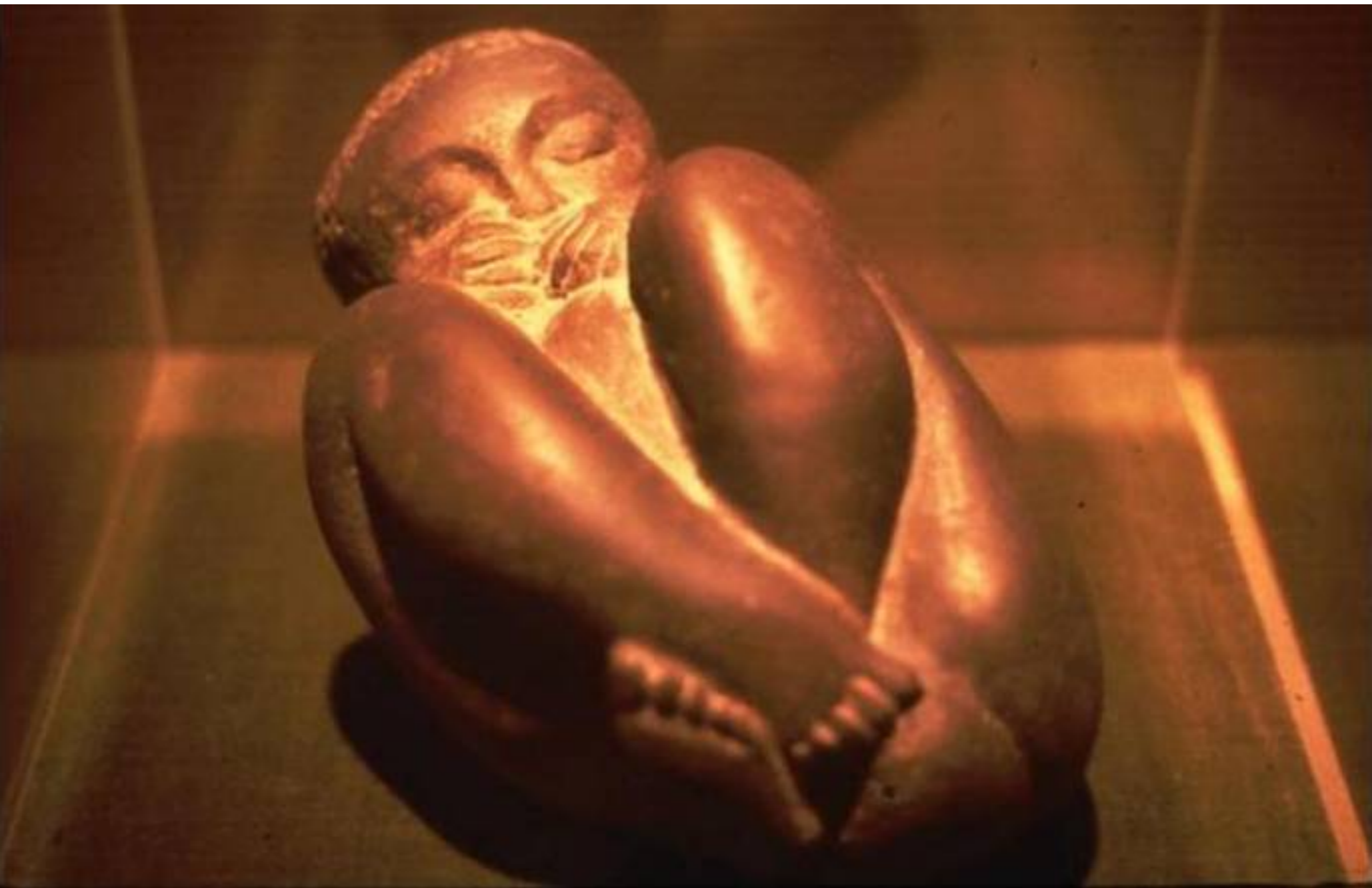


Fig. 14.15. Fetus 105, 14½ weeks, CR 112 mm. The foot is now





ANATOMIE ET PHYSIOLOGIE

DU PIED

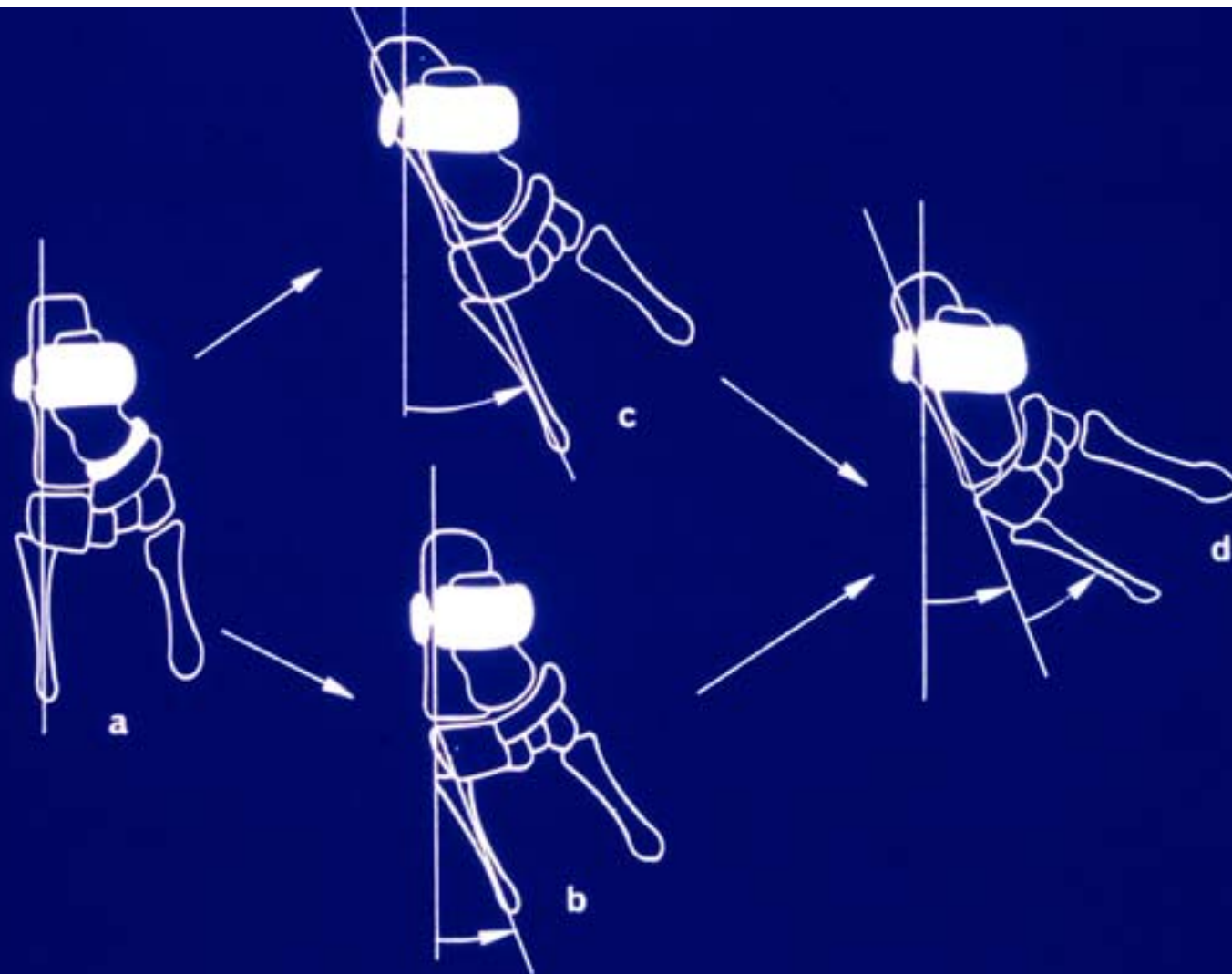
- BLOC CALCANEO PEDIEUX
- DOUBLE APPARTENANCE DE L'ARTICULATION TALO-NAVICULAIRE
- LOI DES MOUVEMENTS DIADOCHAUX DE Mac CONNAIL



L'ARTICULATION TALO-NAVICULAIRE

FAIT PARTIE DE 2 COMPLEXES ARTICULAIRES DIFFERENTS :

- L'ARTICULATION MEDIO-TARSIENNE
- L'ARTICULATION SOUS-TALIENNE



**DOUBLE APPARTENANCE DE L'INTERLIGNE
ASTRAGALO-SCAPHOÏDIEN**

LOI DE Mac CONNAIL

- **S'APPLIQUE AUX ENARTHROSES**
(arti. sphérique)

- **DEUX MOUVEMENTS SUCCESSIFS DANS 2 DES 3**
PLANS DE REFERENCE FONT APPARAITRE
AUTOMATIQUEMENT LE 3^e MOUVEMENT

FAUSSE SUPINATION

LA CORRECTION DE L'EQUINISME

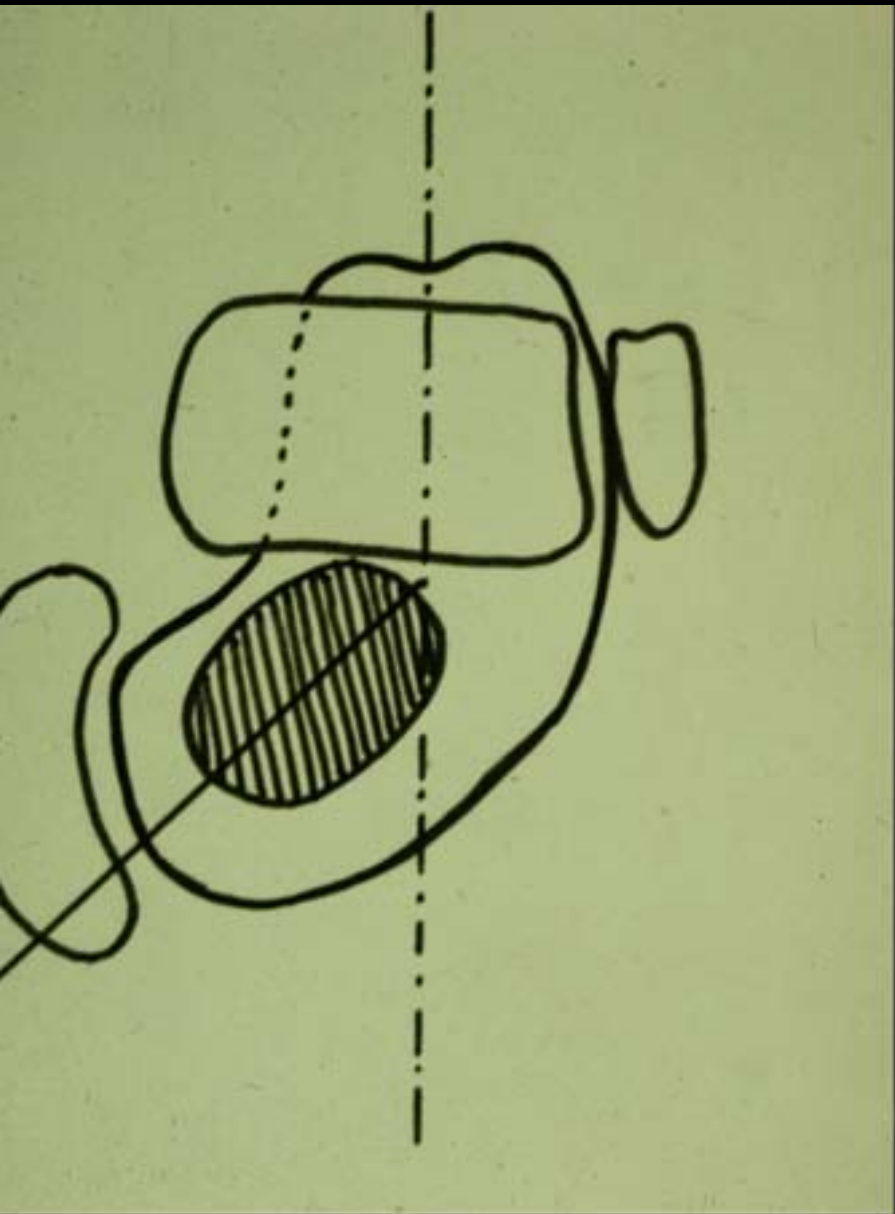
SUPPRIME LA SUPINATION





ANATOMIE PATHOLOGIE

- DEFORMATIONS OSSEUSES
- ATTITUDES VICIEUSES ARTICULAIRES
- RETRACTION DES PARTIES MOLLES
- ANOMALIES MUSCULAIRES
- ANOMALIES VASCULAIRES



ARCHES LONGITUDINALES DU PIED

ARCHE EXTERNE PLUS LONGUE

QUE L'ARCHE INTERNE



DEMEMBREMENT DES ATTITUDES VICIEUSES

- EQUINISME : TIBIO-TALIEN ++
SOUS-TALIEN
- SUPINATION : "FAUSSE SUPINATION"
- ADDUCTION : BLOC CALCANEO-PEDIEUX ++
MEDIO-TARSIENNE ++
DISTALE

LE P.B.V.E.

À LA NAISSANCE

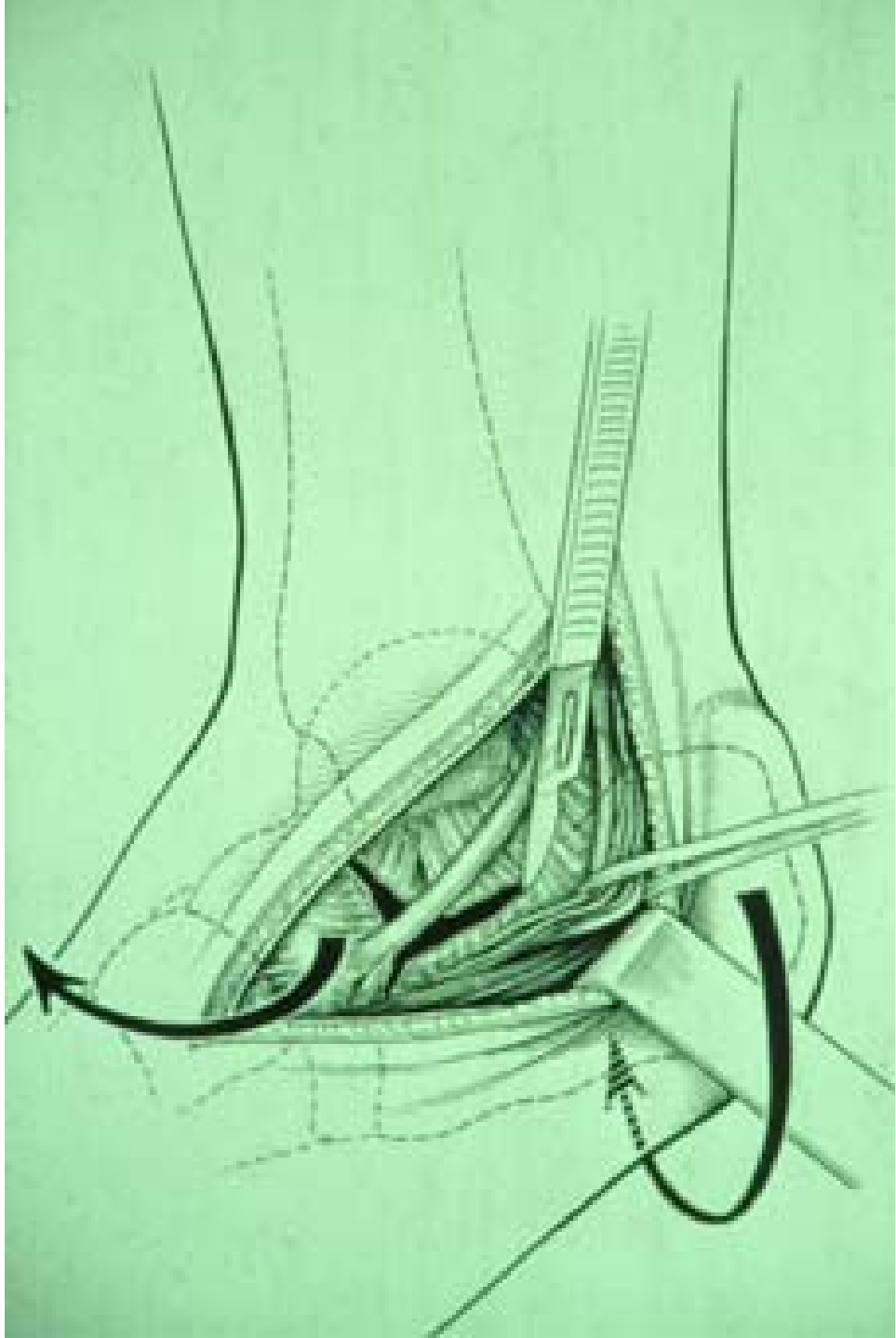


RETRACTION DES PARTIES MOLLES

(AVANT 1975)

- RETRACTIONS POSTERO-MEDIALES
 - LIGAMENTS SOUS-TALIENS
 - LIGAMENT INTER-OSSEUX
- RETRACTIONS ANTERO-MEDIALES

(MASTER KNOT OF HENRY)



RETRACTION DES PARTIES MOLLES

(APRES 1975)

- PAS DE RETRACTION POSTERO-MEDIALE
- RETRACTIONS POSTERO-LATERALES
- RETRACTIONS ANTERO-LATERALES

ANTERO MEDIAL
FIBROUS KNOT



ANTERO LATERAL
FIBROUS KNOT

POSTERO LATERAL
FIBROUS KNOT

EQUINUS CONTRACTURE OF SOFT TISSUES

- ACHILES TENDON
- POSTERIOR TIBIO-TALAR CAPSULE
- POSTERO-LATERAL FIBROUS KNOT



NOEUD FIBREUX

POSTERO-LATERAL

- RETINACULUM DES PERONIERS
- LIGAMENT CALCANEO-FIBULAIRE
- LIGAMENT TALO-FIBULAIRE



ADDUCTION OF CALCANEOPEDAL BLOCK CONTRACTURE OF SOFT TISSUES

- POSTEROLATERAL FIBROUS KNOT**
- ANTEROMEDIAL FIBROUS KNOT**
- ANTEROLATERAL FIBROUS KNOT**

ANTERO MEDIAL
FIBROUS KNOT

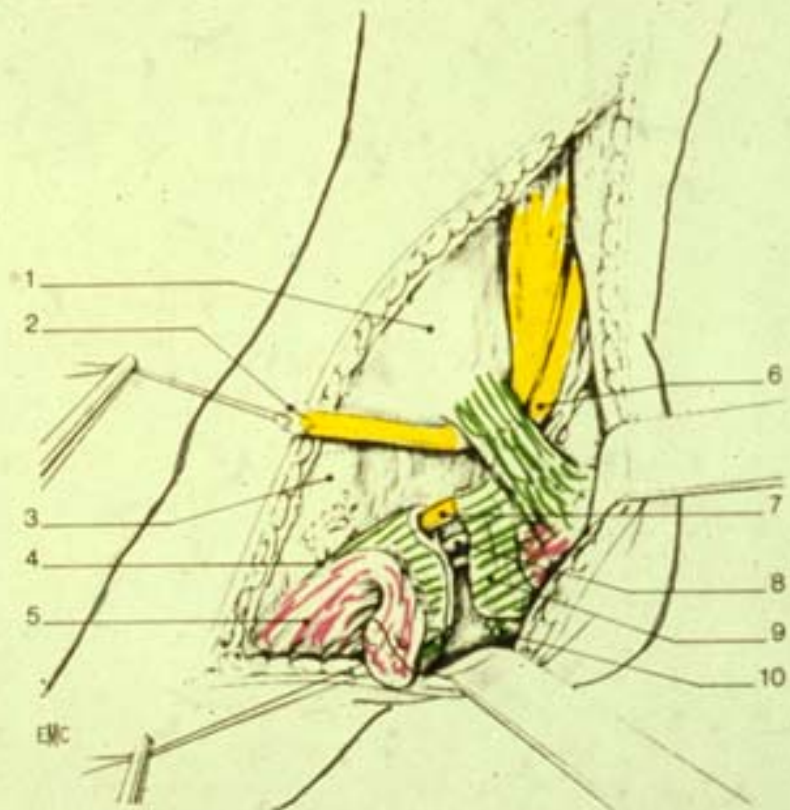
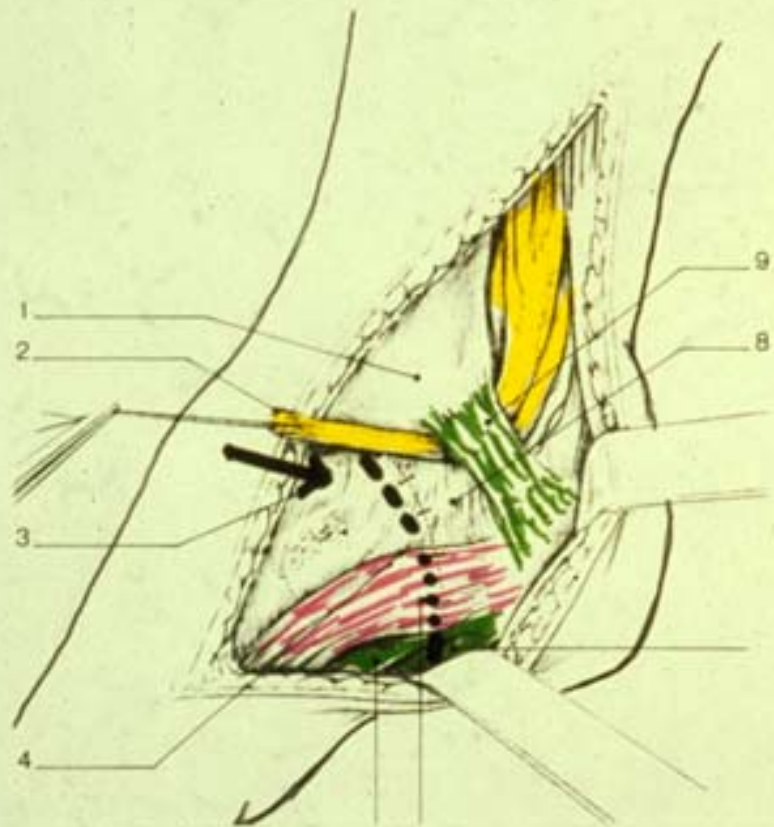


ANTERO LATERAL
FIBROUS KNOT

POSTERO LATERAL
FIBROUS KNOT

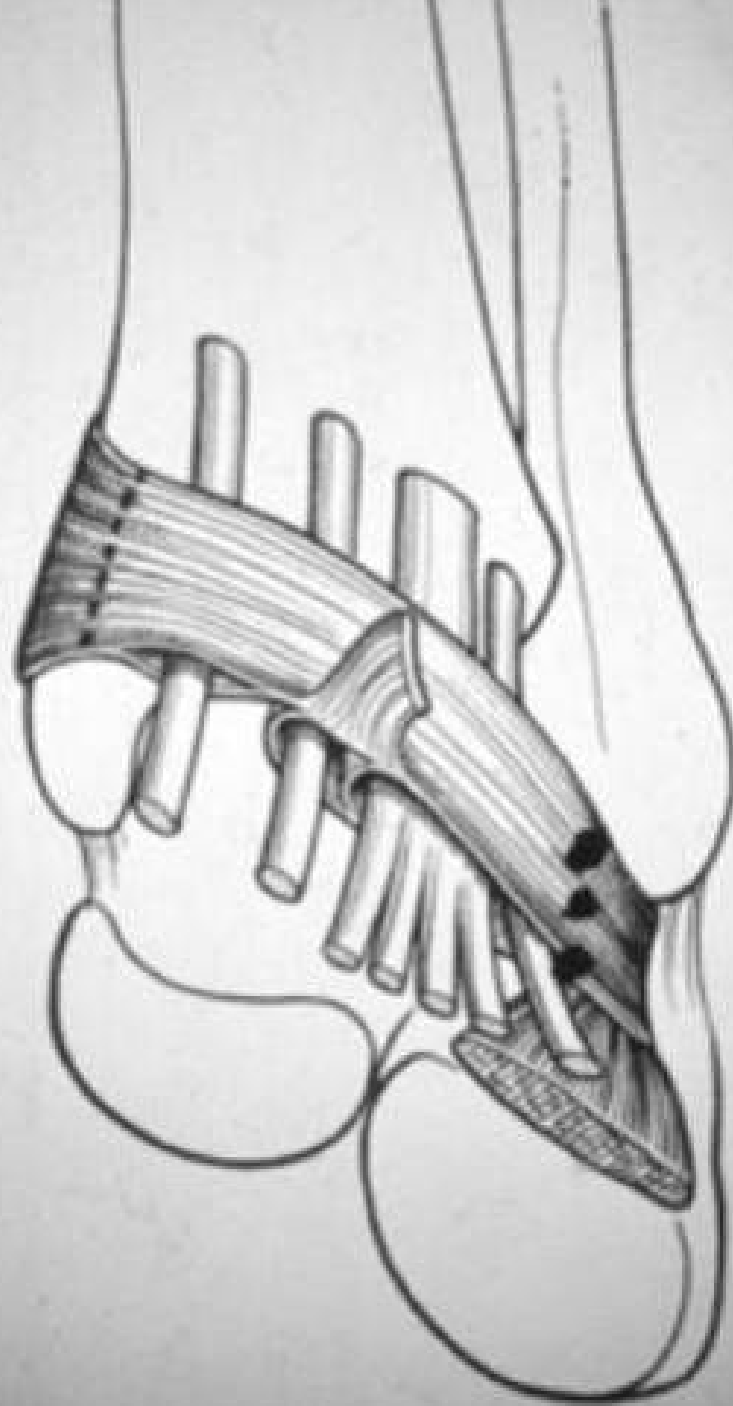
NOEUD FIBREUX ANTERO-MEDIAL

- TENDON DU MUSCLE TIBIAL POSTERIEUR
- TISSU FIBREUX NAVICULO-TIBIAL
- GAINÉ DU LONG FLECHISSEUR COMMUN
- BORD SUPERIEUR DU SEPTUM MEDIAL



NOEUD FIBREUX ANTERO-LATERAL

- RETINACULUM ANTERO-LATERAL DU COU-DE-PIED
- CAPSULE LATERALE DE L'ARTICULATION SOUS-TALIENNE ANTERIEURE



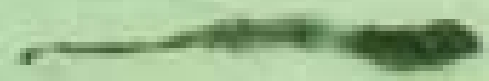
ANOMALIES MUSCULAIRES

- ANOMALIES D'INSERTION
- DESEQUILIBRE MUSCULAIRE
(PRONATEURS - SUPINATEURS)
- HYPOPLASIE MUSCULAIRE

Tibialis posterior

Tibialis anterior

Gastrocnemius



R.



L.

Peroneus longus



R.



L.



ANOMALIES VASCULAIRES

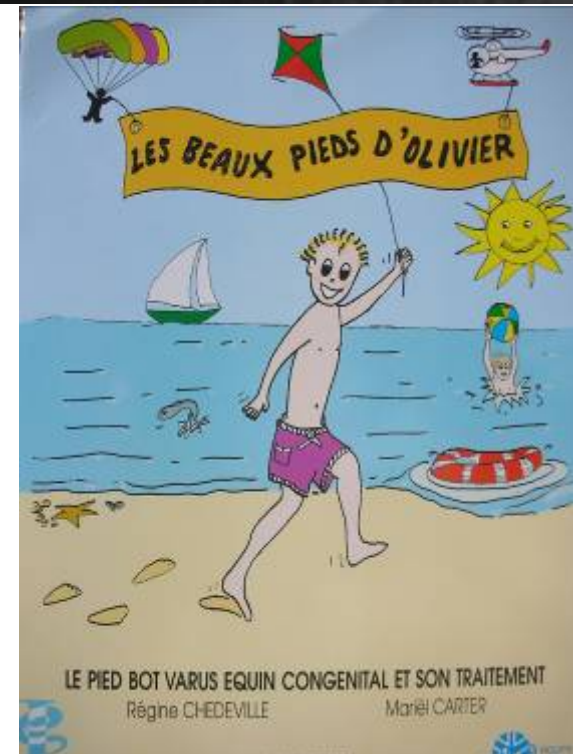
- HYPOPLASIE : ARTERE TIBIALE ANTERIEURE
ARTERE PEDIEUSE



Diagnostic prénatal (15 à 20 SA)

Prise de contact avec l'équipe

Explications ++++++



Méthode fonctionnelle

Les méthodes fonctionnelles

« French Method »

Henri Bensahel

Alain Diméglio

Paul Masse

Raphaël Seringe

Méthode

Kinésithérapie :

- **Correction progressive et globale** (adduction + équin)
- **Mobilisations passives et actives,**
- **Rééducation en charge**

Appareillage et postures

Ténotomie per-cutanée d'achille (depuis 1996)

Étirement passif parties molles

Dérotation bloc calcanéopédieux

Étirement passif parties molles

Étirement arche interne

Étirement passif parties molles

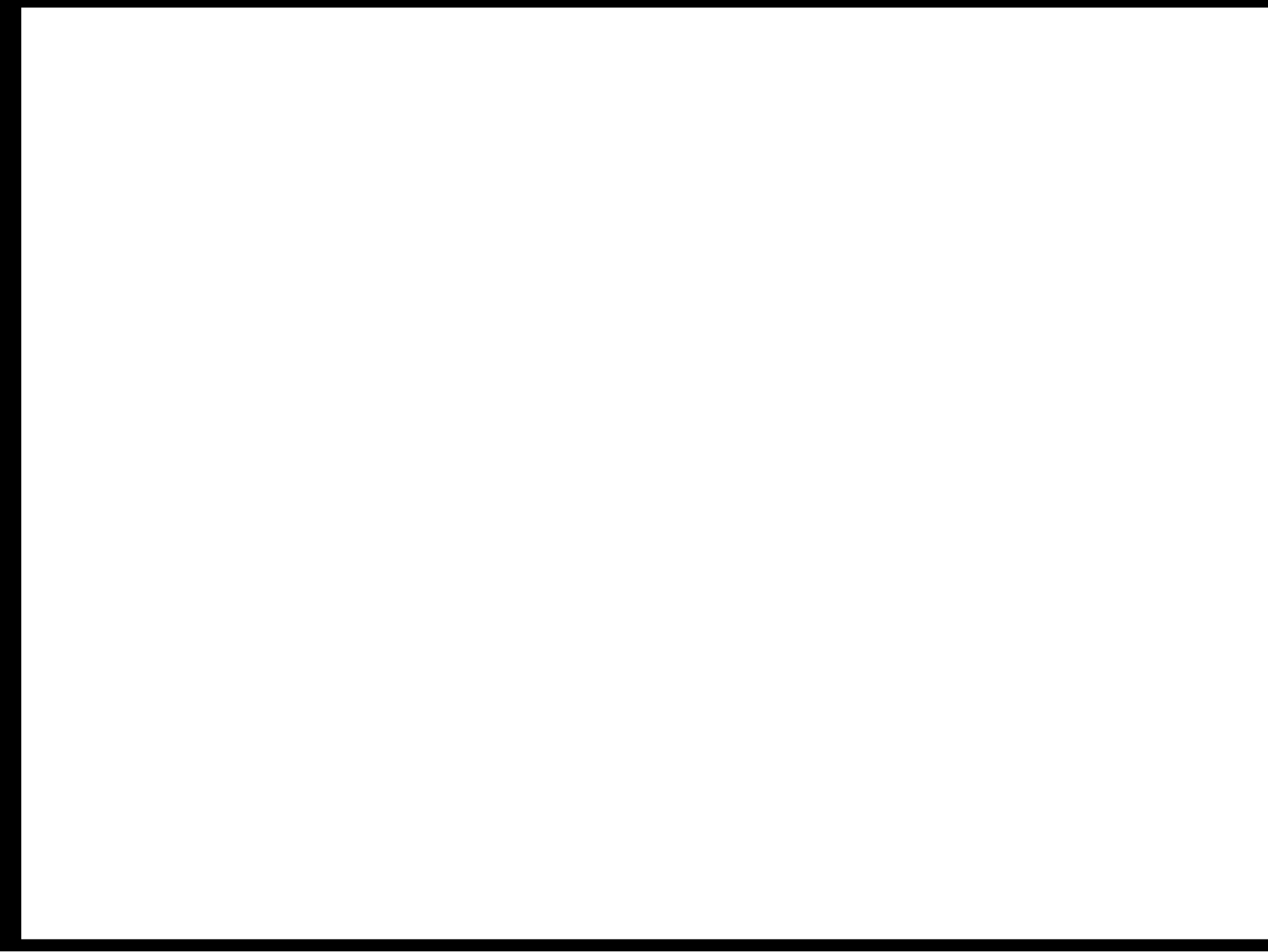
Étirement tendon d'Achille

Sollicitation active des muscles fibulaires

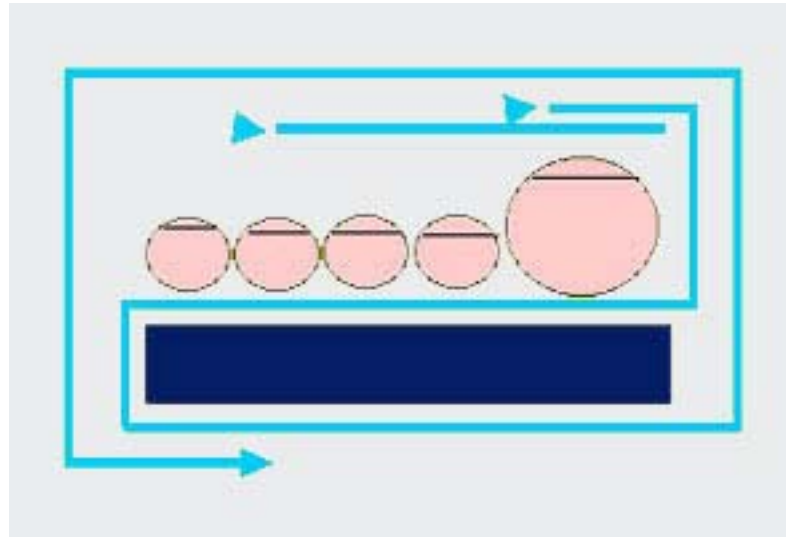


Renforcement muscles fibulaires

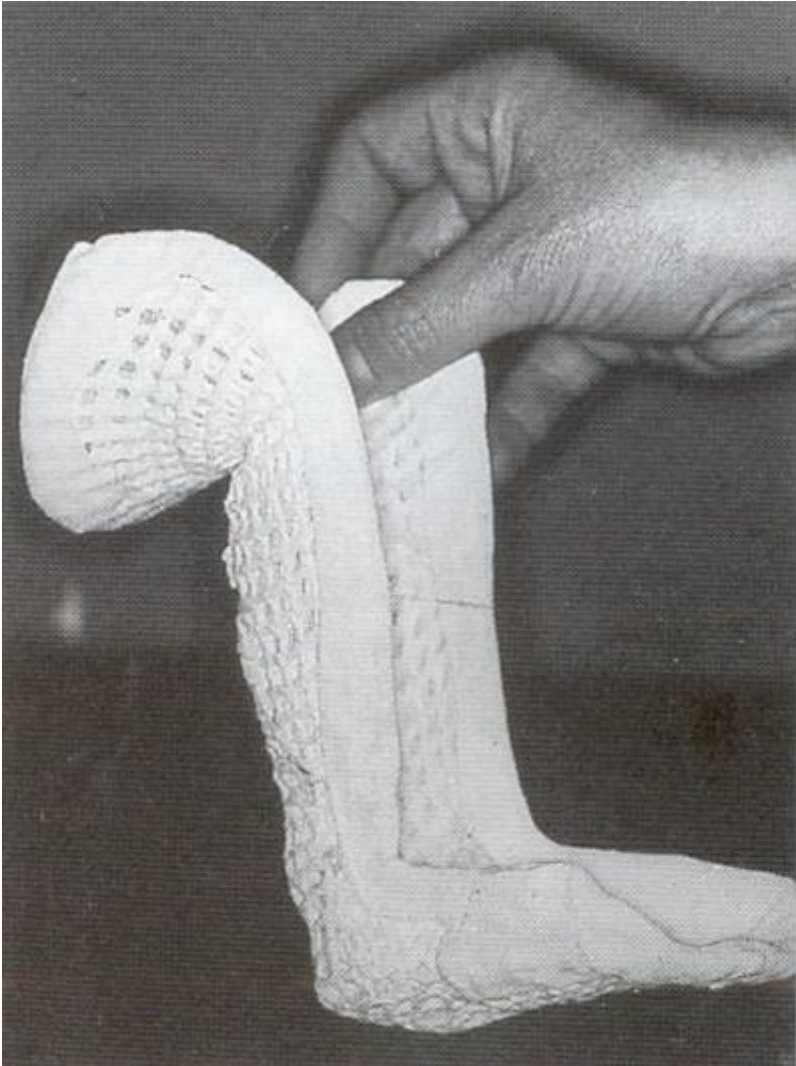




Plaquettes et bandages inextensibles



Attelle thermoformée fémoro-pédieuse



Postures

Naissance à 6 mois

Attelle fémoro-pédieuse

A partir de 6 mois

**Attelle jambo-pédieuse diurne
fémoro-pédieuse nocturne**

Au moment de la marche

Appareillage nocturne

- Attelle fémoro-pédieuse

puis

- Attelle jambo-pédieuse nocturne plusieurs années

Clubfoot conservative treatment

Passive manipulations

Muscular stimulations

Fixation of the foot onto a plate and splint



Rotation
Externe
de jambe



Rotation
Externe
de jambe



Rotation
interne
de jambe



**Rotation
Externe
de jambe**



**Rotation
interne
de jambe**



**Attelle
jambo
pédieuse**



**Attelle
fémoro
pédieuse**

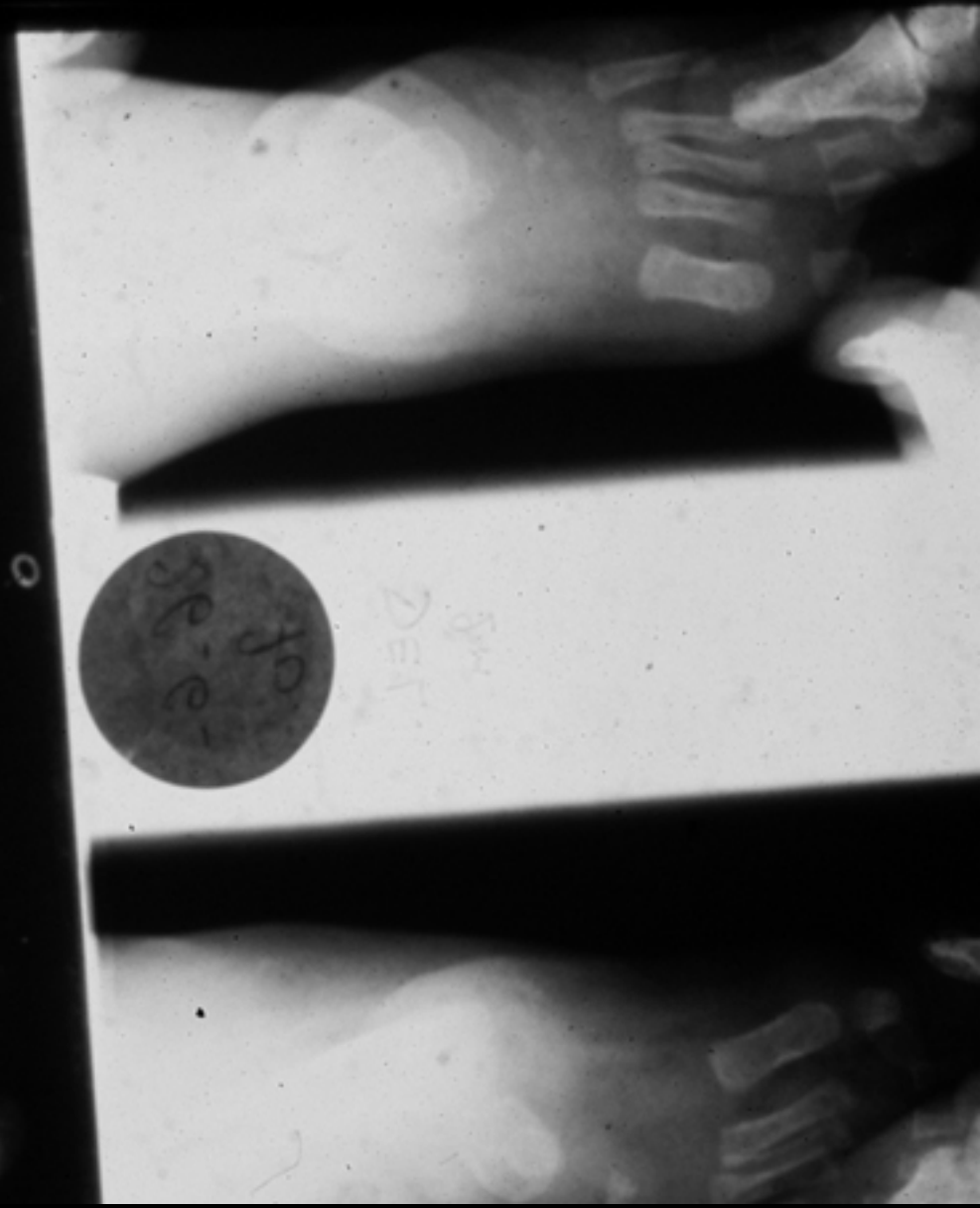


COMPLICATIONS DU TRAITEMENT

CONSERVATEUR

- LESIONS CUTANÉES
- DECOLLEMENT EPIPHYSAIRES
- HYPER-CORRECTION EN "PIED CONVEXE"







**Iatrogenic Rocker Bottom Deformity in
congenital idiopathic clubfoot :
A report of 36 cases
with 15 years follow-up**

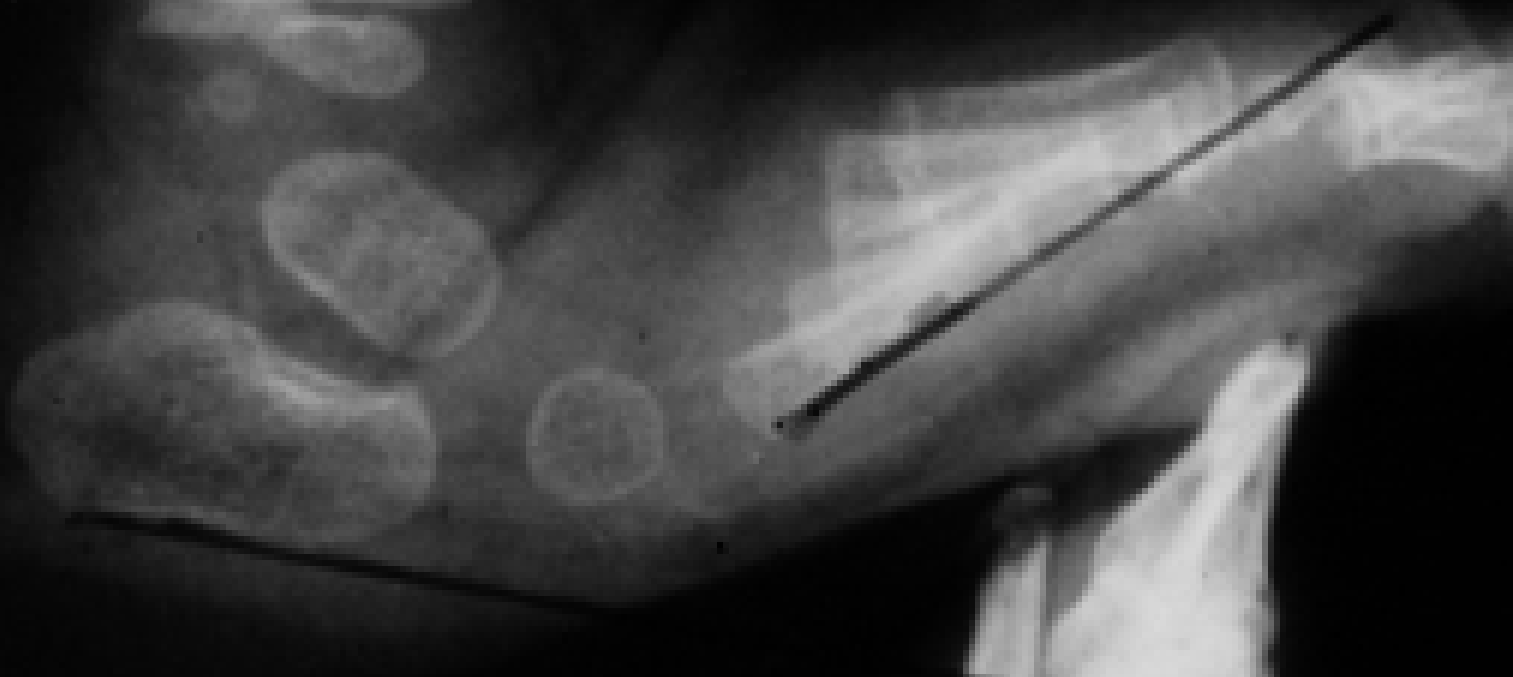
Wicart Ph, Koureas G, Seringe R

**Saint-Vincent de Paul Hospital, Paris
University René Descartes, Paris V**

DET

11M

G



Ténotomy per-cutanée d'achille

Indication : Equin persistant de l'arrière-pied +/- convexité plantaire

Age : 5 à 10 mois

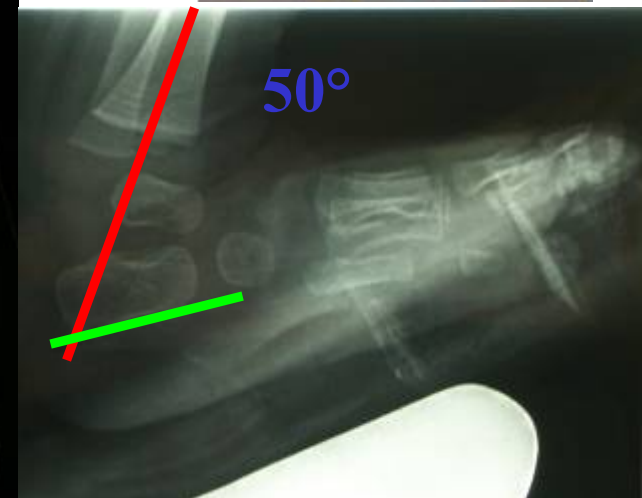
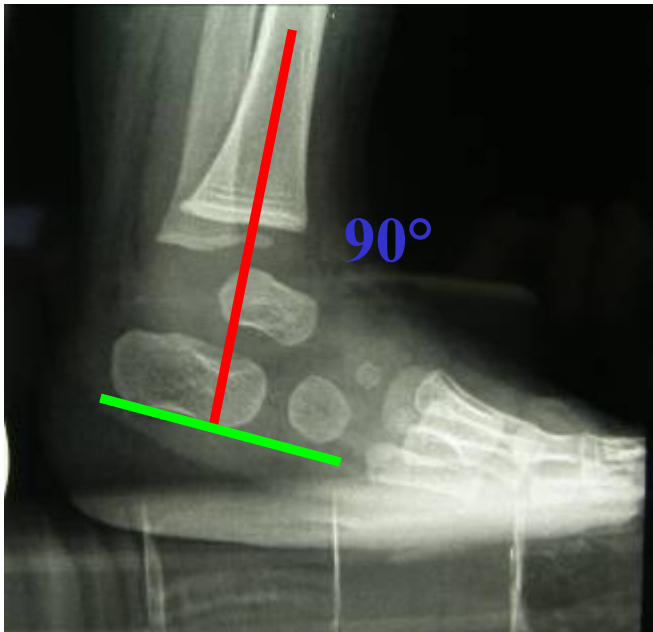
Hôpital de jour

+ plâtre cruropédieux 21 jours



Pré-op

Post-op immédiat



During the first period of 6 months

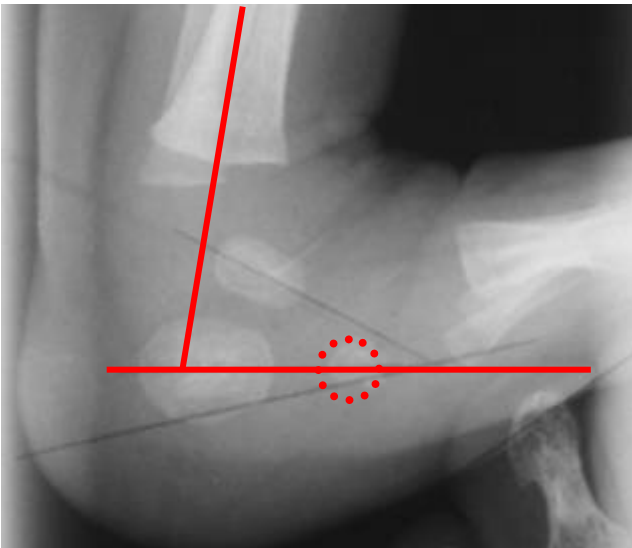
Improvement of clinical dorsal flexion (p=0.006)

-2.1° ± 15 (birth) versus 6.5° ± 17 (6 months old)

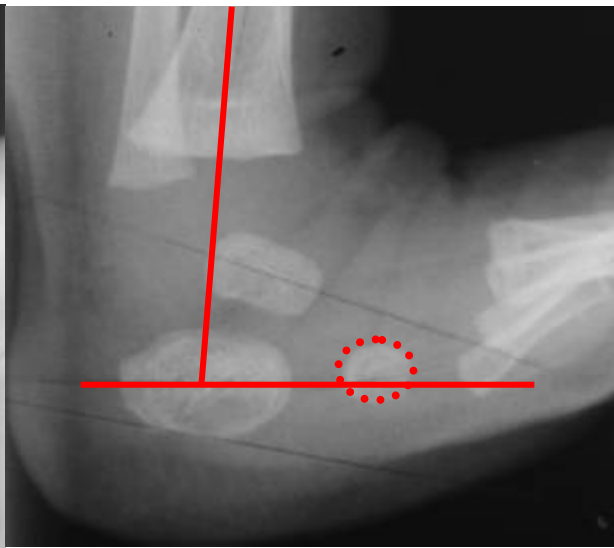
Radiological hindfoot equinus unchanged

82.7° ± 11 (birth) versus 83° ± 16 (6 months old)

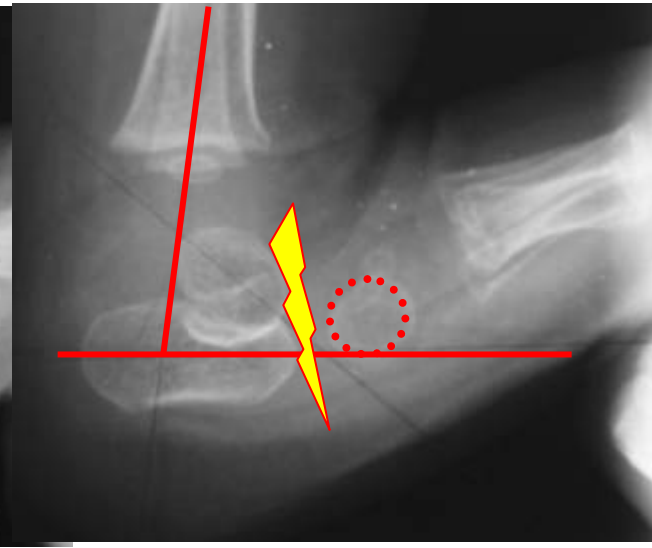
Mid-foot sagittal break



Birth



2 months old



6 months old

Ténotomie d'Achille et pied bot varus équin congénital idiopathique

Pour quels pieds ?

Quand ?

Ph. Wicart, R. Seringe

Hôpital Saint-Vincent de Paul, Paris



Introduction

Les méthodes fonctionnelles

« French Method »

Henri Bensahel

Alain Diméglio

Paul Masse

Raphaël Seringe

Méthode de Ponseti

Introduction

Ténotomie percutanée d'achille

Absente dans la méthode fonctionnelle

Quasi-systématique dans la méthode de Ponseti

Pour quels pieds ?

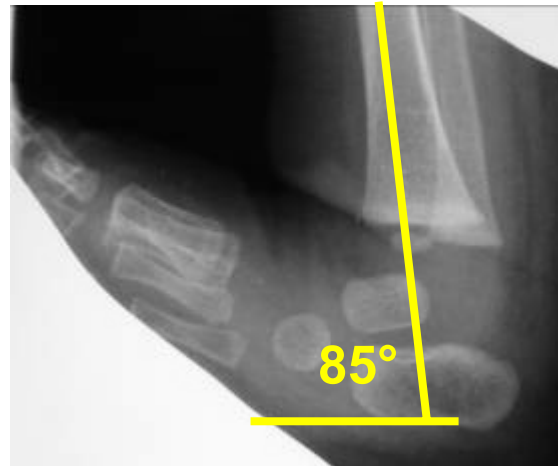
Quand ?

Critères radiographiques

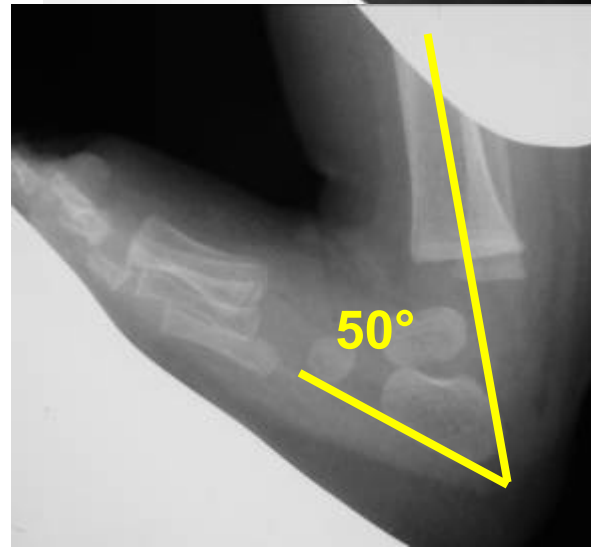
Angle Tibio-calcanéen (ATC)

4 mois

$ATC \geq 75^\circ$



$ATC < 75^\circ$



Discussion

Pour quels pieds proposer une ténotomie d'Achille ?
Critères d'indication ?

~~Sévérité à la naissance (Grade de Diméglio) ?~~

~~Examen clinique en cours de traitement ?~~

Radiographie en cours de traitement

+++

Discussion

Quand faire une ténotomie d'Achille ?

Avant 4 mois ?

Indication difficile car radiographie non interprétable

A 4 mois ?

Peut-être

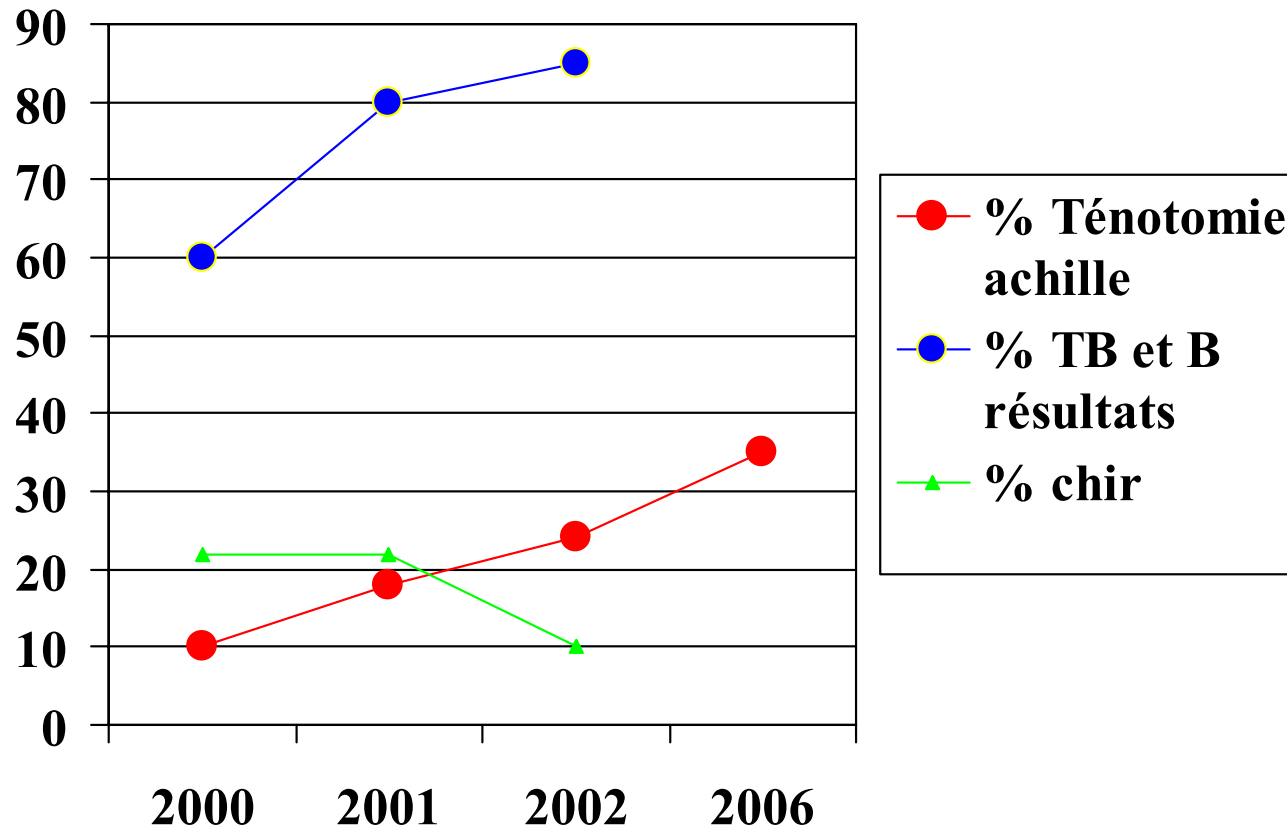
Mais absence d'indication dans 43% des pieds avec $ATC > 75^\circ$
Probablement si $ATC > 90^\circ$

Après 4 mois (6 mois) ?

Après modification/correction du protocole de traitement

Si absence d'amélioration de l'angle Tibio-calcaneén

Elargir les indications ?





TRAITEMENT CHIRURGICAL

- LIBERATION DES PARTIES MOLLES
- OSTEOTOMIES (CALCANEUM, CUBOIDE, TIBIA...)
- TRANSFERTS MUSCULAIRES
- APPAREIL D'ILIZAROV- DOUBLE ARTHRODESE

PRINCIPES DES LIBERATIONS

CHIRURGICALES

- 1 - CORRIGER L'ÉQUINISME, L'ADDUCTION DU B.C.P. ET L'ADDUCTION M.T.
- 2 - LIBERER D'ARRIERE EN AVANT CAR LA CORRECTION DE L'ÉQUIN SUPPRIME LA SUPINATION

3 - RESPECTER L'ARTICULATION SOUS-TALIENNE

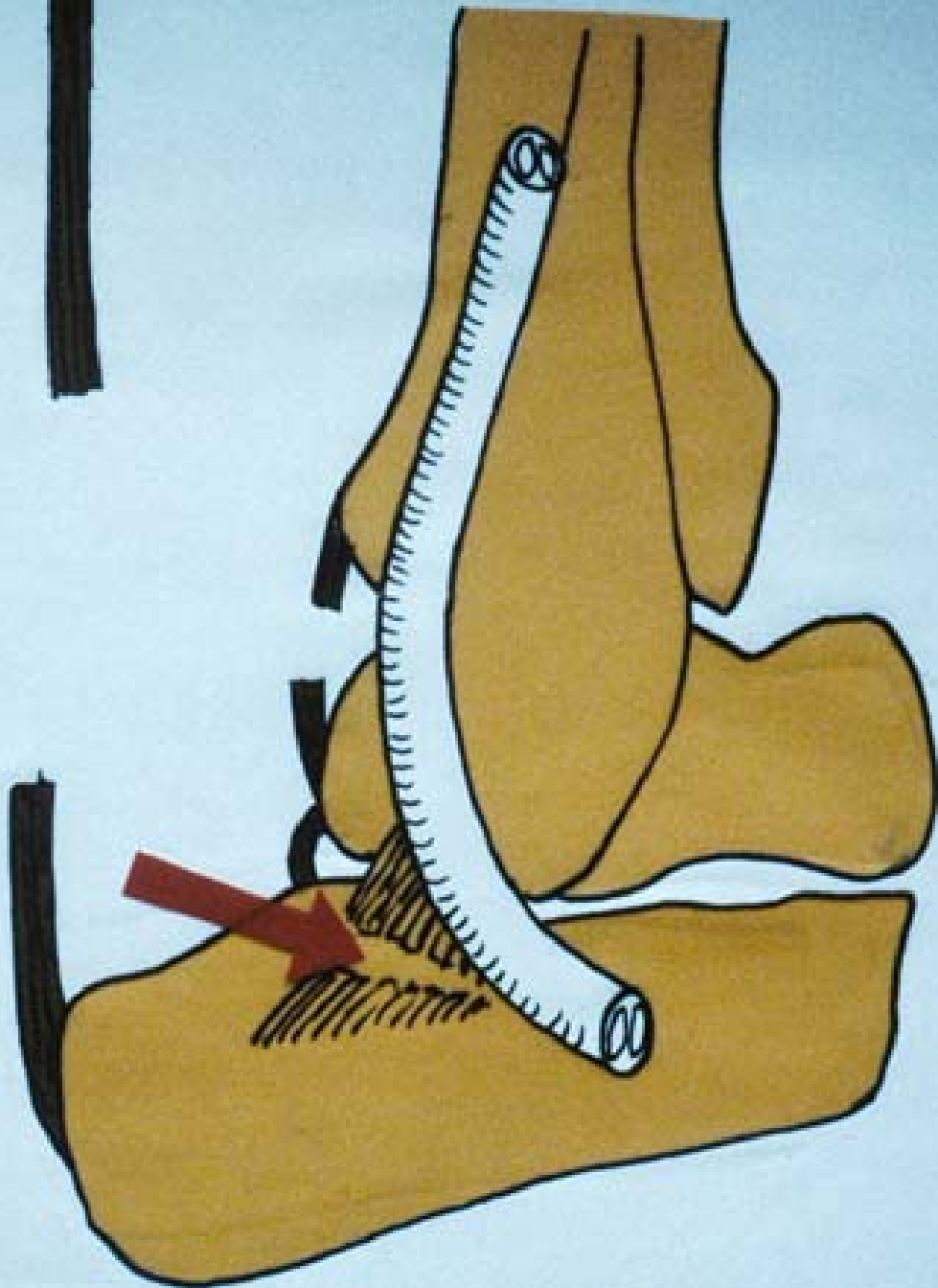
4 - RESPECTER LE LIGAMENT INTER-OSSEUX

5 - NE PAS RACCOURCIR L'ARCHE INTERNE

6 - PENSER A ALLONGER LE JAMBIER ANTERIEUR

POSTERO-LATERAL FIBROUS KNOT

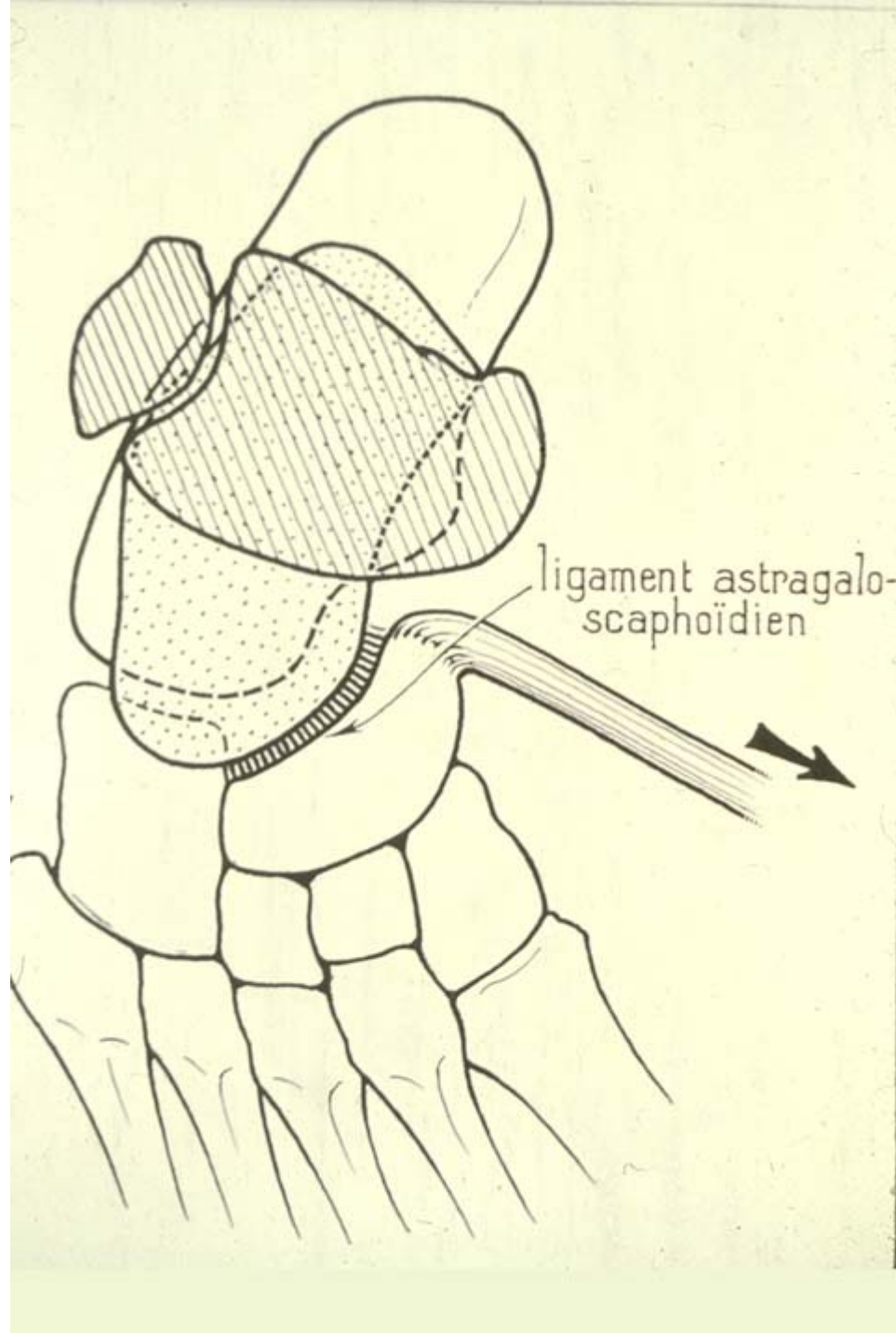
- RETINACULUM OF PERONEAL
TENDONS
- CALCANEO-FIBULAR LIGAMENT
- TALO-FIBULAR LIGAMENT

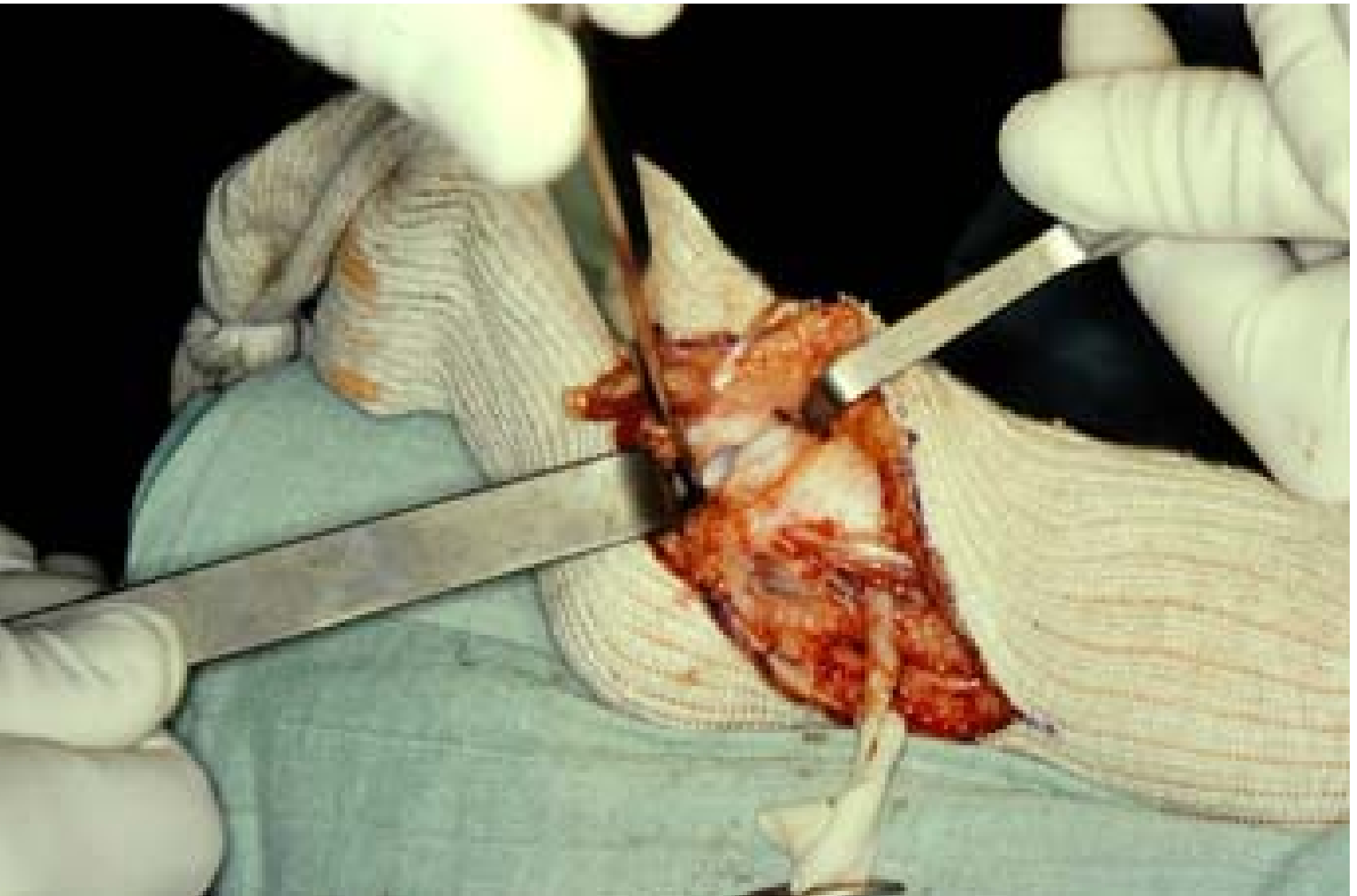


MEDIAL PLANTAR SEPTUM

- OFTEN THIN
- THICKENED UPPER BORDER



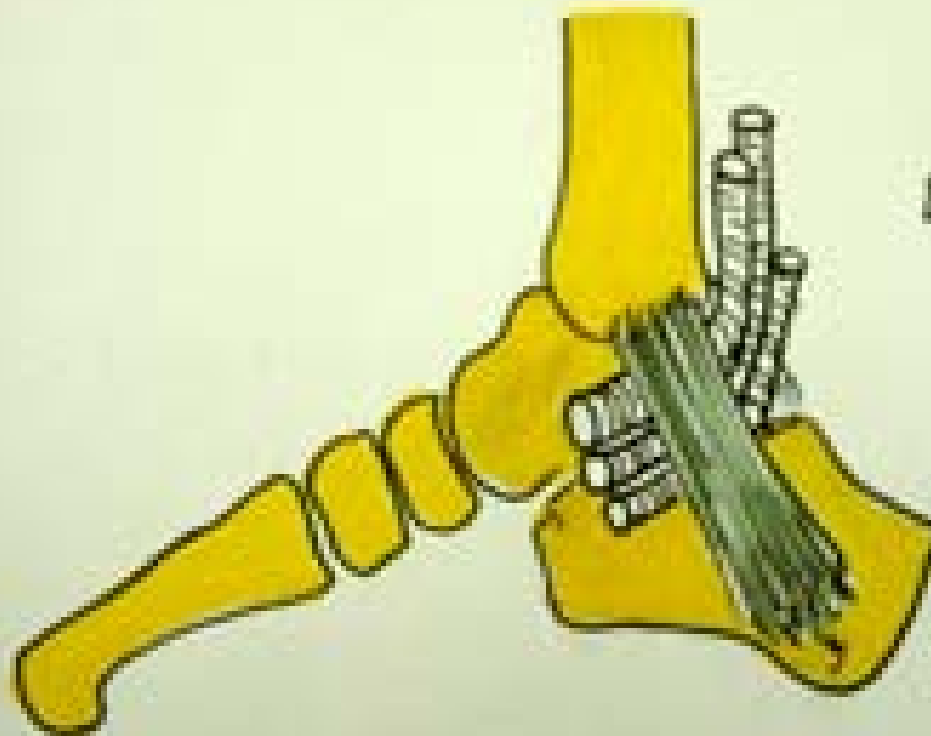




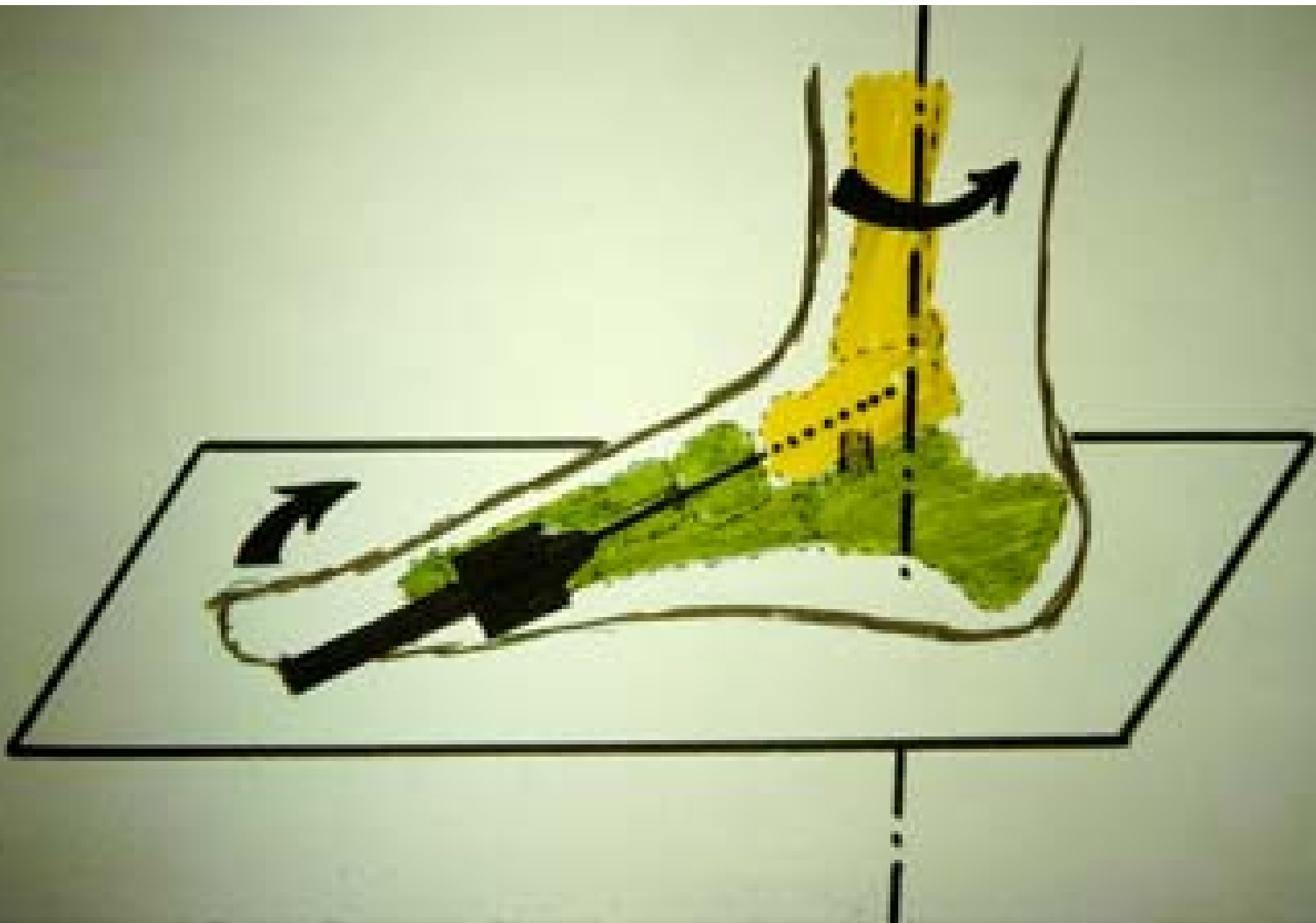
RESPECTER

- LES LIGAMENTS SOUS TALIENS
- LE LIGAMENT INTER-OSSEUX

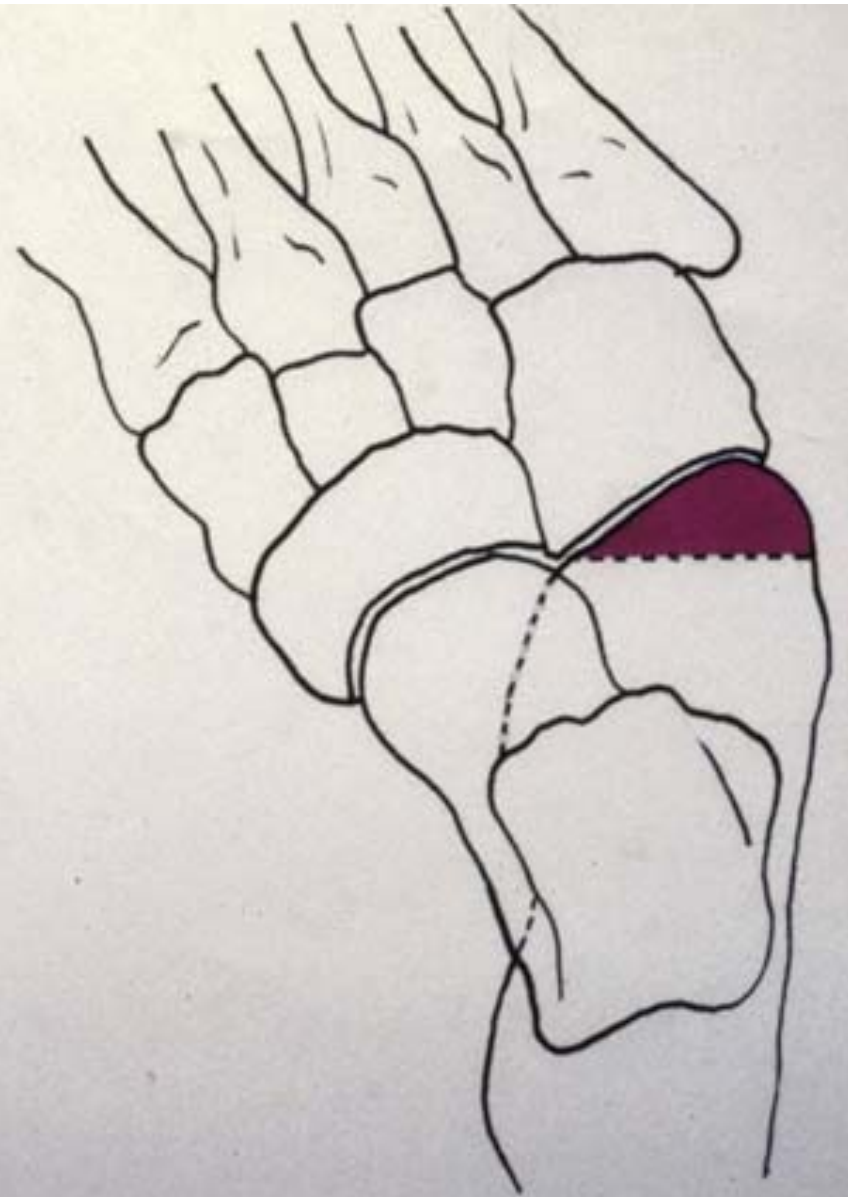
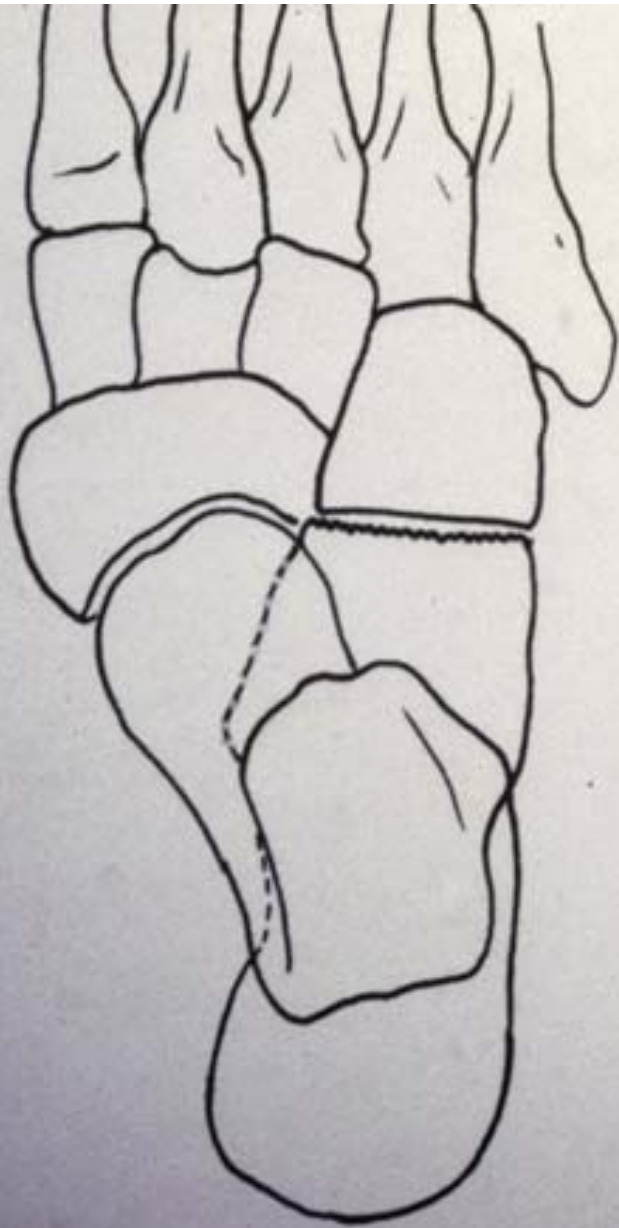
SANGLE TIBIO-CALCANÉENNE À RESPECTER



LES 3 GAINES
TENDINEUSES
ET
LE LIAMENT
ANNULAIRE
INTERNE









**ATTENTION A LA SUBLUXATION DORSALE
DU SCAPHOIDE**

ELH.
5A4M



Clubfoot posteromedial release : advantages of Tibialis anterior tendon lengthening

Wicart Ph, Seringe R

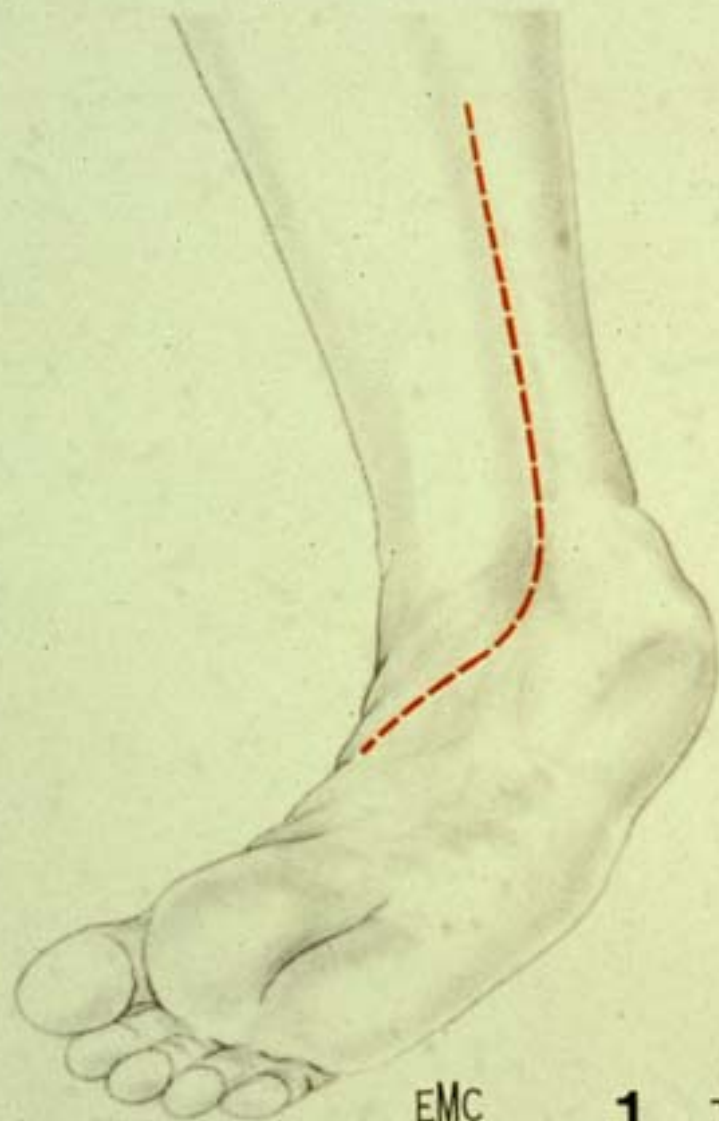
René Descartes University (Paris V)

Department of Paediatric surgery, Hôpital Saint-Vincent-de-Paul

Paris, France

SOINS POST-OPERATOIRES

- ATTELLE PLATREE EN LEGER EQUIN
- PLATRE CIRCULAIRE AVEC ANESTHÉSIE GÉNÉRALE AU 7^e JOUR
- PLATRE DE MARCHÉ 40^e JOUR
- ABLATION PLATRE ET BROCHE 90^e JOUR

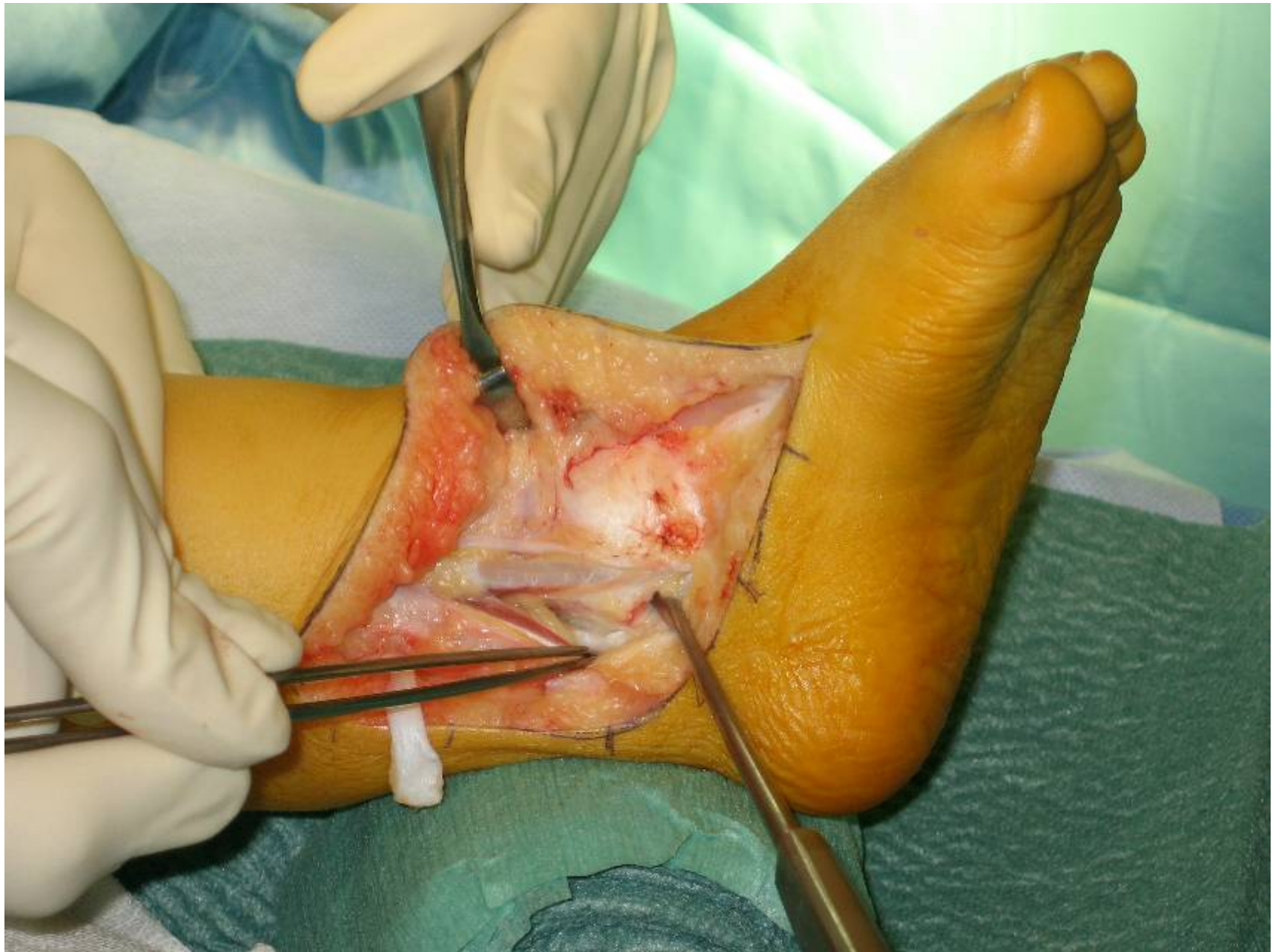


EMC

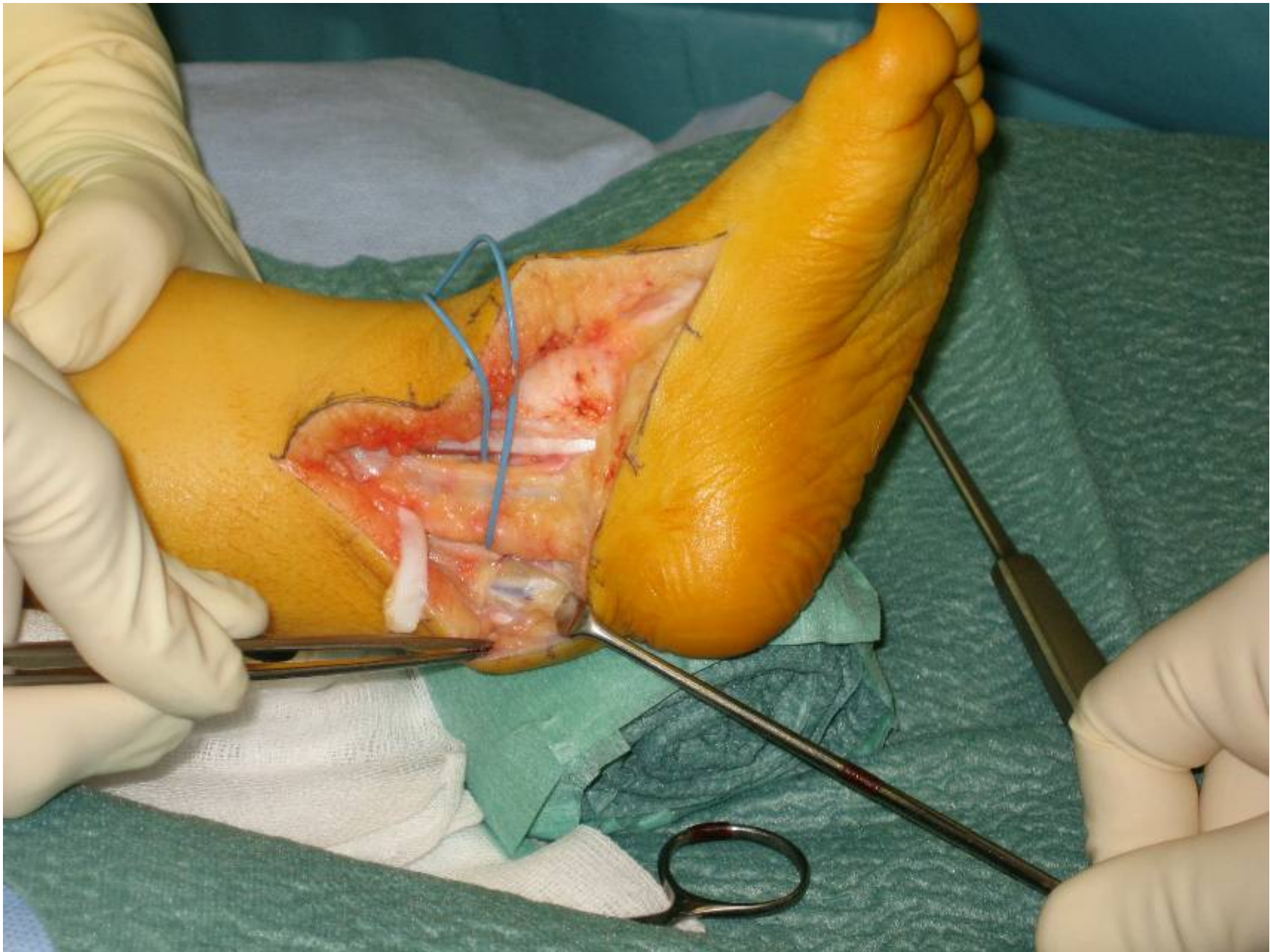
1 Tracé de la voie d'abord postéro-interne.



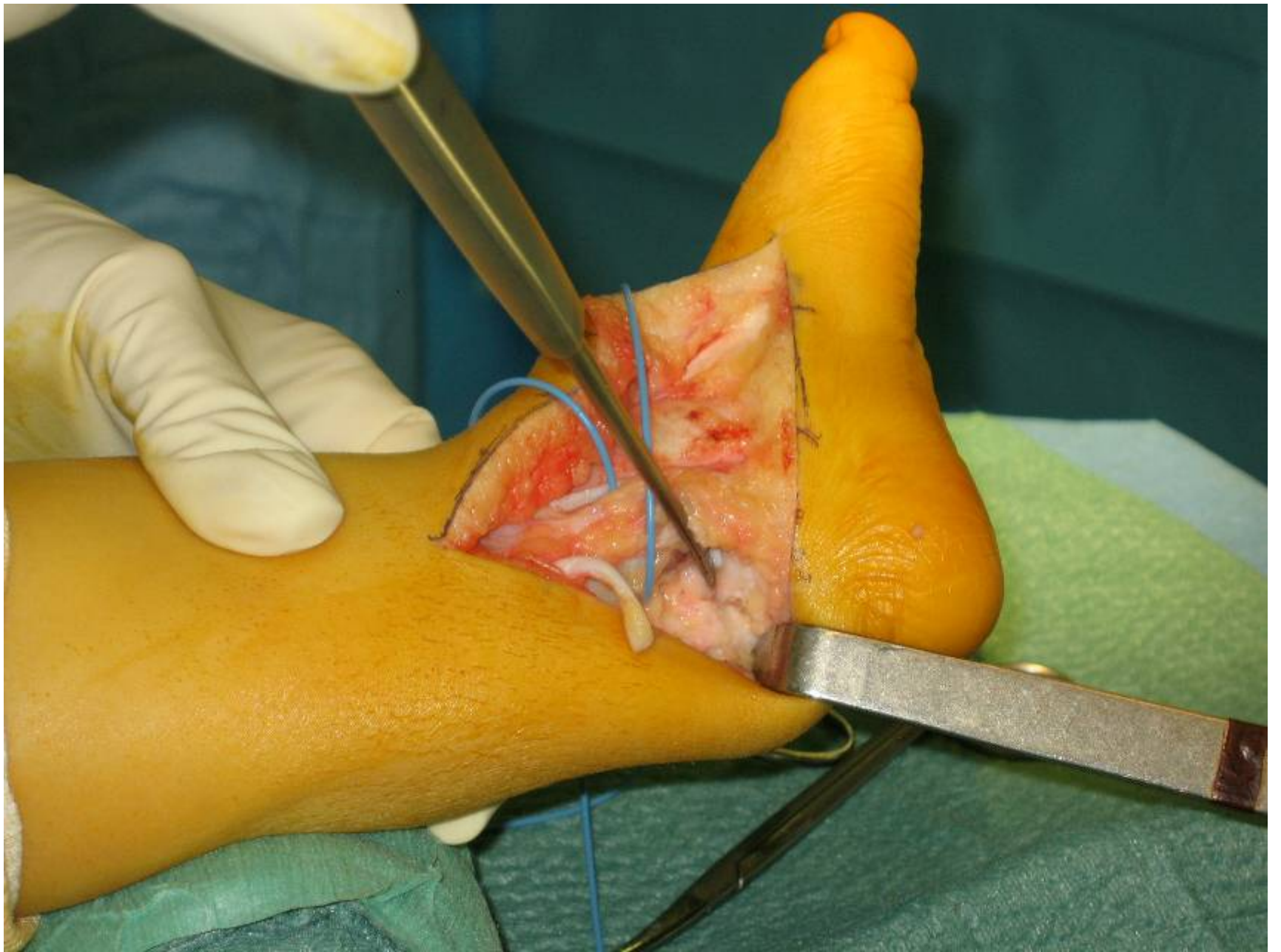


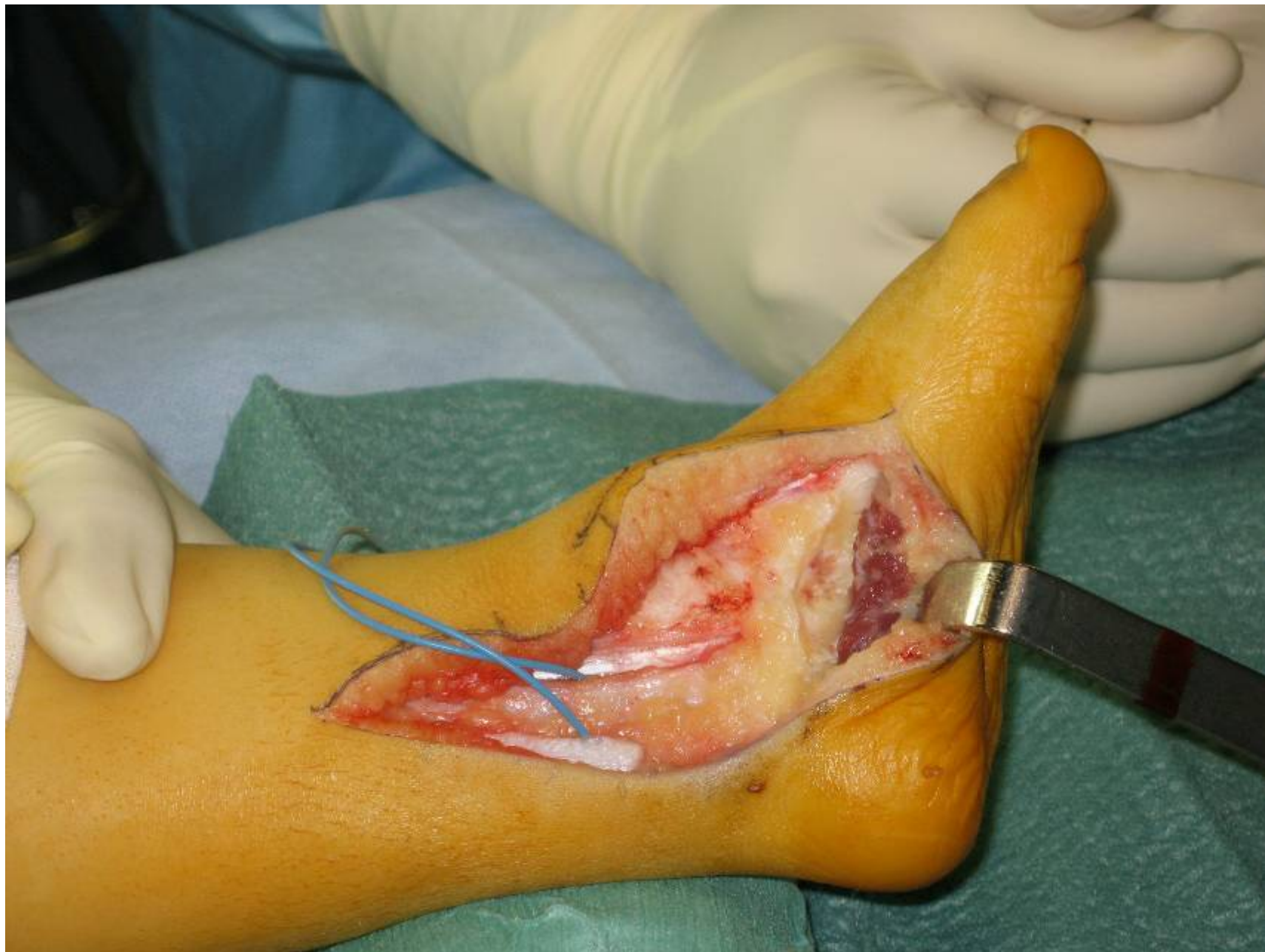






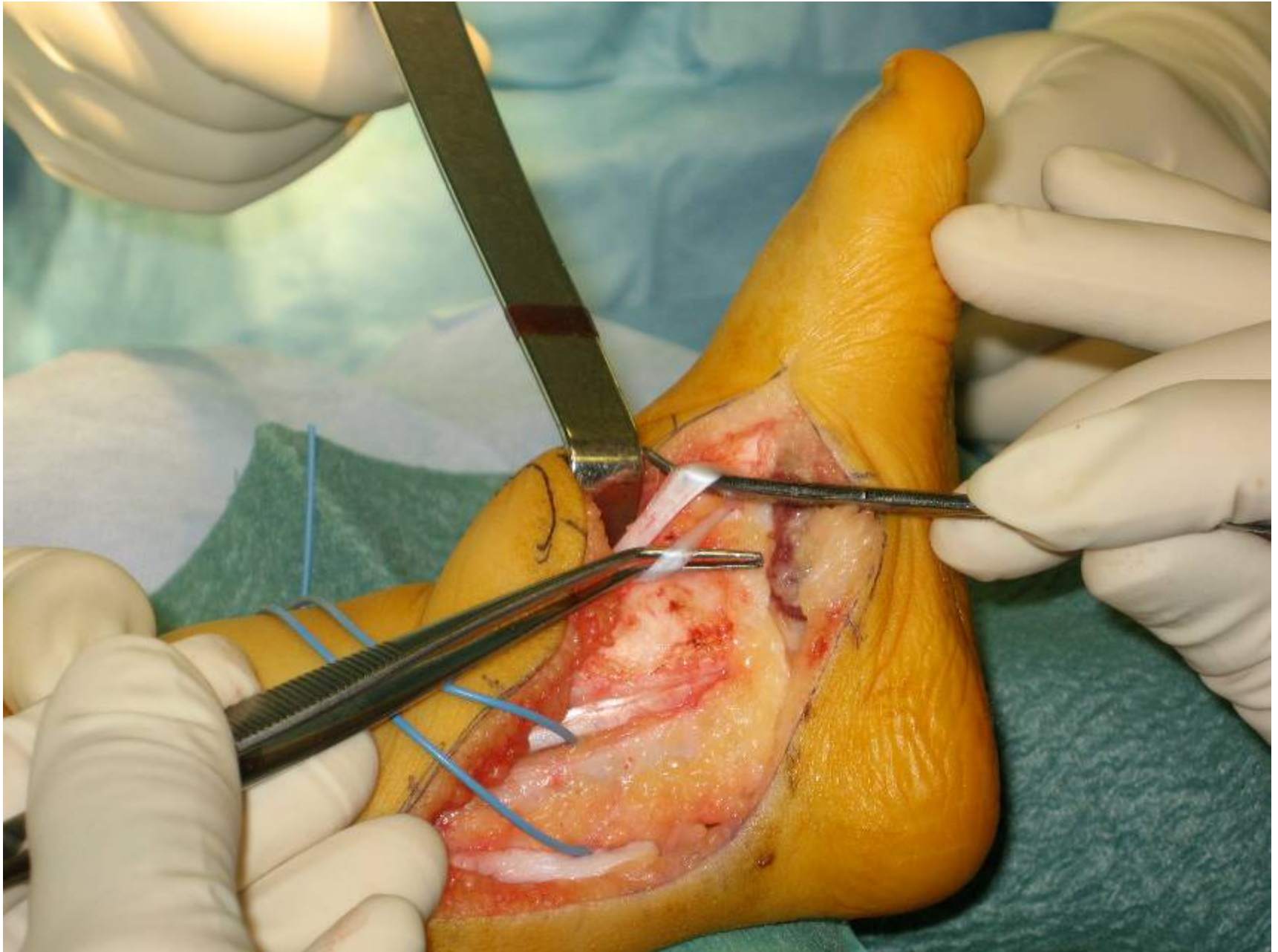




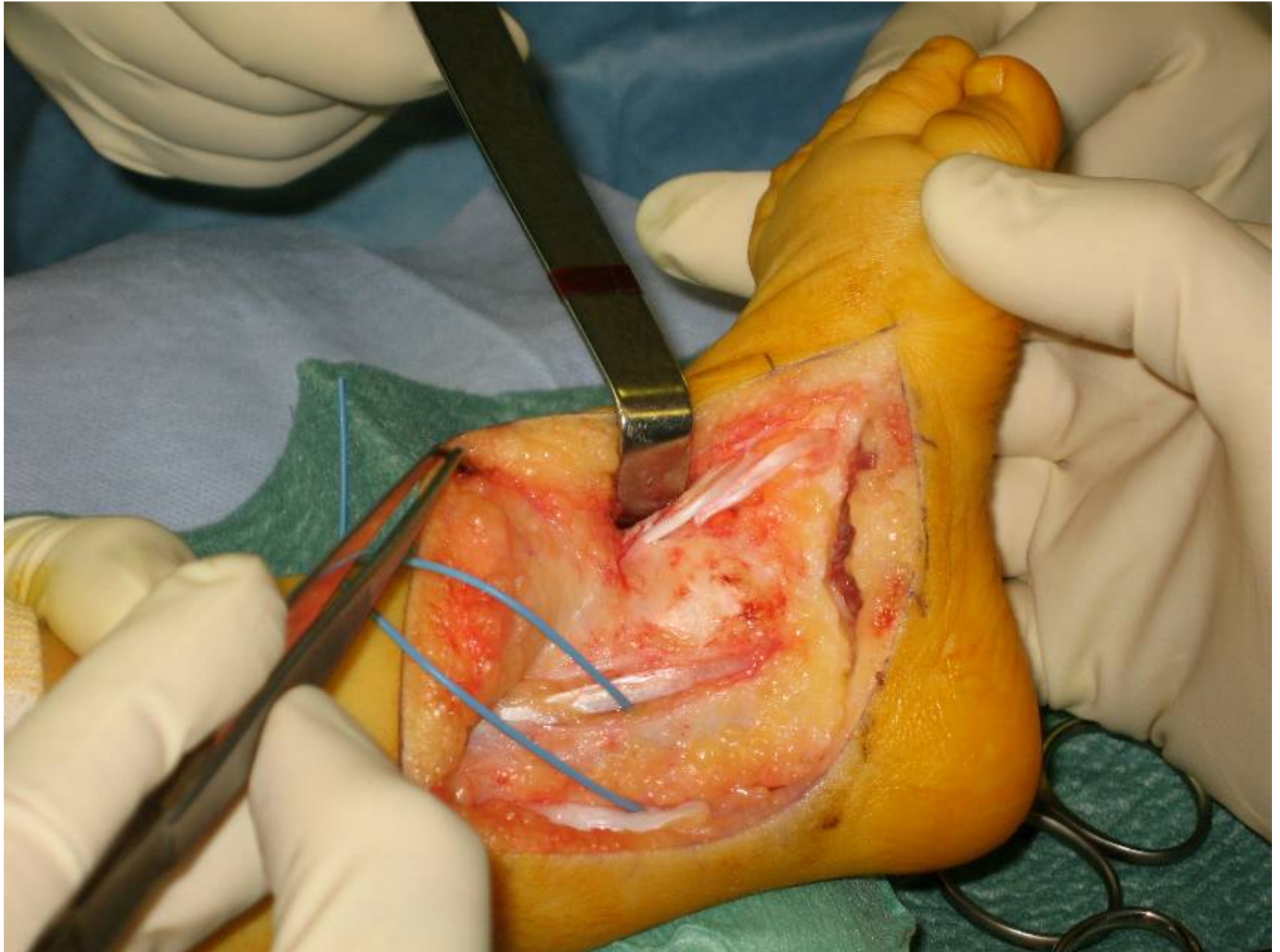


Aponévrose plantaire





Allongement tibialis anterieur



Allongement tibialis anterieur









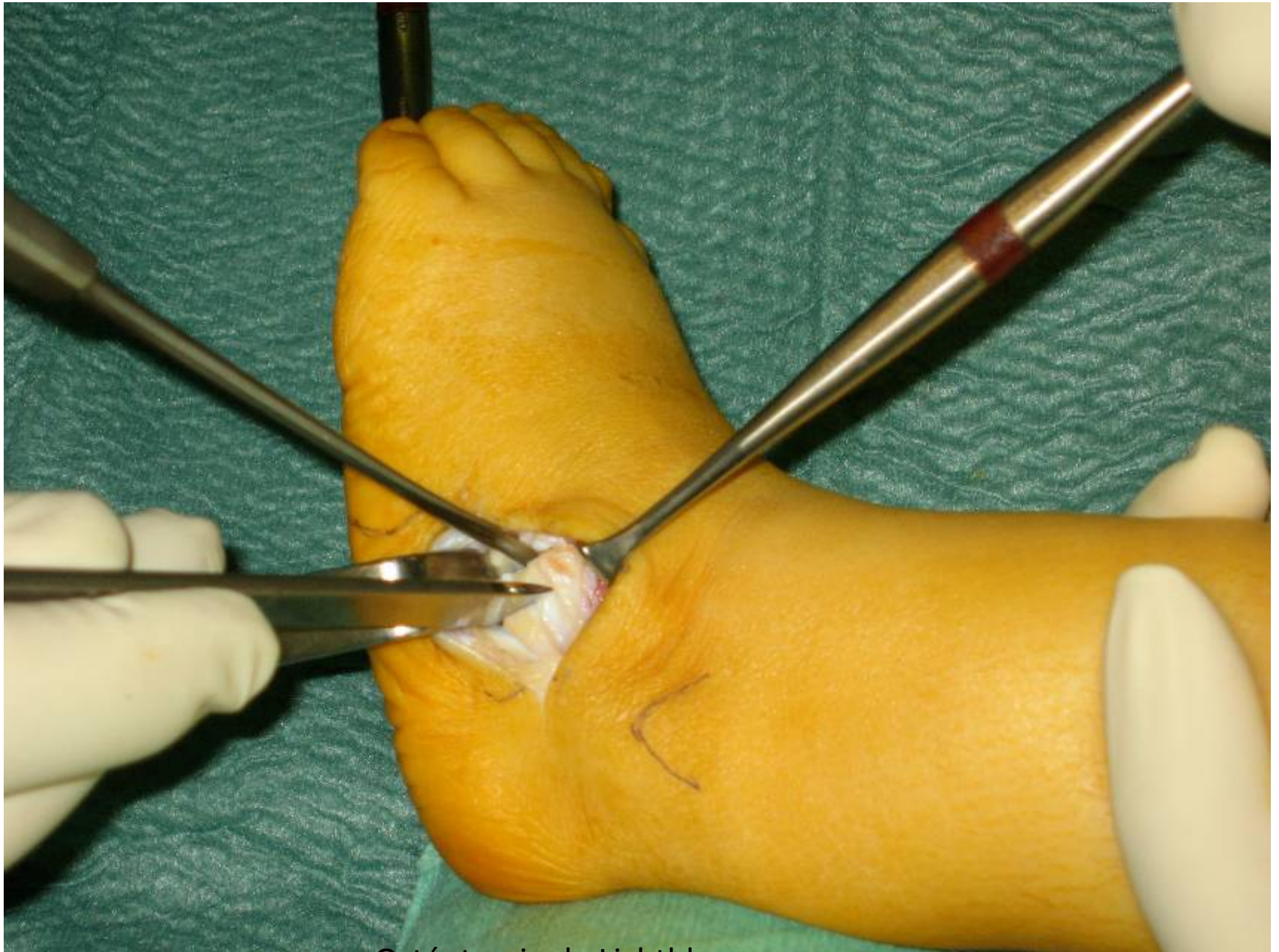
Baillement de la talonaviculaire



Baillement de la talonaviculaire





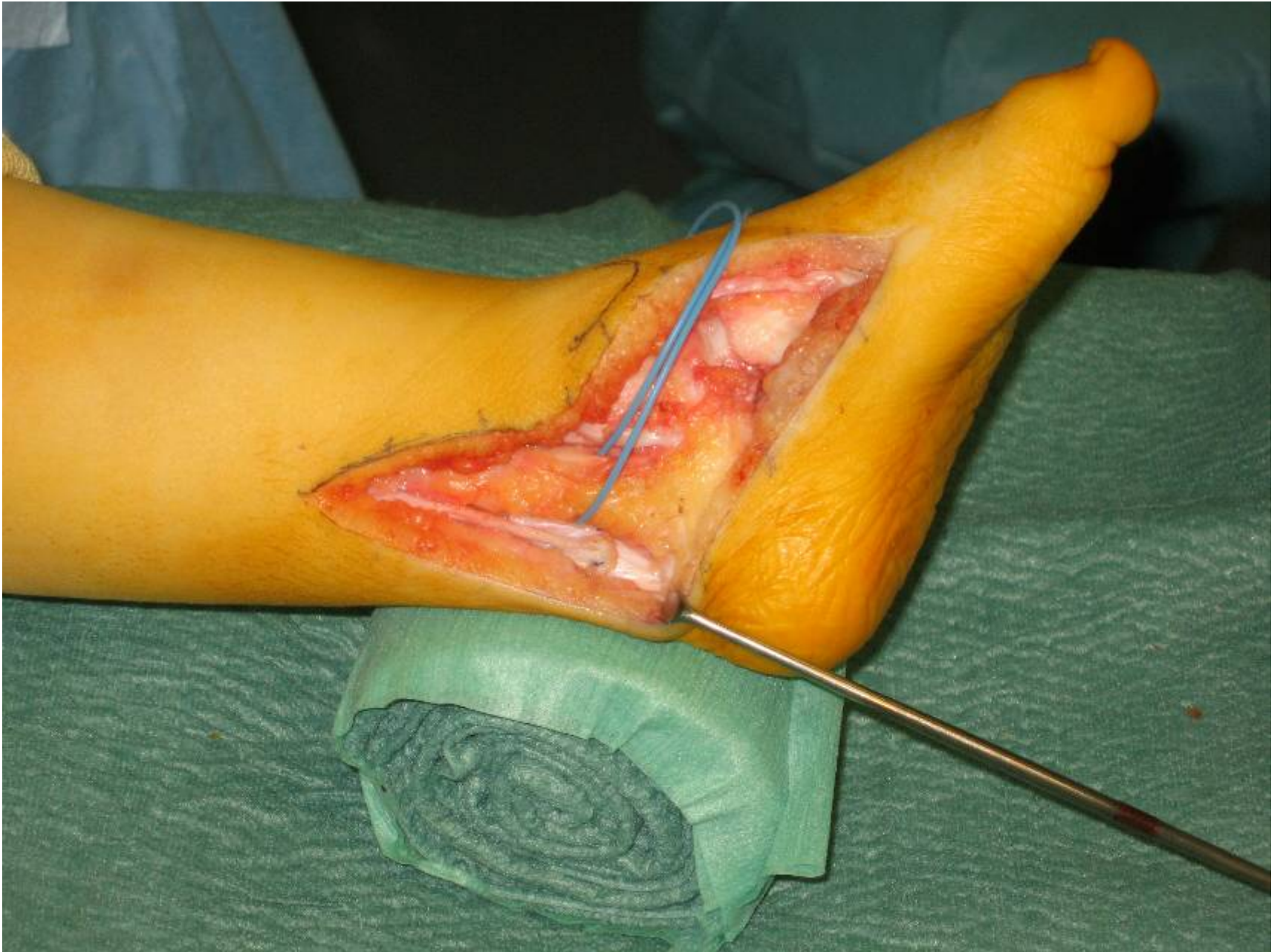


Ostéotomie de Lichtblau









Suture Achille



the 1990s, the number of people with a mental health problem has increased in the UK (Mental Health Act 1983, 1990, 1994, 1998, 2003, 2007, 2012, 2017, 2020).

There is a growing awareness of the need to improve the lives of people with mental health problems (Mental Health Act 1983, 1990, 1994, 1998, 2003, 2007, 2012, 2017, 2020).

The aim of this study was to explore the experiences of people with mental health problems who have been involved in research.

The study was part of a larger project which explored the experiences of people with mental health problems who have been involved in research.

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Case 1

Abdelkader, 1st soft tissue release at 5 month old

relapse at 5 y/o

Pre-op

Post-op

**MT joints + plantar release
+ Cuboide close wedge
osteotomy**



F/U: 32 y
Age: 37 y

“Excellent” results



TRANSFERTS MUSCULAIRES

- MOITIE DU TIBIAL ANTERIEUR



OSTEOTOMIES

- CALCANEUM
- CUBOIDE
- METATARSIENS
- TIBIA ET FIBULA



LEB.
FAGM



LEB
+ 2M



LERB

9A6M

**CHIRURGIE DU
PIED BOT INVETERE**











**CORRECTION PAR
APPAREIL D'ILIZAROV**









**DOUBLE ARTHRODESE
SOUS TALIENNE ET
MEDIO-TARSIENNE**





PIED HYPER-CORRIGE EN VALGUS

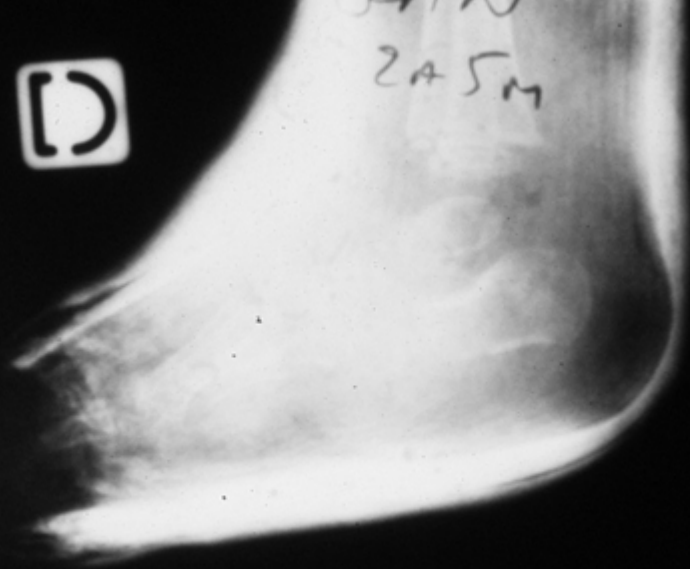






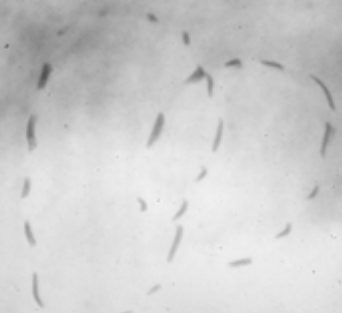
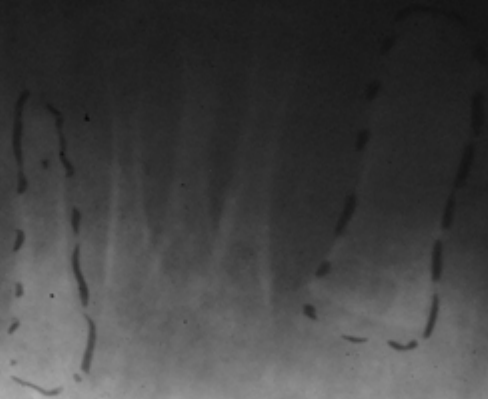


2A5M



9





GAN
2A5M





