

SUB-TALAR AND TRIPLE ARTHRODESIS



EFAS IC

2015

Antwerp

J de Halleux

With the members of Education Committee



INDICATIONS

- ARTHRITIS OF THE SUB-TALAR AND/OR MID-TARSAL JOINTS
- RIGID VARUS OR VALGUS DEFORMITY OF THE HIND-FOOT
- COALITIONS
- SEVERE INSTABILITY OF THE HIND-FOOT



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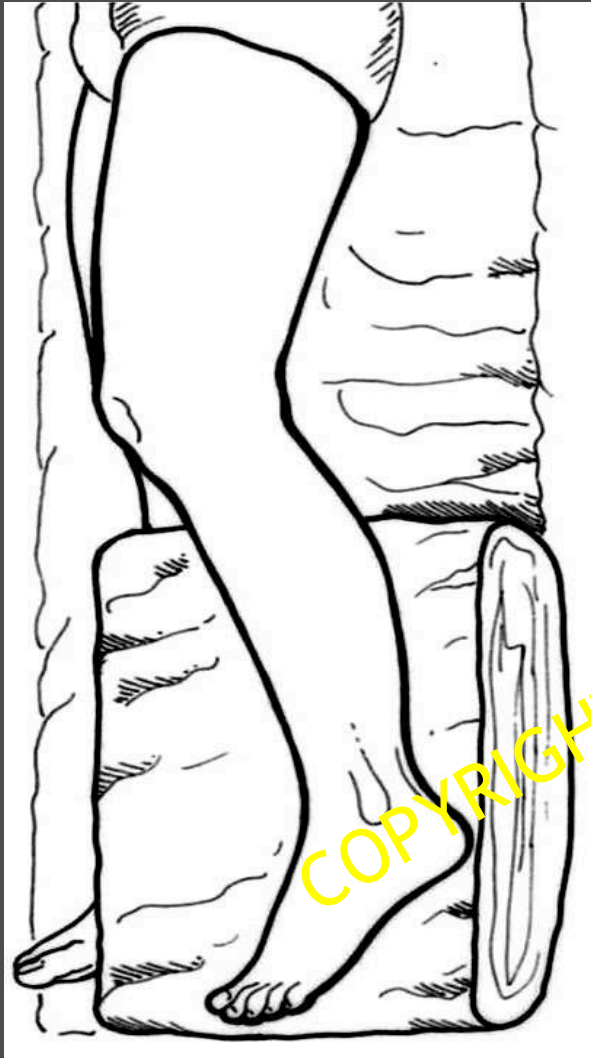
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SUB-TALAR ARTHRODESIS

PATIENT IN LATERAL OPPOSITE POSITION



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INCISION

- FROM THE TIP OF THE FIBULA OVERLYING THE SINUS TARSI
- UP TO CALCANEO-CUBOID JOINT





EXCISION OF THE SINUS TARSI SOFT TISSUES



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OPENING OF THE JOINT

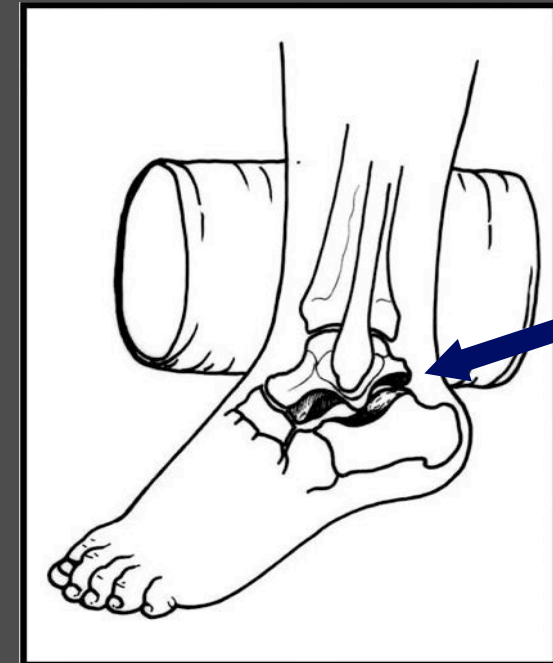


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• lamina spreader

• bulk under medial malleolus

*to stress the foot in varus
and to facilitate the opening*





REMOVAL OF CARTILAGE AND BONE ACCORDING WITH THE DEFORMITY



- CHISEL
- CURRETTE
- BURR

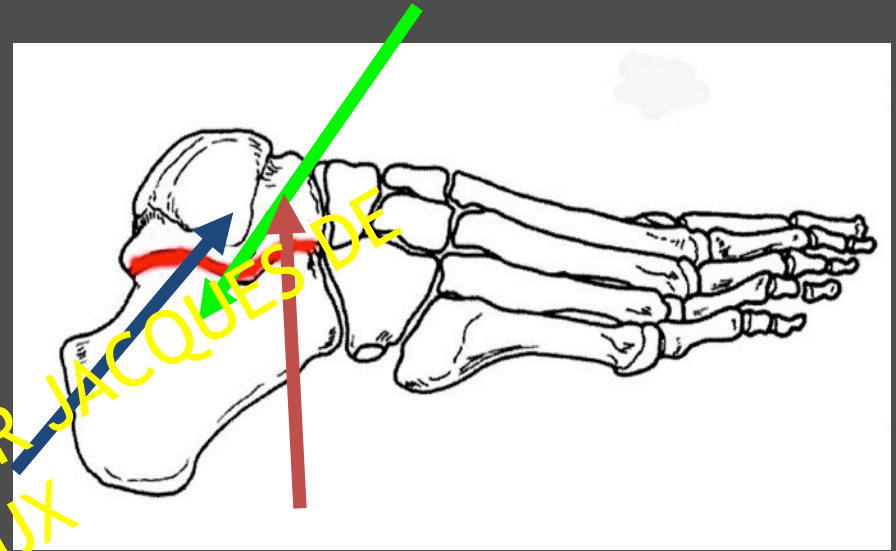




REDUCTION + FIXATION

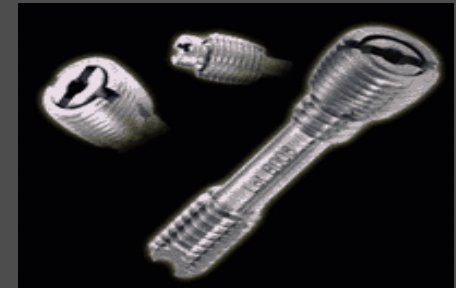
5/10° VALGUS

Direction



1 or 2 screws

Type



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CANNULATED SCREWS

- FREEHAND
- FLUOROSCAN

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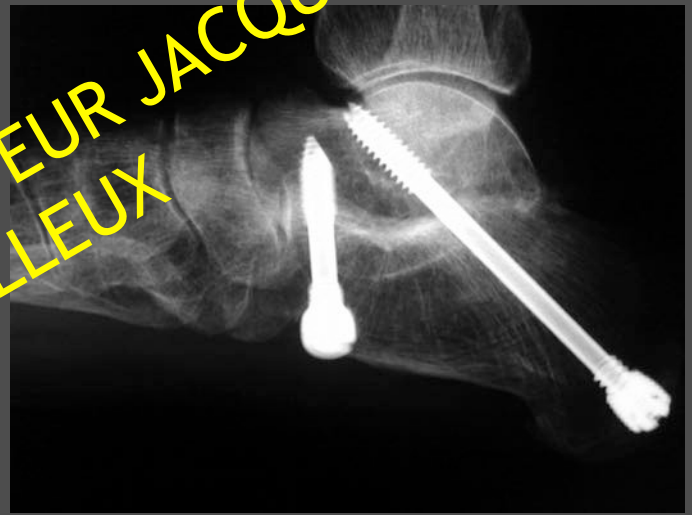
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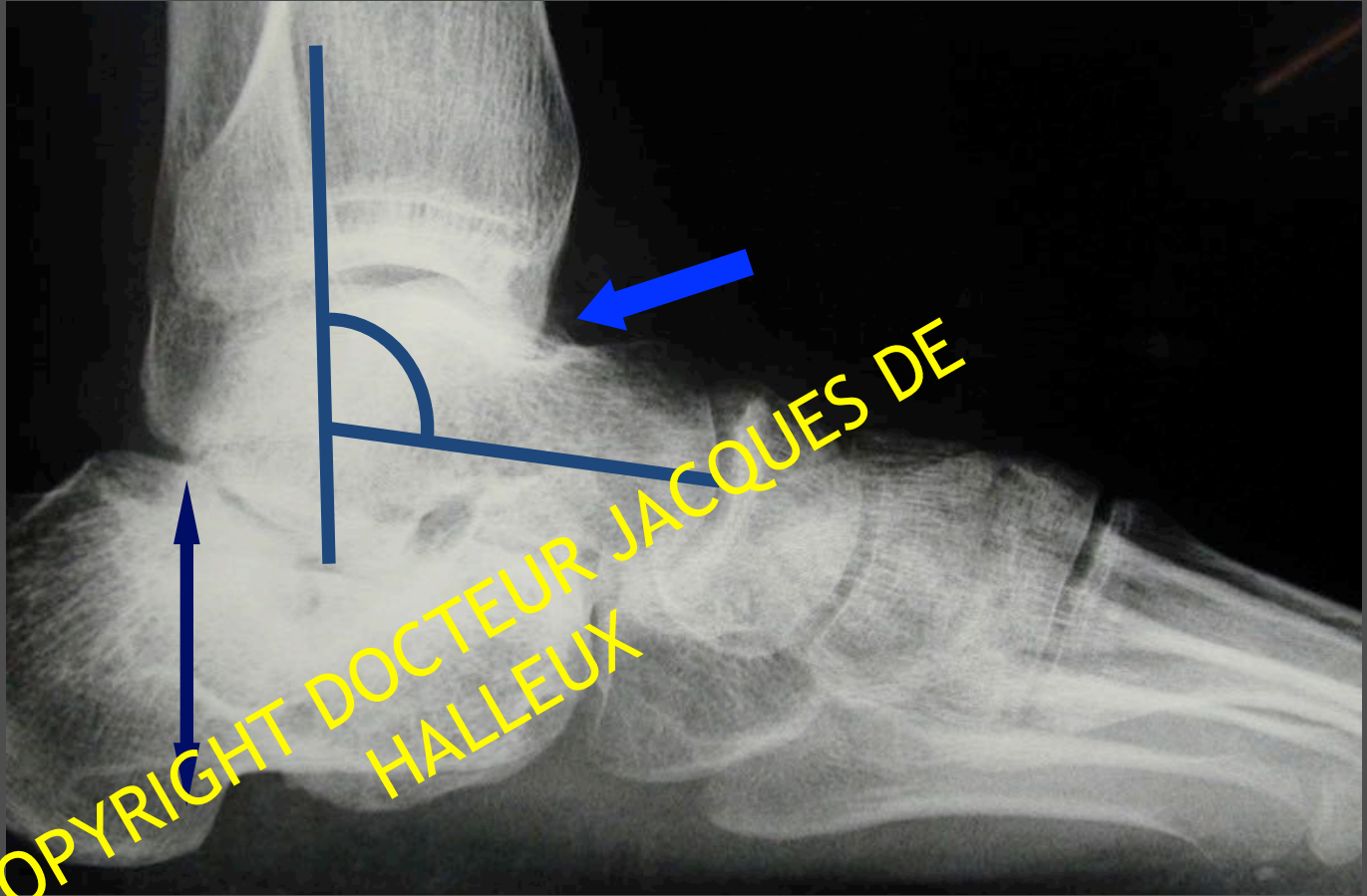
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A.O.

ICOS



OUTCOME OF CALCANEAL FRACTURE



- ➡ Reduction of calcaneus high
- ➡ Reduction of tibio-talar angle (n.v. $\sim 120^\circ$)
- ➡ Anterior impingement of ankle joint

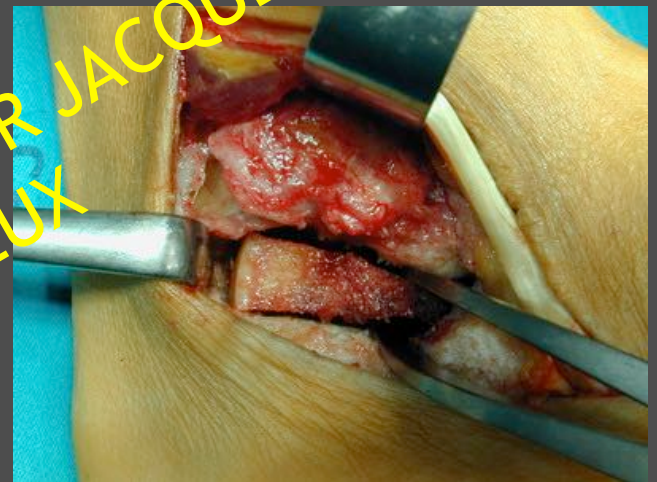
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DISTRACTION BONE BLOCK FUSION



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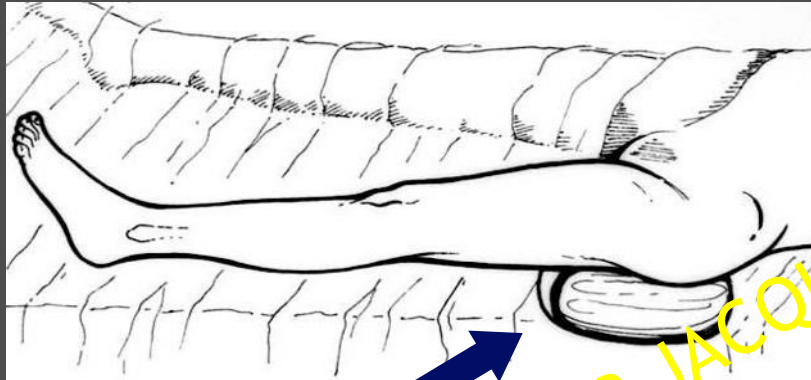
- Bone graft from femoral head

(Carr 1988)



TRIPLE ARTHRODESIS

SUPPINE POSITION



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FIRST STEP

*(sandbag underneath the ipsilateral buttock
the medial malleolus)*

Sub-talar joint

+/- calcaneo-cuboid joint

SECOND STEP

Talo-navicular
joint

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OPTIMAL POSITION FOR FUSION

- Subtalar joint = 5 to 10° valgus
- Rotate transverse tarsal joint into a plantigrade position
- *!NO forefoot varus/supination position!*



SURGICAL TECHNIQUE : 1° Step (ST +/- CC)

- Lateral incision (*tip fibula to base MT4*)
 - Sural nerve inferiorly
 - Fib Sup nerve superiorly



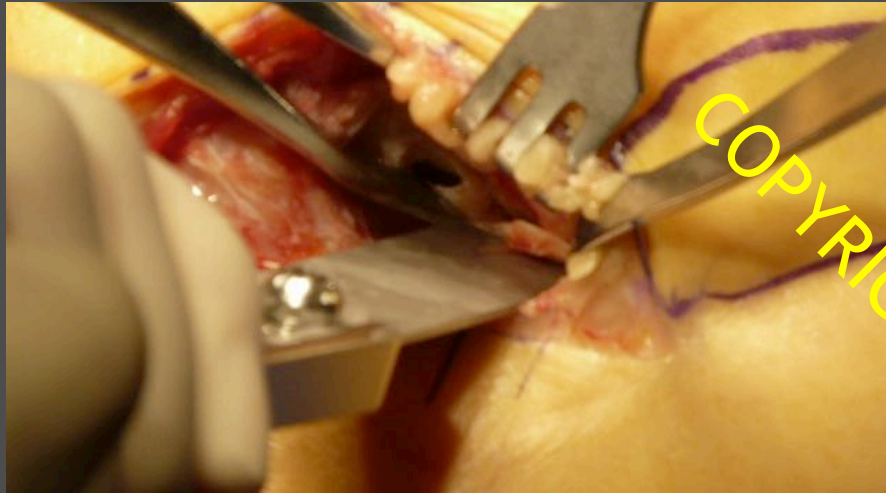
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Remove articular cartilage from the subtalar joint (anterior and posterior facets)



! FHL in the postero-medial subtalar joint

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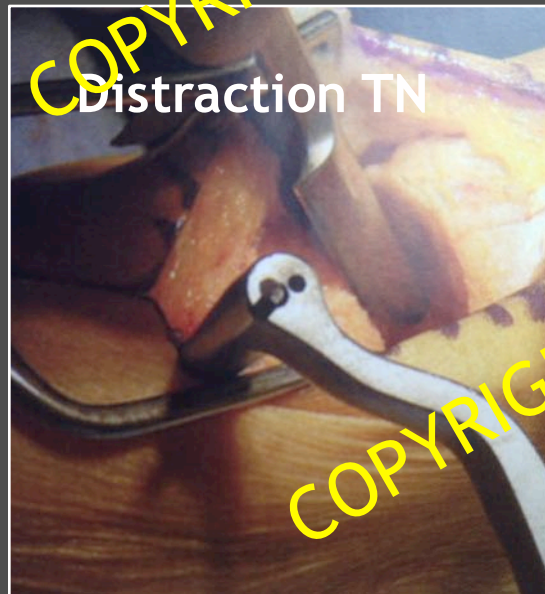
SURGICAL TECHNIQUE : 2° Step (TN)



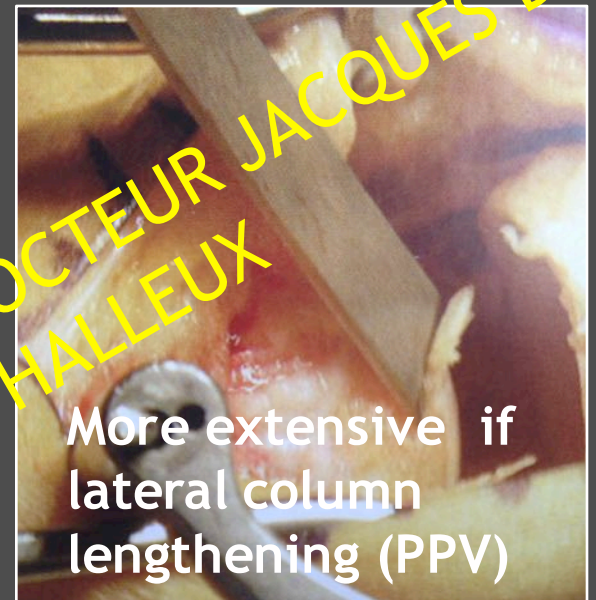
Antero medial approach
between Tib Ant / AHL



Hinterman distractor



Distraction TN



More extensive if
lateral column
lengthening (PPV)



DO WE NEED TO STABILISE THE CALCANEO-CUBOIDAL JOINT?

Effect of isolated hindfoot arthrodesis

Type of arthrodesis	Diminution ROM subtalar	Diminution ROM TN	Diminution ROM CC	Diminution ROM TT
subtalar	100%	26%	56%	13° loss
Talo-navicular	>60%	100%	>90%	10-15° loss
Calcaneo-cuboidal	15-35%	%	100%	?

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Astion DJ and all, Motion of the hindfoot after simulated arthrodesis, JBJS Am, 1997



CC ARTHRODESIS only if:

- painful CC arthritis
- need for lateral column shortening or lengthening



REMOVAL OF CARTILAGE AND BONE
ACCORDING WITH THE DEFORMITY

PPV + abduction FF



lateral column lengthening

PCV + adduction FF

lateral column shortening

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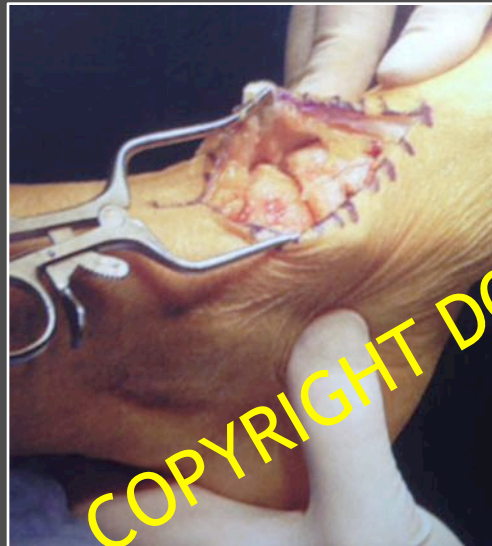
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REDUCTION + temporary STABILISATION 1° = TN JOINT

- TN = Key joint to allow excellent correction of the 3 joints
- Rotate transverse tarsal joint into a plantigrade position
!NO forefoot varus/supination position!



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- PPV = Forefoot plantar flexion + adduction



REDUCTION + temporary STABILISATION 2° = TC JOINT

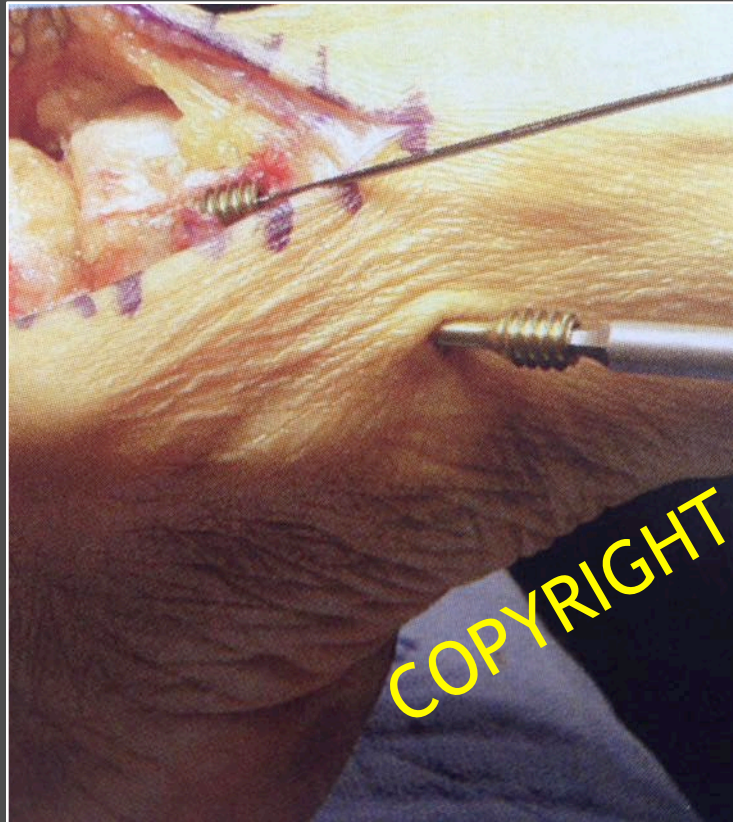
- Subtalar joint = 5 to 10° valgus



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Talo Navicular Screws

2 cannulated screw

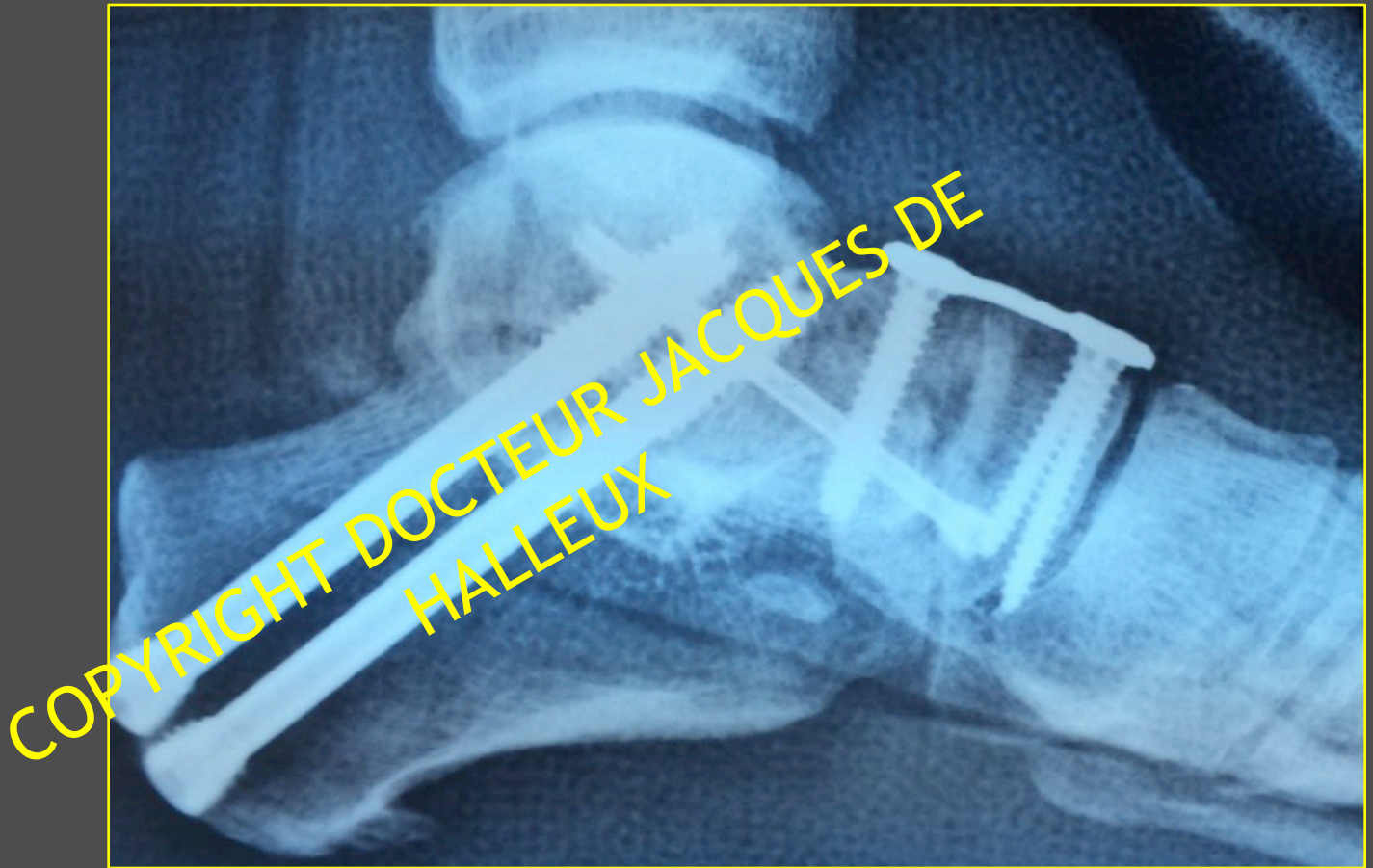
4,5 mm



Talo Calcaneal screw

1 or 2 cannulated screws

6,5 / 7,0 mm



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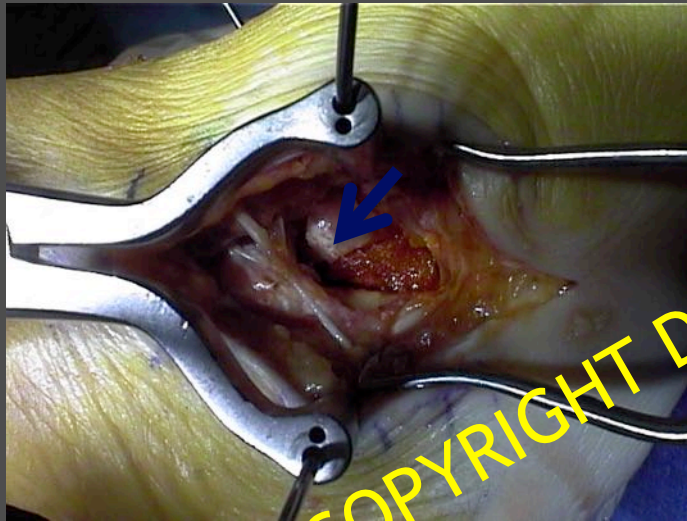
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Auto - & allografts ?



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If Triple arthrodesis performed :

peroperative difficulty to correct hindfoot deformities

Achilles Tendon tightness

→ lengthening



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Additional procedures ?

- If hindfoot deformity is associated to the bone morphology : additional osteotomies of the calcaneus
 - Valgus : Myerson
 - Varus : Dwyer type
- If instability of the first column : arthrodesis of the medial column
- If insufficiency of medial collateral ligament = additional procedures mandatory



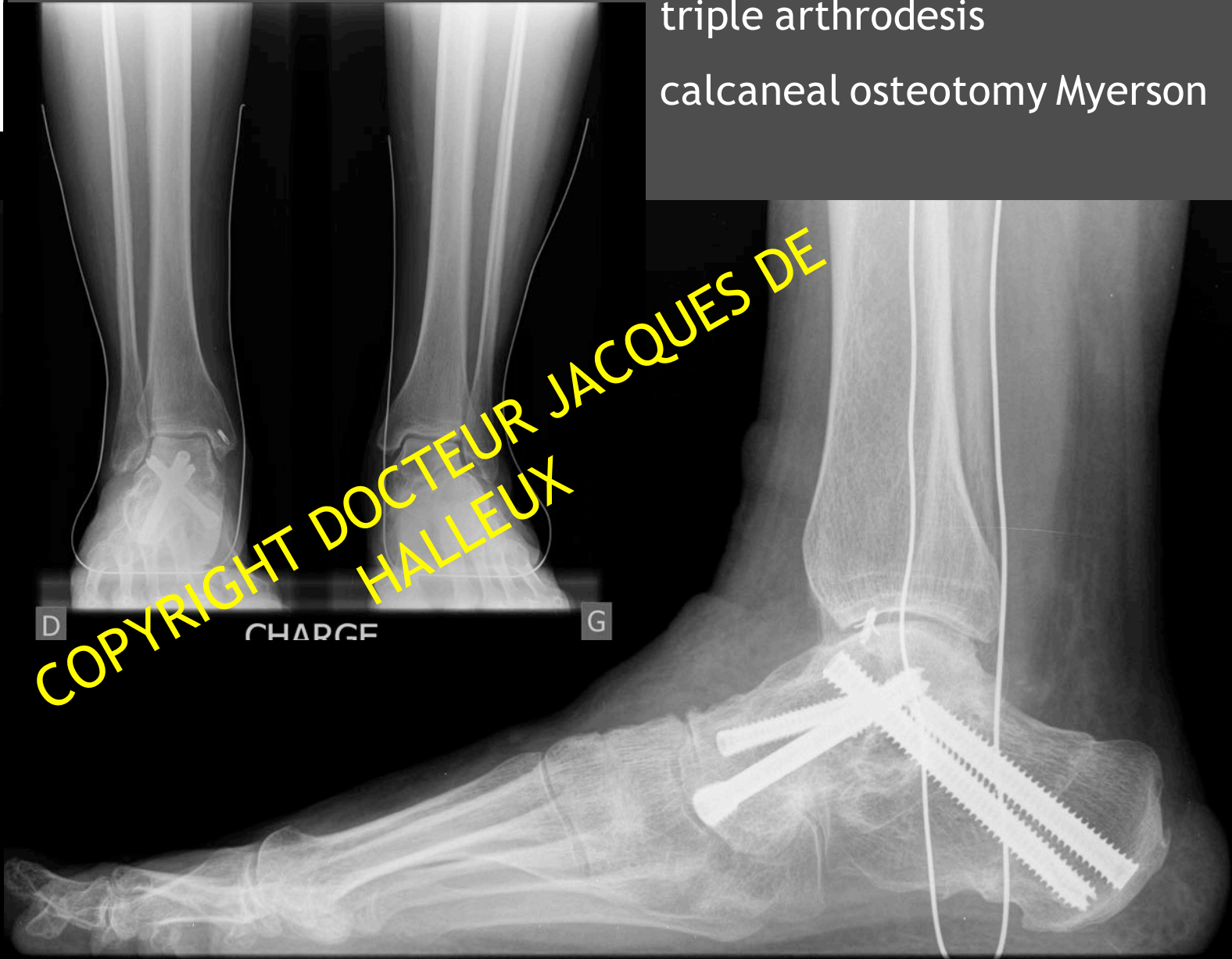
Example : Pes planovalgus treated by subtalar joint arthrodesis, remaining valgus deformity due to the insufficiency of the medial collateral ligament

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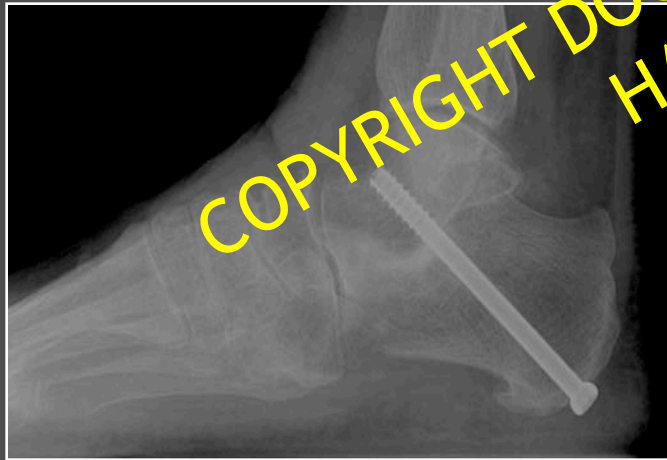


R/ medial ligamentoplasty
triple arthrodesis
calcaneal osteotomy Myerson





ARTHROSCOPIC TECHNIQUE



- *LIMITED INDICATIONS*
- *NO DEFORMITY CORRECTION*

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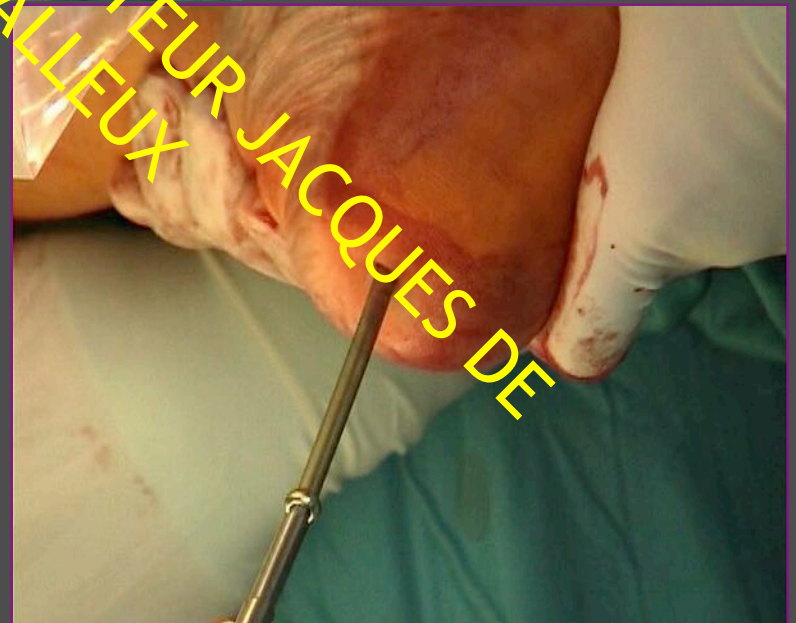
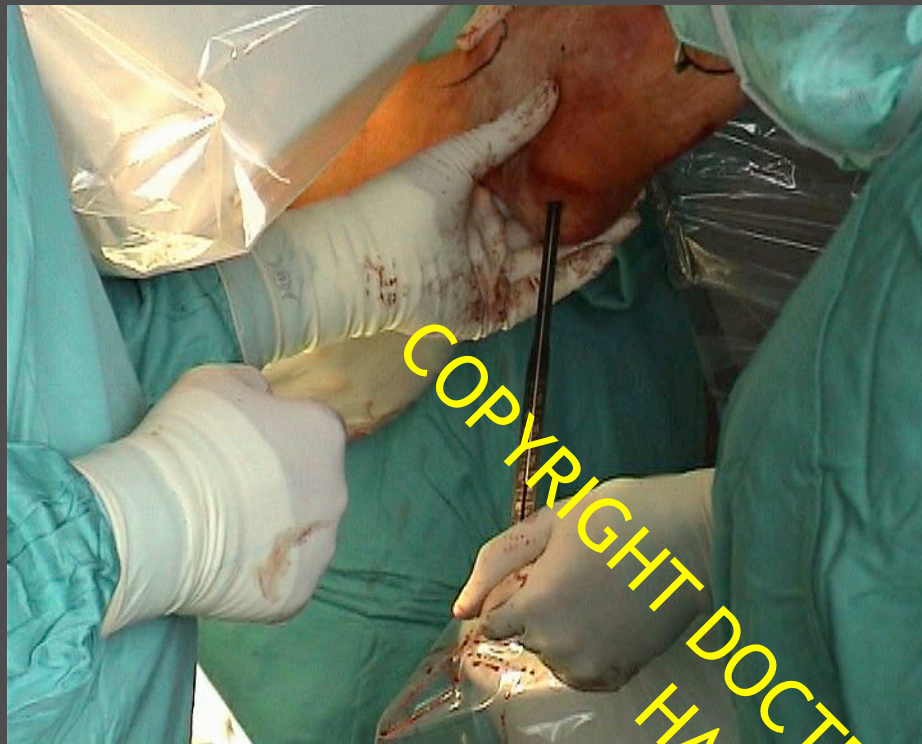
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