

Ruptures of extensor apparatus after TKA

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Review article

Extensor tendon ruptures after total knee arthroplasty

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Quadriceps tendon

Allograft

ABSTRACT

Extensor tendon rupture is a rare but serious complication after total knee arthroplasty (TKA) that impairs active knee extension, thereby severely affecting knee function. Surgery is usually required. Surgical options range from simple suturing to allograft reconstruction of the entire extensor mechanism and include intermediate methods such as reconstruction using neighbouring tendons or muscles, synthetic ligament implantation, and partial allograft repair. Simple suturing carries a high failure rate and should therefore be routinely combined with tissue augmentation using a neighbouring tendon or a synthetic ligament. After allograft reconstruction, outcomes are variable and long-term complications common. Salvage procedures for managing the most severe cases after allograft failure involve reconstruction using gastrocnemius or vastus flaps. Regardless of the technique used, suturing must be performed under tension, with the knee fully extended, and rehabilitation must be conducted with great caution. Weaknesses of available case-series studies include small sample sizes, heterogeneity, and inadequate follow-up duration. All treatment options are associated with substantial failure rates. The patient should be informed of this fact and plans made for a salvage option. Here, the main techniques and their outcomes are discussed, and a therapeutic strategy is suggested.

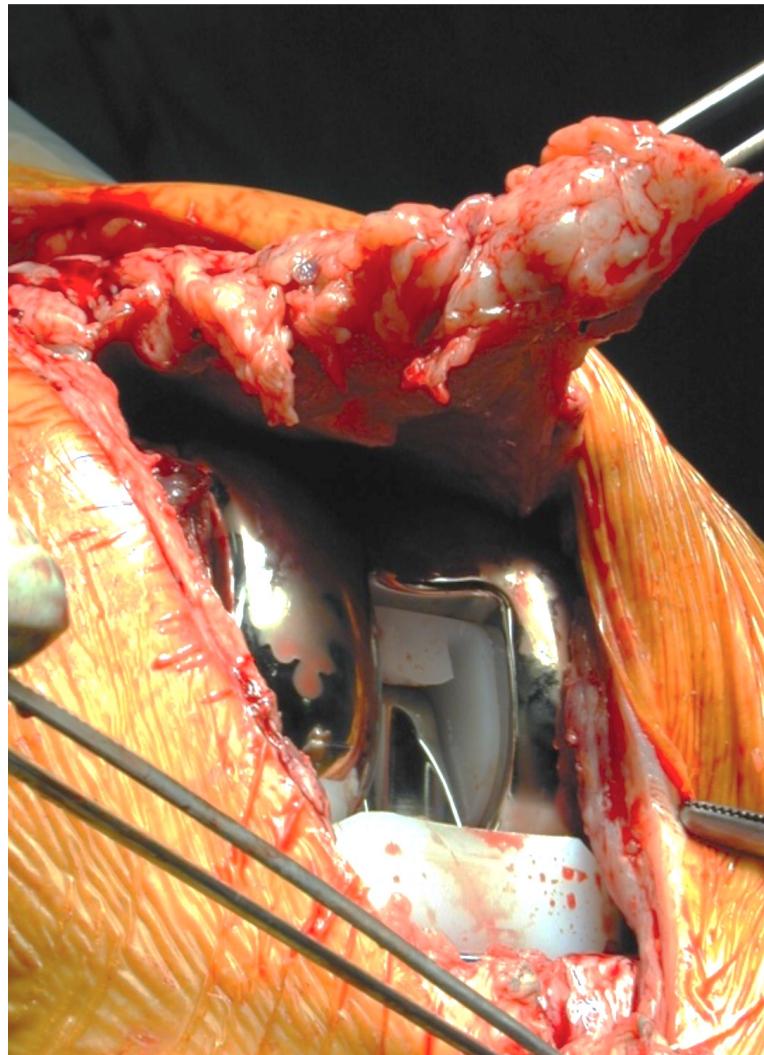
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Extensor tendon ruptures after total knee arthroplasty.

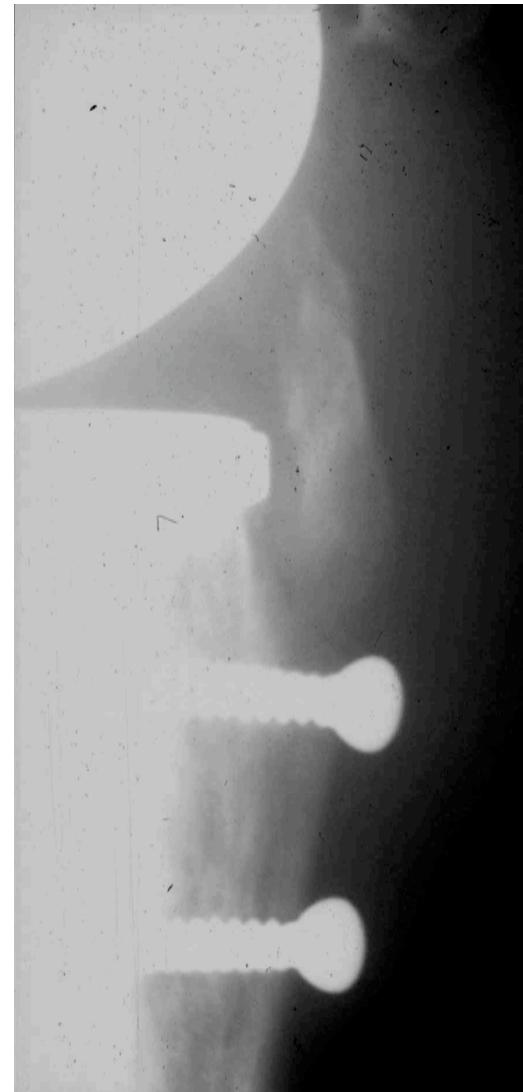
Bonnin M¹, Lustig S², Huten D³.

0,17% à 2,5% des PTG

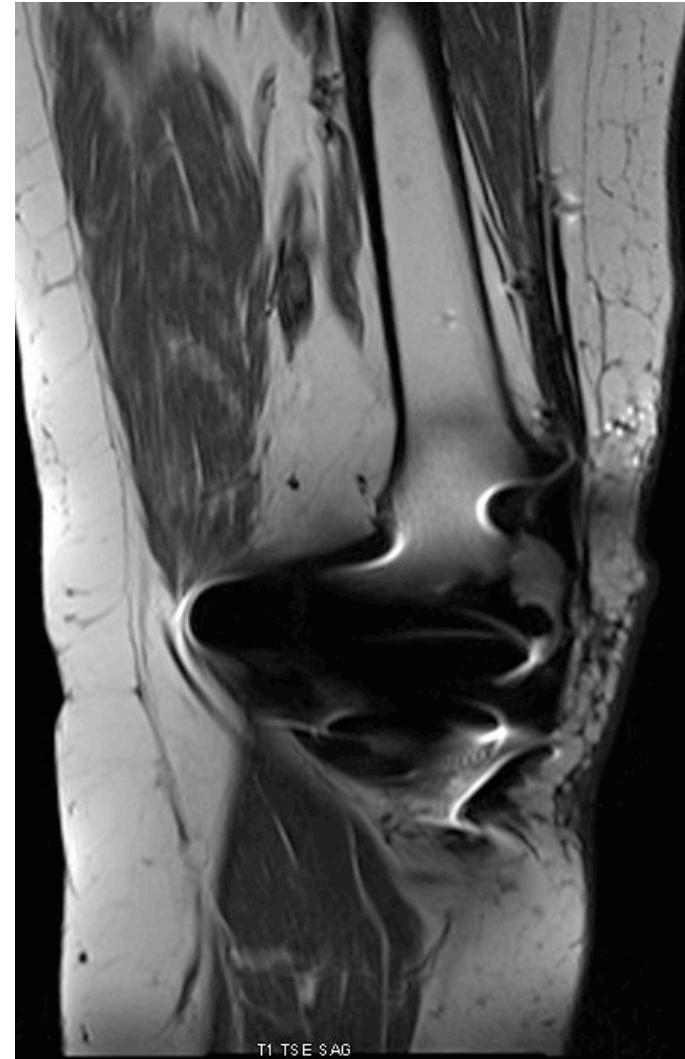
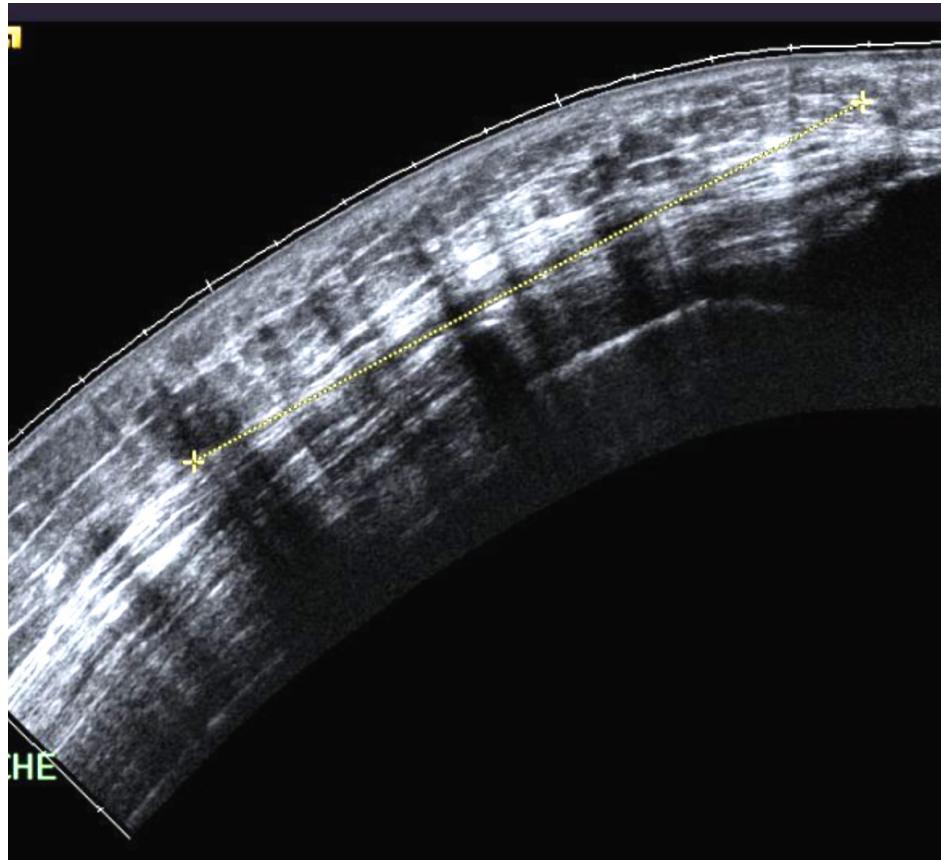


Patellar tendon: 0,17% à 1%

Diagnostic: XR



Diagnostic: US? MRI?



Diagnostic: mostly based on clinic

Loss of active extension



Diagnostic: avant tout clinique

PALPATION DU DEFECT

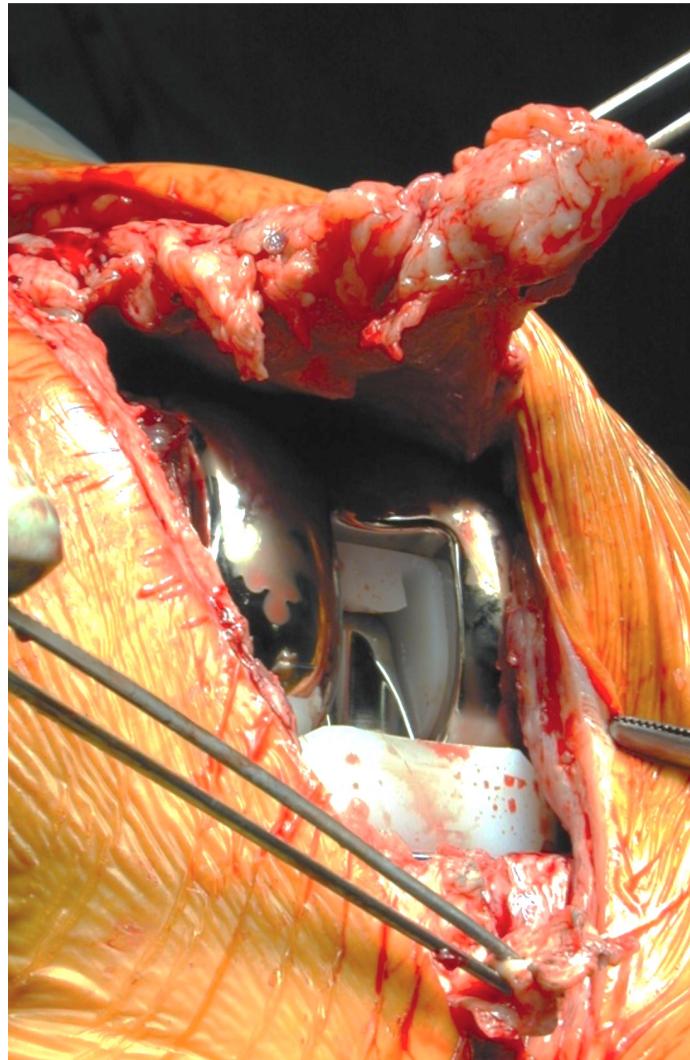


Treatment

1. Recent ruptures
2. Chronic ruptures

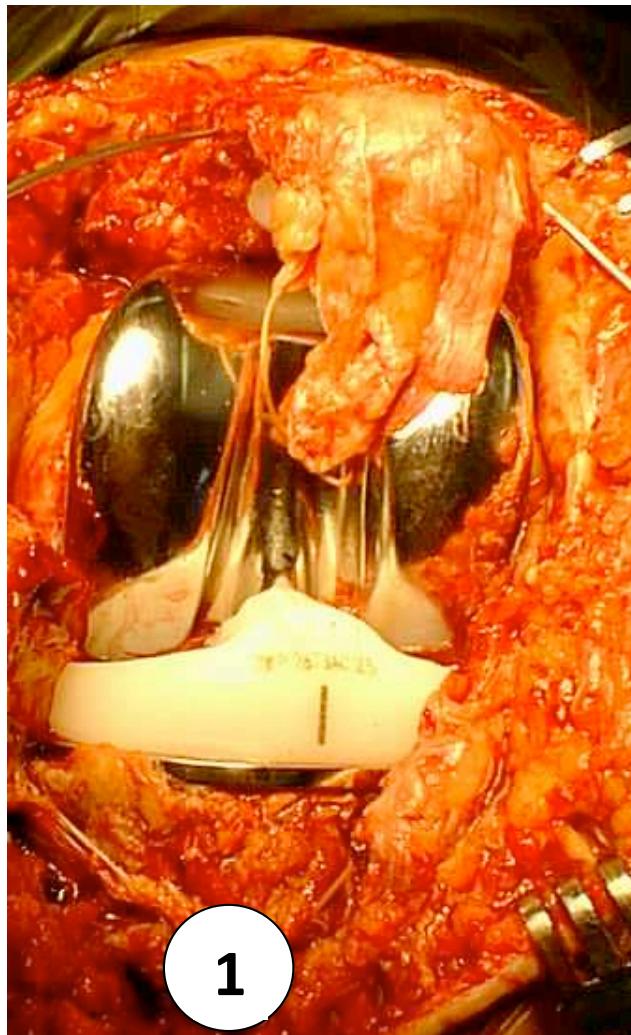
Recent rupture

Isolated Suture = failure

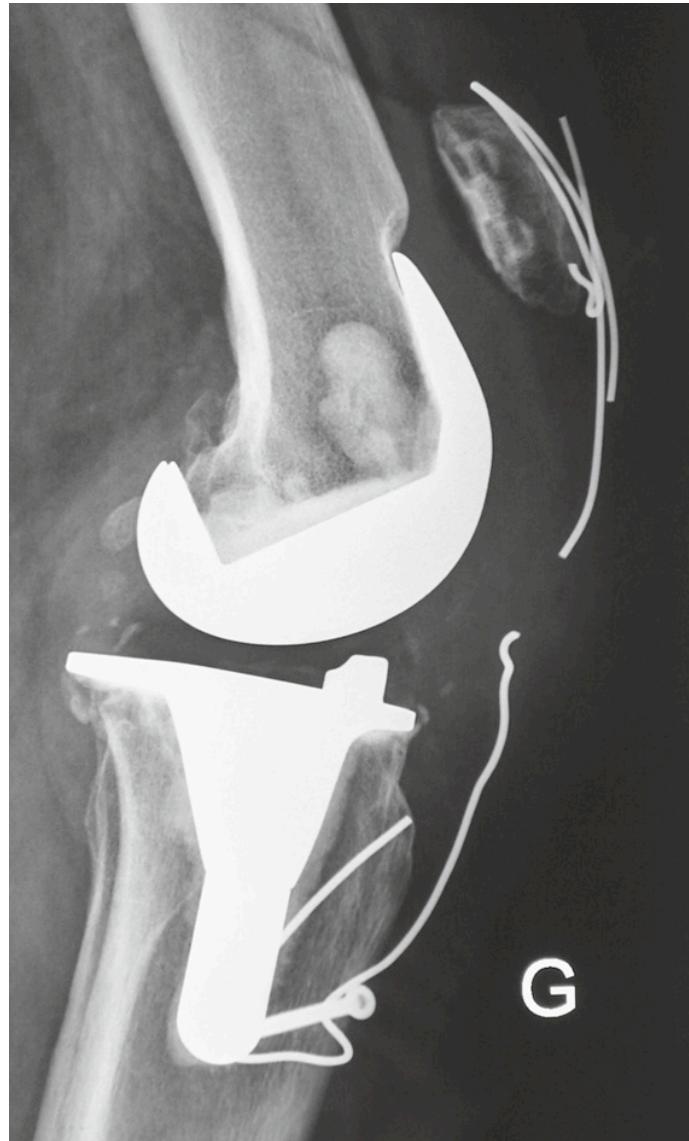


Recent rupture

Suture + metal cables = failure

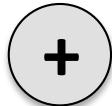


Suture + metallic cables = failure



Recent rupture

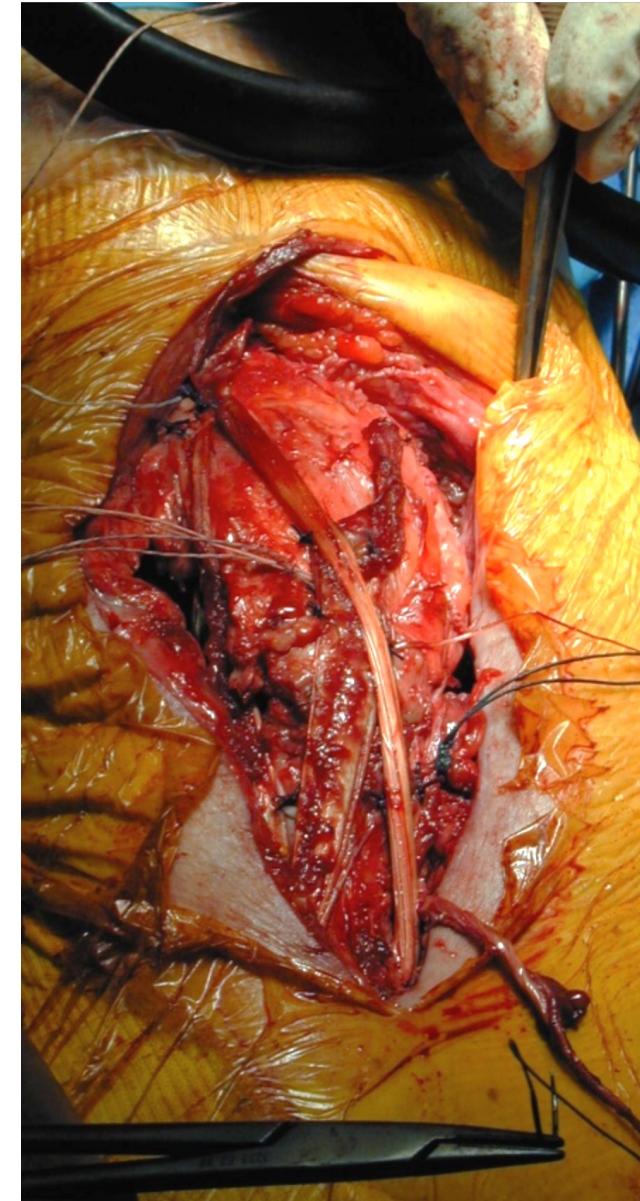
1. Suture



2. Autograft

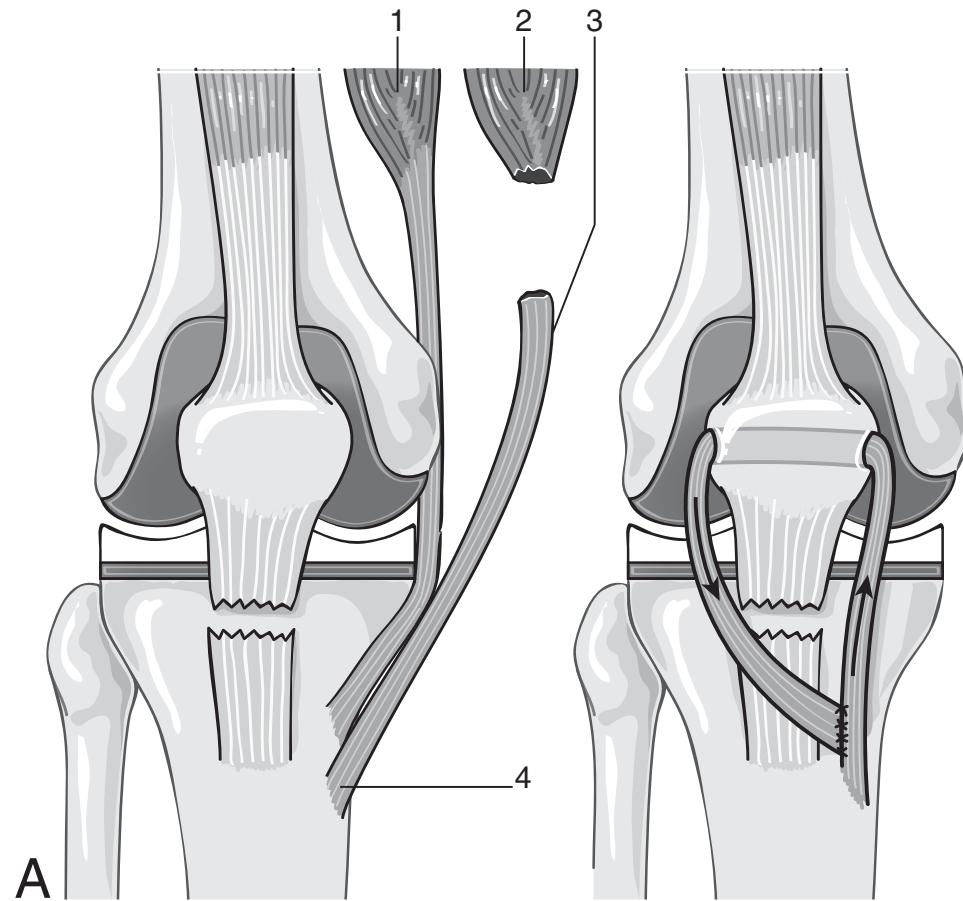


3. Metallic cables



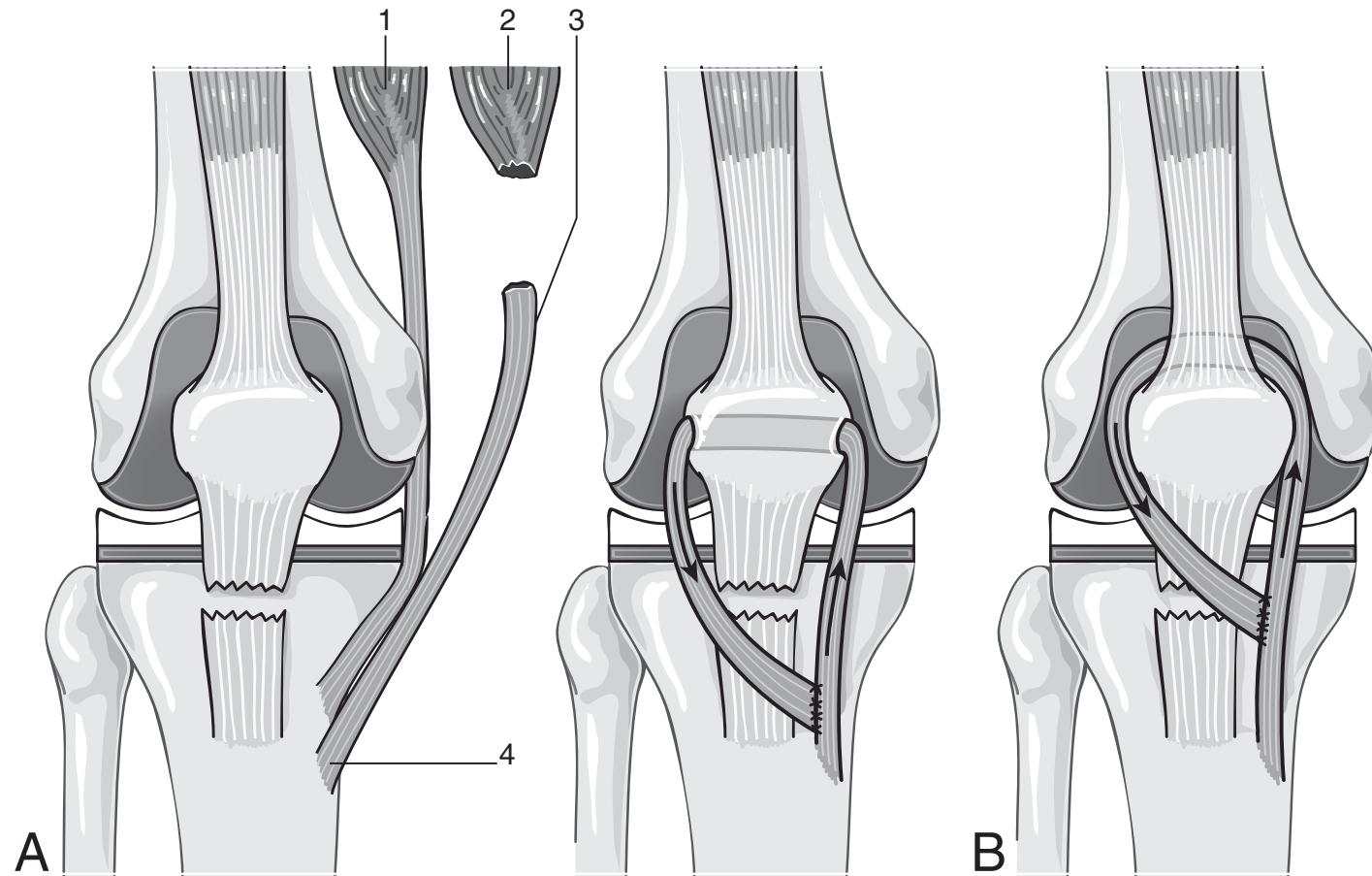
Semi-Tendinosis

- Cadambi 1992
- Järvela 2005



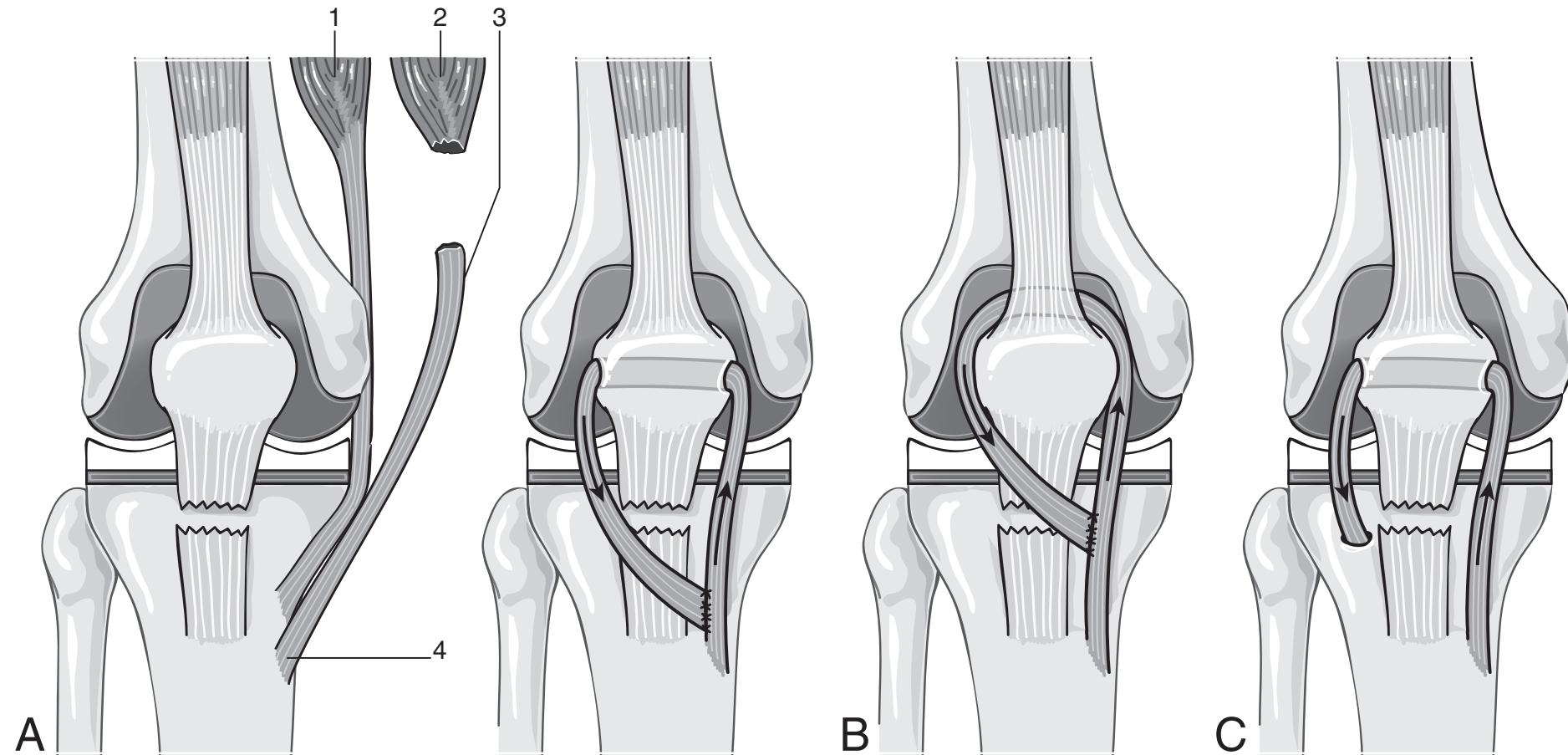
Semi-Tendinosis

- Cadambi 1992
- Järvela 2005



Semi-Tendinosis

- Cadambi 1992
- Järvela 2005



Traitement des ruptures ‘chroniques’

✓ Artificial ligt

- Tech de Hanssen

✓ Allograft

- Partial

- Complete (app.extenseur)

- Achilleus

✓ Salvage techniques

- Gastrocnemius ± vastus

- Arthrodesis

Hanssen technique

Browne J and Hanssen A. JBJS Am 2011

Polypropylène plate

Courtesy S Lustig Lyon

Plaque de 30cmX30cm

- USA: Marlex mesh ™
- France: Prolène™, Ethicon

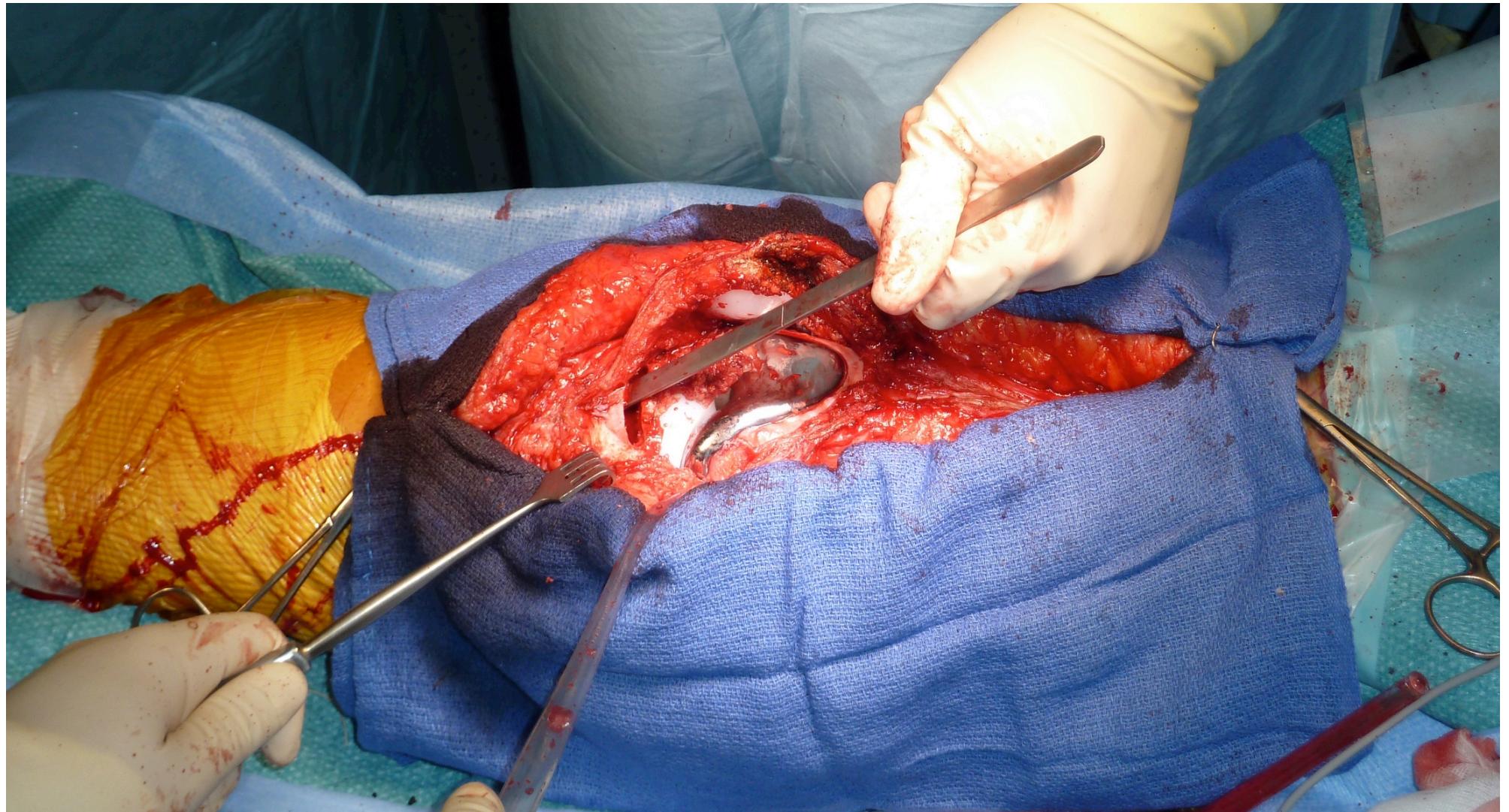


1- Suture of the plate

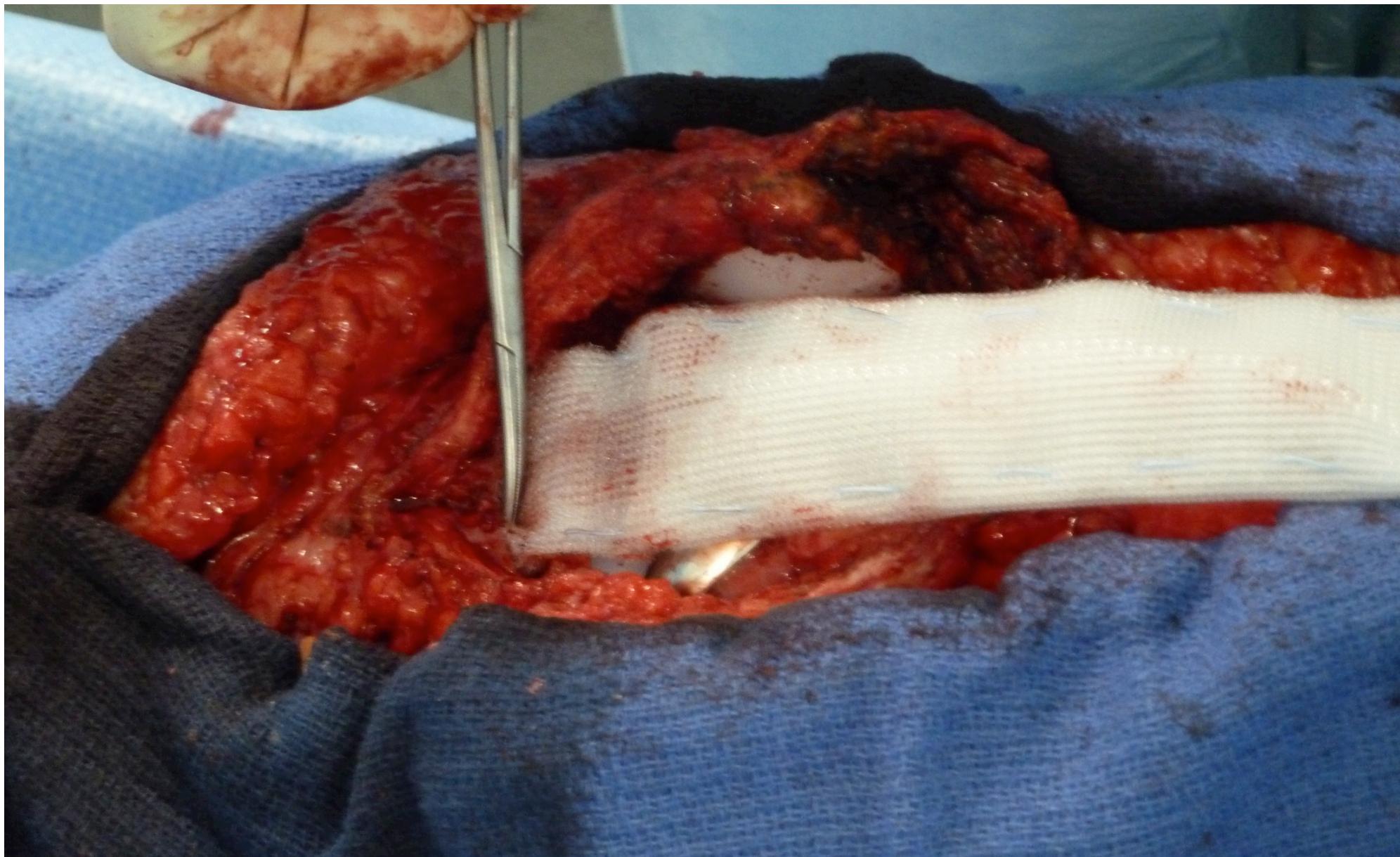
Non resorbable suture (Fiberwire® Arthrex)



2- Ant^{re} groove on the tibia



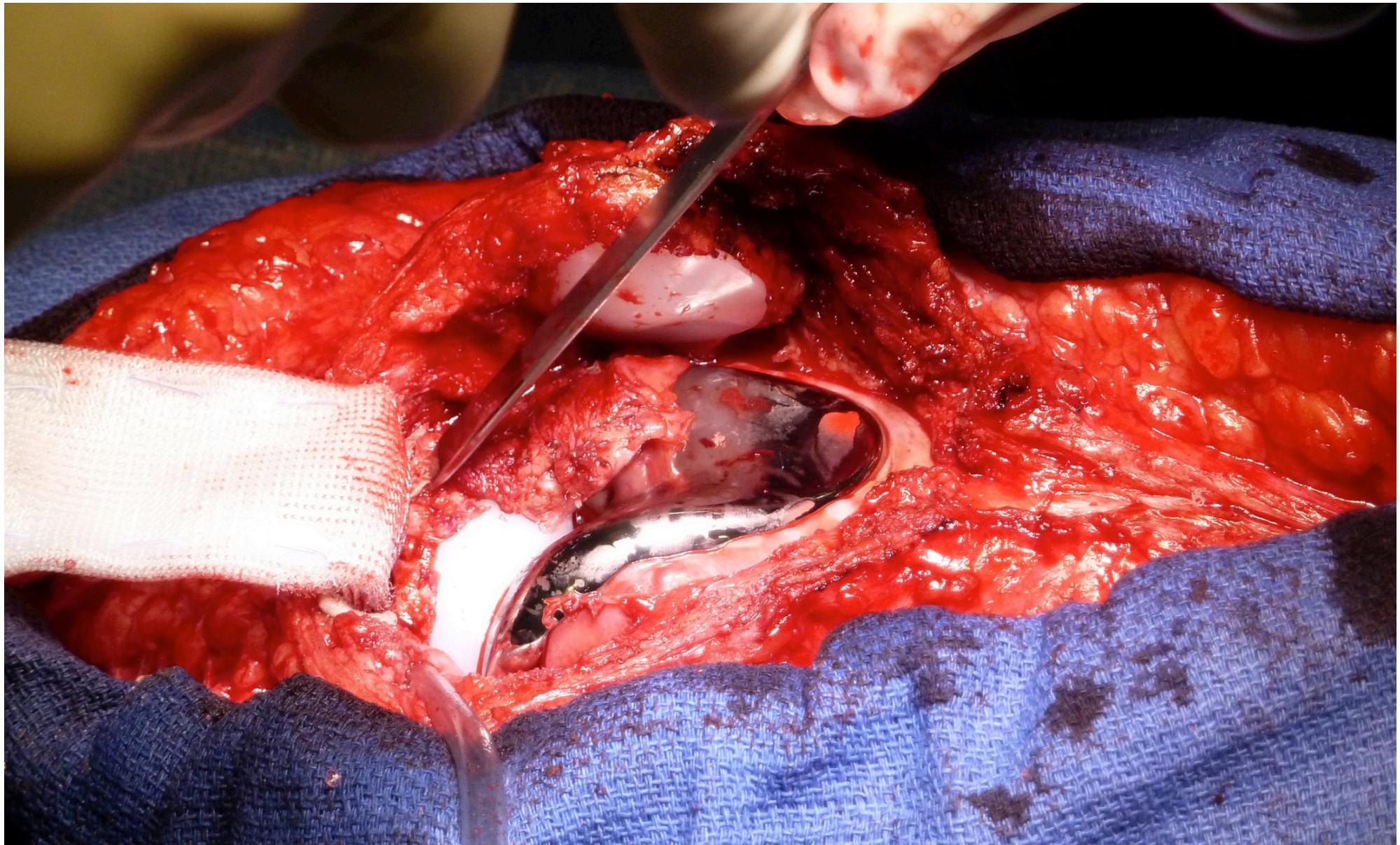
3- Insertion of the plate



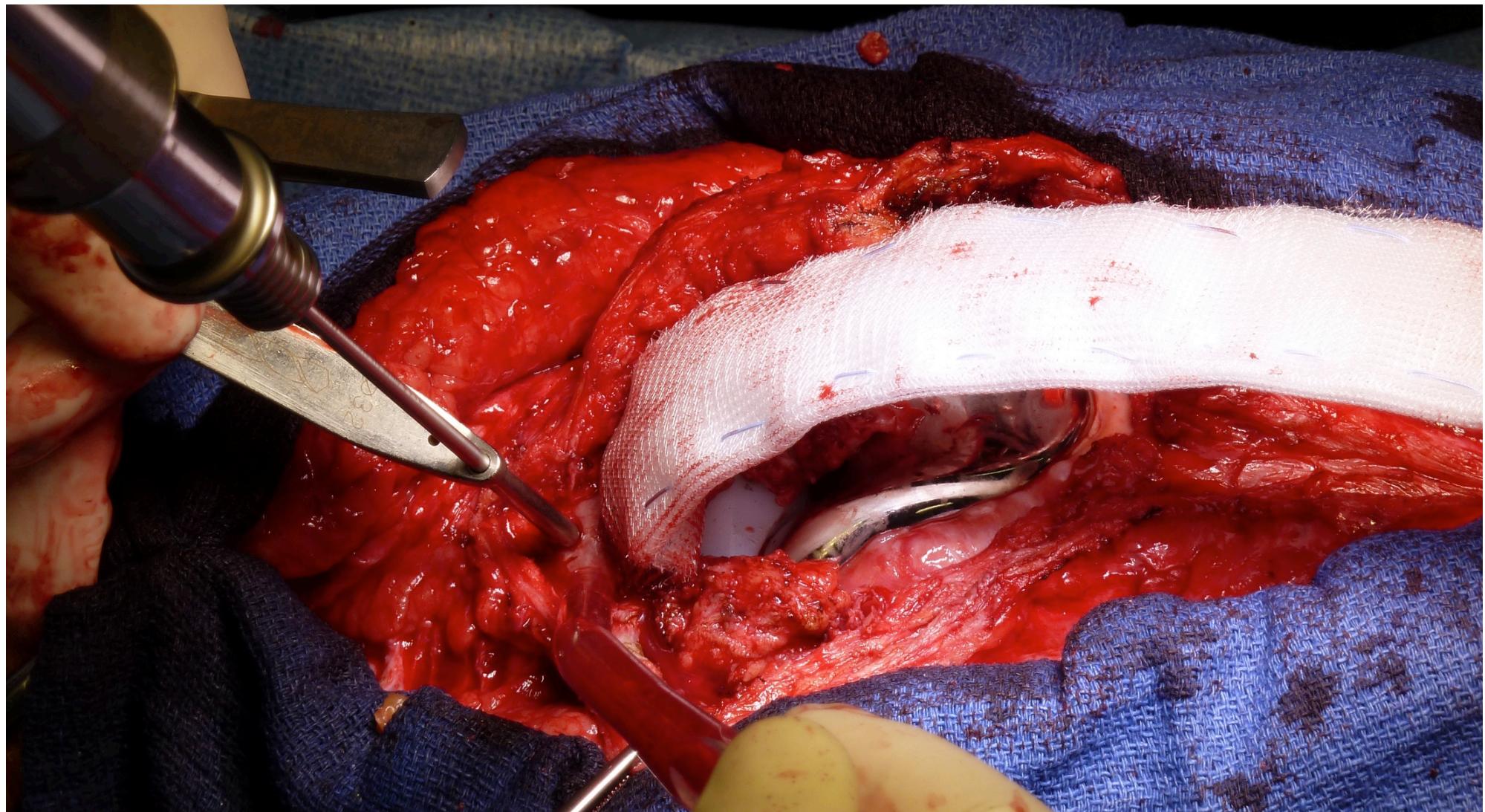
4- Fixation with cement



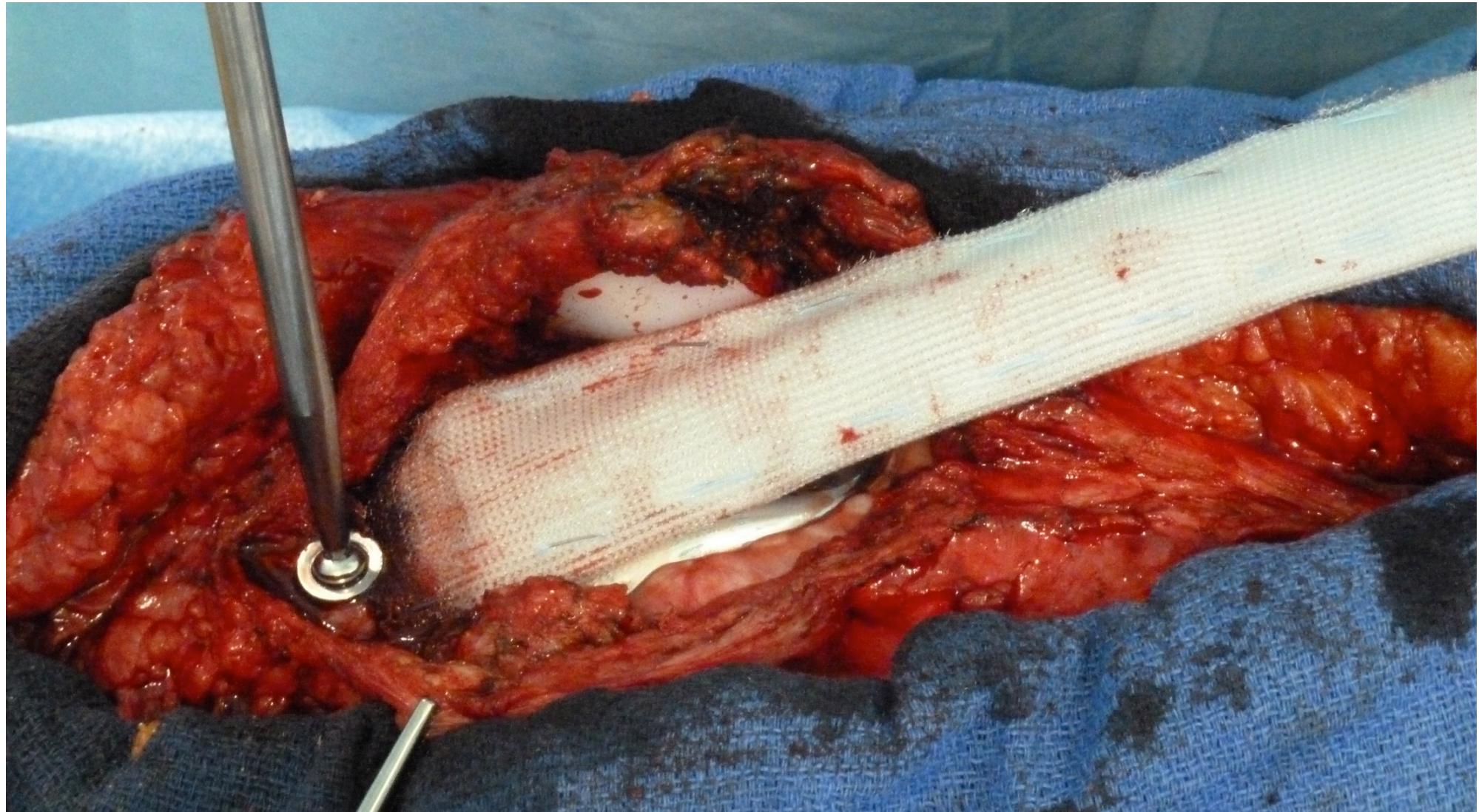
5- Check impingements



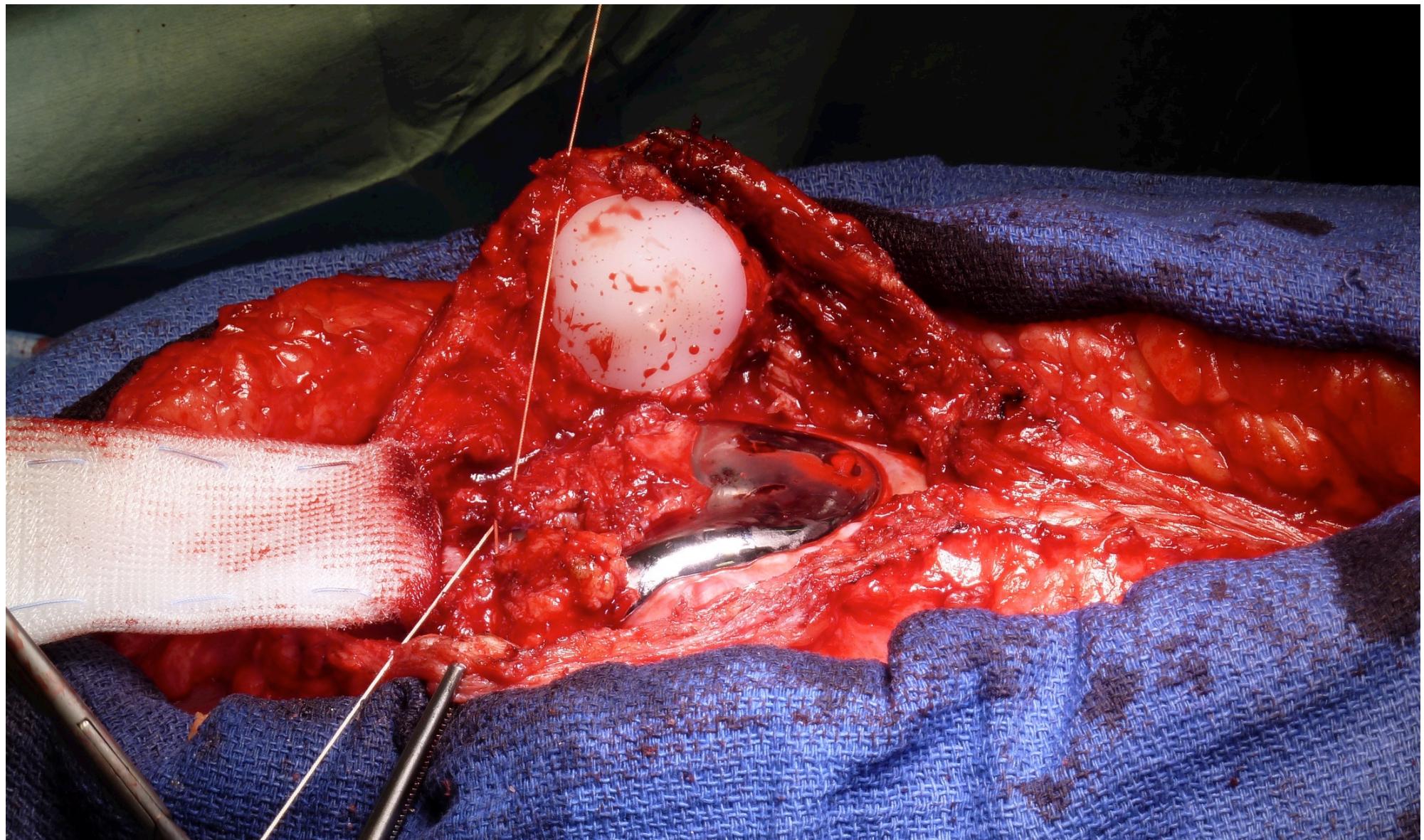
6- Screw



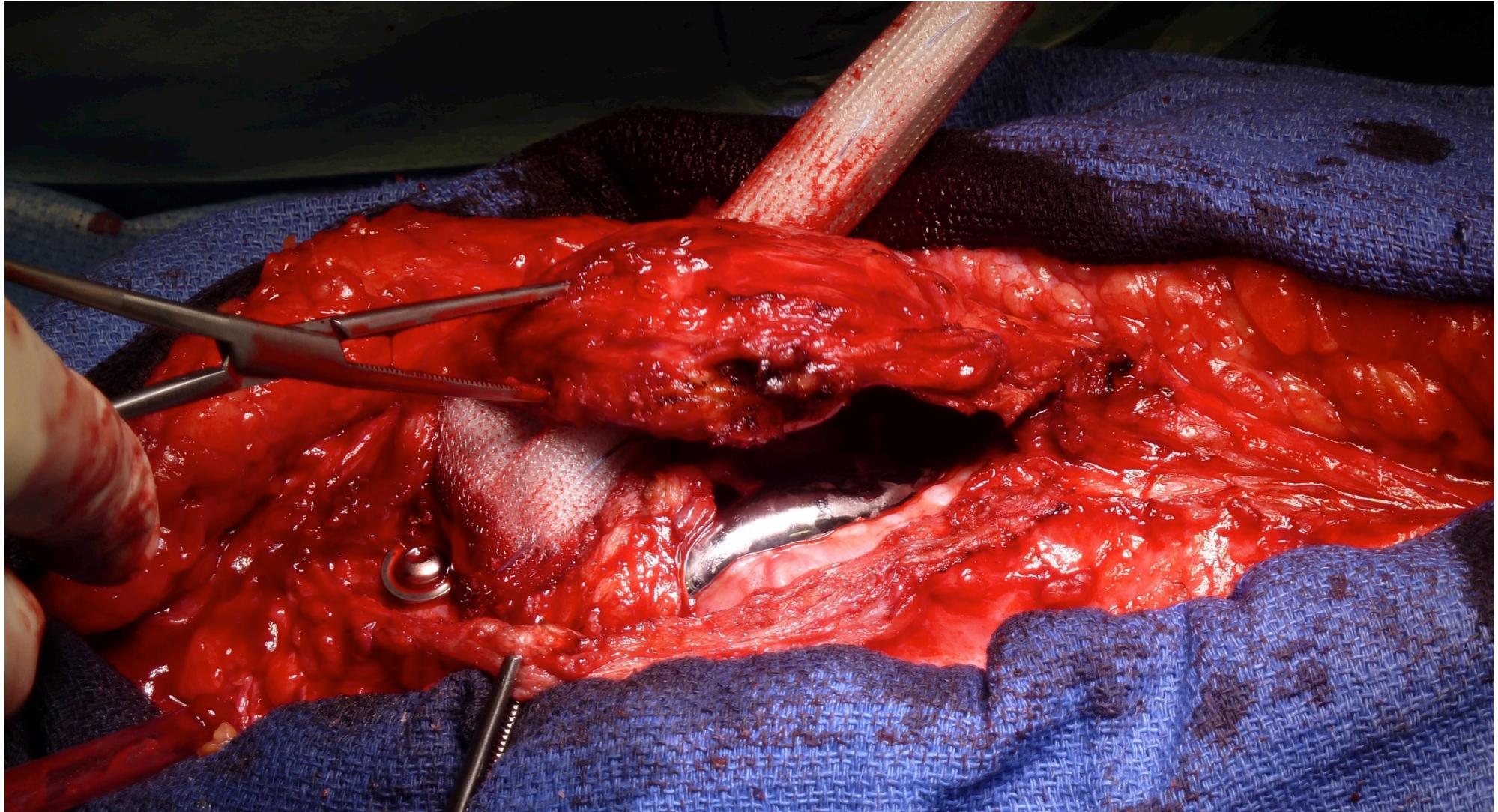
6- Screw



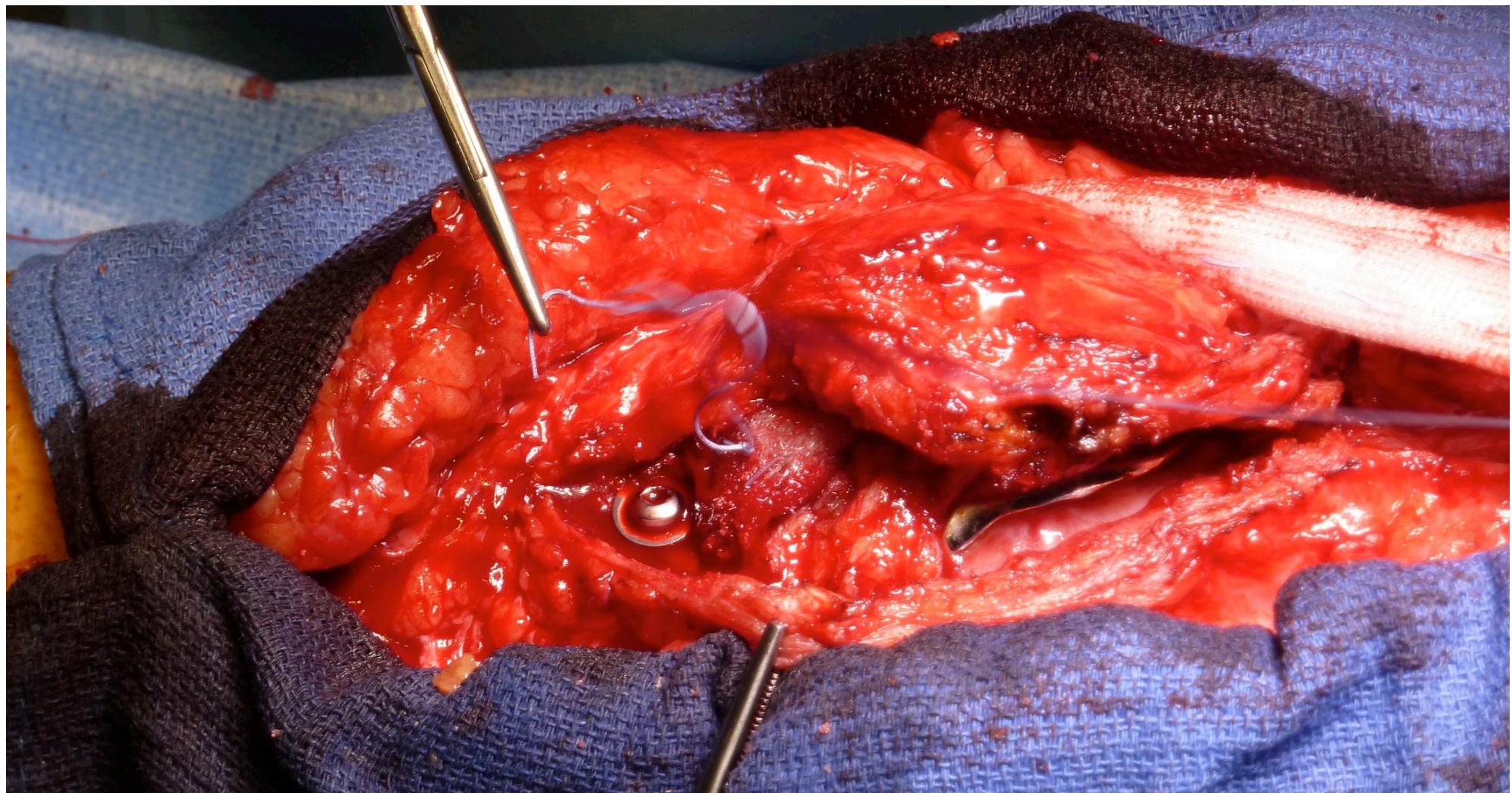
7- Protective tissues between plate and PE



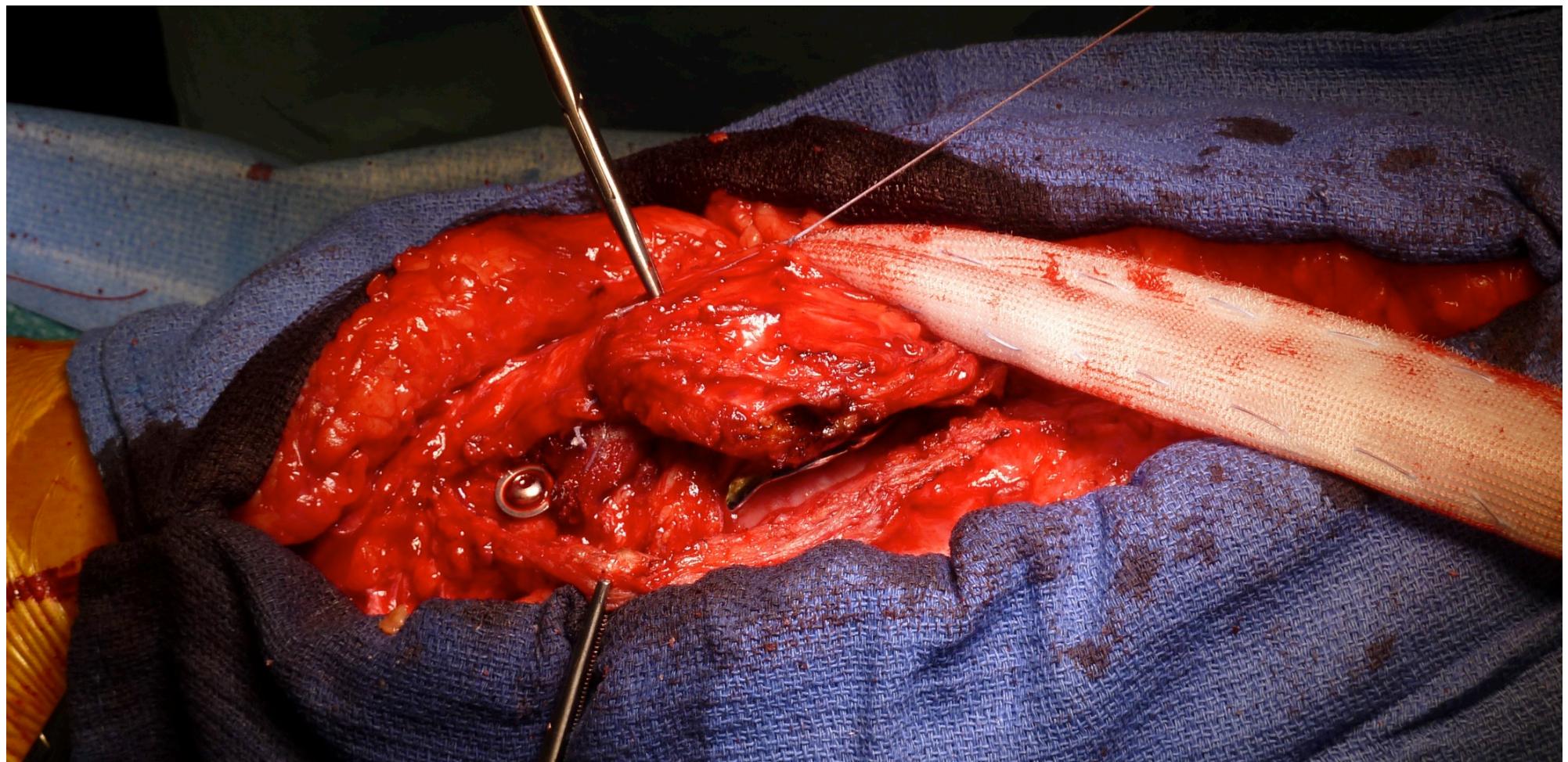
8- lateral arthrotomy



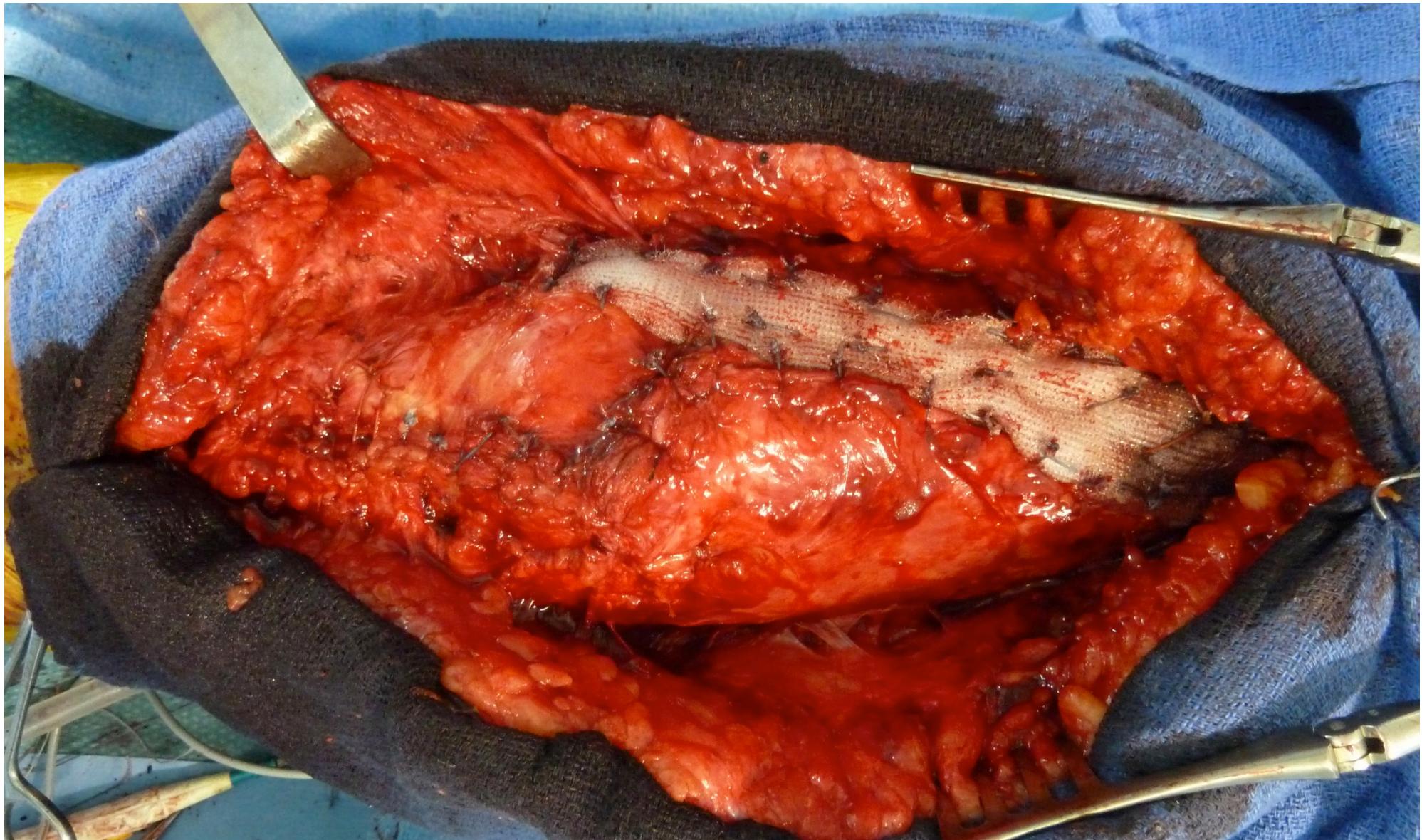
9- Suture on patellar tendon in extension



9- Suture on patellar tendon in extension

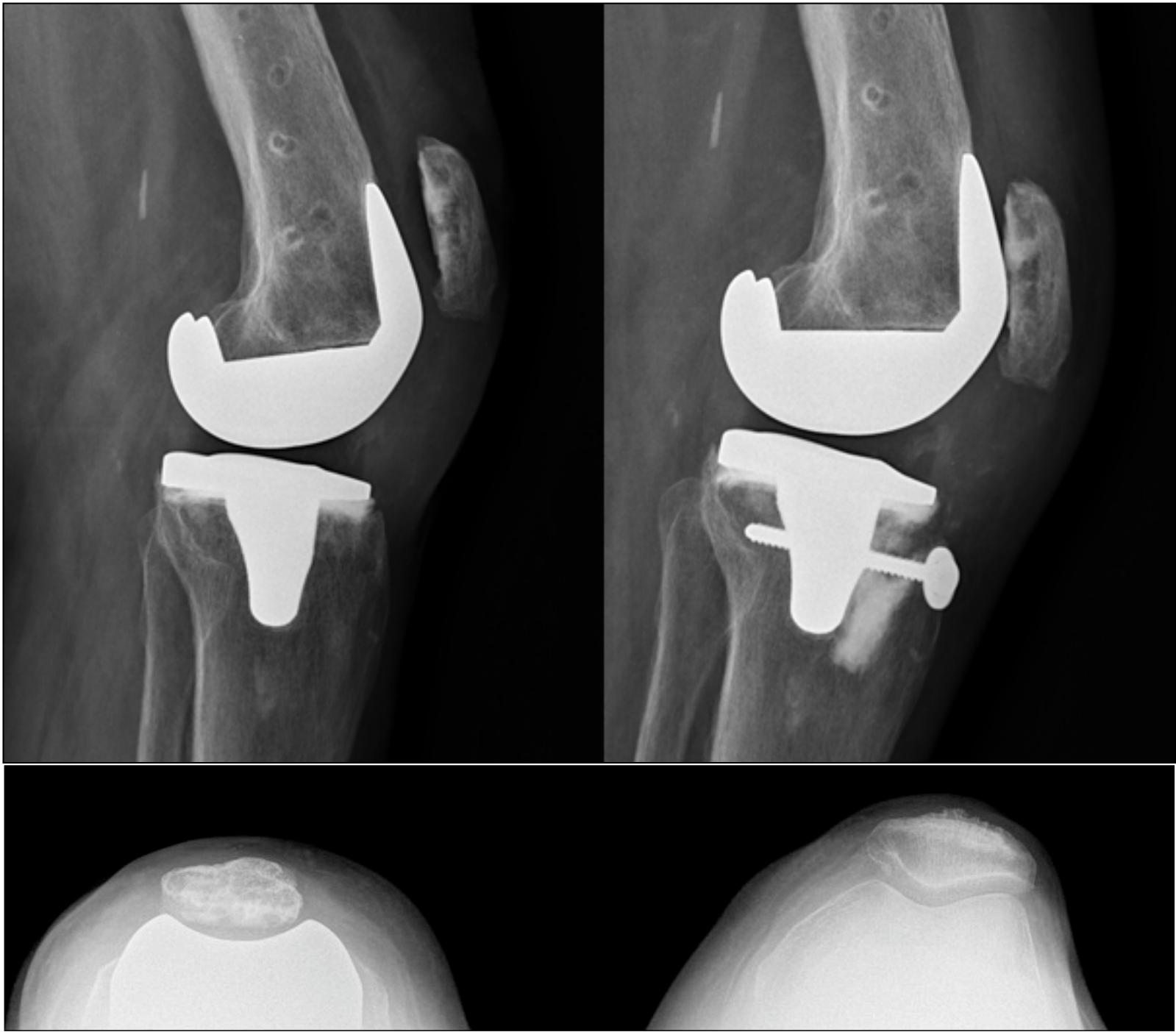


10- Suture on Quad. tendon



Post op

- Full weight-bearing with a cruro-malleolar cast
- No flexion during two months
- 0°/60° during 45 days (2m à 3m½)
- 0/90 another 45 jours (3m½ à 5 m)



One year postop



Allograft

Emerson CORR 1990

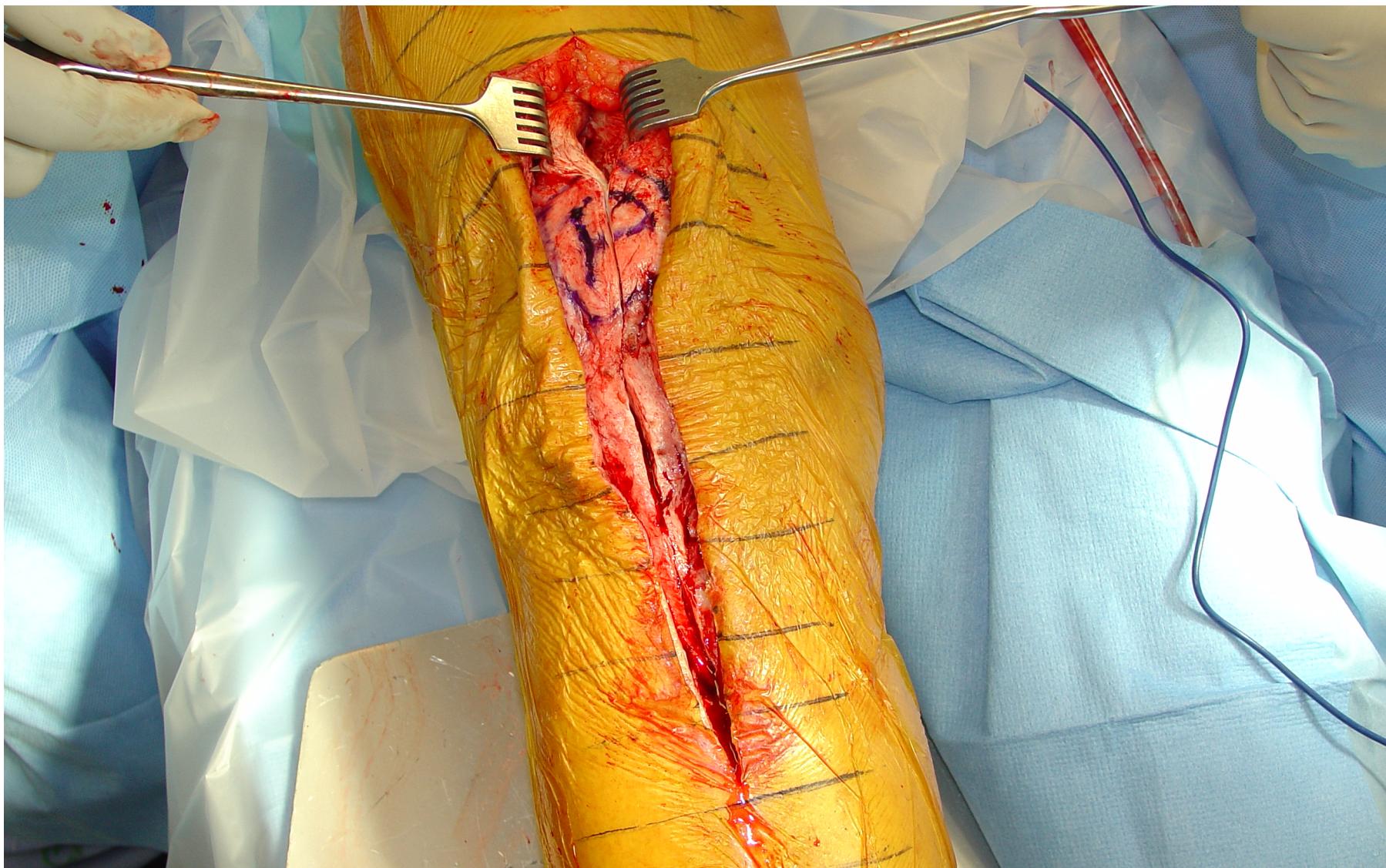


Courtesy Alexander Shah Chicago

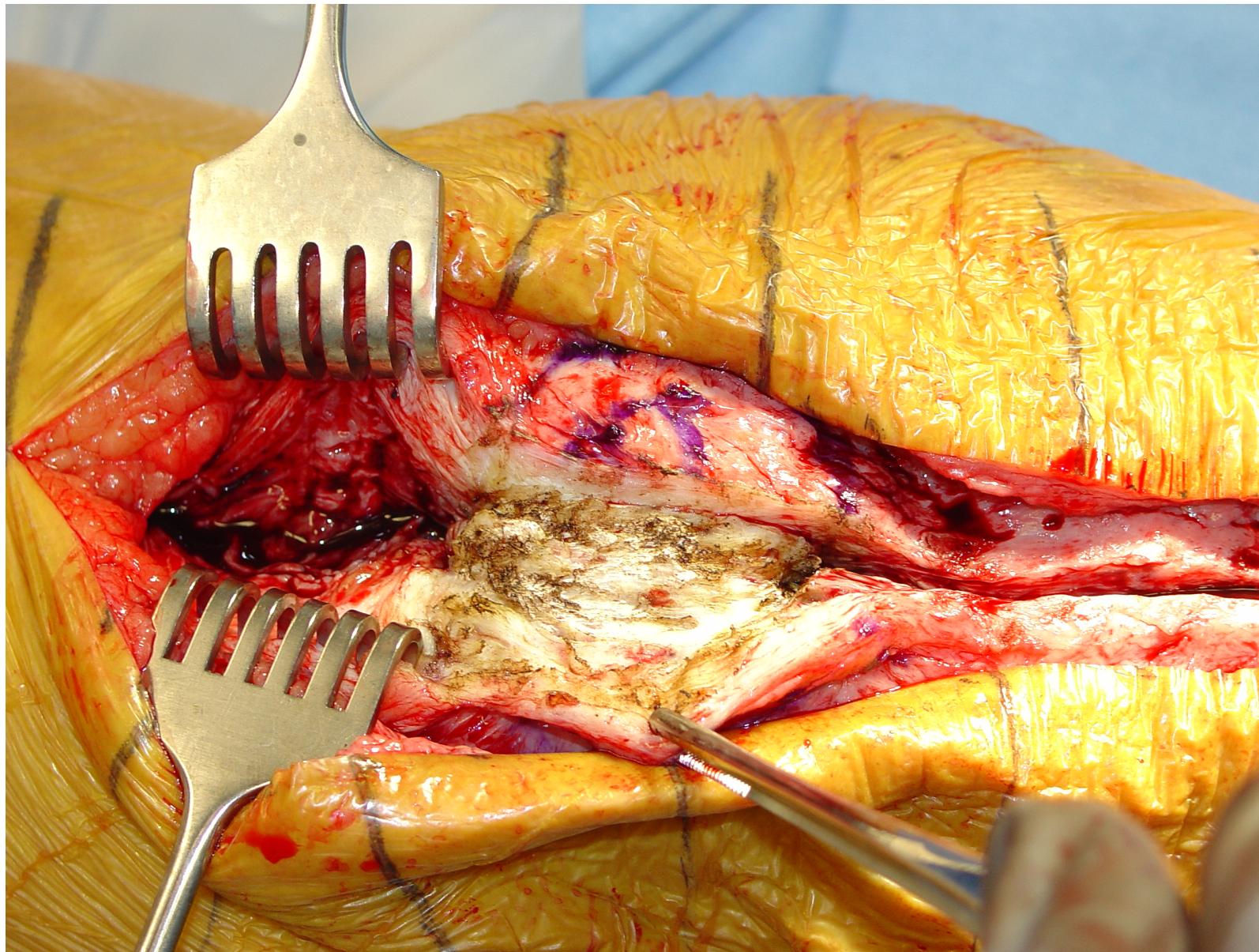
Improvement by Nazarian et Booth (1999)

1. Cryoconserved graft.
2. No patellar resurfacing.
3. Remove the patella.
4. Max Tension knee in extension.
5. Suture native tissues above the graft.
6. Cast 8 weeks in full extension

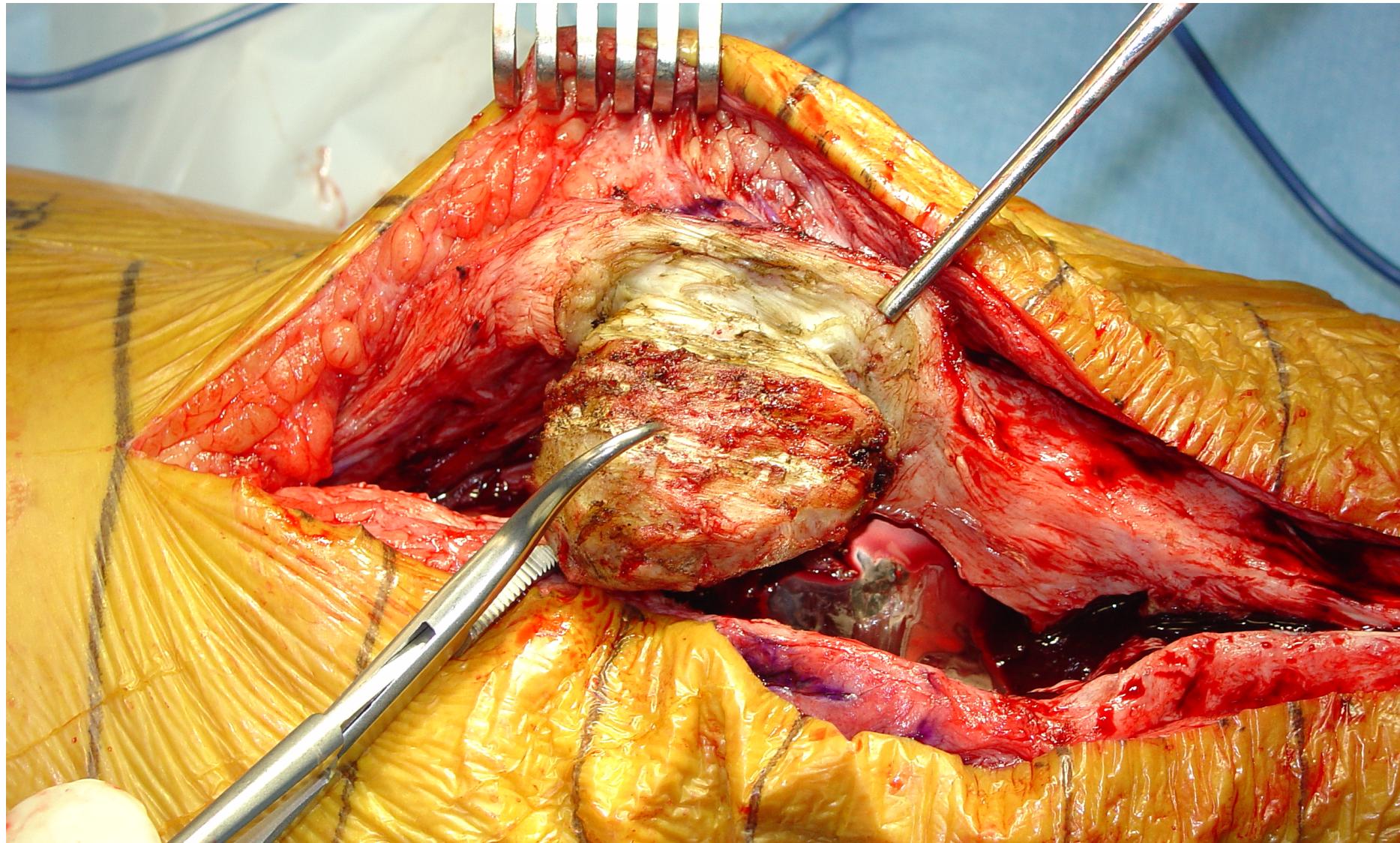
1- Préservation des tissus natifs



2- Patellectomie



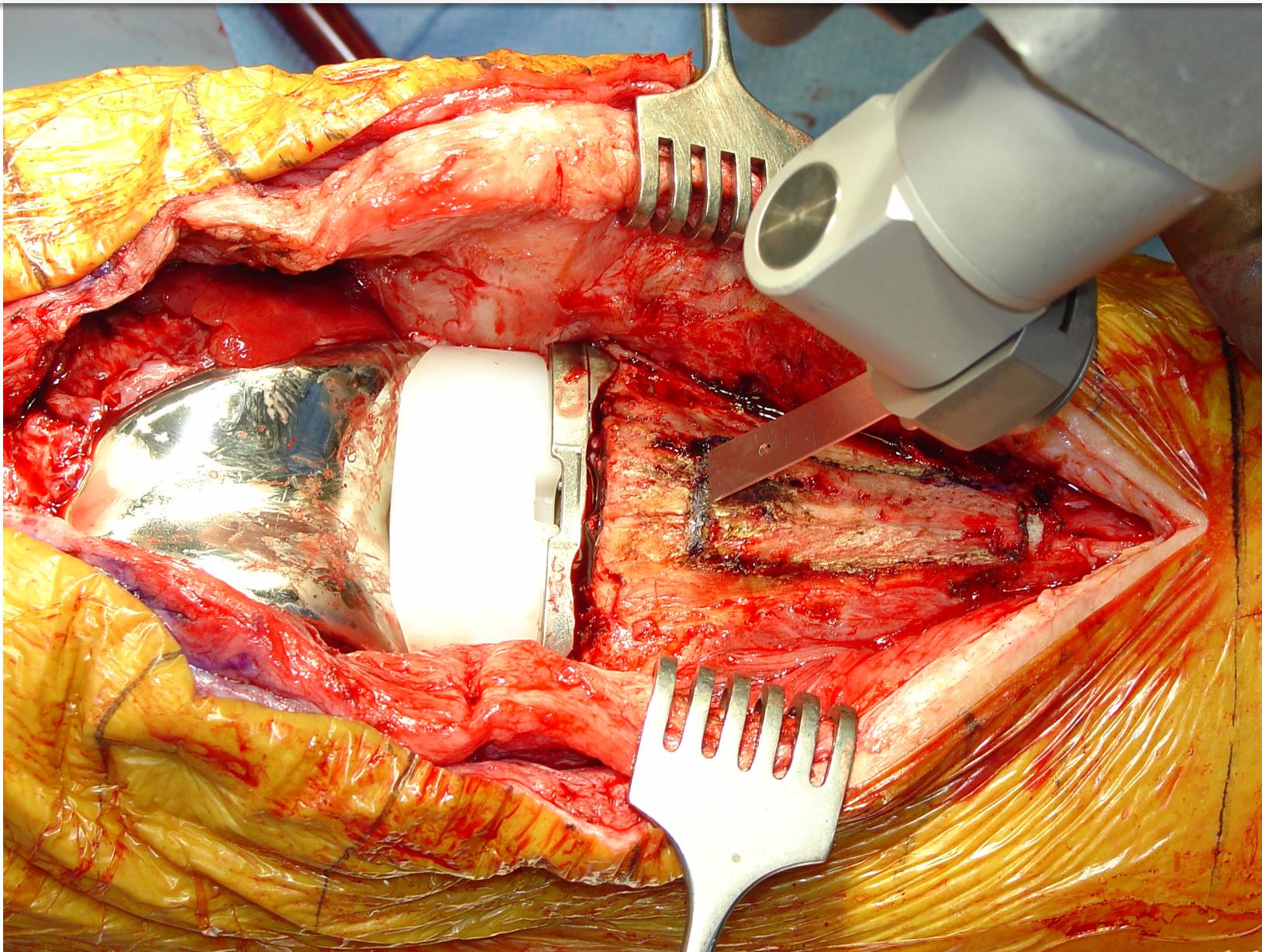
2- Patellectomie



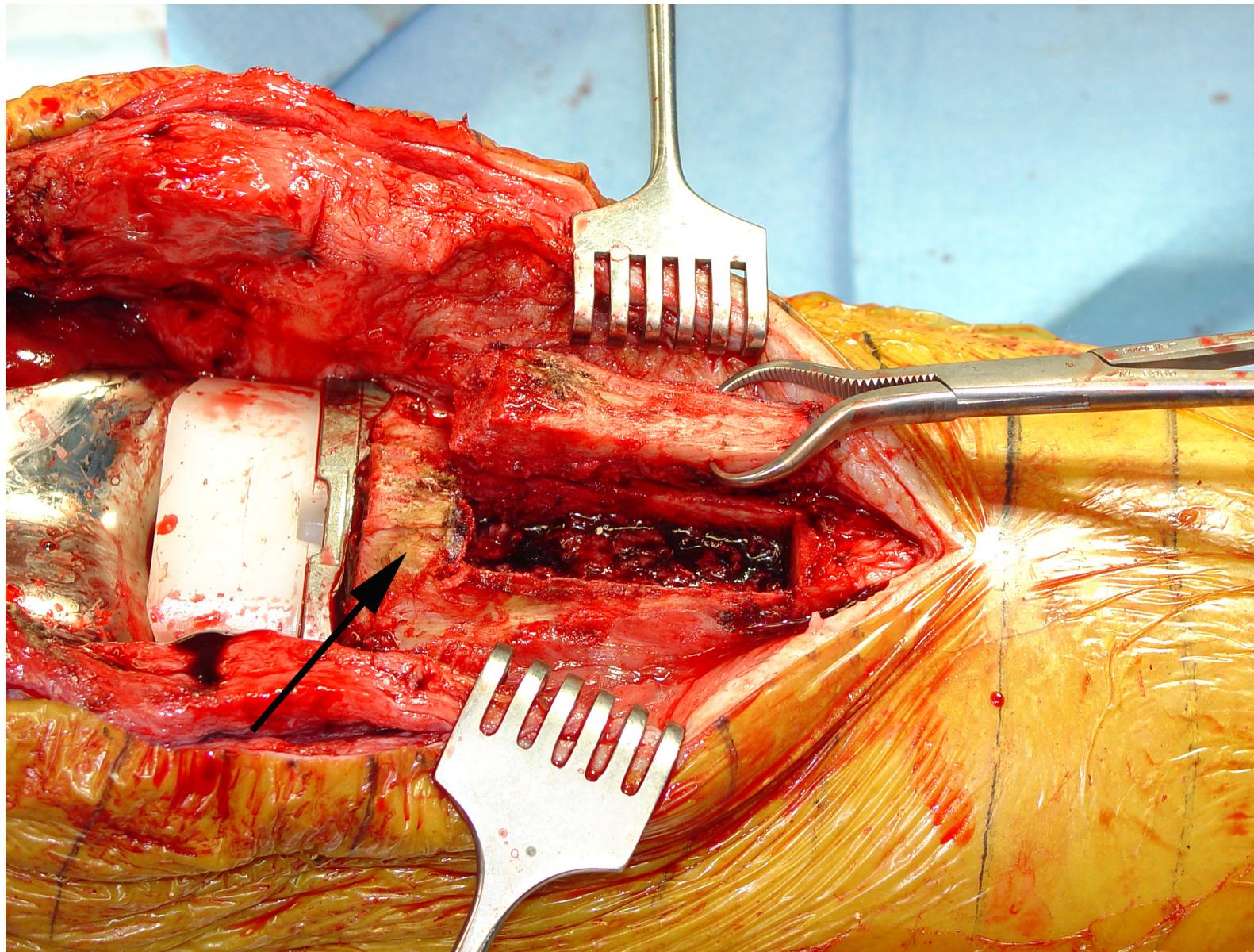
3- Préparation /calibrage de la greffe



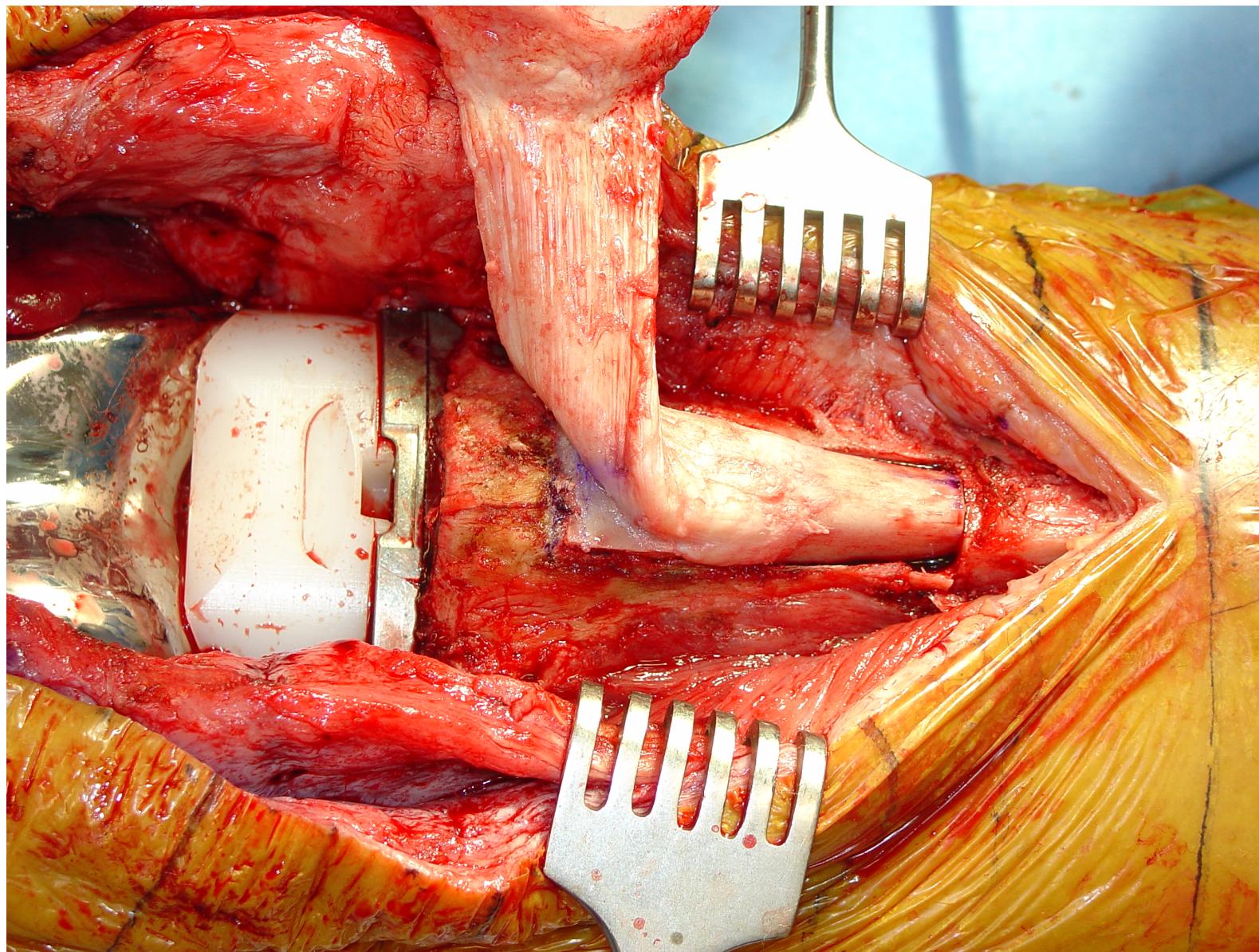
4- Creusement d'une gouttière dans la TTA



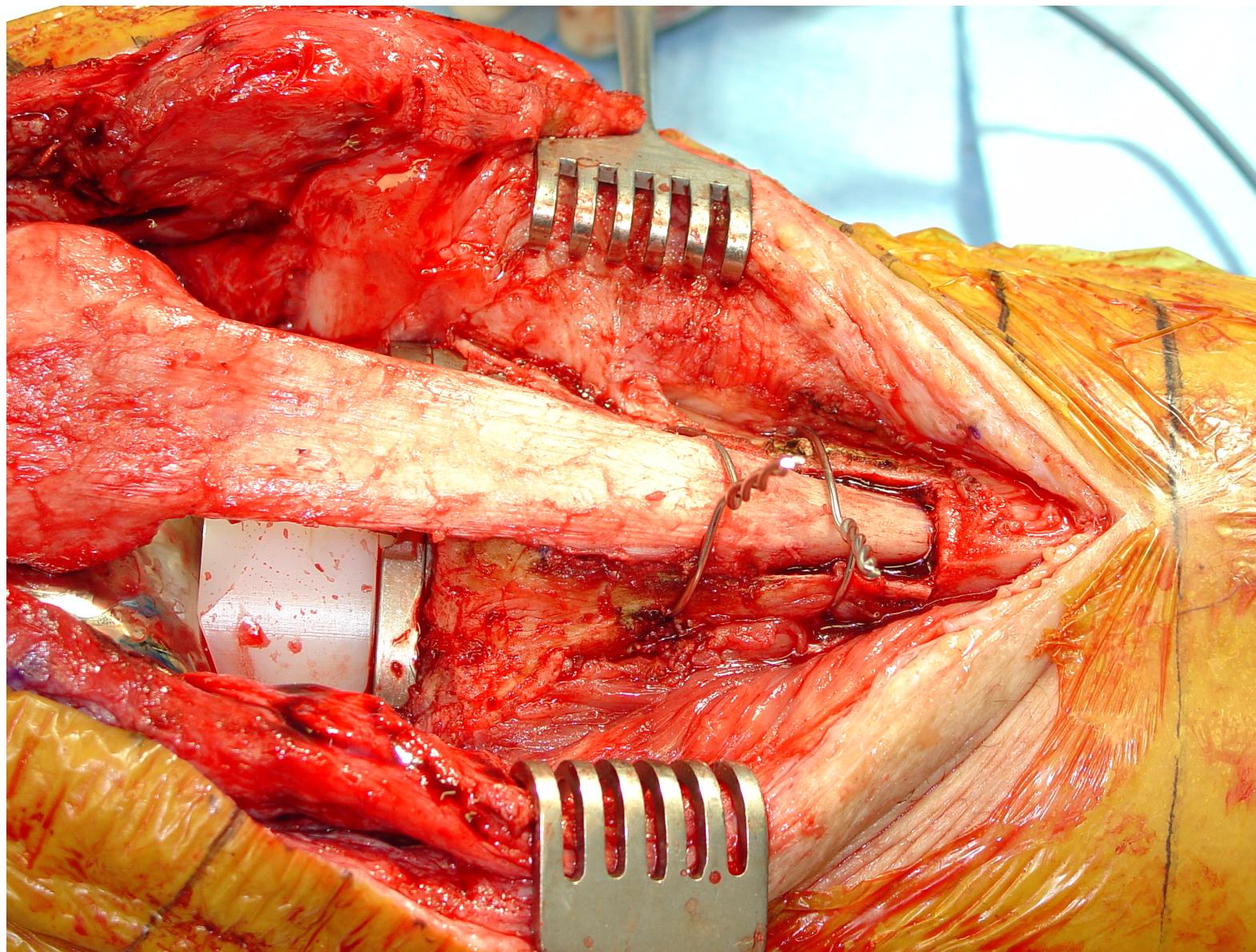
4- Creusement d'une gouttière dans la TTA



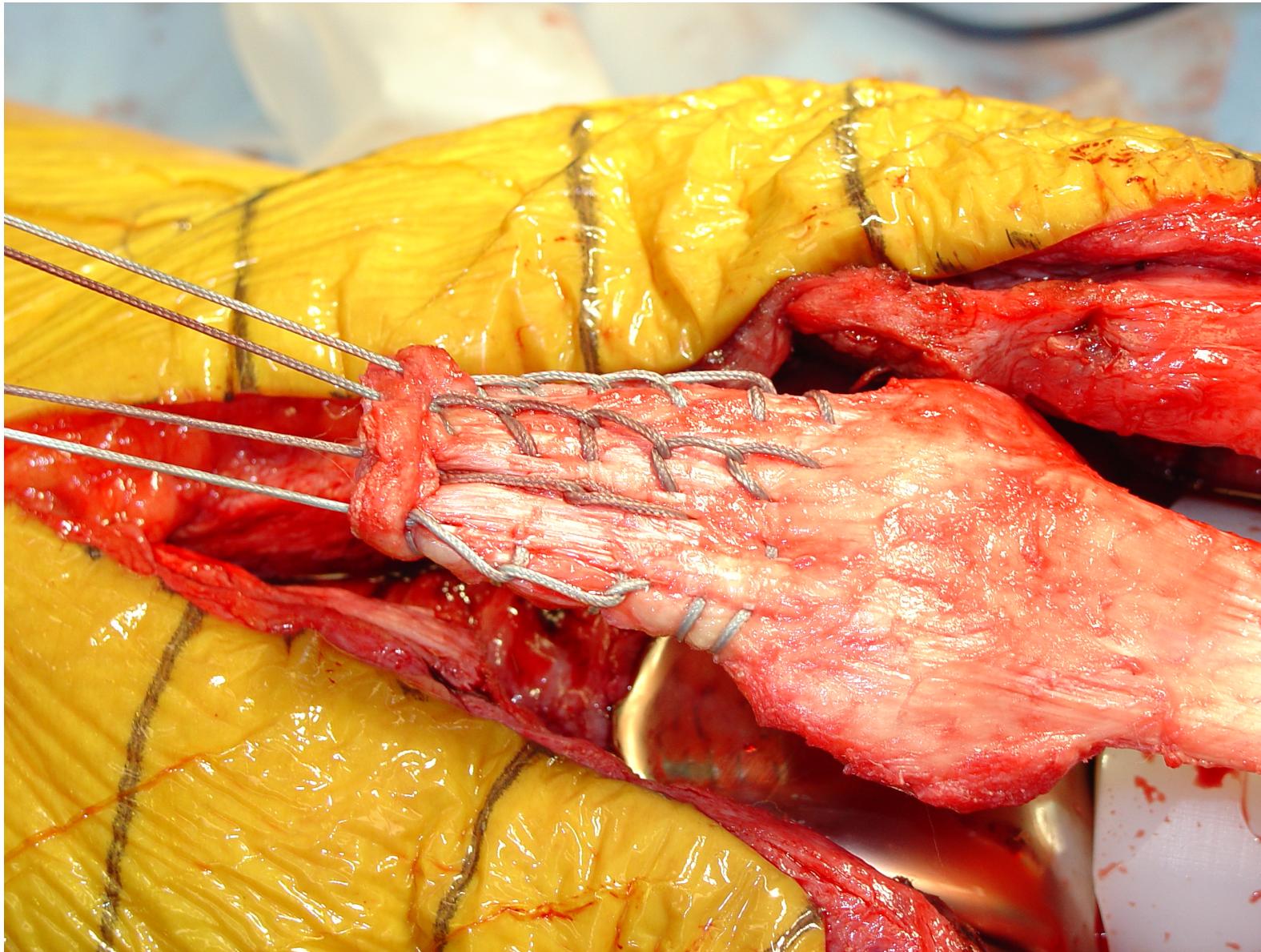
5- Enfouissement et fixation de l'allo-TTA



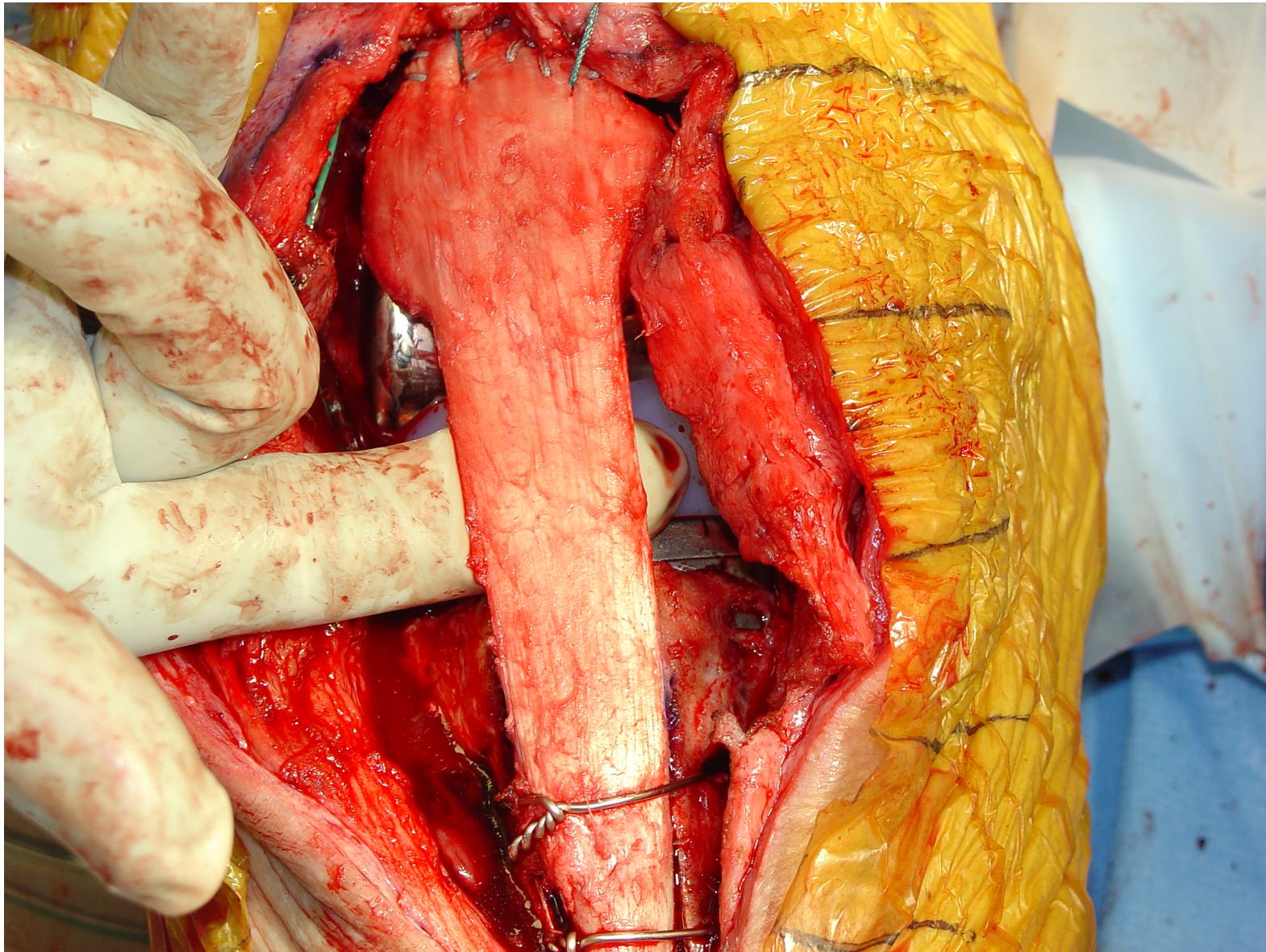
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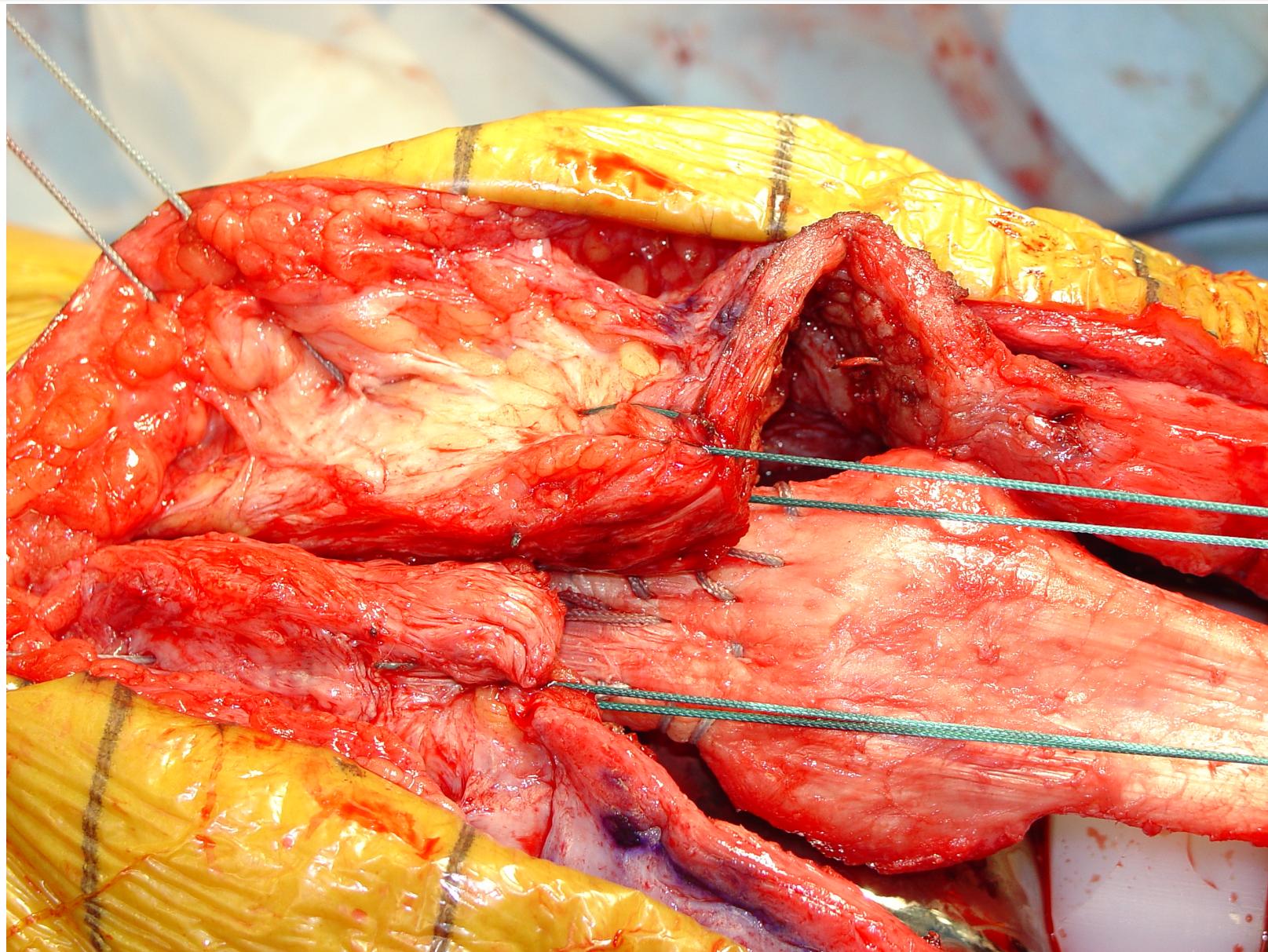
6- Fauilage du Tendon Quadricipital



7- Règlage de la tension (en extension)



8- Recouvrement par les tissus natifs



9- Suture définitive



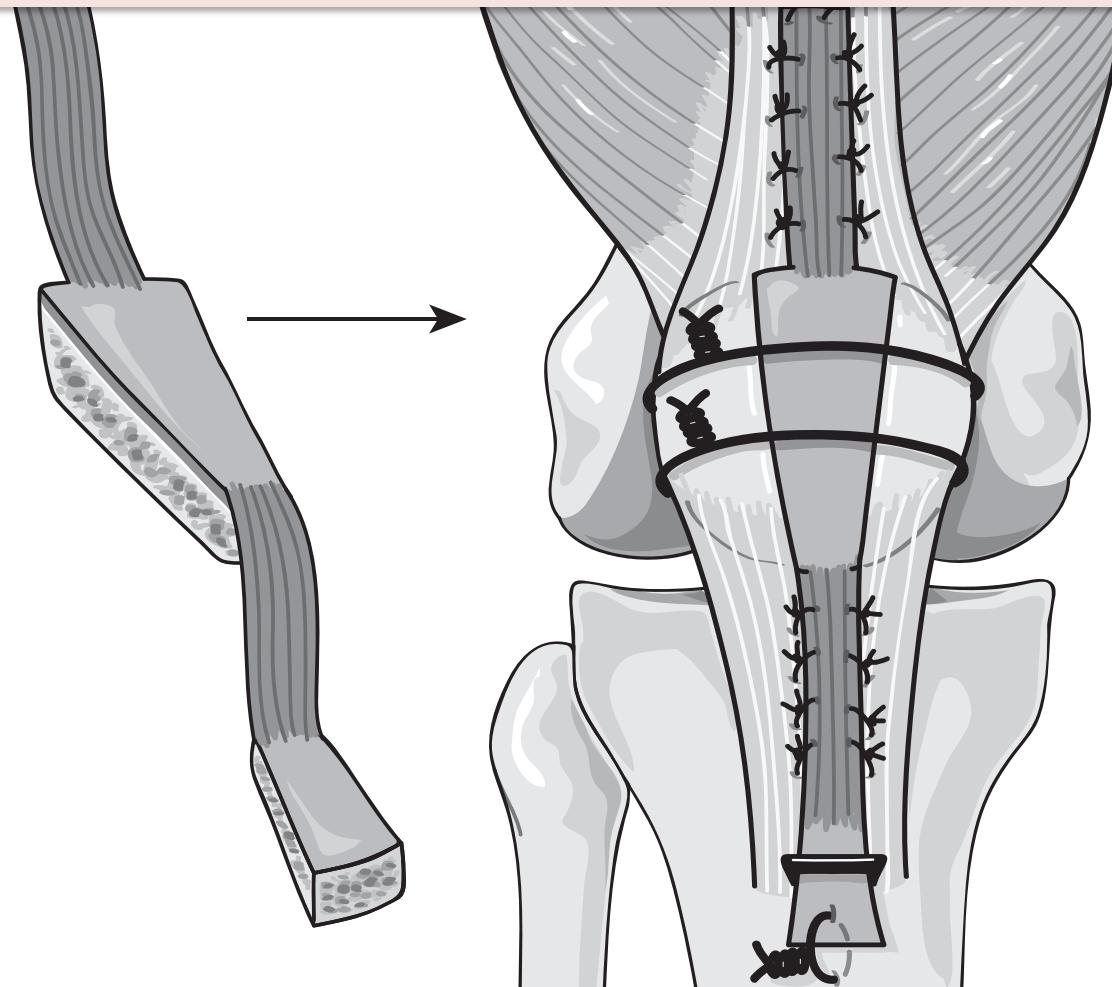
10- Contôle de la tension



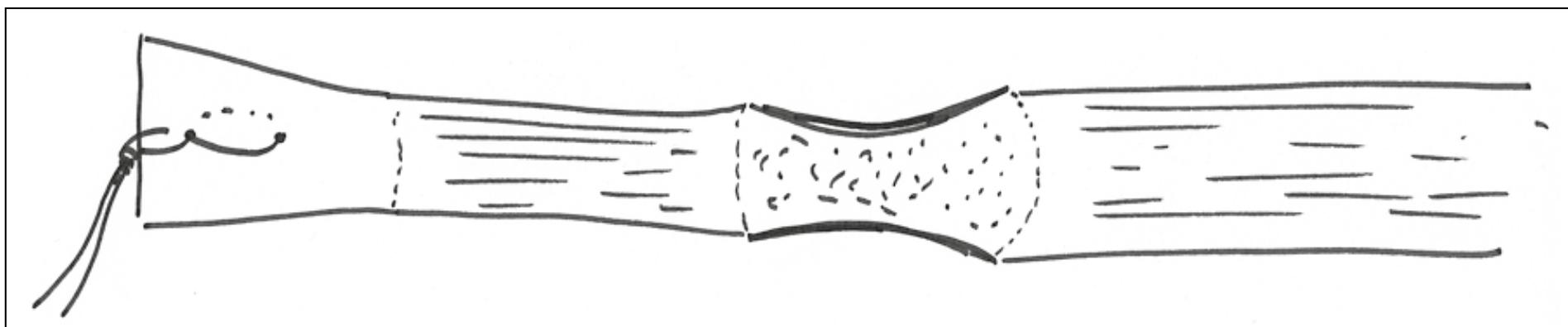
Partial allograft

Conservation of native patella

Only if patella height correct

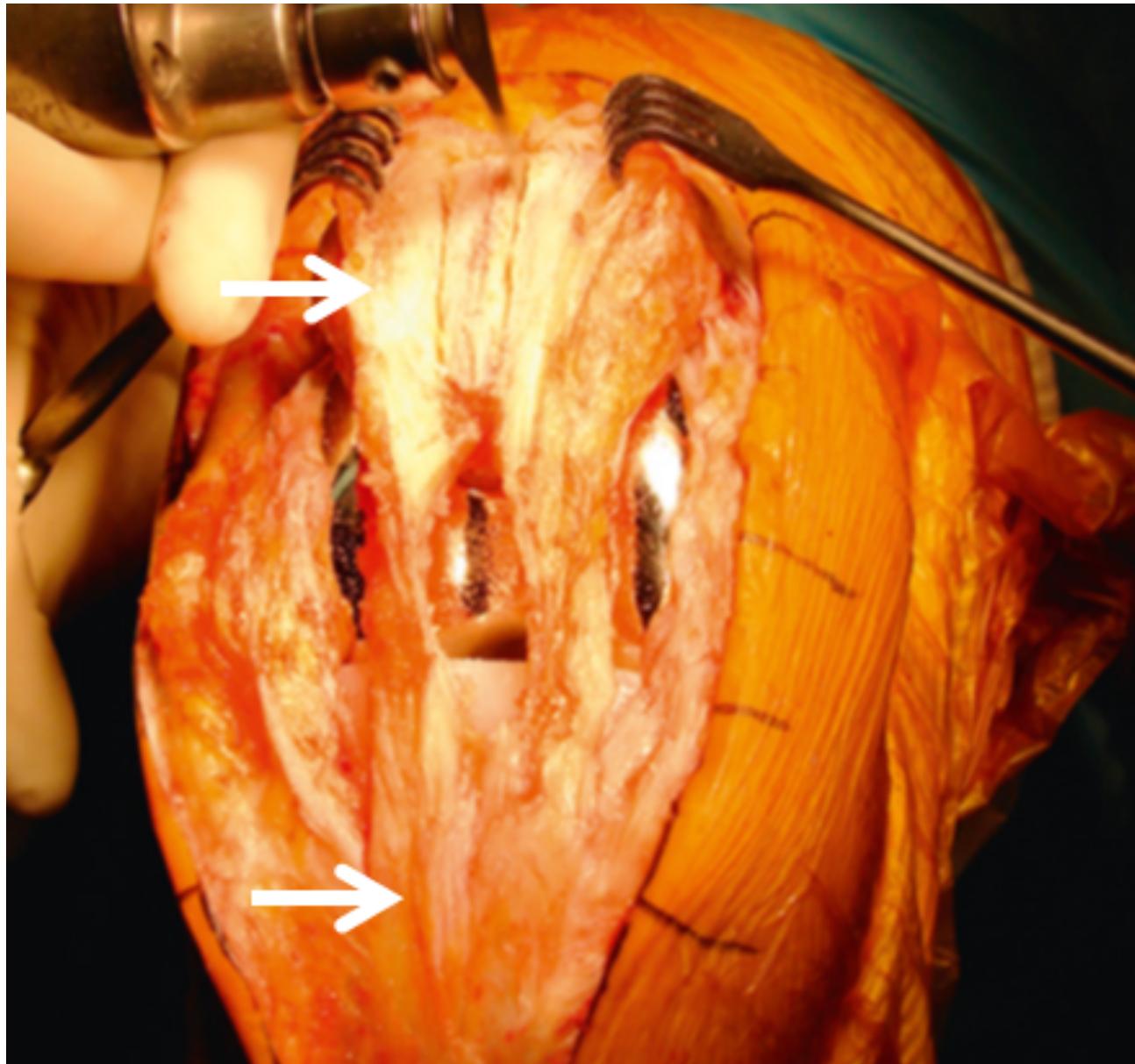


Calibrage du greffon adapté au défaut



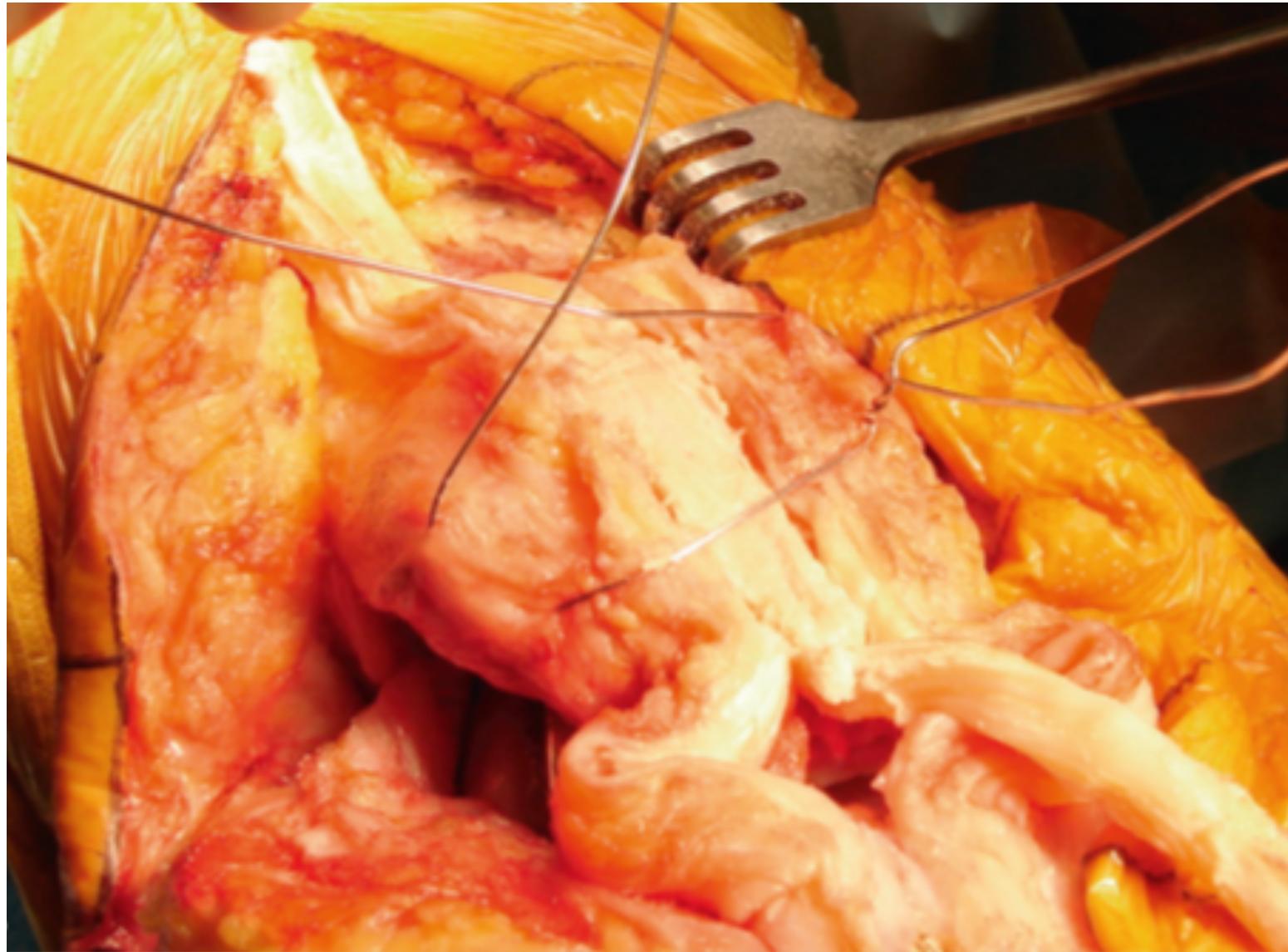
Patellar and tibial grooves

Courtesy P neyret and S Lustig. Lyon



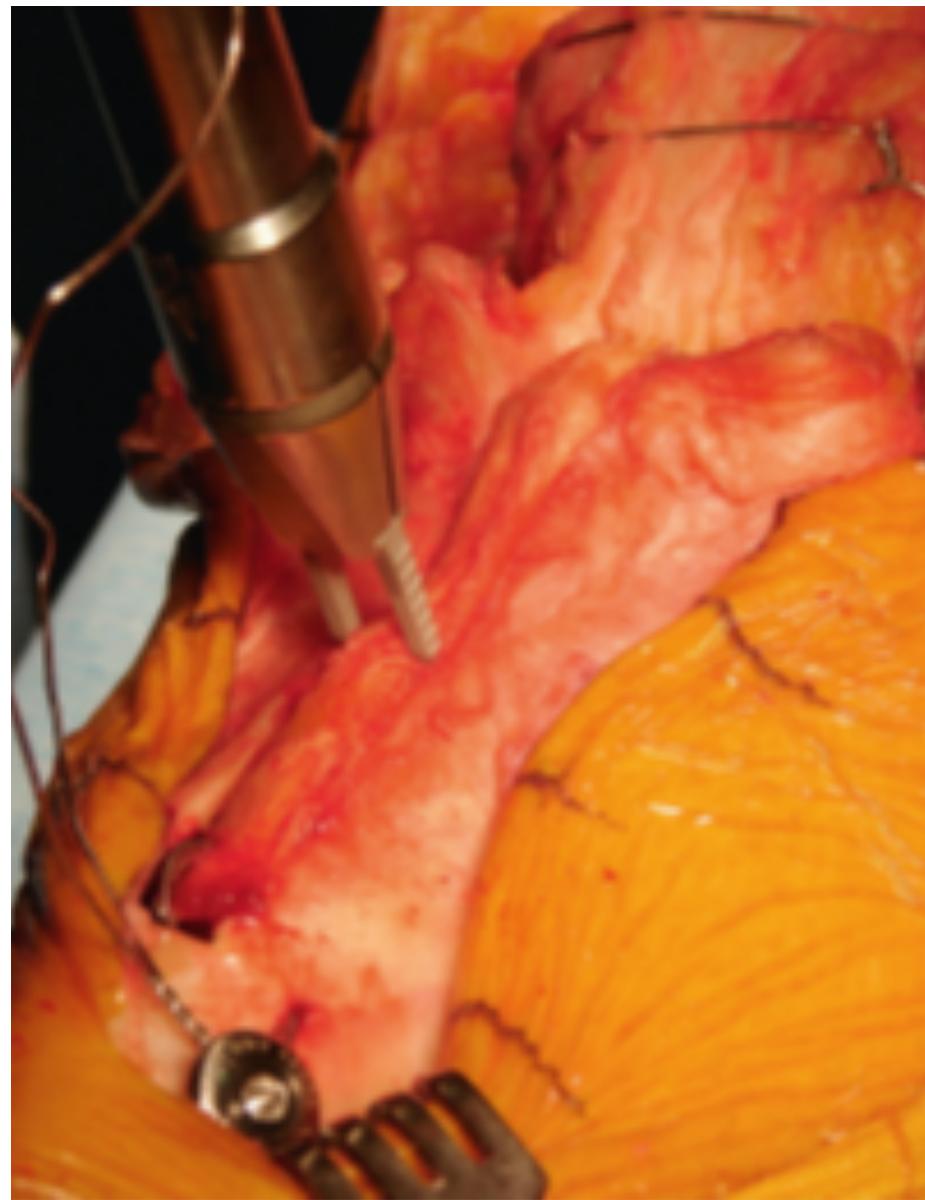
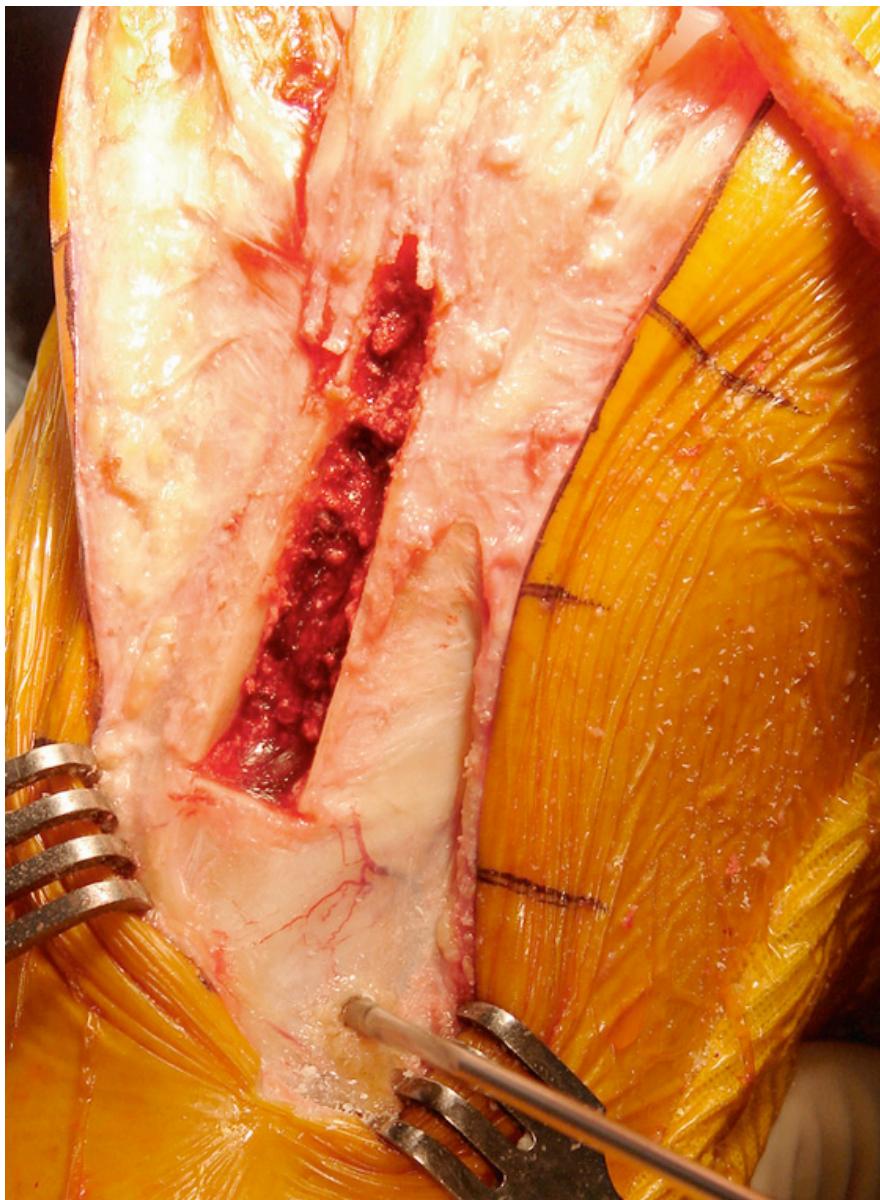
Patellar fixation

Courtesy P neyret and S Lustig. Lyon



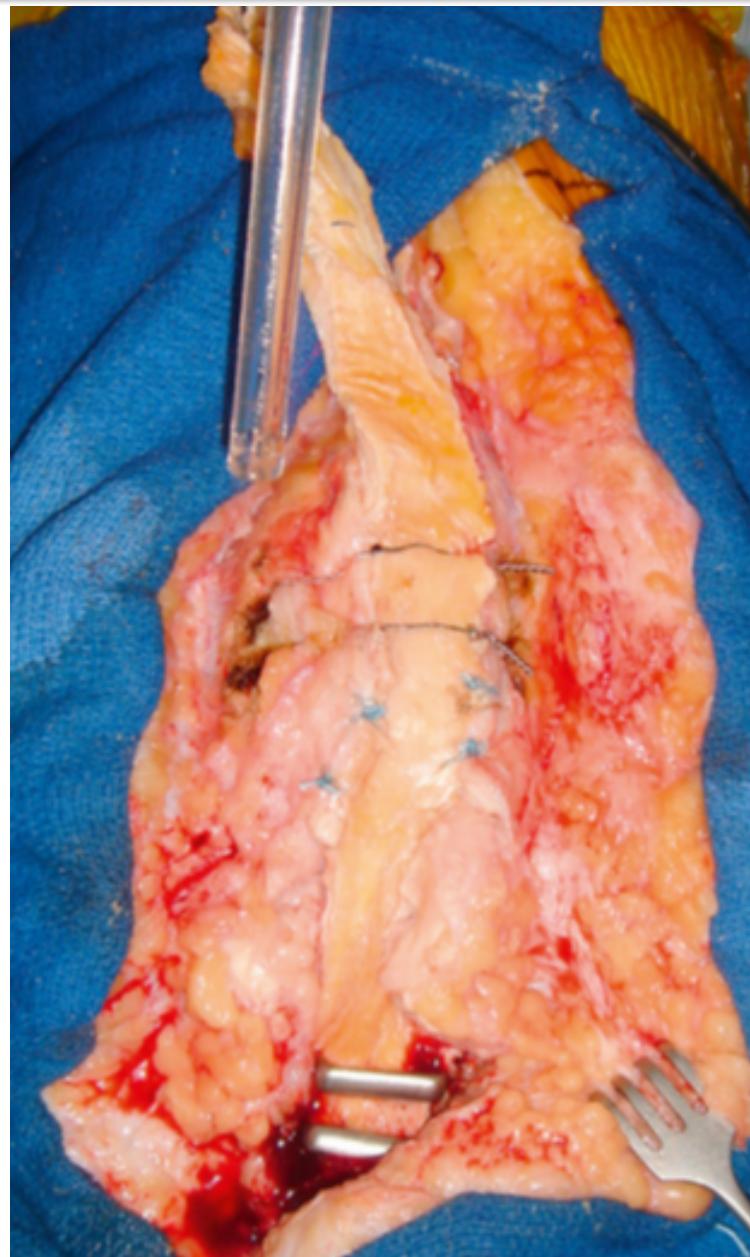
Tibial fixation

Courtesy P neyret and S Lustig. Lyon



Proximal fixation

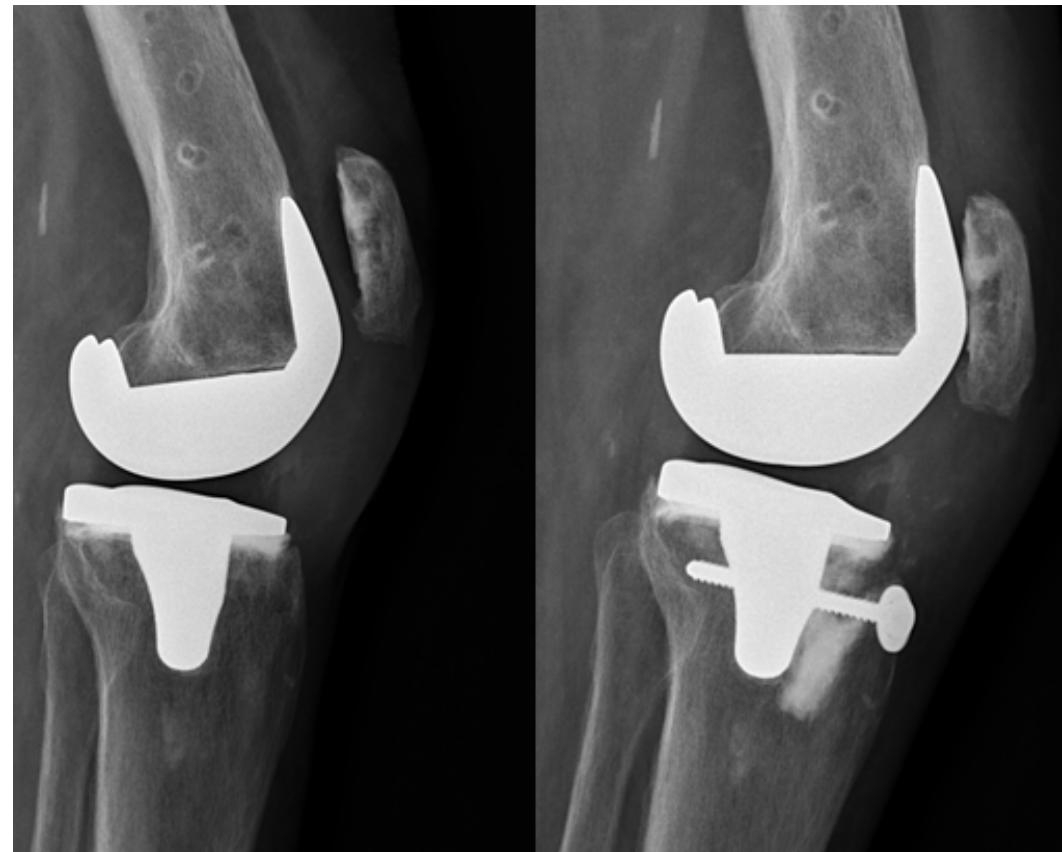
Courtesy P neyret and S Lustig. Lyon



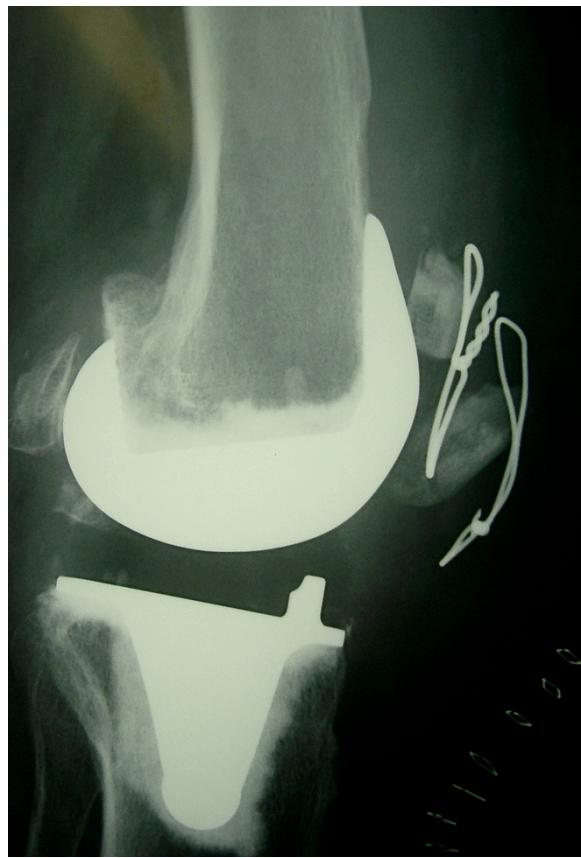
Strategy

Height and quality correct

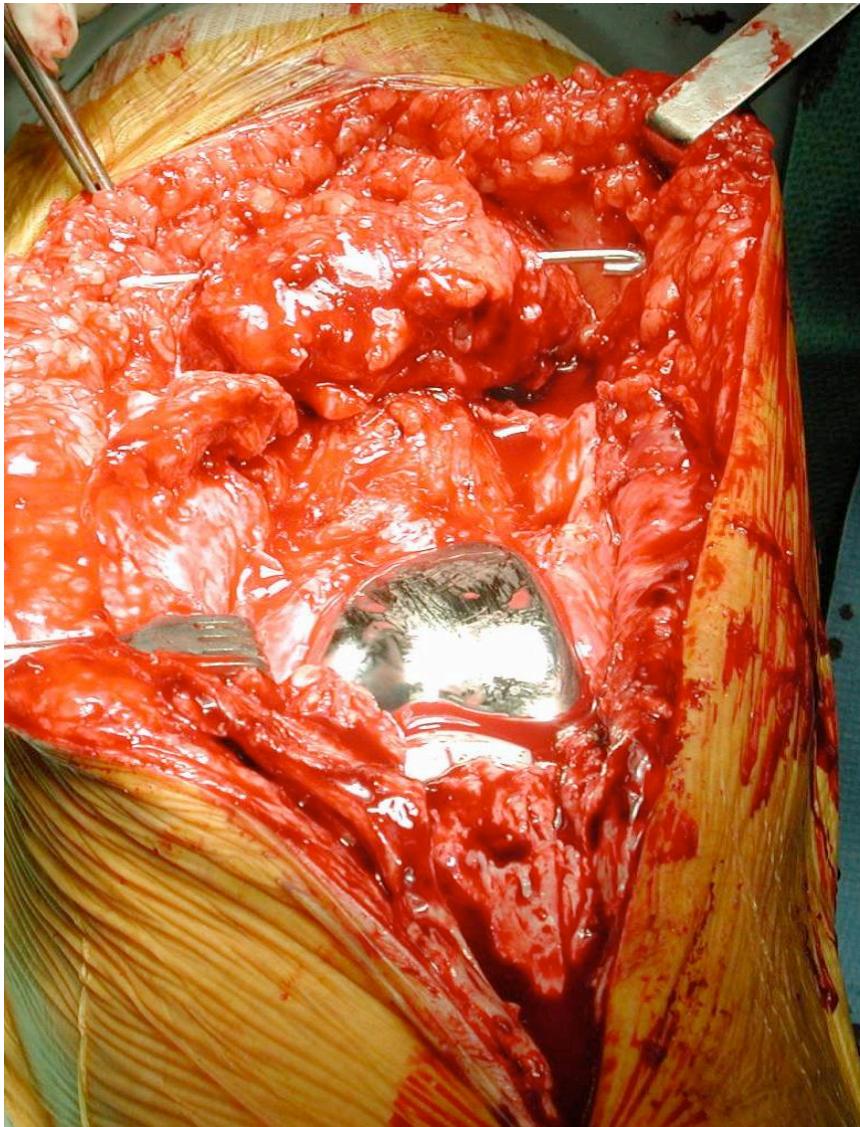
- ✓ Allogreffe partielle
- ✓ Allogreffe complète
- ✓ Hanssen



Residual patella : complete allograft



Residual patella : complete allograft



Septic risk: arthrodesis



**EX#1: PTG rupture App. Ext. : suture puis $\frac{1}{2}$ T
1^{er} changement de PTG (post op)**



Sepsis: changement en deux temps



Récidive. Disp de l'app. extenseur



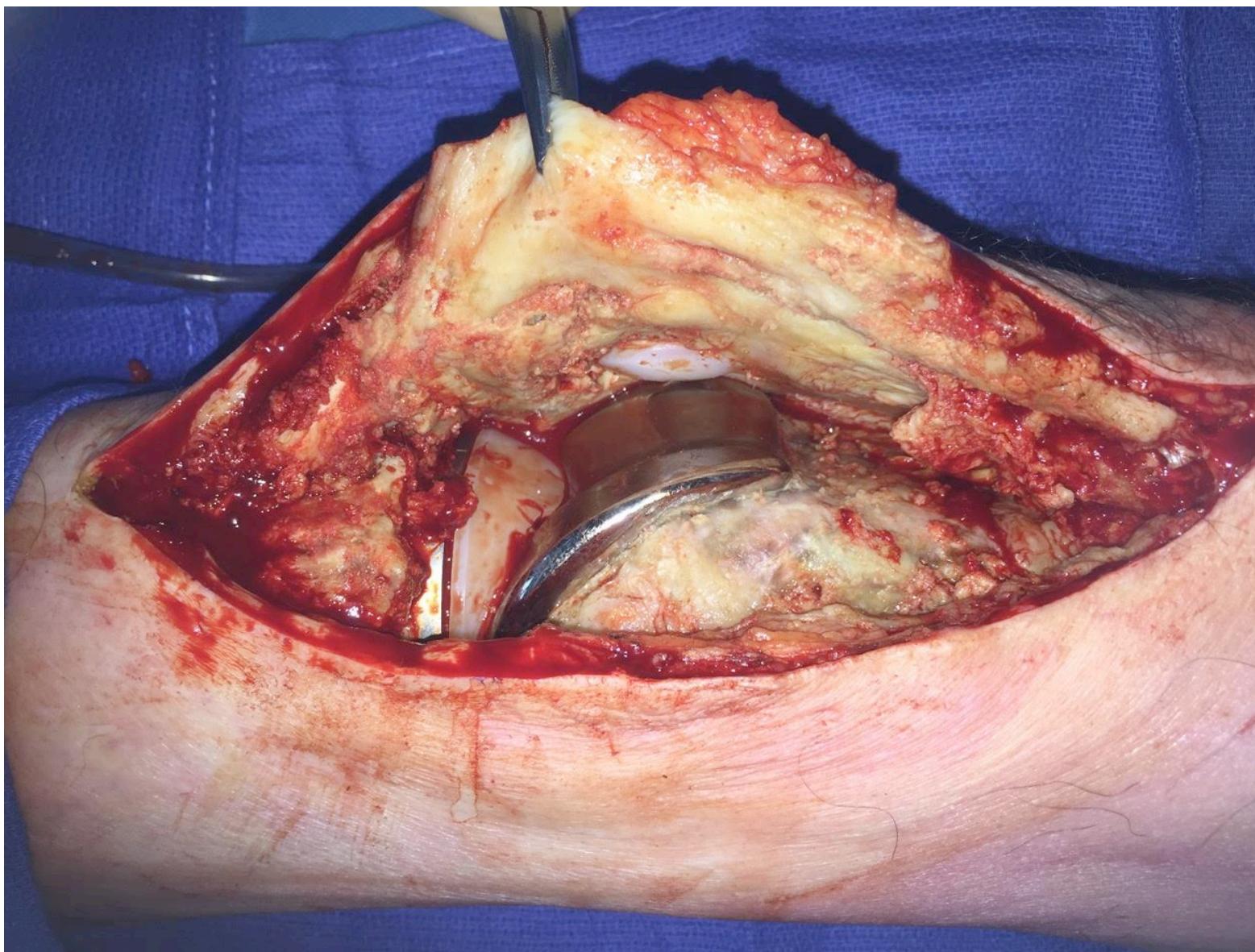
Prothèse-arthrodèse



EX#2 Fistule chronique. Prlvts négatifs. PTG intacte



Rupture chronique tendon patellaire



Reconstruction par lambeau de jumeau médial



Lambeau de jumeau médial



A photograph of the Lyon skyline in winter, featuring the Saône River in the foreground with snow-covered railings. In the background, the Fourvière hill rises behind the Basilique Notre-Dame de Fourvière. Several red cable car lines are visible against the sky.

Thank you

Toutes les photos de LYON ! <http://www.Lyon-Photos.com>