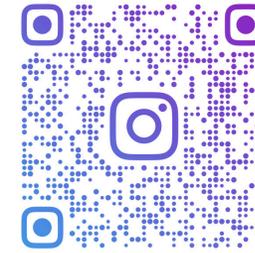


# ACL Repair



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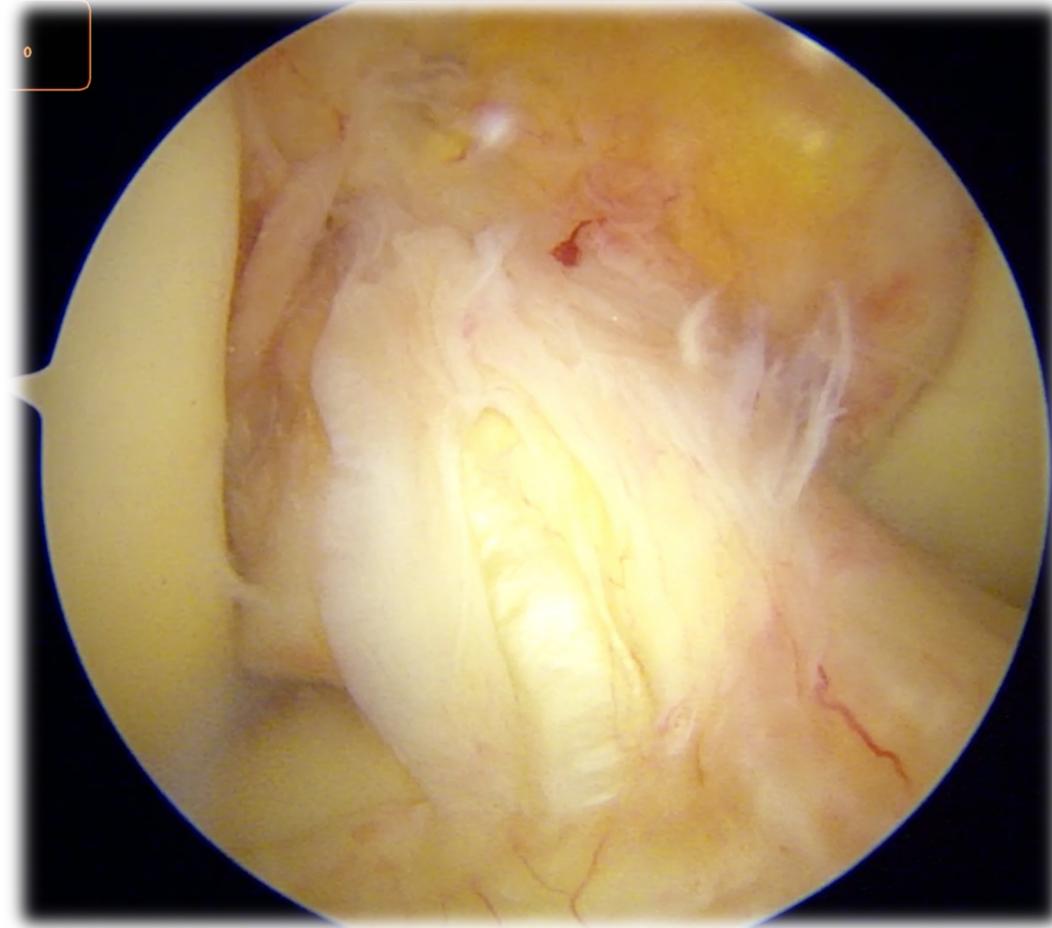


# Current statut

## ACL Reconstruction : Gold Standard

But:

- Rerupture (6 to 10% , up to 28% in high-risk populations)
- Graft morbidity (pain, weakness...15% / 20%)
- Clinical failure 10%
- RTP: 50 to 65% to their preinjury level
- Return to work: On average 11 weeks
- RTP: 9 – 12 months



# Past Statut

ACL repair : First documented treatment by Mayo Robson in 1897

RUPTURED CRUCIAL LIGAMENTS AND THEIR  
REPAIR BY OPERATION.<sup>1</sup>

BY A. W. MAYO ROBSON, F.R.C.S.,  
OF LEEDS,

Consulting Surgeon to the General Infirmary at Leeds.

DOGMA : ACL Healing?

## ACL Is Not Able To Heal

Clin Orthop Relat Res (2012) 470:979–985  
DOI 10.1007/s11999-011-1933-8

SYMPOSIUM: ARTHROSCOPY

### Spontaneous Healing in Complete ACL Ruptures

#### A Clinical and MRI Study

Matias Costa-Paz MD, Miguel Angel Ayerza MD,  
Ignacio Tanoira MD, Juan Astoul MD,  
Domingo Luis Muscolo MD

### Outcomes Following Healing Response in Older, Active Patients: A Primary Anterior Cruciate Ligament Repair Technique

J. Richard Steadman, M.D.<sup>1</sup> Lauren M. Matheny, B.A.<sup>1</sup> Karen K. Briggs, M.P.H.<sup>1</sup>  
William G. Rodkey, D.V.M.<sup>1</sup> Dominic S. Carreira, M.D.<sup>2</sup>

<sup>1</sup>The Steadman Clinic, Steadman Philippon Research Institute, Vail, Colorado  
<sup>2</sup>Broward Health Orthopedics and Sports Medicine, Fort Lauderdale, Florida

Address for correspondence and reprint requests J. Richard Steadman, M.D., Steadman Philippon Research Institute, 181 West Meadow Drive, Suite 1000, Vail, CO 81657 (e-mail: Lauren.Matheny@sprival.org).

J Knee Surg 2012;25:255–260.

# Past Statut

## Historical Studies:

- Catastrophic result (mid – long term )of ACL Repair *Feagin and Cu*
- But:
  - Several Biases
  - **Outcomes of Repair depends on tear location** *Sherman et al., Am J Sports Med, 1991*
- ACL Repair was wrongly abandonned for All patients

The long-term followu  
cruciate ligament repa  
Defining a rationale for augm

MARK F. SHERMAN,†† MD, LAWREN



Preservation of the Anterior Cruciate Ligament:  
A Treatment Algorithm Based on Tear Location  
and Tissue Quality

Jelle P. van der List, MD, and Gregory S. DiFelice, MD

Preservation of the Anterior Cruciate Ligament:  
Surgical Techniques

Jelle P. van der List, MD, and Gregory S. DiFelice, MD

# Current Statut

## ACL Repair : **Return to the Spotlight** (last decade)



- New Techniques: Less invasive compared to Reconstruction
  - Size of the drilled tunnels
  - No graft harvesting morbidity as no graft is needed
  - Preserving the native ACL ligament (Proprioreceptors, Vascularization)
  - Preserving the native insertion site (Better Joint mechanics)
- Better Patient selection
  - Tear location & Tissue quality
- « No bridges are burned »
  - In Case of rerupture, a standard ACL reconstruction can be performed.

Indications : How we Select our Patients?

**We select « repairable » lesions:**

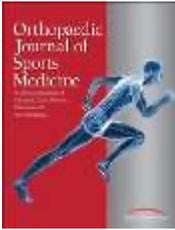
Based on **Tear location & Tissue quality**

Pre operative : MRI

Per operative : Arthroscopic view



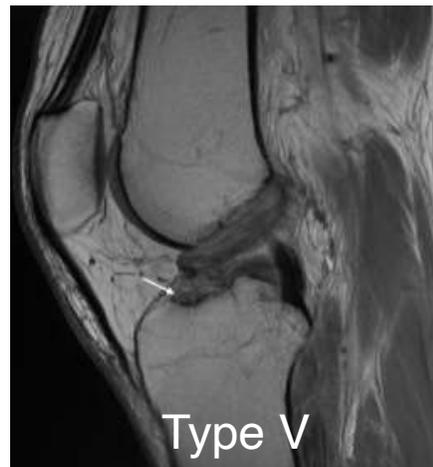
Time to surgery : **Trauma – Surgery (6 Weeks)**

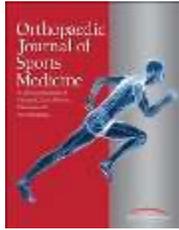


# The Location of Anterior Cruciate Ligament Tears

## A Prevalence Study Using Magnetic Resonance Imaging

Jelle P. van der List,<sup>\*†</sup> MD, Douglas N. Mintz,<sup>‡</sup> MD, and Gregory S. DiFelice,<sup>†</sup> MD  
*Investigation performed at the Hospital for Special Surgery, New York, New York, USA*





## The Location of Anterior Cruciate Ligament Tears

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Investigation performed at the Hospital for Special Surgery, New York, New York, USA

- Classification for tear types



Type I tear  
Prox-dist >90%



Type II tear  
75-90%



Type III tear  
25-50%



Type IV tear  
10-25%



Type V tear  
<10%

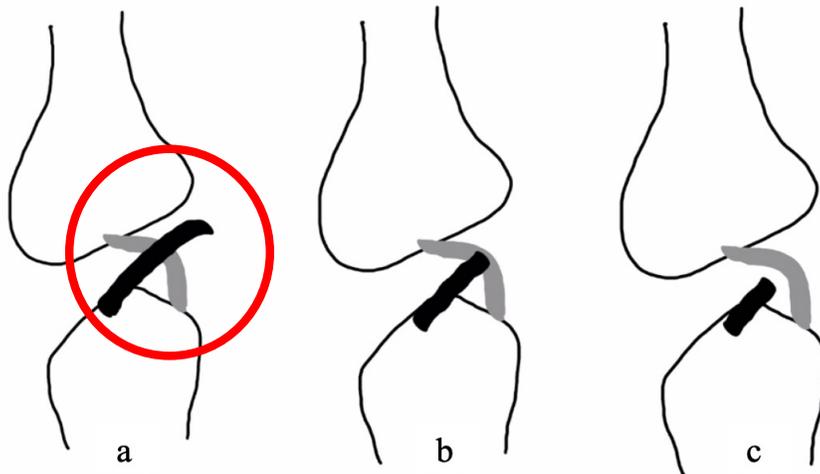
- Type I and V can be bony avulsion or soft tissue avulsion



# Primary anterior cruciate ligament repair: magnetic resonance imaging characterisation of reparable lesions and correlation with arthroscopy

Clement Mehier<sup>1</sup> · Isabelle Ract<sup>1</sup> · Marie-Astrid Metten<sup>2</sup> · Nabil Najihi<sup>3</sup> · Raphael Guillin<sup>1</sup>

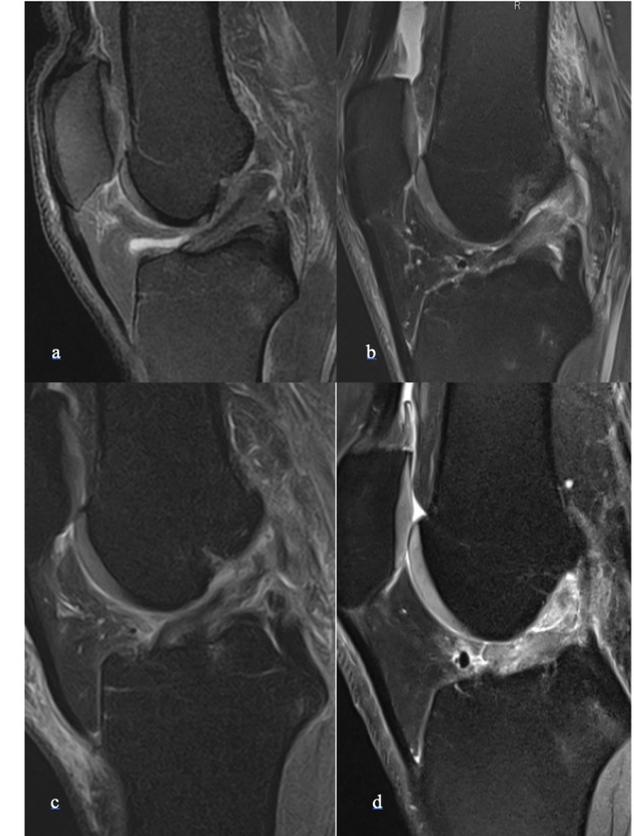
Received: 22 February 2021 / Revised: 5 June 2021 / Accepted: 14 June 2021  
 © European Society of Radiology 2021



**Figure 2 - Grading scale used to define tear location with PCL as reference.**  
 Black line: ACL; Grey line: PCL  
 a. Type I proximal tear : behind the PCL; b. Type II mid-substance tear : in front of the PCL; c. Type III distal tear : before de PCL  
 PCL: posterior cruciate ligament

	Simplified classification		
	« Sharp » section	Fibers visible (Signal T1 or T2)	Fibers parallel
<b>Good<sup>b</sup></b>	Yes <sup>a</sup>	Yes	Yes
Fair	No	Yes	No
Poor	No	No	No

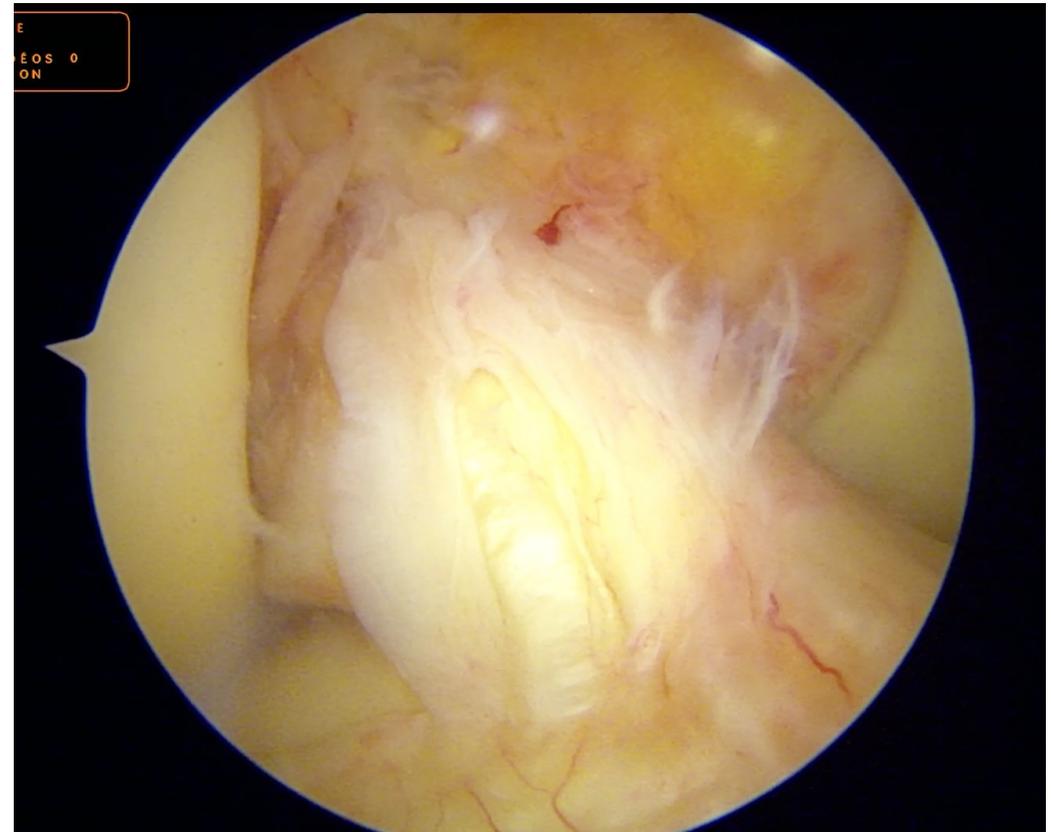
Simplified Classification– Length distal ACL



**Figure 3 – Simplified classification - Sagittal proton density weighted images showing the different grade used to define tissue quality on MRI.**  
 a. Typical “sharp” section grading the quality tissue as good;  
 b. the fibers are visible (in T1-weighted or T2-weighted images) and parallel, grading the quality tissue as good;  
 c. the fibers are visible but not parallel, grading the quality tissue as fair;  
 d. the fibers are not individualizable, grading the quality tissue as poor.

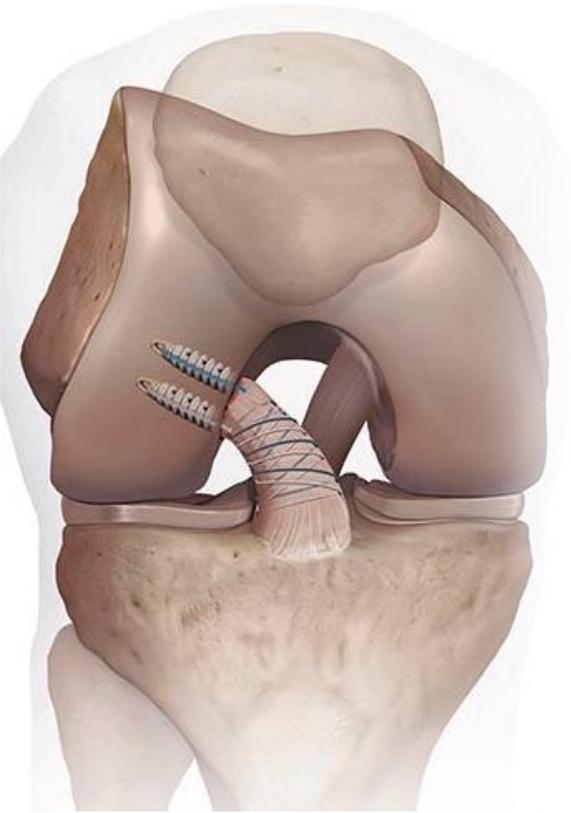
Simplified Classification – ACL Tissue Quality

# Arthroscopic Evaluation Tissue Quality



# Surgical Technique

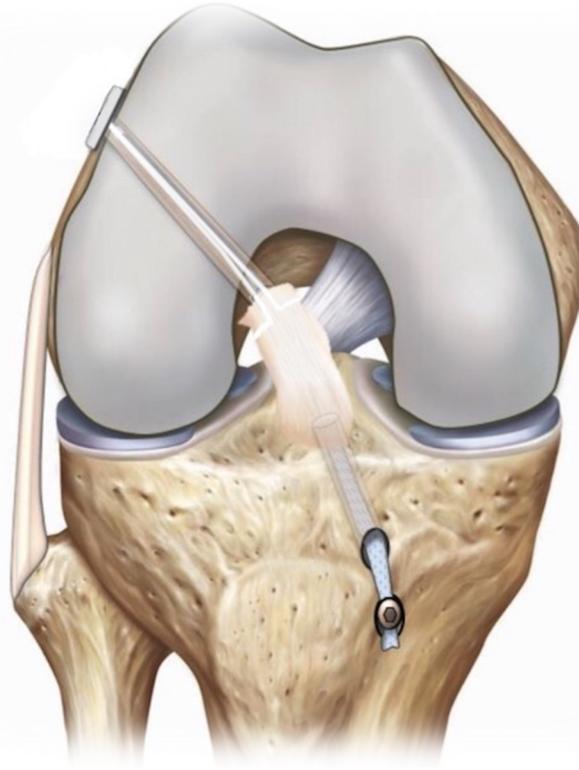
# Modern ACL Repair Techniques



*Suture Anchor Primary  
ACL Repair*



*Suture Tape Augmentation/Internal Brace  
Ligament Augmentation*

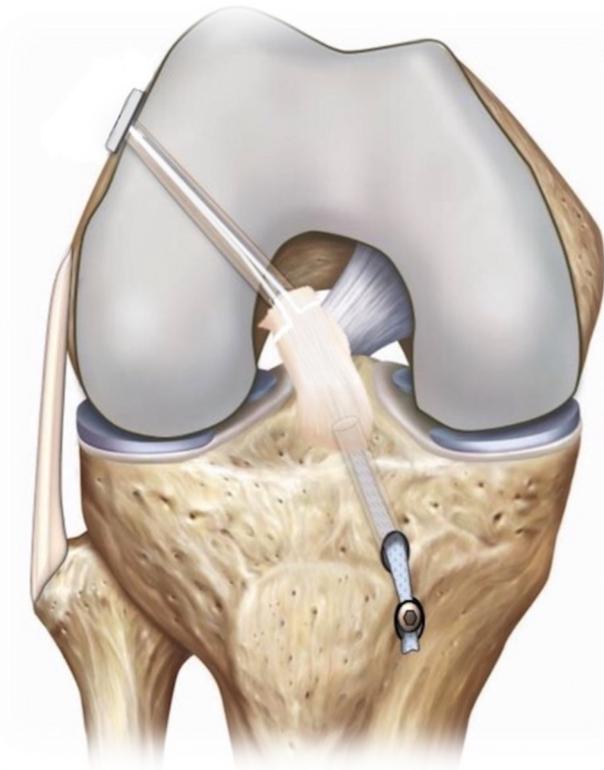


*Ring Sutures Arthrex*

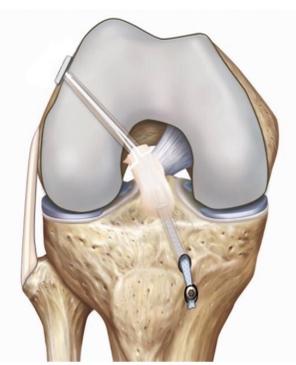
# ACL Repair Technique

*Suture (TightRope ABS)*

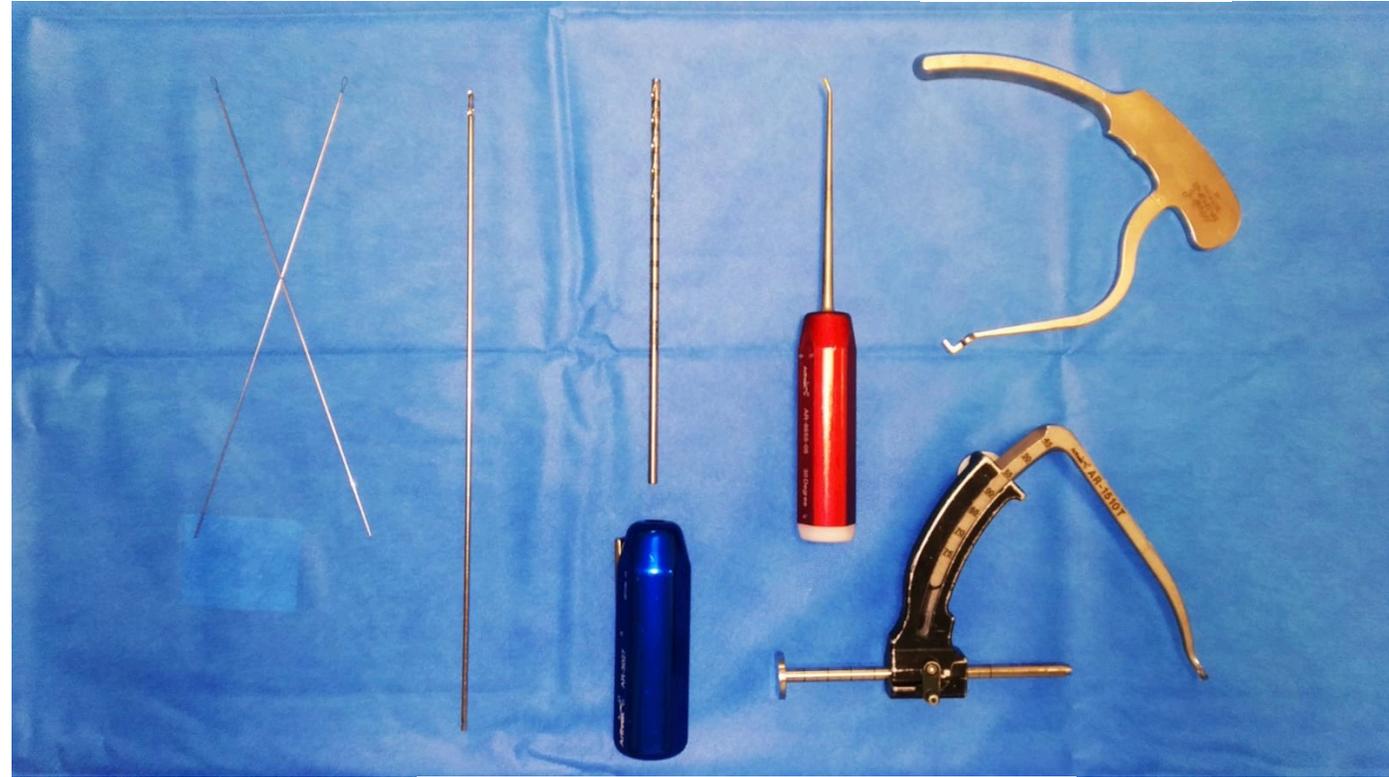
*Internal Brace Ligament Augmentation (Fiber Tape)*

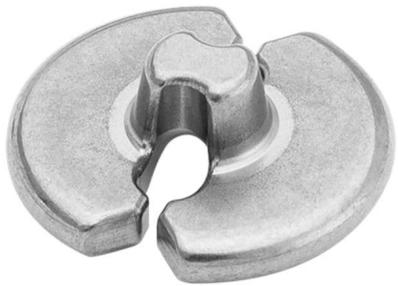
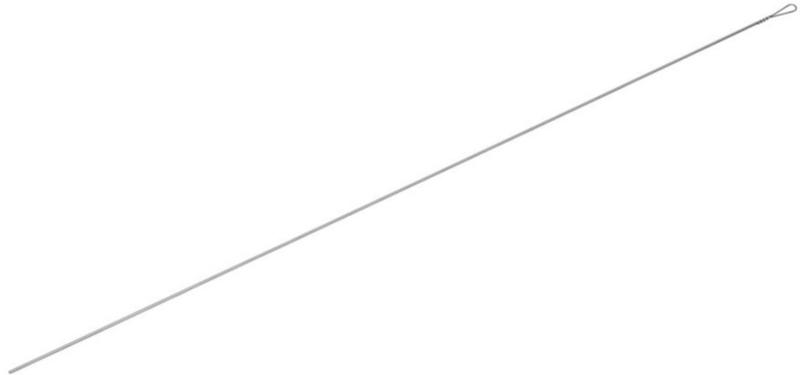
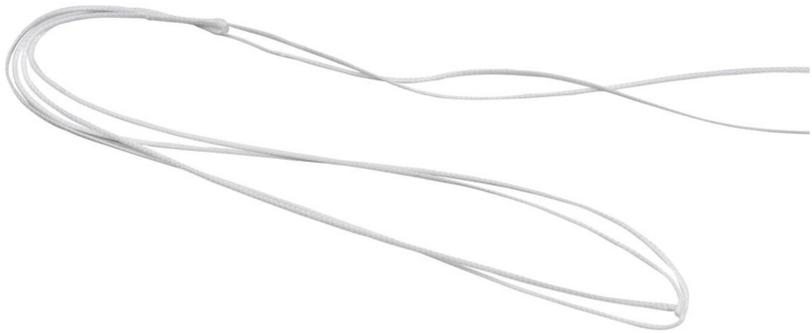


# « My ACL Repair Box »



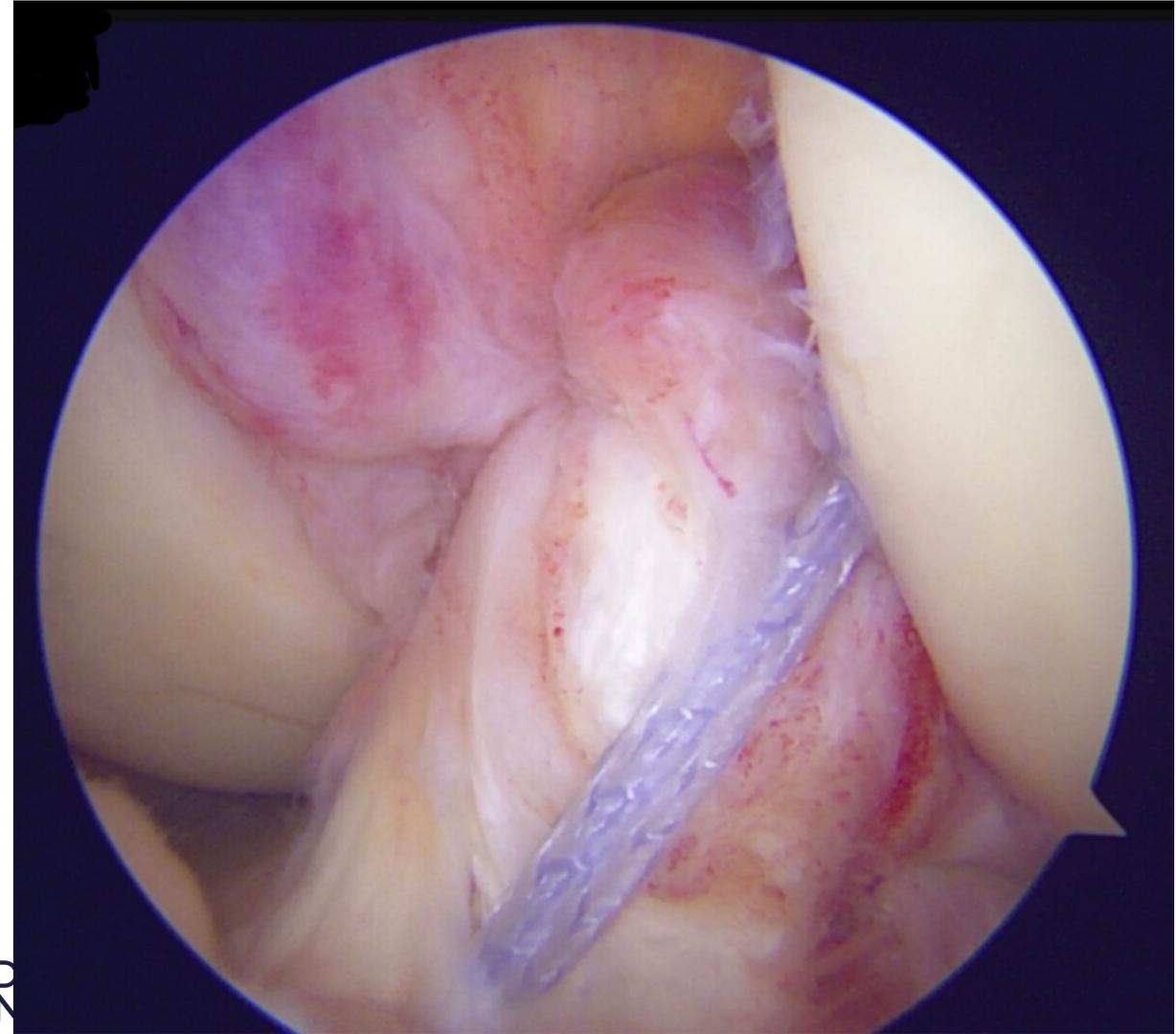
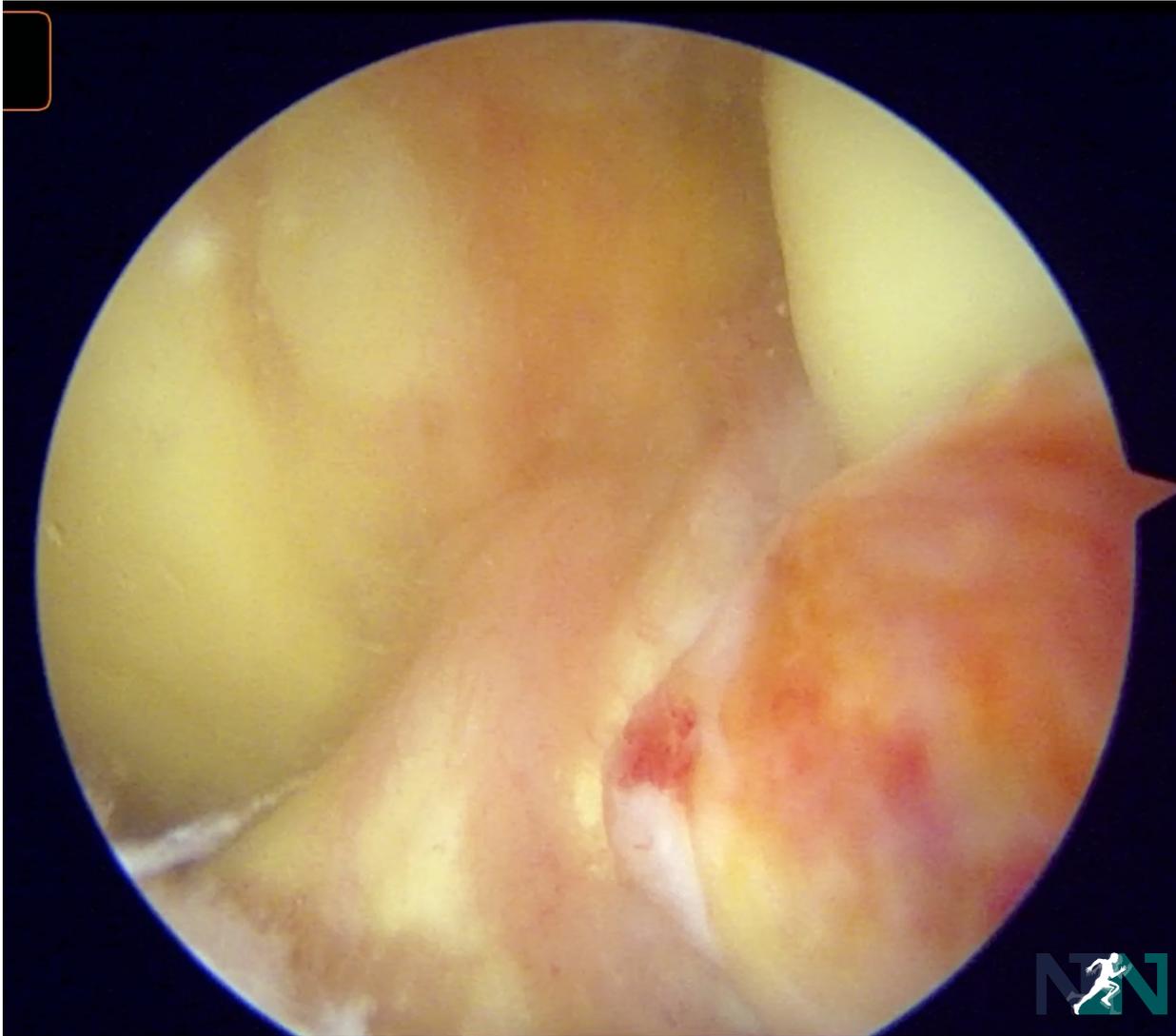
- SCORPION suture passer
- Chondro Pick, 20°
- Guide Pin
- Suture Passing Wire
- Drill Pin
- Cannuleted Drill 4 mm







# ACL (Double Bundle) Repair





# Take Home Message

- ACL Repair:
  - Additionnal Option
  - Biological surgery
  - Minimally invasive
  - No bridges are burned
- Ideal patient
  - Proximal tear & Good Quality tissue
  - >30 ans
  - Non-high athlete



**ICI C'EST  
MARSEILLE  
BÉBÉ**



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