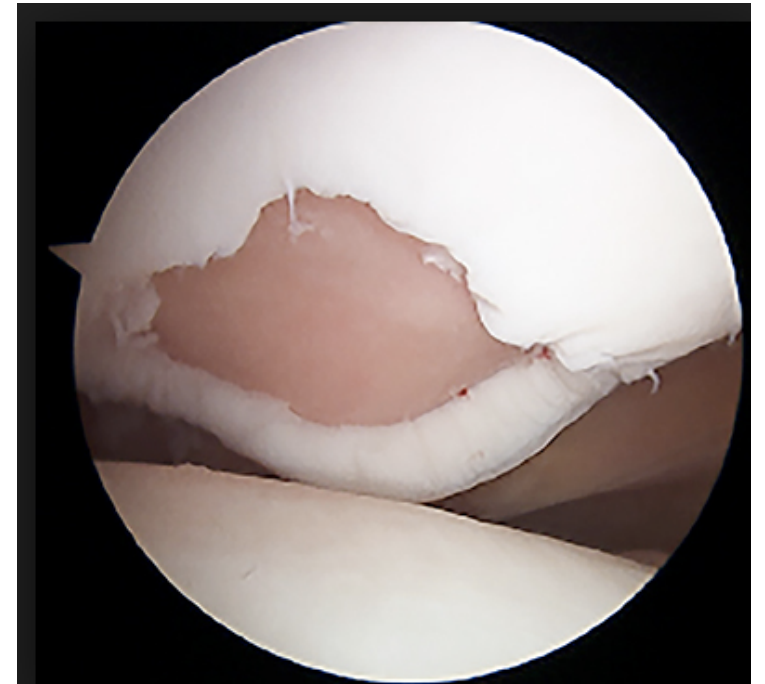
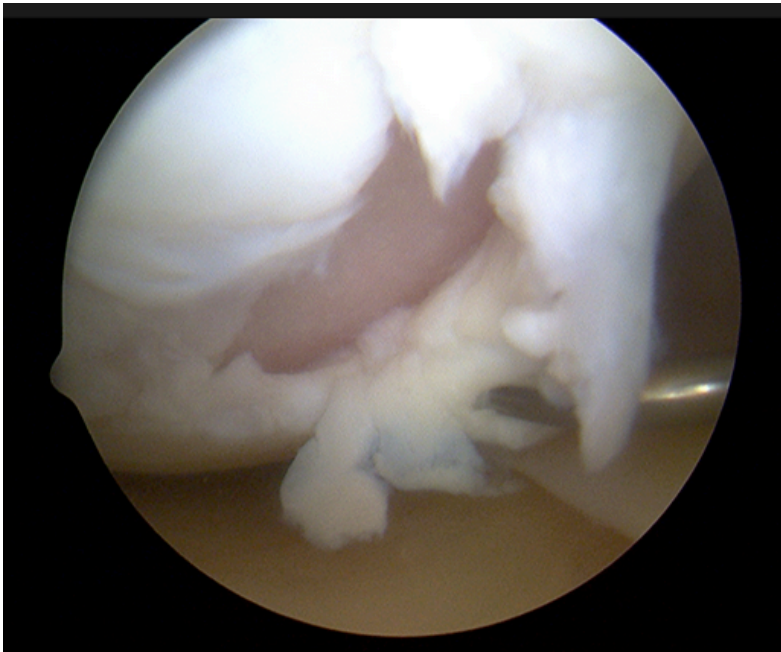


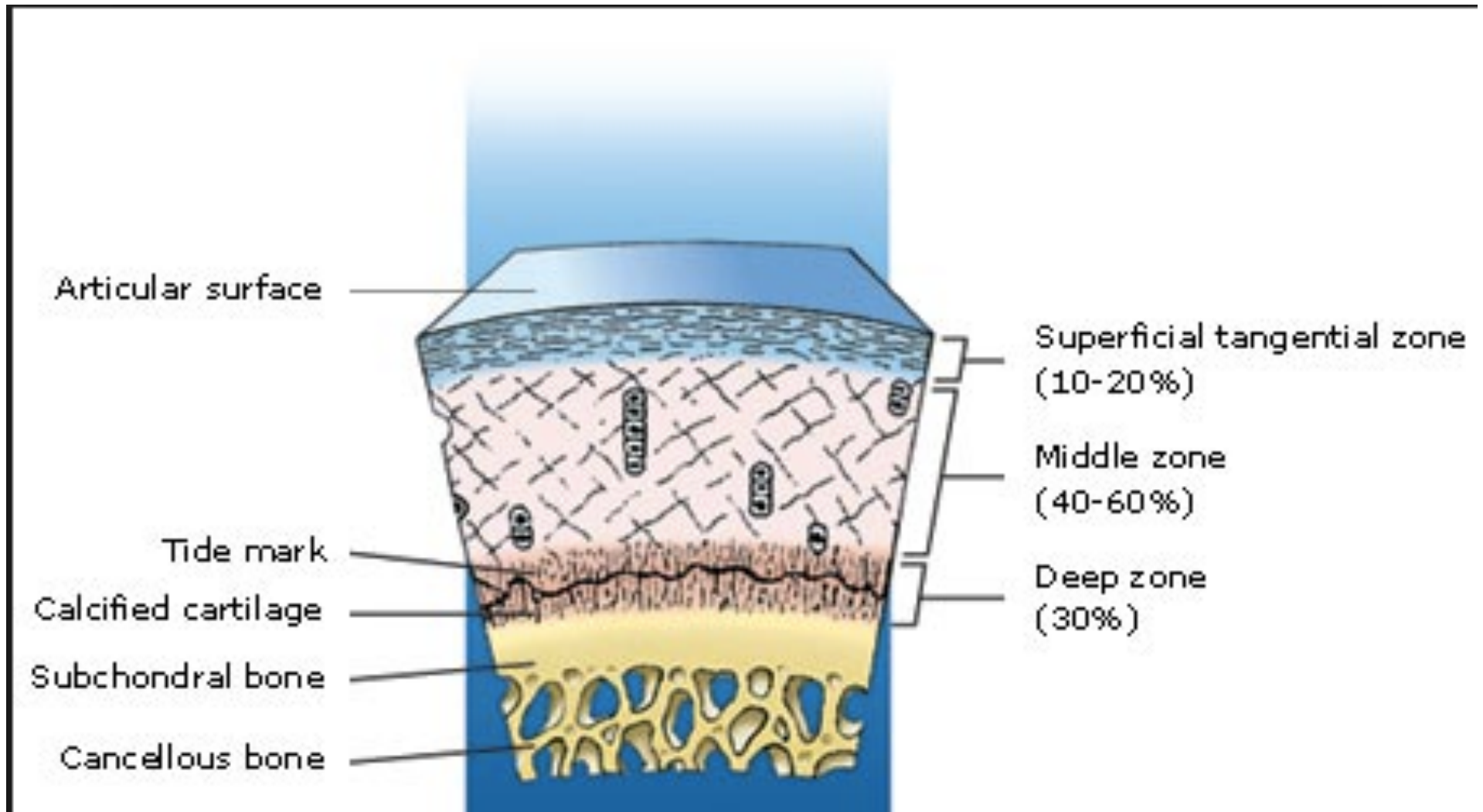
# Acute cartilage lesions In Child and Adulte

## SURGICAL INDICATIONS

**JL Rouvillain  
Fort de France**



Articular cartilage provides an ultimate low-friction gliding surface, which none of the artificial constructs have been able to replace successfully



# Cartilage Acute lesion : Biomechanic

The chondral Structure is configured to resist to **direct pressure forces**

Don't tolerate **shear stress** and **rotations**

Sports with twisting, or very quick directional changes, are particularly harmful for the cartilage

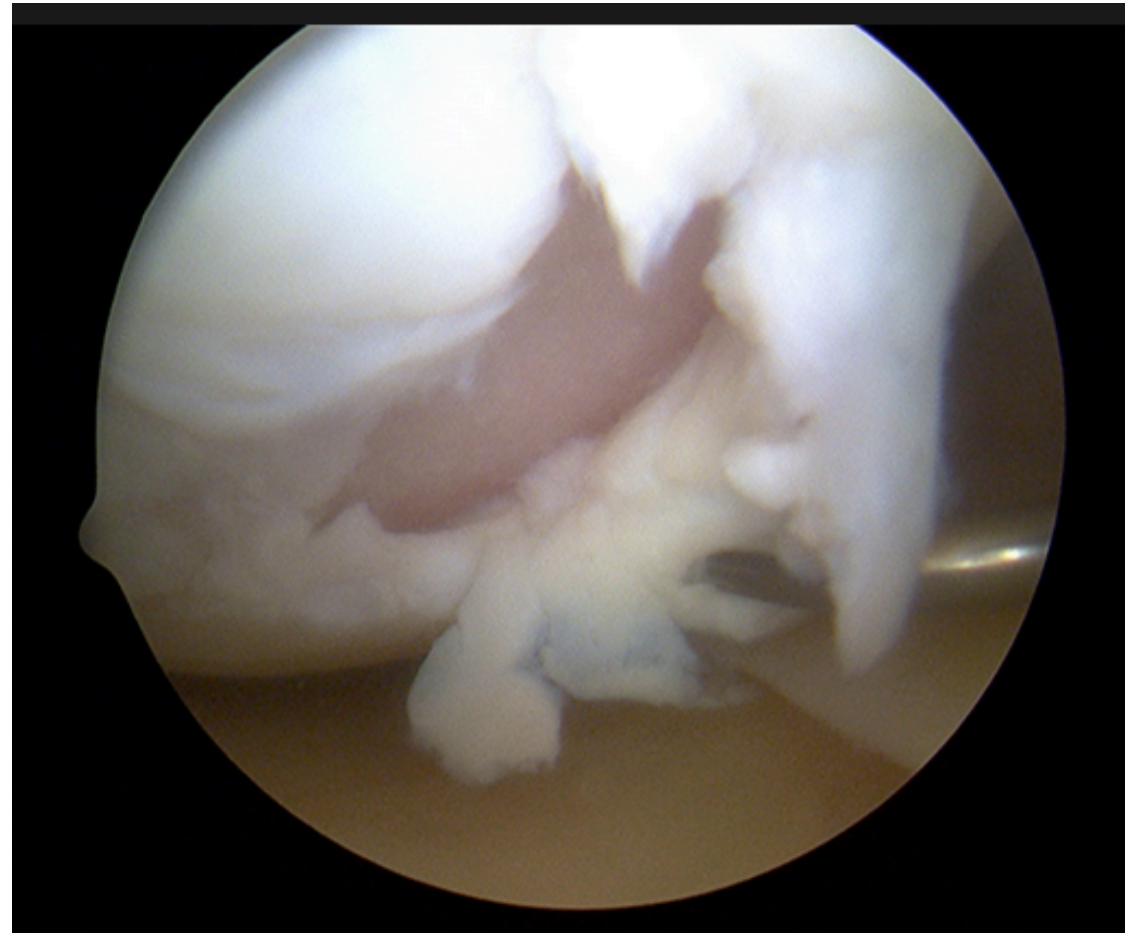


No sport : no Risk  
But not good for cartilage



# Trauma is the most common cause of osteochondral lesions

- sports injury or accidents.
- The shearing force creates a stress fracture through cartilage matrix, and sometimes through subchondral bone.



# Main Etiologies

- Patellar dislocation leads to osteochondral fracture 40–50% in young active patients (20–40 years)
- Osteochondritis in the lateral aspect of the medial femoral condyles in 85% of cases
- Osteonecrosis
  - primary (spontaneous/avascular)
  - secondary to steroid therapy, post-meniscectomy, alcoholism...
  - Osteoarthritis : the most common cause of chondral lesions after age 40
- Direct trauma

# SURGICAL MANAGEMENT OF CHONDRAL LESIONS

## IN EMERGENCY

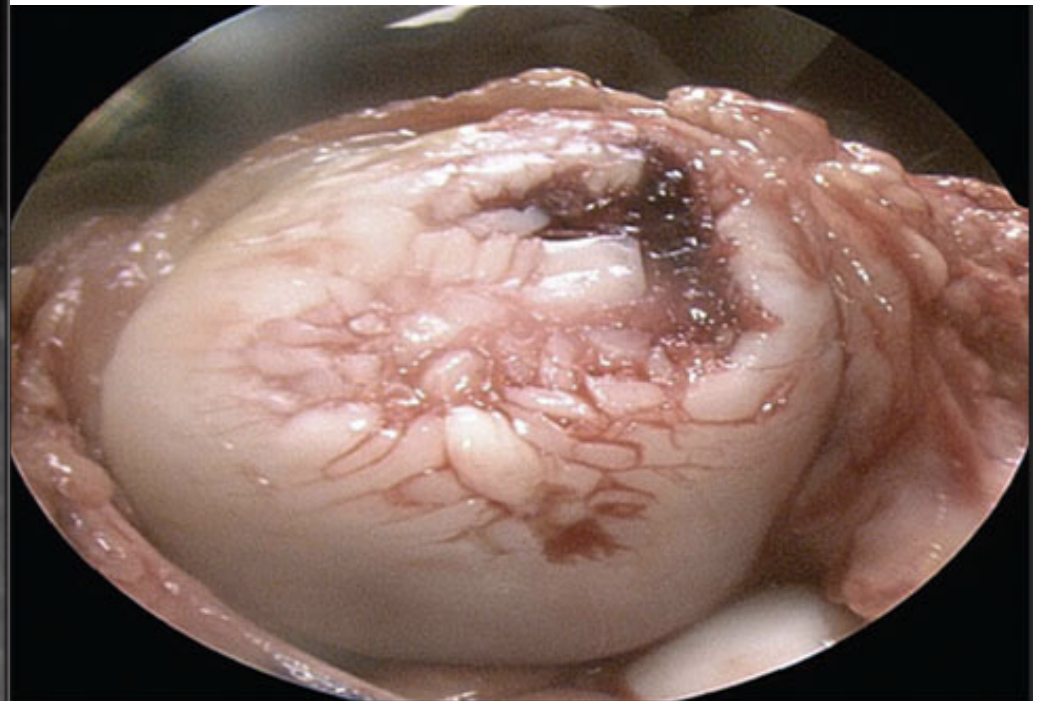
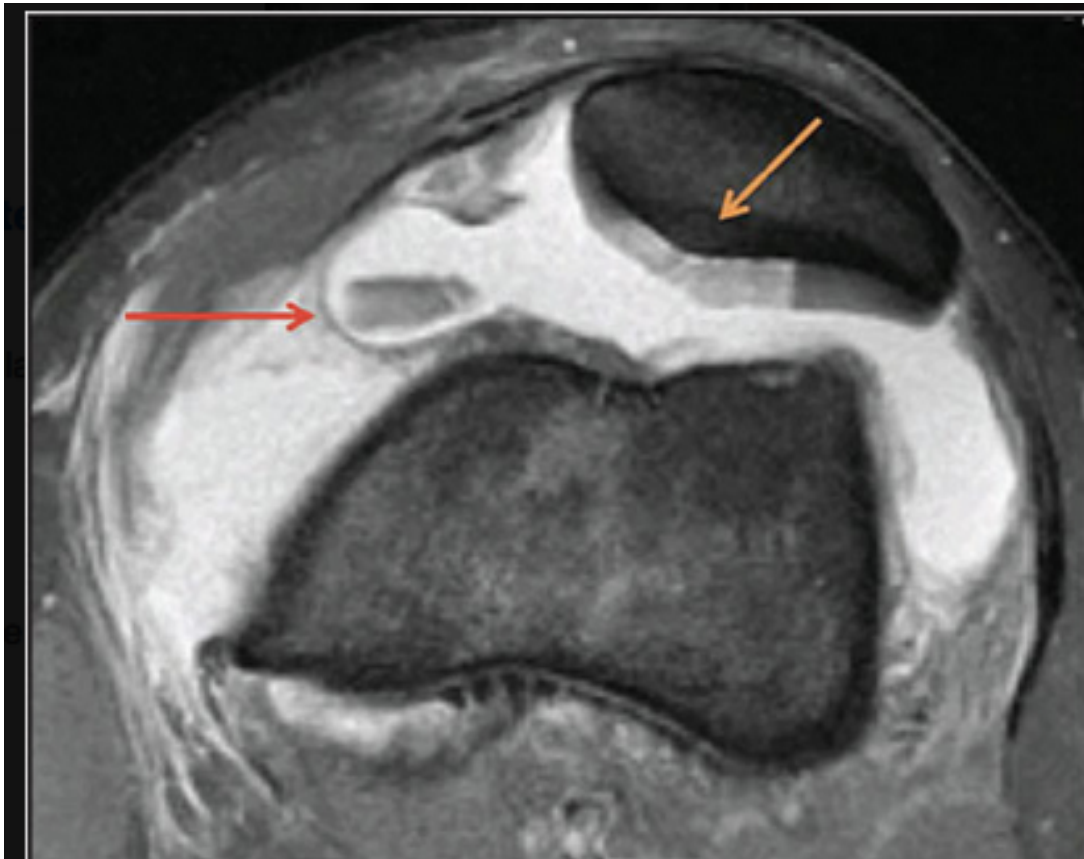
- Arthroscopic debridement and lavage
- Thermal chondroplasty (laser, radio frequency energy)
- Marrow-stimulating techniques
- Osteochondral autograft/mosaicplasty
- Regenerative scaffold

## DELAYED

- Osteochondral allograft
- Autologous chondrocyte implantation (ACI)

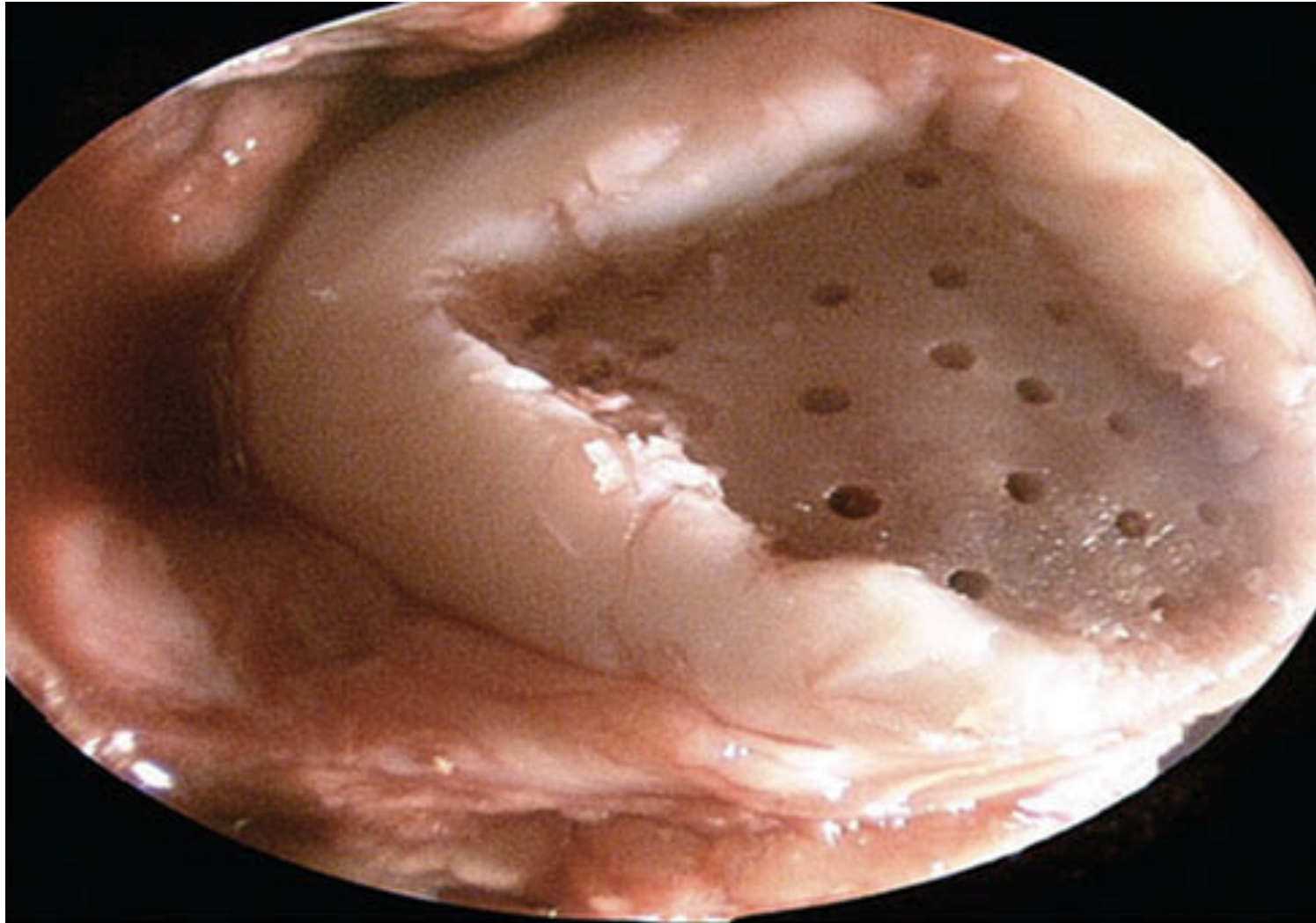
# Acute cartilage lesion after patella dislocation in adult

AV Metzler. *Orthopedics*. 2015; 38(5):310-314.



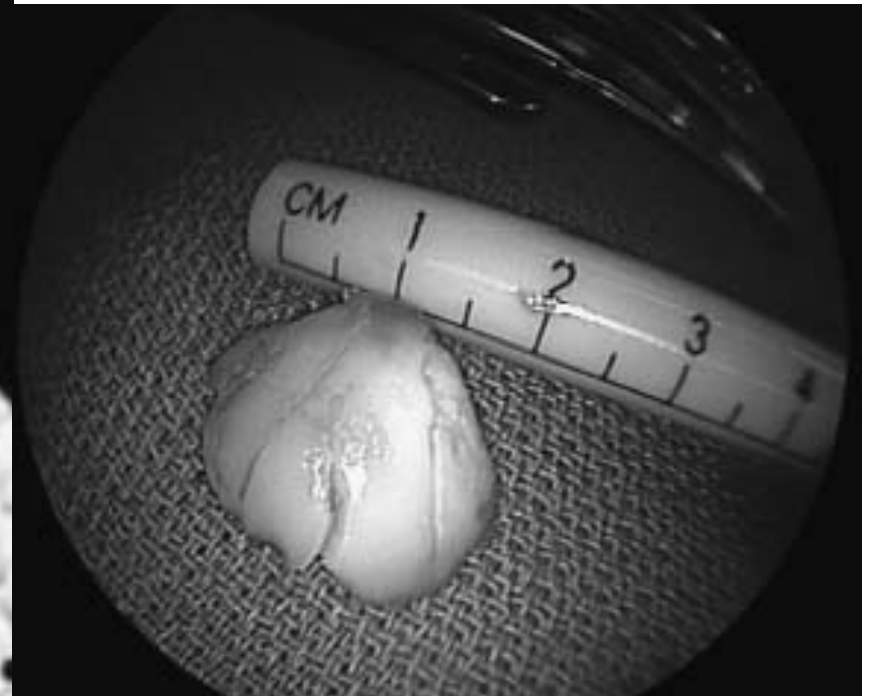
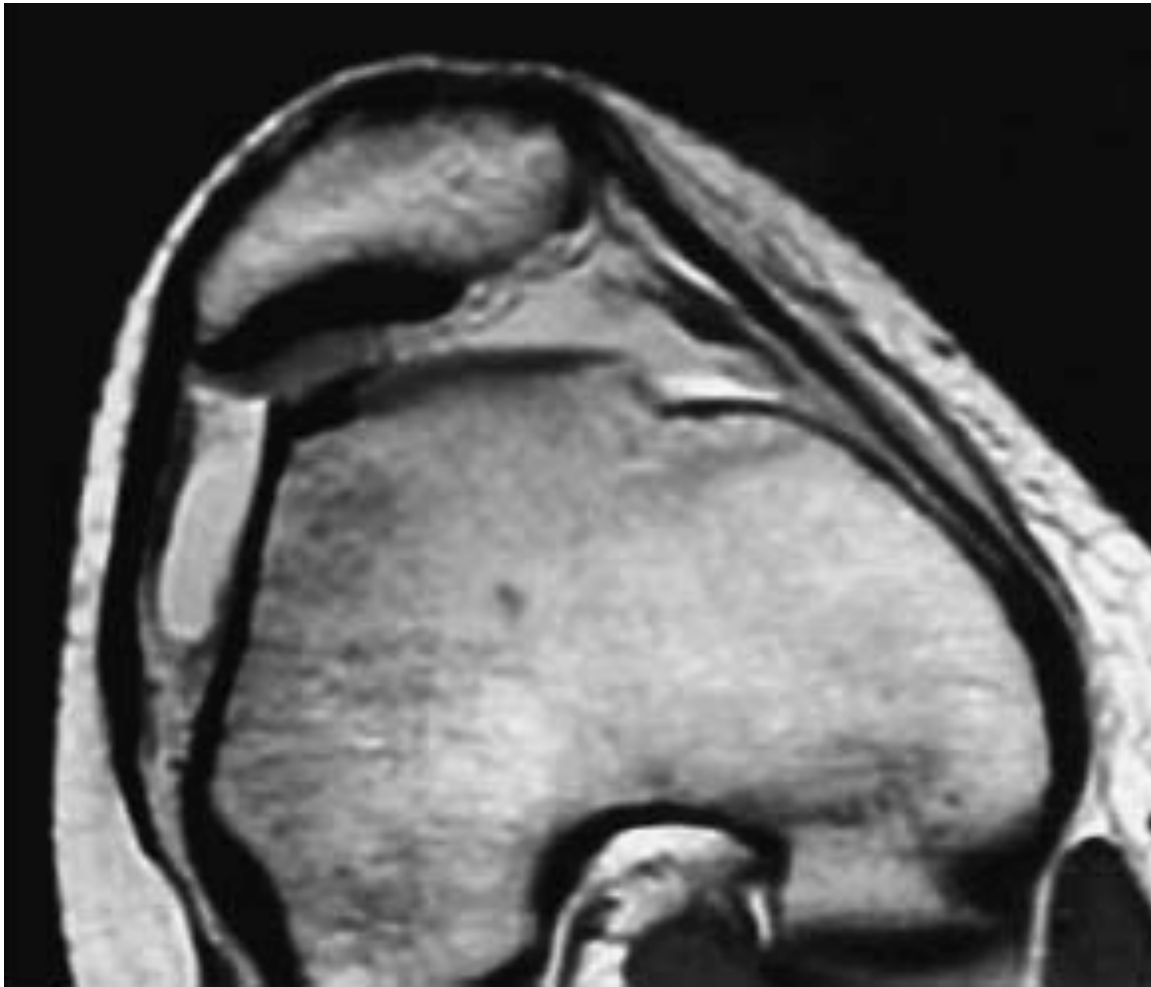


# Debridement, microfractures?

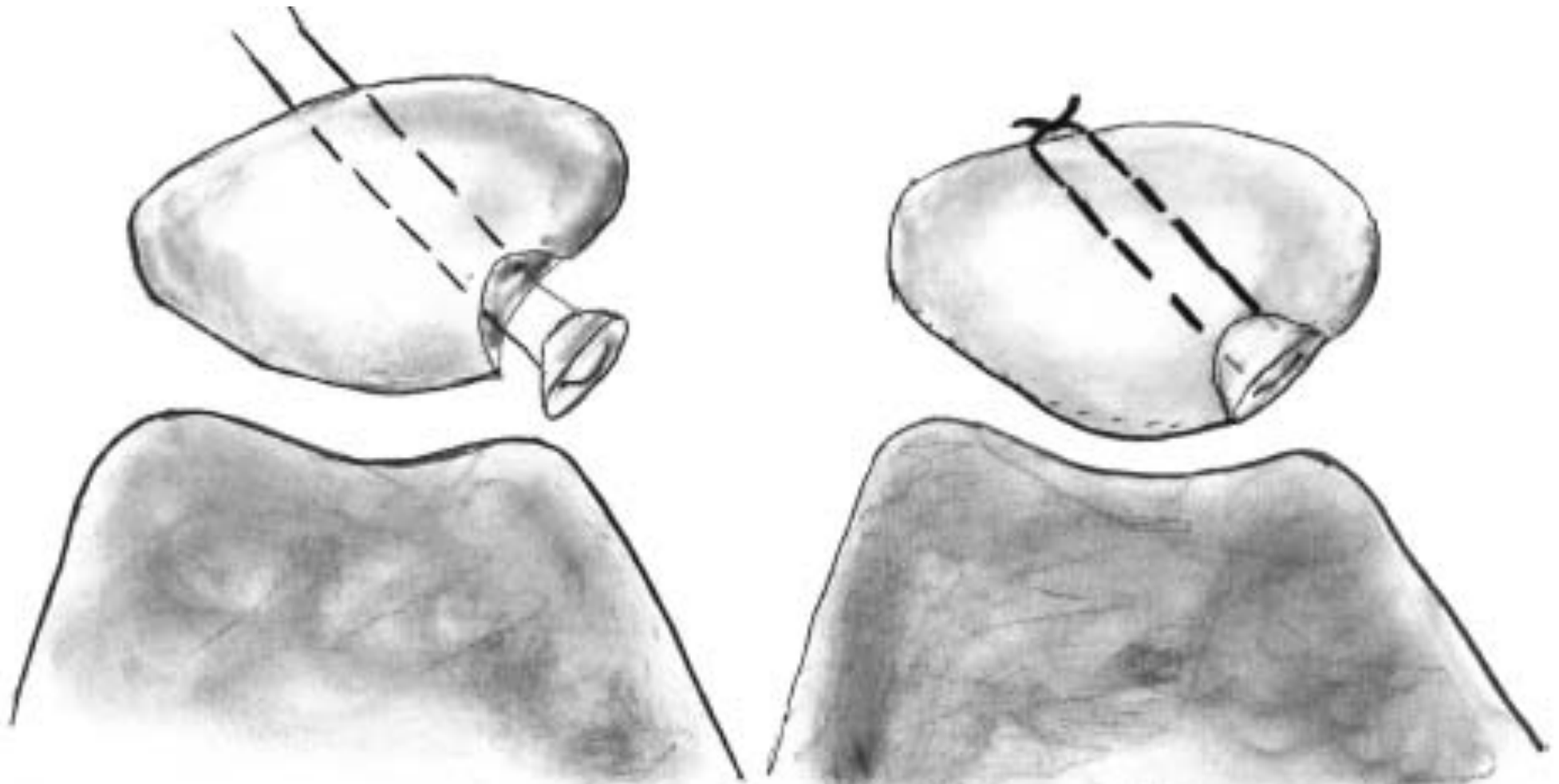


+/- Autologous cells and/or Scaffold

# Medial facet patella on MRI after patella dislocation.



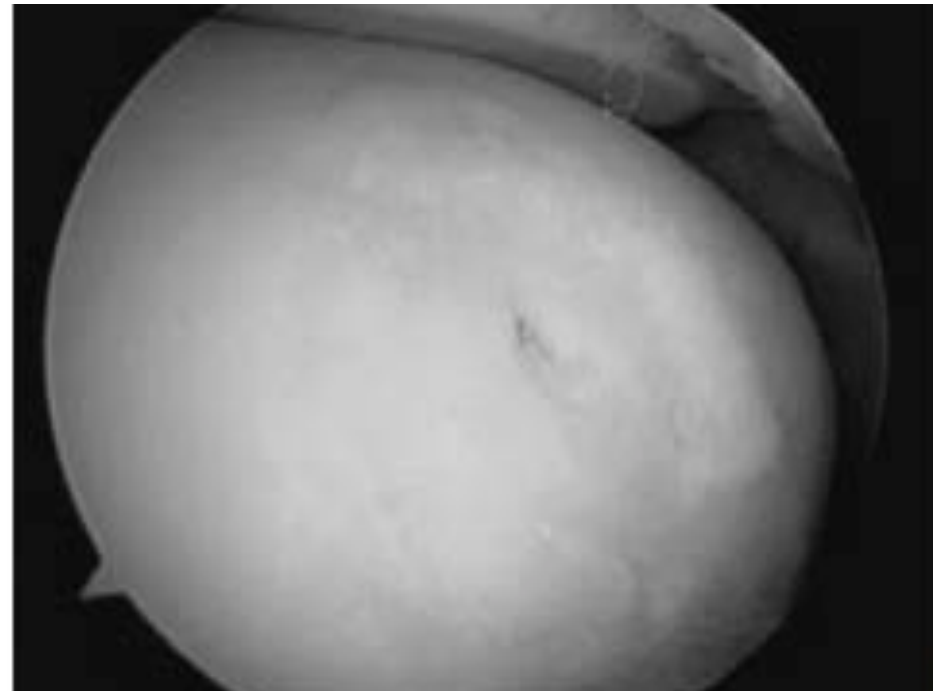
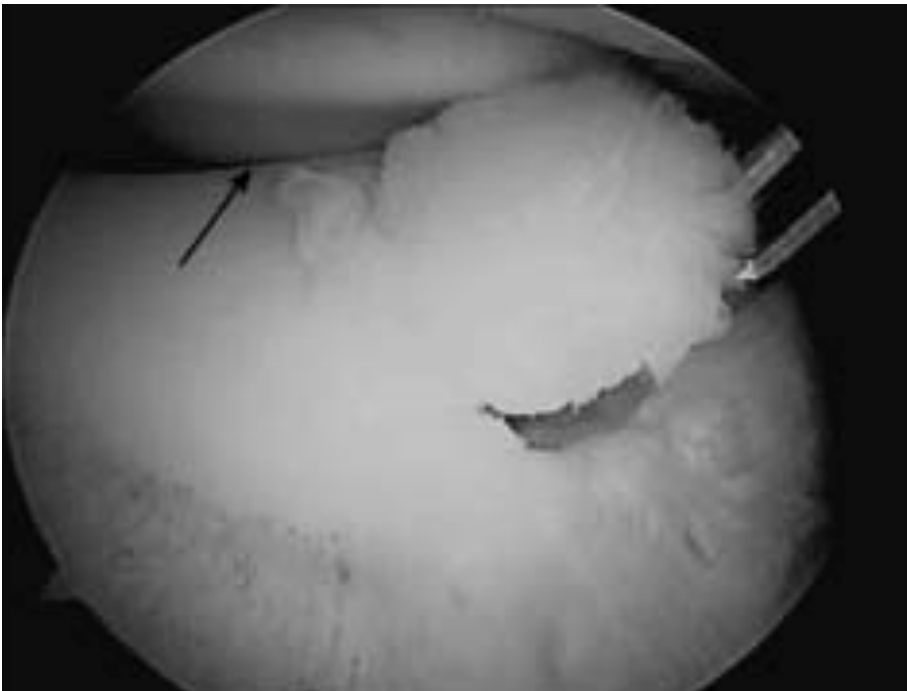
# Suture fixation with PDS



# 16-year-old boy with an osteochondral injury to the trochlear region

Arthroscopically debridement and drilling. Maintained attachment, like a trapdoor. Fixation with an absorbable tack (No need for removal)

Ensure that the head of the tack is countersunk to avoid injury to the opposing articular surface.



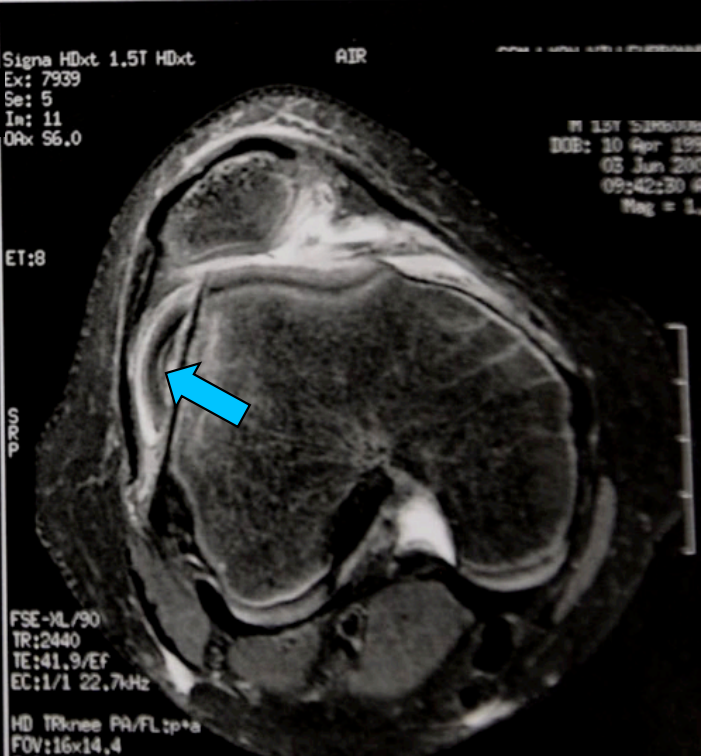
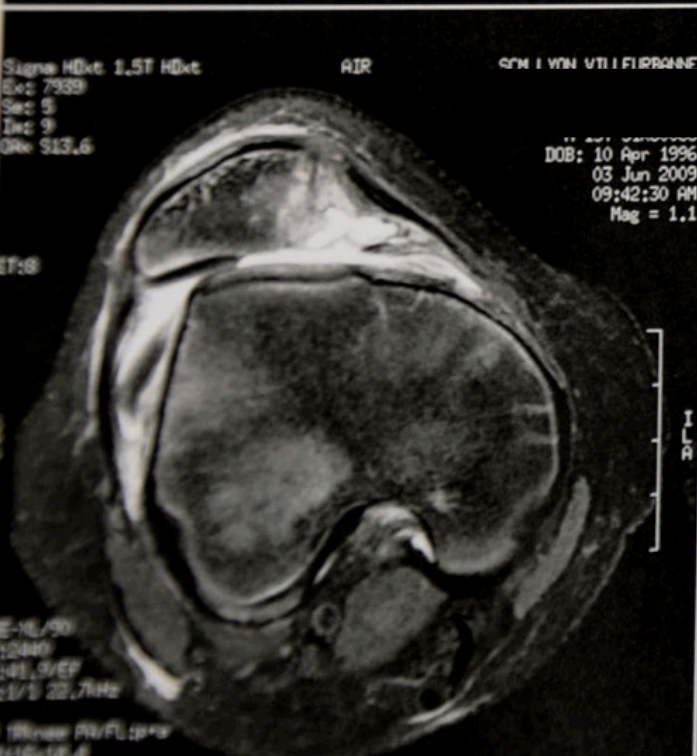
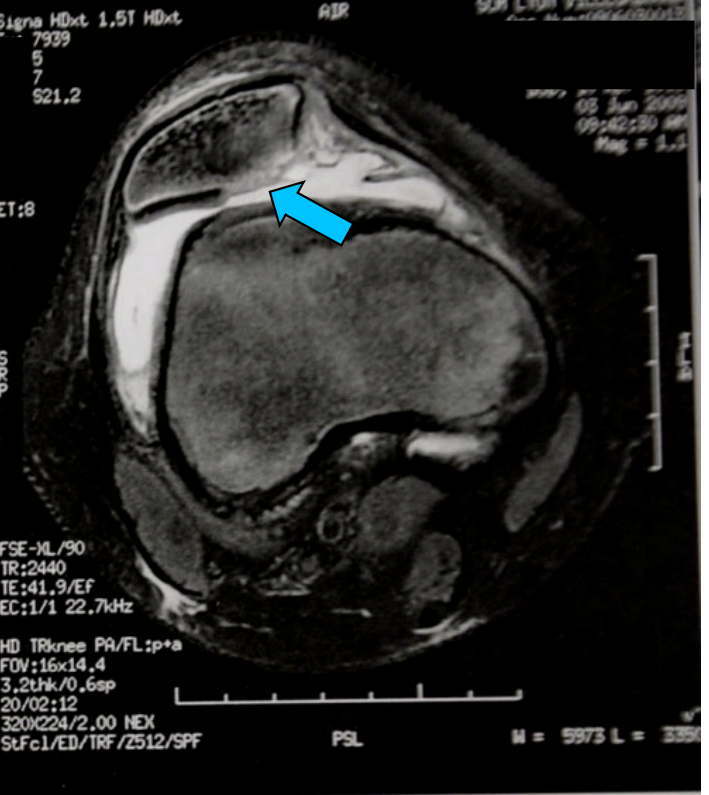
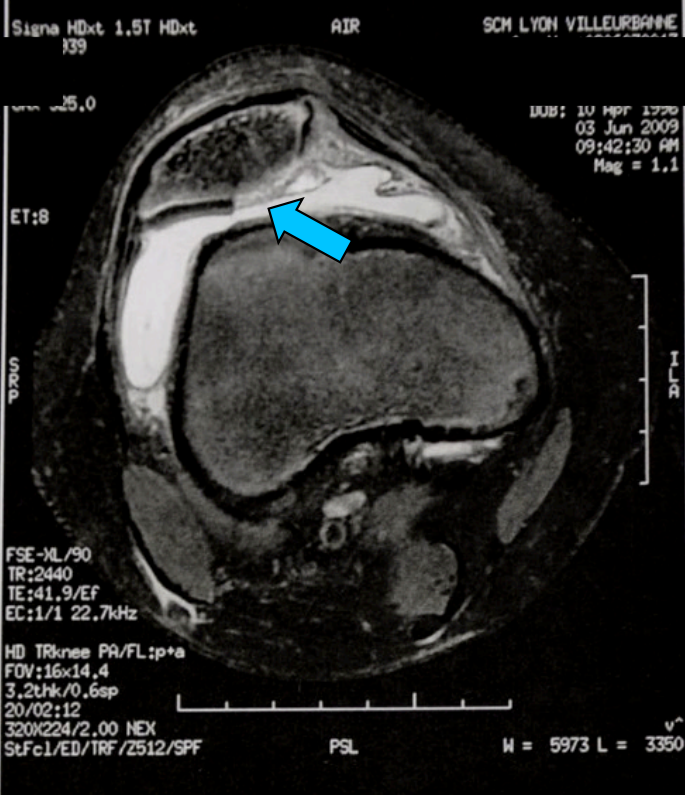
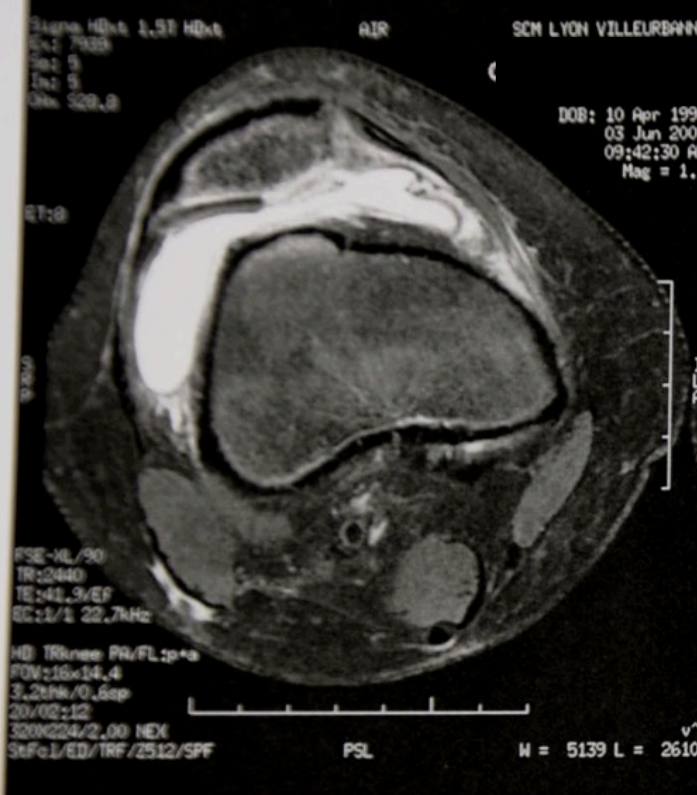
# Post op Result

Photo courtesy of Raffy Mirzayan, M.D.



# Diagnostic is often difficult

- Regular Xrays are often Normal
- All acute knee hemarthrosis must have an MRI



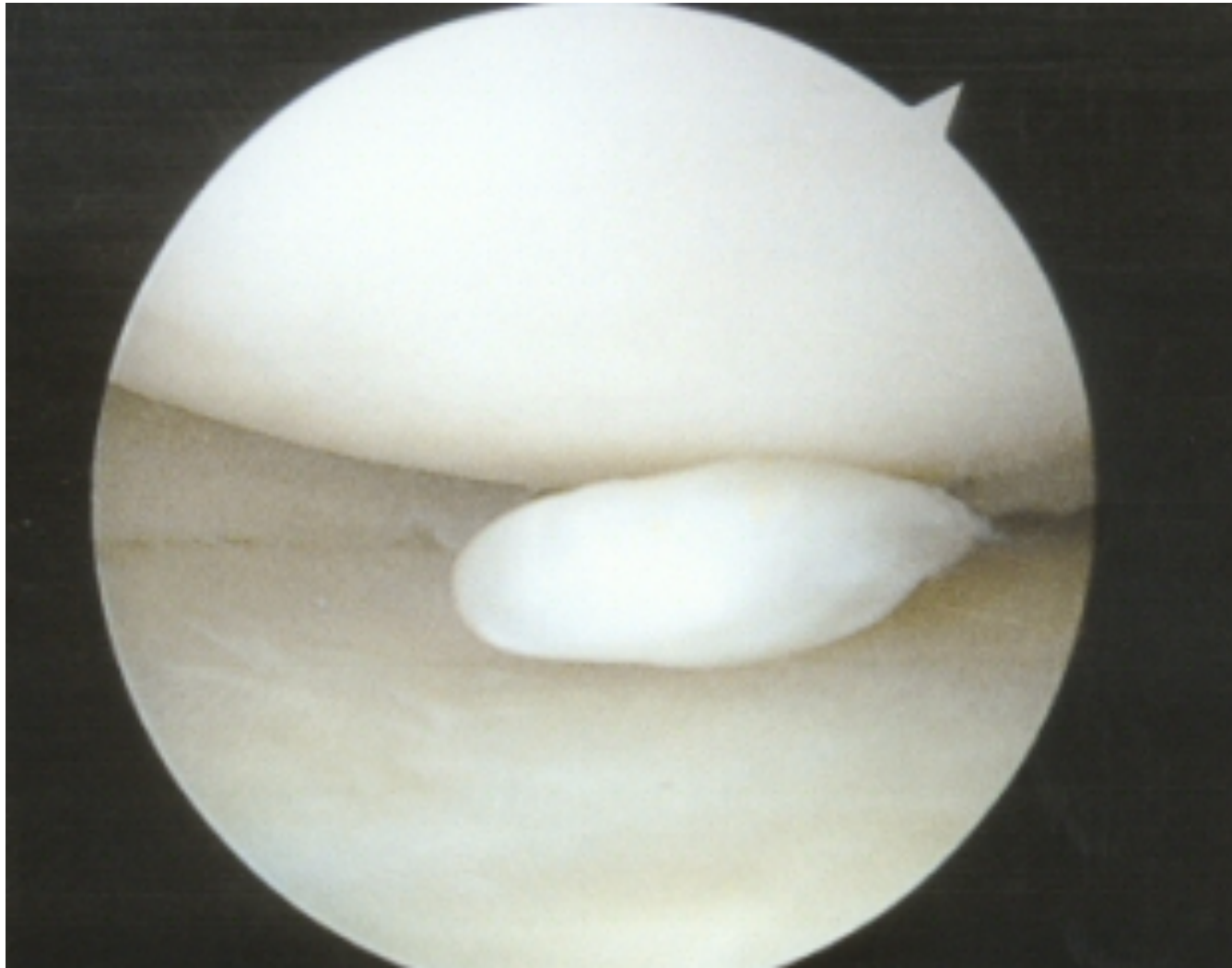
# E Nomura et al. Chondral and osteochondral injuries associated with acute patella dislocation.

Arthroscopy.2003; 19(7):717-721.

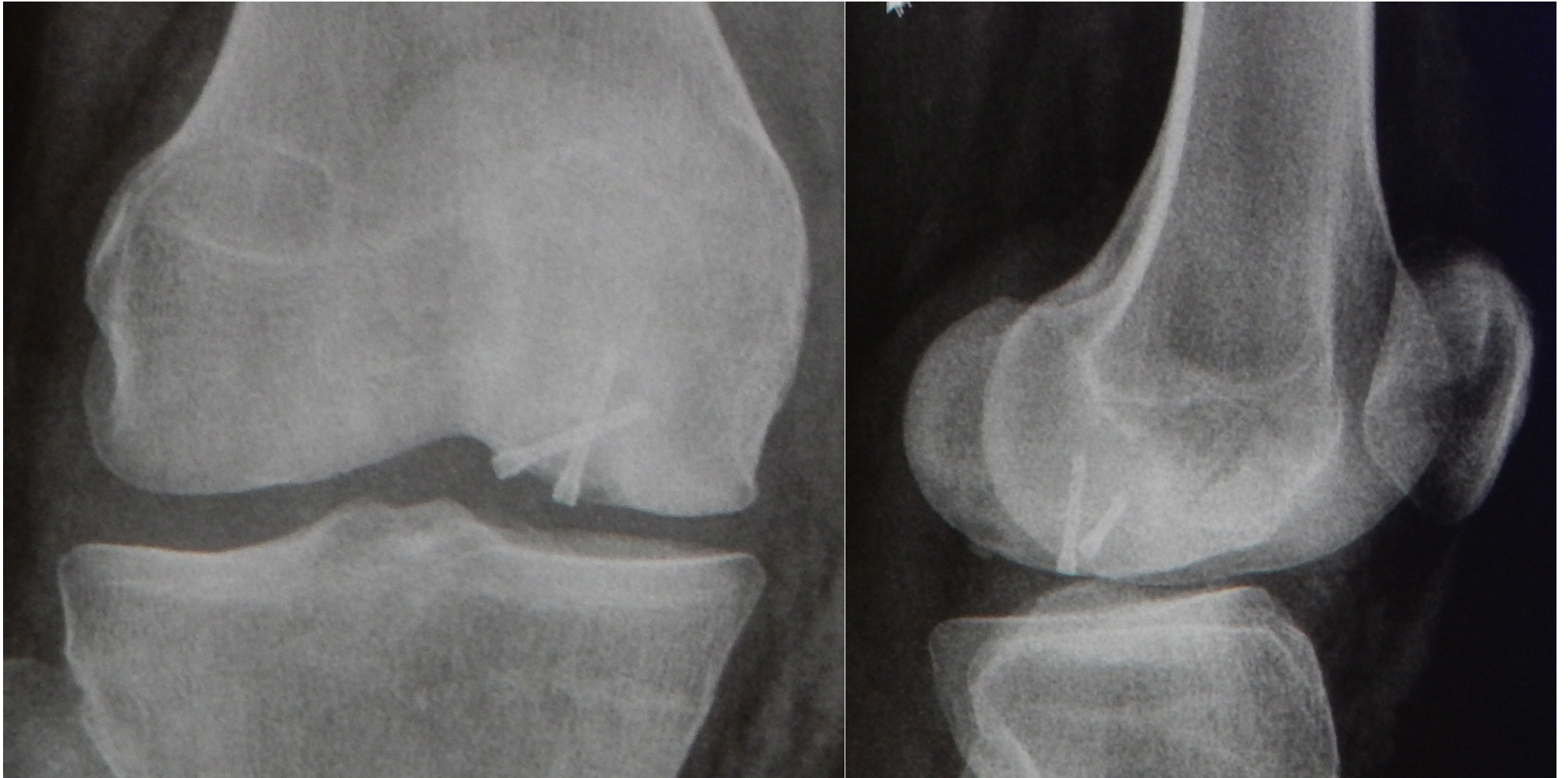
- 17% chondral or osteochondral fracturing,
  - 23% cracks (fissures),
  - 54% both fracturing and cracks (fissures).
- 
- Cause swelling, pain, mechanical symptoms, and functional impairment.



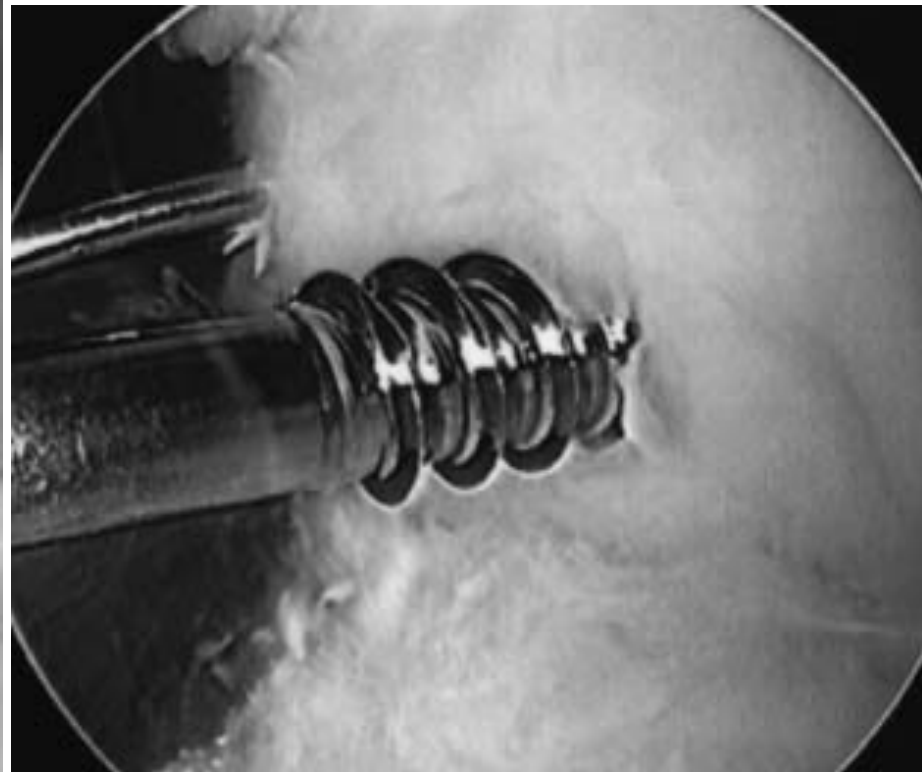
Loose body : Arthroscopic removal  
or repositionning?



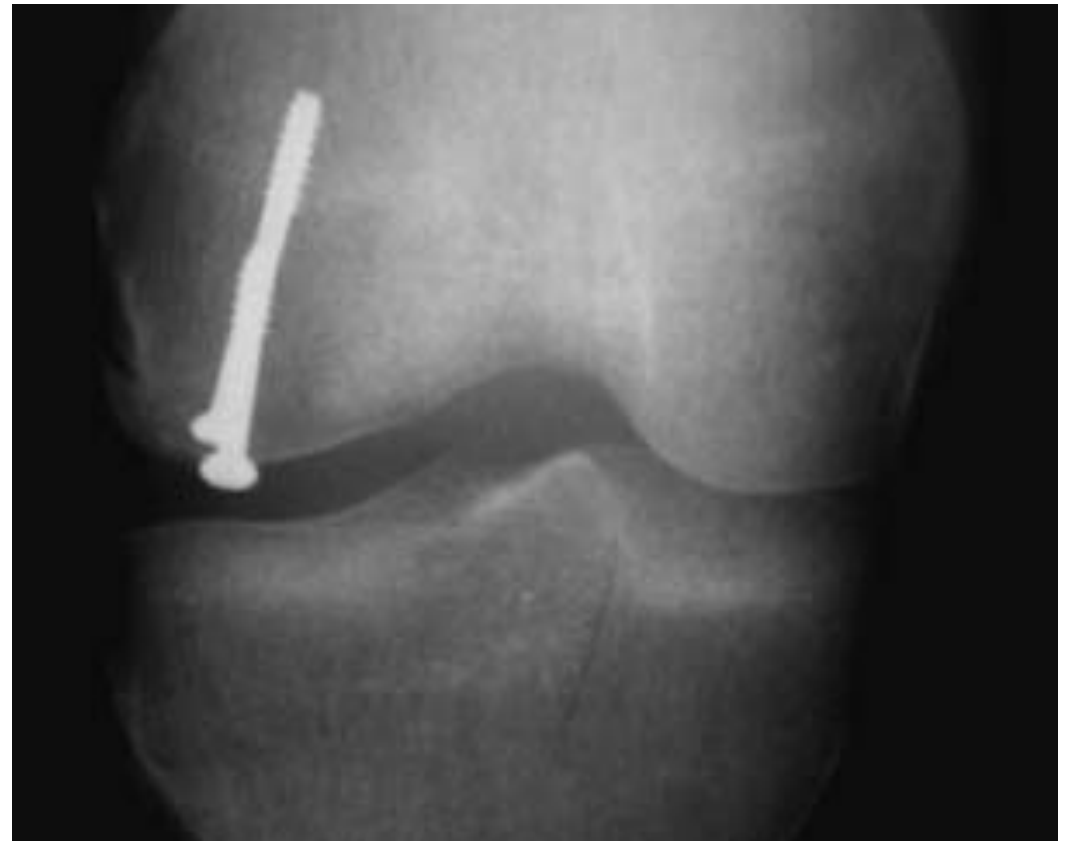
# Fixation with screws



A 16-year-old high-level ballet dancer sustained an injury pivoting during dance



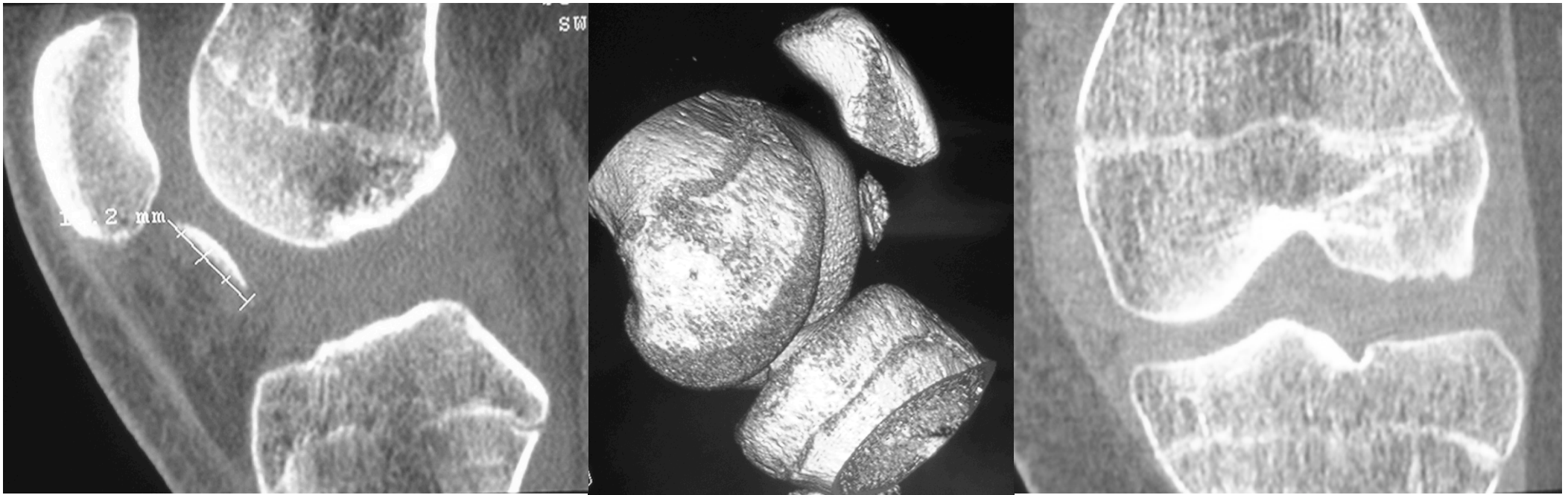
At 2-year follow-up the patient is asymptomatic, has returned to high-level ballet dancing,



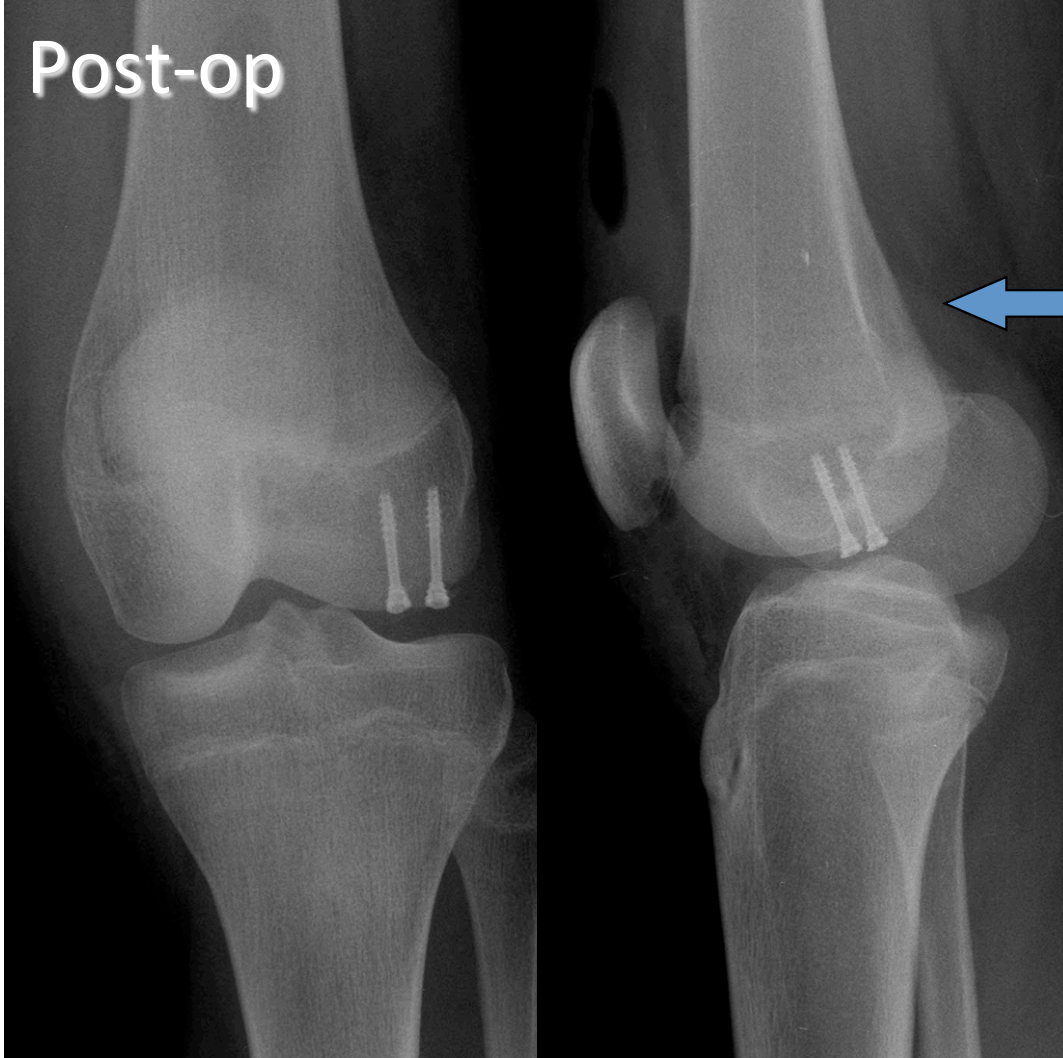
Manon 14 y, No past history

Simple fall

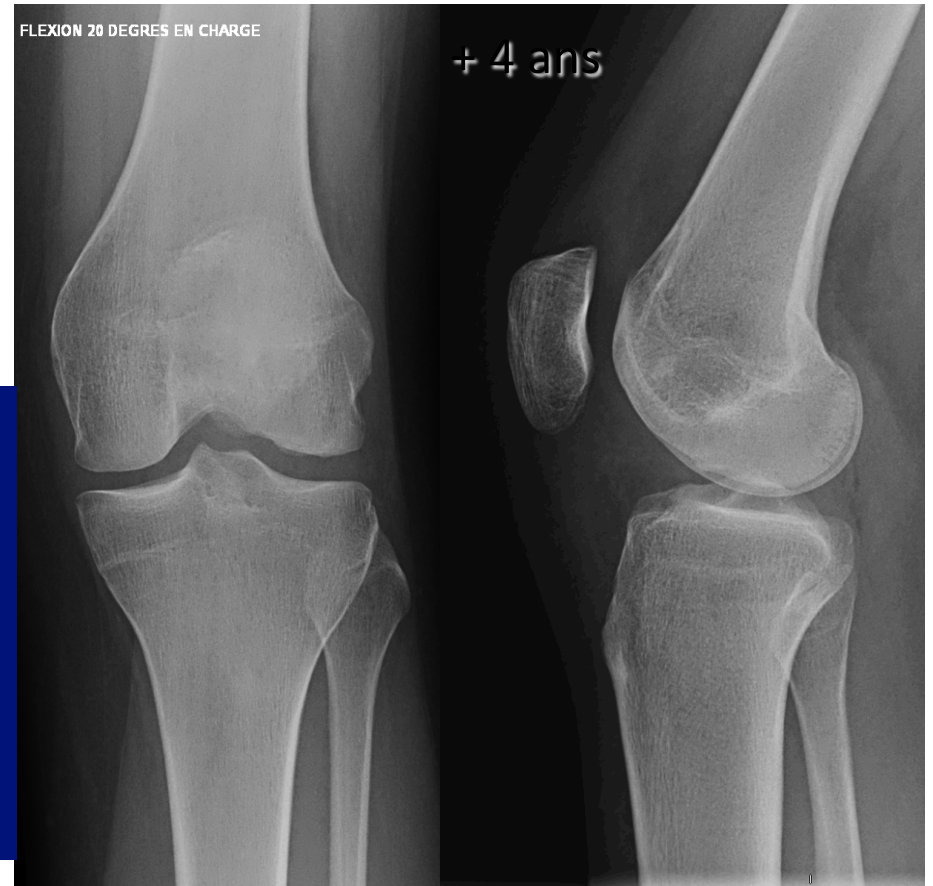
Pain, Hemarthrosis



Post-op

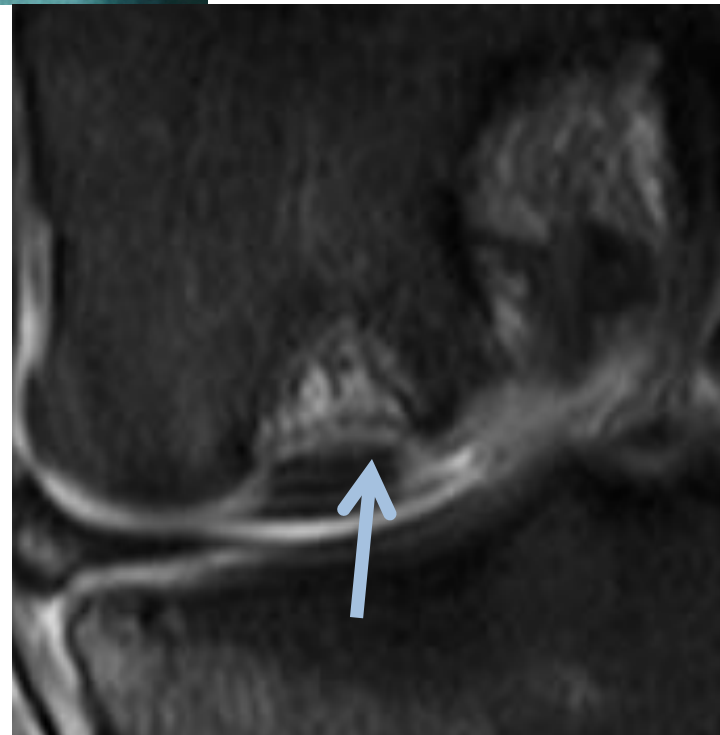
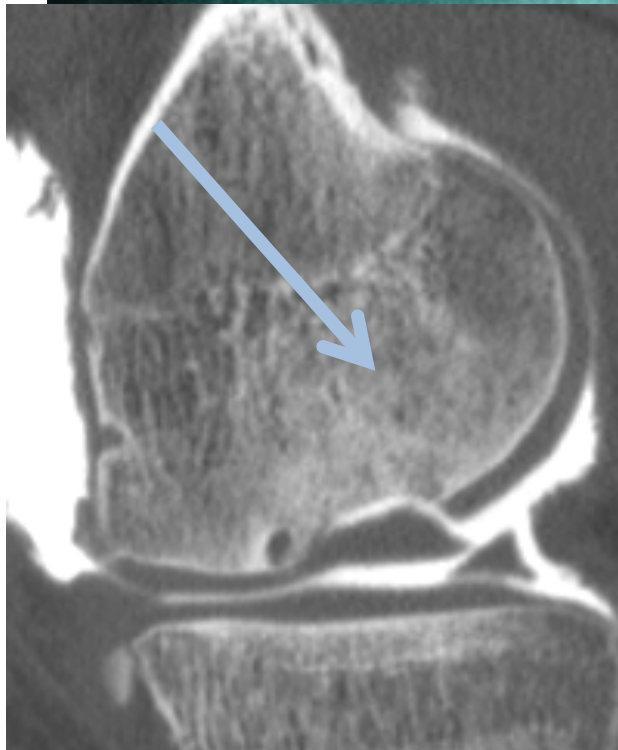
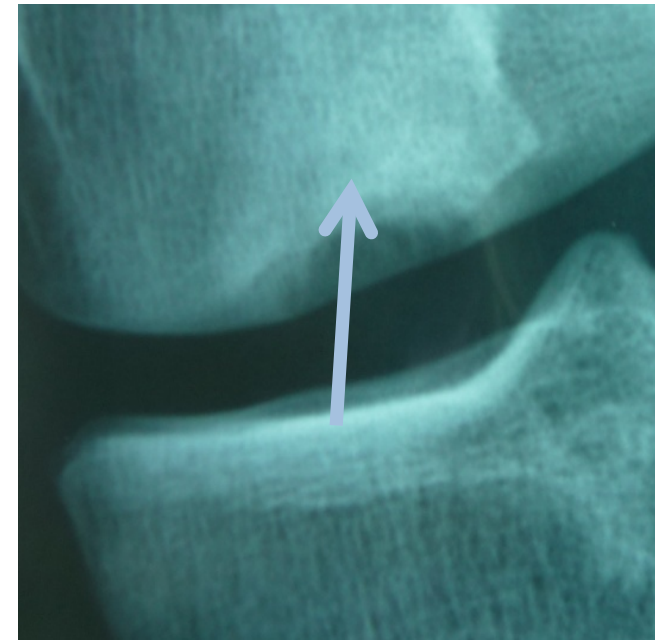
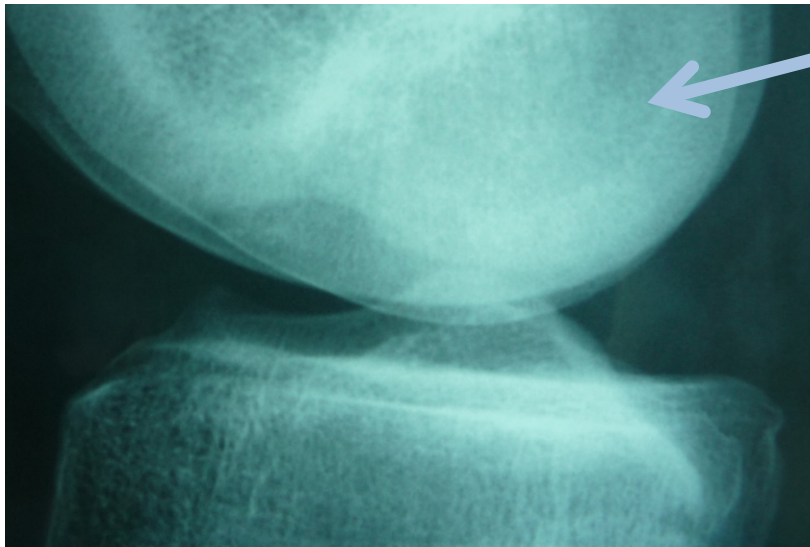


← progressive full weight  
Bearing between 6 and  
8 weeks



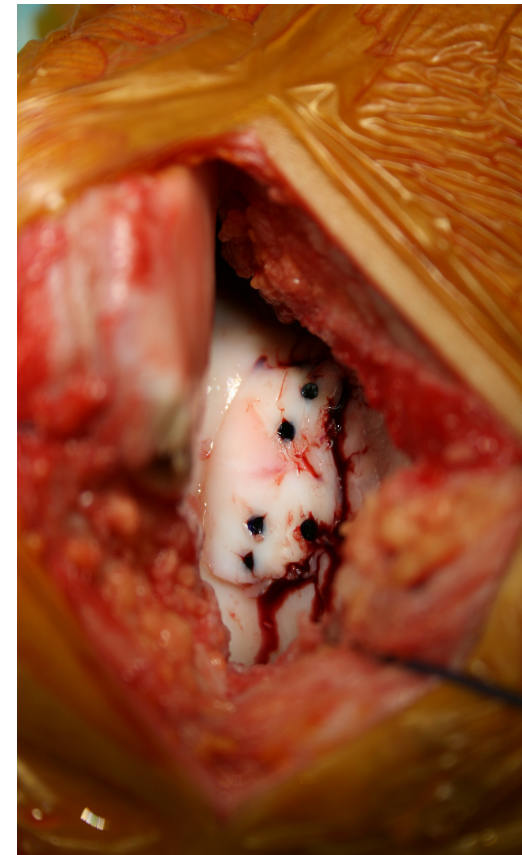
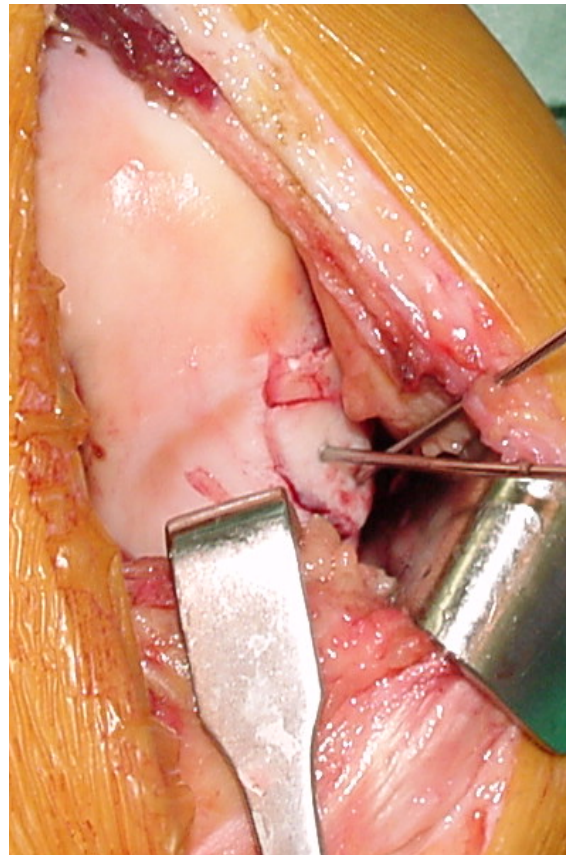
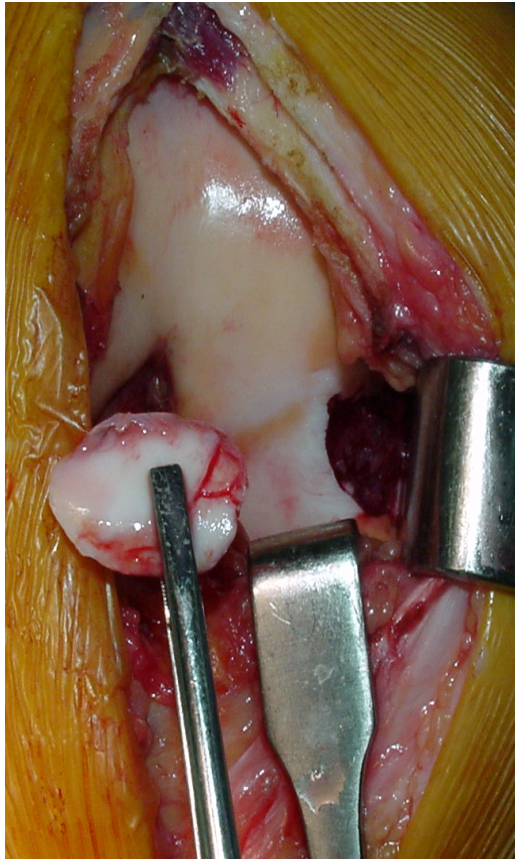
FU 4 y : Very satisfied  
Sweling -, amyotrophy =0  
Mobility : 5/0/140 (5/0/145)  
IKDC Physique B  
IKDC Femoro-patellar C / femoro-tibial A  
Sport Leisure  
Score ICRS II

20 y young man low injury trauma, Past history of knee pain



# Repositioning & fixation ++

weight bearing localisation or  
Large fragment  $> 5 \text{ mm}^2$





# Conclusion for Patella luxation and Osteochondritis

- Repositioning and fixation must be the rule
- But the diagnostic must have be made!



*Moti, AAOS IL 2003*

# 12 Y type II tibial eminence avulsion fracture

Reduction with guidewire. Fixation with a 4.0-cannulated screw



Screw above the physis



# Open Fracture with lost osteo- cartilage defect



## **In emergency**

Wound care

Debridement

If possible medial collateral  
ligament suture

Antibiotherapy

Immobilisation

## **After wound closure : Filling-in Graft :**

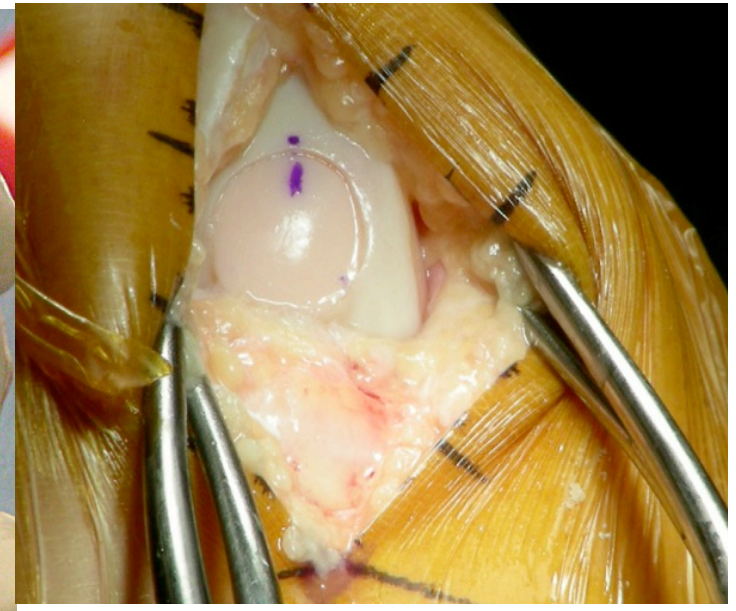
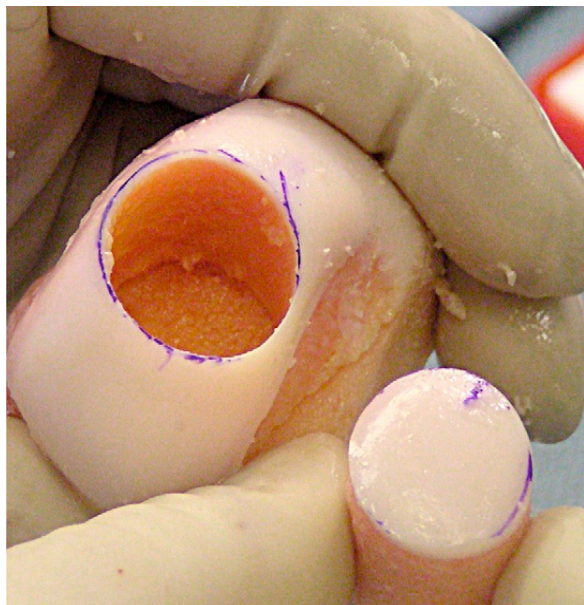
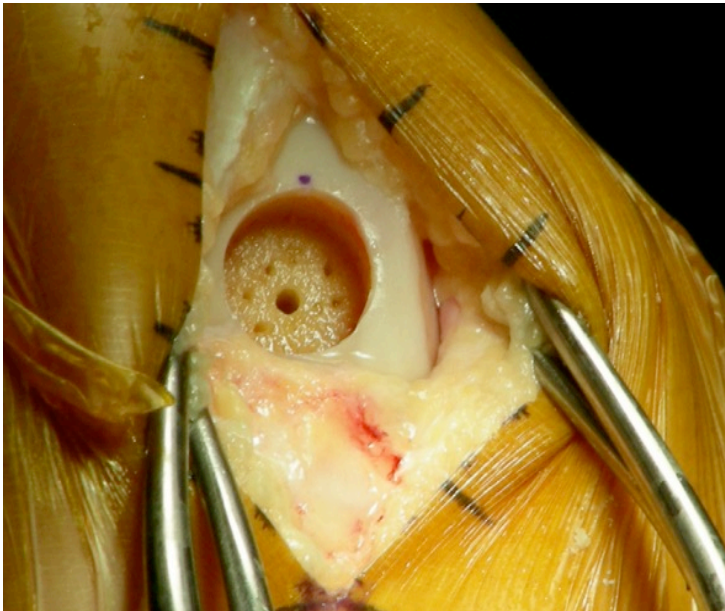
Autologous Iliac crest

Osteocartilage Allograft?

Delayed surgery

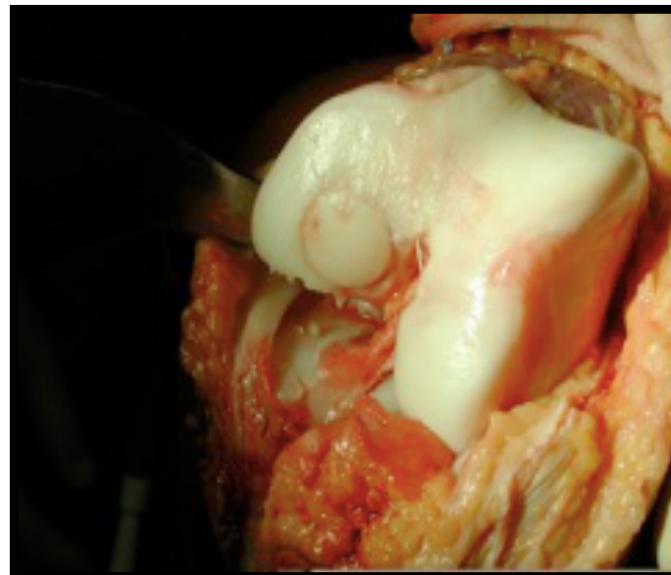
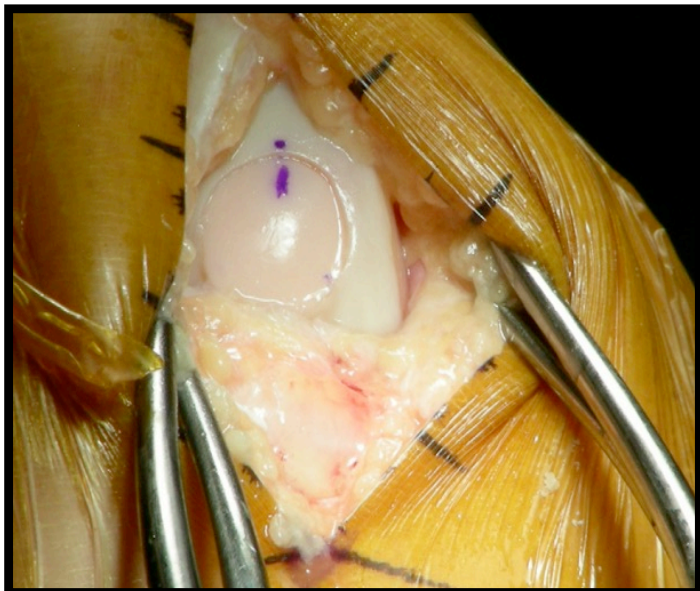
# Osteochondral Allograft

- Bone and cartilage Allograft
- One step, easy to do
- Problems of disponibility and Cost



# Osteochondral fracture. Surface $> 4 \text{ cm}^2$

- Autologous chondrocytes culture (ACC)
- Osteocartilage Autologous Transfert with post condyle (Imoff)



1 euro  
4,5 cm<sup>2</sup>

# Time limit of the repositioning ?

- Idealy : as soon as possible and less than 10 days
- In some cases up to 2 months :with success

# Knee child Hemarthrosis (+/- dysplasy) Rx 4 incidences

## MRI : osteochondral Fracture

weight bearing localisation

OR

Large fragment  $> 5 \text{ mm}^2$



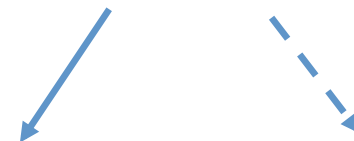
**Repositionind and fixation**

+/- with patella stabilisation surgery

• no weight bearing aera

• and

• Small fragment  $< 5 \text{ mm}^2$



Removal under arthroscopy  
+ micro fractures



JOHN G. COSTOUROS et al.  
Acute Osteochondral Defects in the Knee

[Musculoskeletal Key](https://musculoskeletalkey.com/acute-osteochondral-defects-in-the-knee/)

<https://musculoskeletalkey.com/acute-osteochondral-defects-in-the-knee/>

