

FIRST TIME PATELLAR DISLOCATION: MANAGEMENT, ALGORITHM



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Associate Professor

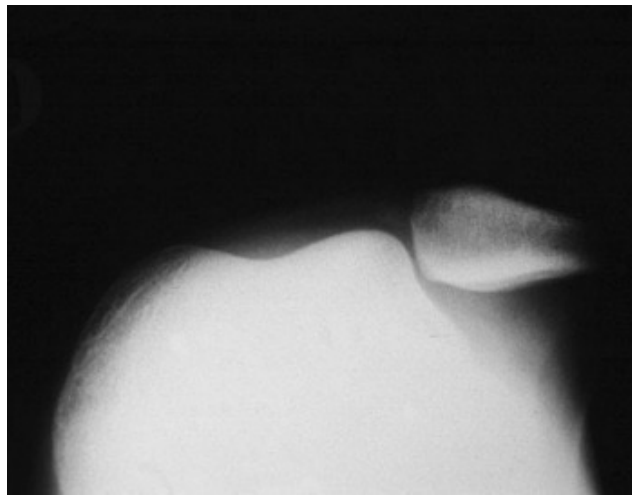
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Introduction

Incidence: 5,8/10000 per year



Peak of incidence: adolescents= 43/10000 per year



Murray et al Clin Sports Med Jan 2022

Risks : First Time patellar dislocation

- (Osteo)Chondral fracture

➤ Clinical examples

- Recurrence

➤ How to assess the risk?

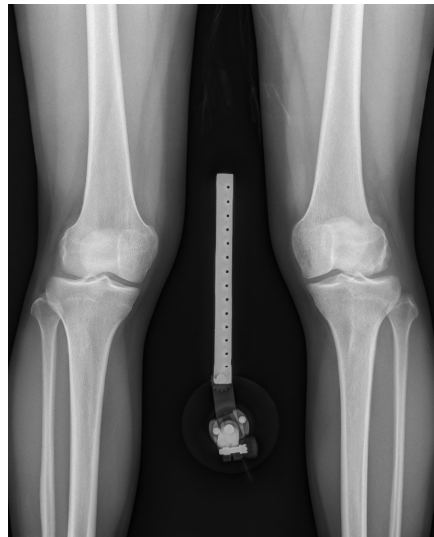
Surgical versus non-surgical interventions for treating patellar dislocation (Review)
Smith TO, Donell S, Song F, Hing CB



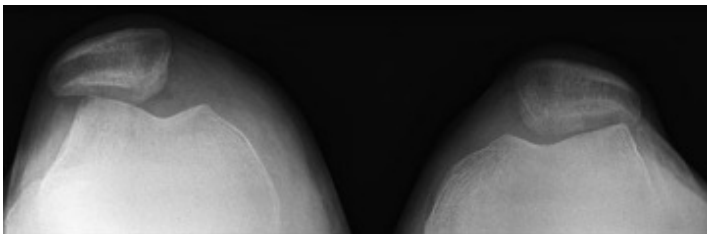
Imaging

Which exams?

- Radiographs
- AP, Lateral



- Comparative Skyline views at 30°



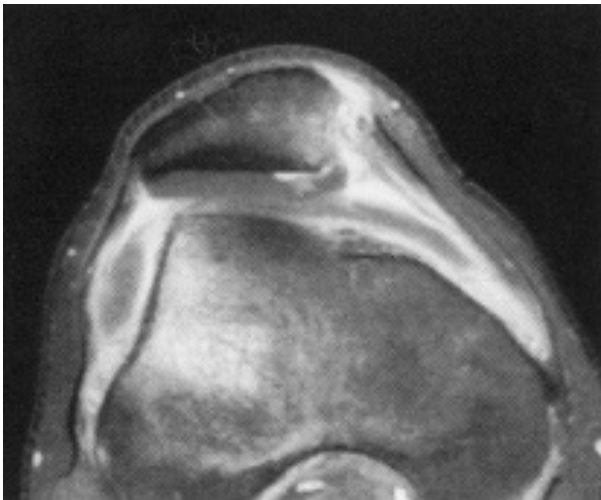
Why?

- Fracture?
- Effusion
- Trochlear Dysplasia
- Patella height
- Patellar tilt

Imaging

Which exams ?

- **MRI**



Original Paper | [Published: 02 June 2020](#)

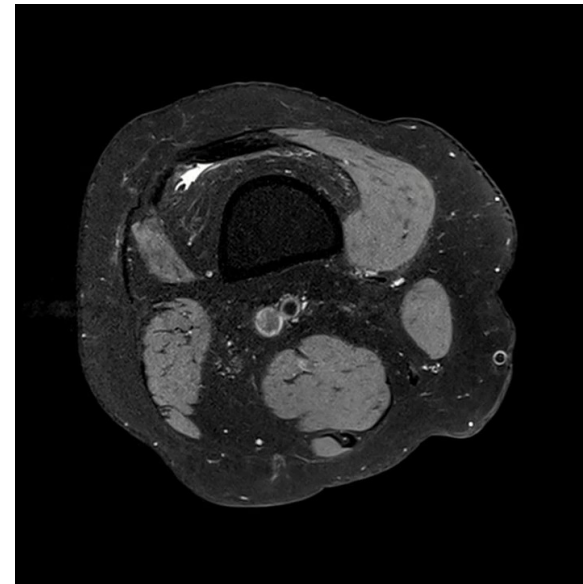
Acute instability of the patella: is magnetic resonance imaging mandatory?

[Dominique Saragaglia](#) , [J. J. Banihachemi](#) & [R. Refaie](#)

[International Orthopaedics](#) **44**, 2299–2303 (2020) | [Cite this article](#)

Why?

- **Chondral fracture+++**
- **MPFL lesion**



Analysis: MPFL

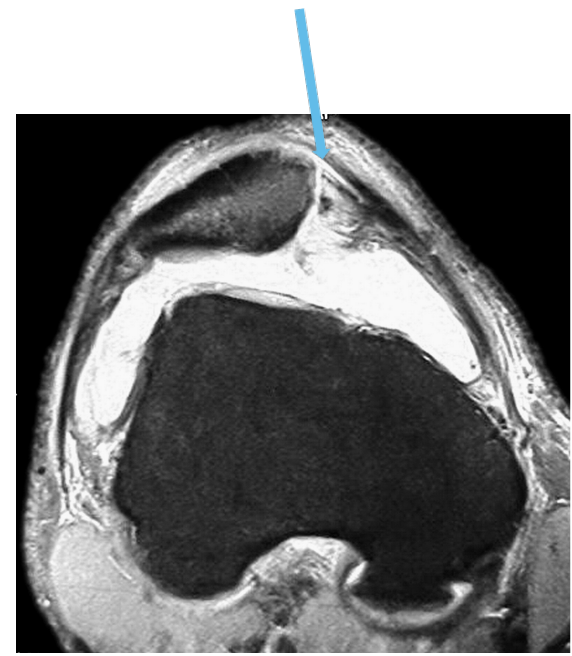
- Location of lesion:



FEMUR 34%



MID SUBSTANCE 12%



PATELLA 54%

LOCATION OF THE LESION: OF IMPORTANCE?

Evaluation of risk correlation between recurrence of patellar dislocation and damage to the medial patellofemoral ligament in different sites caused by primary patellar dislocation by MRI: a meta-analysis

Boyong Jiang^{1†}, Chenggang Qiao^{2†}, Yuting Shi³, Yizhong Ren⁴, Changxu Han^{4*}, Yong Zhu⁵ and Yuyan Na^{4**}

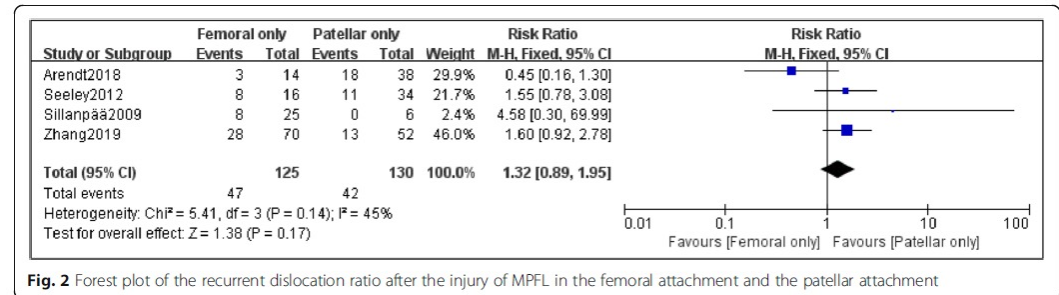
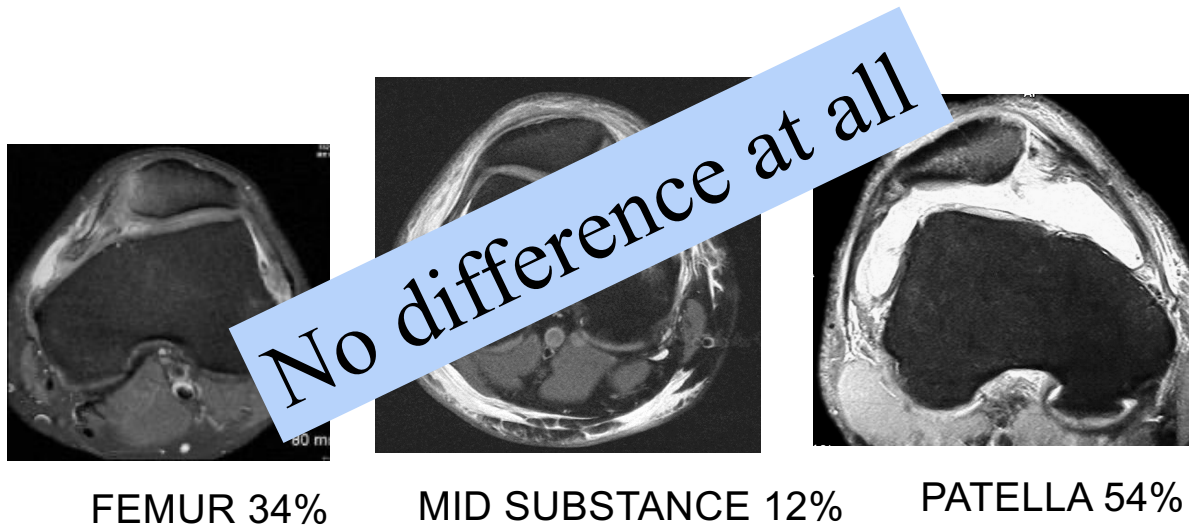


Fig. 2 Forest plot of the recurrent dislocation ratio after the injury of MPFL in the femoral attachment and the patellar attachment



Patellar instability severity score:

Knee Surg Sports Traumatol Arthrosc (2014) 22:2308–2314
DOI 10.1007/s00167-013-2650-5

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Which patellae are likely to redislocate?

Peter Balcerek · Swantje Oberthür · Stephanie Hopfensitz ·
Stephan Frosch · Tim Alexander Walde · Martin Michael Wachowski
Jan Philipp Schüttrumpf · Klaus Michael Stürmer

Risk factors	Redislocation (%)	No redislocation (%)	Odds ratio (95 % CI)
Age (years)			
≤16	27 (71)	3 (15)	11.2 (3.079–40.78)
>16	11 (29)	17 (85)	
Bilateral instability	10 (26)	2 (10)	3.167 (0.62–16.06)
Trochlear dysplasia			
Mild	6 (15)	9 (43)	4.25 (1.25–14.47)
Severe	34 (85)	12 (57)	
Patellar height			
≤1.2	16 (42)	10 (50)	1.364 (0.47–3.96)
>1.2	22 (58)	10 (50)	
TT–TG (mm)			
<16	20 (53)	12 (60)	1.47 (0.50–4.32)
≥16	18 (47)	8 (40)	
Patellar tilt (°)			
≤20	20 (53)	14 (70)	1.93 (0.62–6.04)
>20	18 (47)	6 (30)	

TT–TG tibial tuberosity–trochlear groove, CI confidence interval

Risk factors	Points
Age (years)	
>16	0
≤16	1
Bilateral instability	
No	0
Yes	1
Trochlear dysplasia	
None	0
Mild	1
Severe	2
Patellar height	
≤1.2	0
>1.2	1
TT–TG (mm)	
<16	0
≥16	1
Patellar tilt (°)	
≤20	0
>20	1
Total points	7

≥4 = RISK X 5

Prediction models?

Current Reviews in Musculoskeletal Medicine (2018) 11:253–260
<https://doi.org/10.1007/s12178-018-9480-5>

ADVANCES IN PATELLOFEMORAL SURGERY (L REDLER, SECTION EDITOR)

Predicting Risk of Recurrent Patellar Dislocation

Shital N. Parikh¹ • Marios G. Lykissas² • Ioannis Gkiatas³

Risk factors	Average predicted risk of recurrence	Treatment recommendation
0	13.8%	Conservative treatment
1	30.1%	Conservative treatment
2	53.6%	Surgery optional
3	74.8%	Surgical treatment
4	88.4%	Surgical treatment

Factors:

Trochlear dysplasia (BD)

Controlateral dislocation

Open physis

Patellar height (C&D index) > 1,45

Which Treatment????

NON OPERATIVE TREATMENT

Knee

EOR | VOLUME 4 | MARCH 2019
DOI: 10.1302/2058-5241.4.180016
www.efortopenreviews.org



EFORT open reviews

Plaster, splint, brace, tape or functional mobilization after first-time patellar dislocation: what's the evidence?

Daan Vermeulen
Mara Rosa van der Valk
Laurens Kaas

NO EVIDENCE AT ALL

Author	Year	No of patients	Redislocation				Kujala score			Lysholm knee score	
			Cast	Splint	Brace	Tape	Cast	Splint	Brace	Tape	Cast
Mäenpää and Lehto ¹⁰	1997	100	38%	47%	57%	–	80	82	74	–	–
Rood et al ¹⁶	2012	18	0%	–	–	0%	–	–	–	100	76
Garth et al	1996	59	functional rehabilitation program				recurrence 26%				

What if fracture/chondral avulsion?

- ☐ Removal alone CHONDRALE FRAGMENTS? IF >5mm
- ☐ Probably not in emergency
- ☐ Depending on the indication to stabilize the patella or not

FIXATION (OSTEO)CHONDRAL FRAGMENTS AND MPFL RECONSTRUCTION

Clinical outcomes after absorbable suture fixation of patellar osteochondral fracture following patellar dislocation

Zu-Xi Li, Huang-He Song, Qing Wang, Dun-Ming Guo

Ann Transl Med 2019;7(8):173

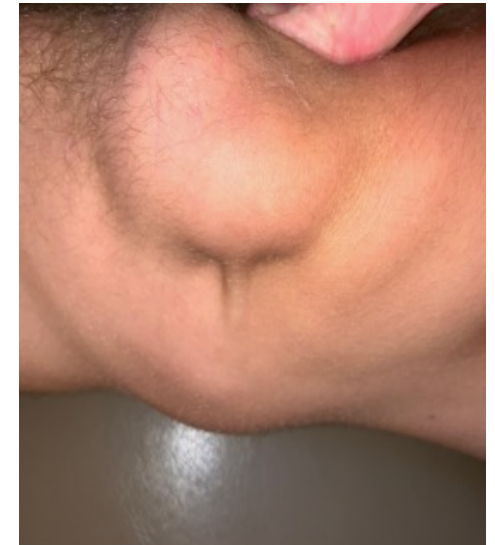
Knee Surgery, Sports Traumatology, Arthroscopy (2019) 27:2537–2550
<https://doi.org/10.1007/s00167-018-5266-y>

KNEE

Recognition of evolving medial patellofemoral anatomy provides insight for reconstruction

Miho J. Tanaka¹ · Jorge Chahla² · Jack Farr II³ · Robert F. LaPrade⁴ · Elizabeth A. Arendt⁵ · Vicente Sanchis-Alfonso⁶ · William R. Post⁷ · John P. Fulkerson^{8,9}

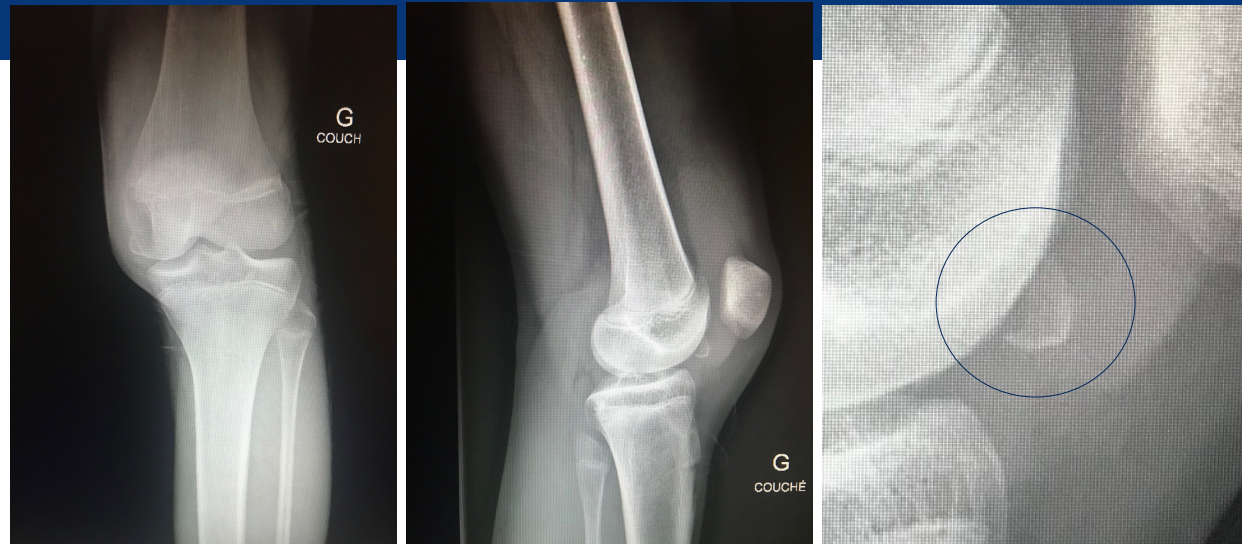
Few evidence-based studies



DIFFERENT TREATMENTS: CLINICAL CASES AND RELEVANT LITERATURE

Clinical case 1

- M 15y
- Volley-ball
- Twisting injury...
- Effusion ++
- Pain: lateral side, medial side
- No laxity
- CT Scan



LATERAL CONDYLE
OSTEOCHONDRAL
FRAGMENT



Patellar index: Caton 1,06
Trochlear dysplasia: Dejour C
TT-TG : 16
Patellar tilt : 38°
Open physis
MPFL avulsion

Which Surgical Treatment ?

- Removal fragment?
- Fixation?
- Patellar stabilization?
- Wich technique?

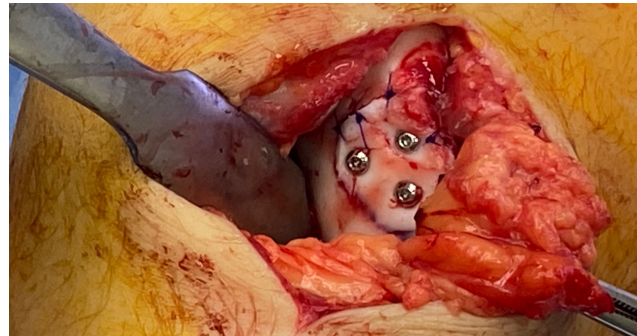
LATERAL CONDYLE
OSTEOCHONDRAL
FRAGMENT



- Refixation of Large Osteochondral Fractures After Patella Dislocation Shows Better Mid- to Long-Term Outcome Compared With Debridement. Gesslein M, Merkl C, Bail HJ, Krutsch V, Biber R, Schuster P. Cartilage. 2019 Nov
- Osteochondral injury after acute patellar dislocation in children and adolescents. Seeley MA, Knesek M, Vanderhave KL. J Pediatr Orthop. 2013
- Toupin JM, Lechevallier J. Osteochondral fractures of the external femoral condyle after traumatic patellar dislocation during physical exercise in children. Rev Chir Orthop Reparatrice Appar Mot 1997
- Stefancin JJ, Parker RD. Firsttime traumatic patellar dislocation : a systematic review. Clin Orthop Relat Res 2007 ; 455 : 93–101

Surgery

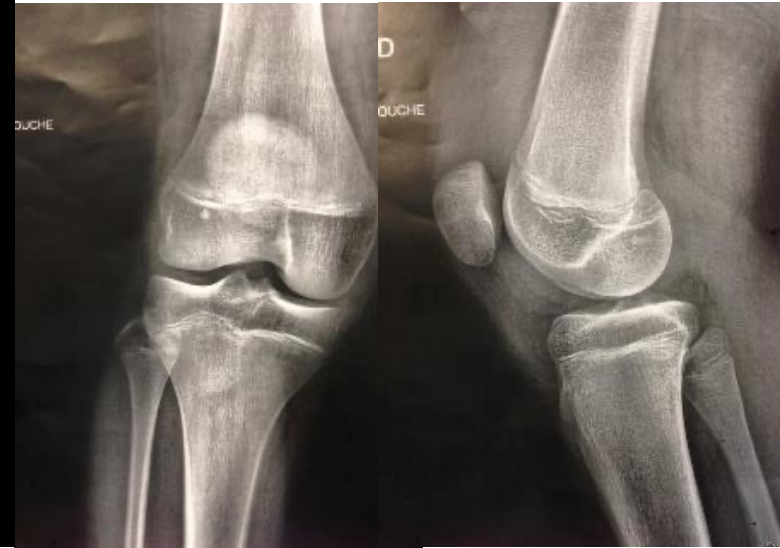
- Fixation (Screws, sutures)
- MPFL reconstruction (Soft tissue technique)



Clinical case 2

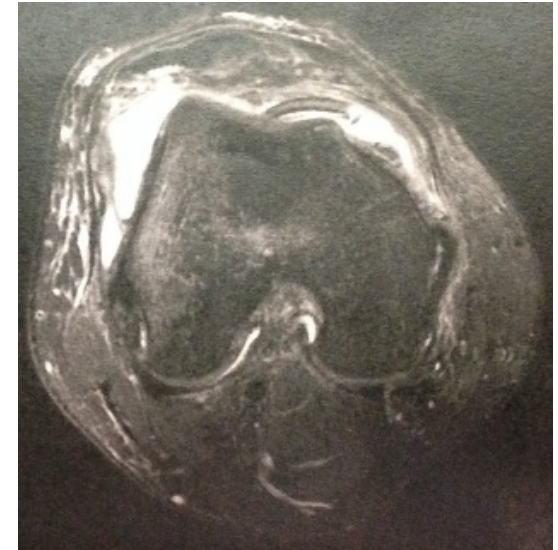
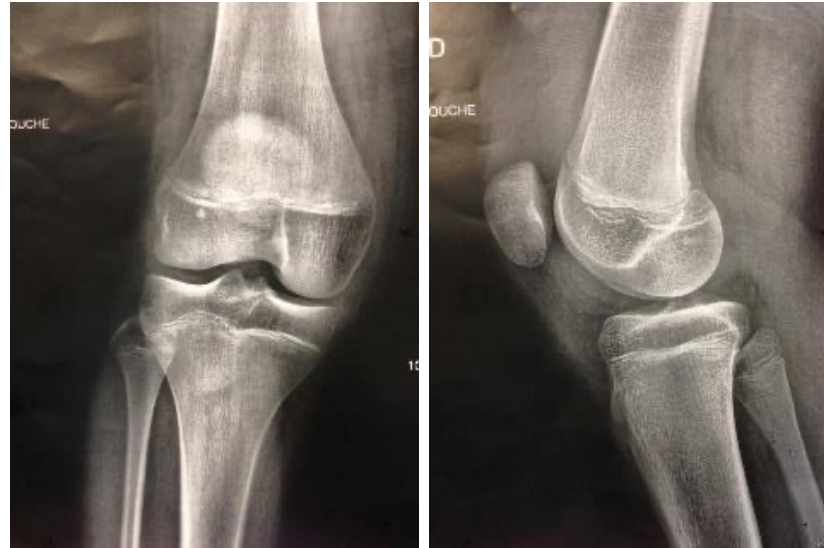
- W 12y
- Dansing
- Twisting injury...
- Effusion ++

- Pain: lateral side, medial side
- No laxity



Clinical case 2

- W 12y
- Dansing
- Twisting injury...
- Effusion ++



- Pain: lateral side, medial side
- No laxity

LATERAL
CONDYLE
CHONDRAL
FRAGMENT

Patellar index: Caton 1,1
Open physis





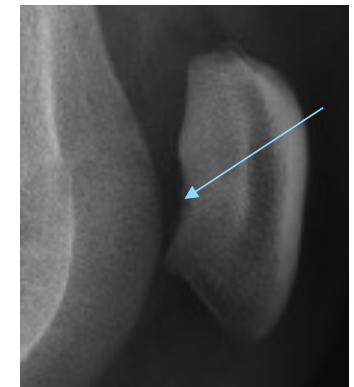
LATERAL
CONDYLE
CHONDRAL
FRAGMENT



Clinical case 3

- M 22y
- Cross-fit
- Twisting injury left knee
- Effusion ++
- Pain: lateral side, medial side
- No laxity
- CT Scan

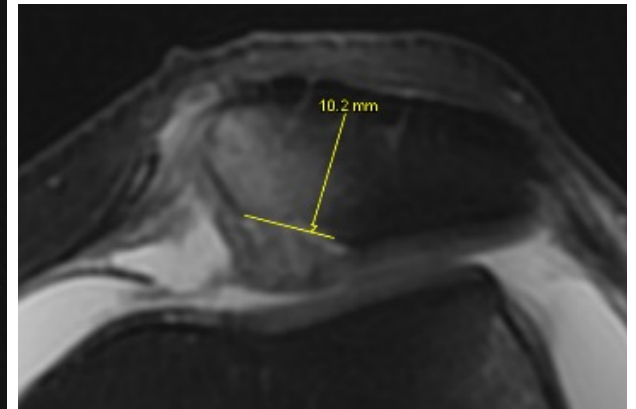
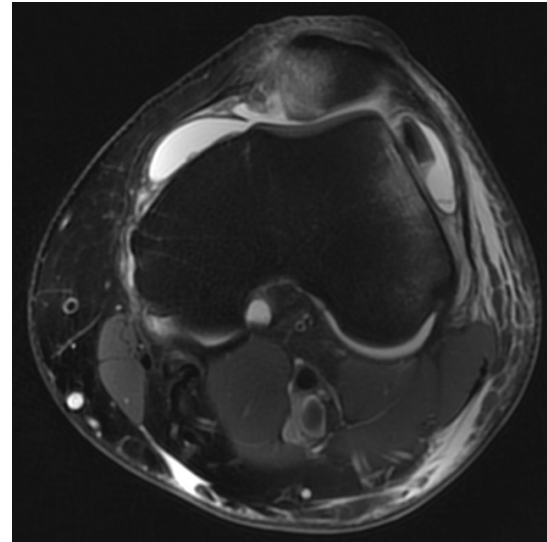
PATELLA:
OSTEOCHONDRAL
FRAGMENT



Clinical case 3

- M 22y
- Cross-fit
- Twisting injury left knee
- Effusion ++
- Pain: lateral side, medial side
- No laxity
- CT Scan

PATELLA:
OSTEOCHONDRAL
FRAGMENT



Patellar index: Caton 1
TT-TG : 14

Surgery



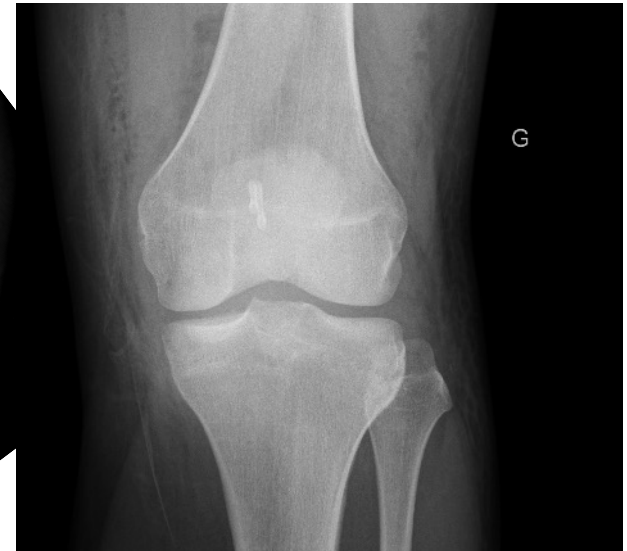
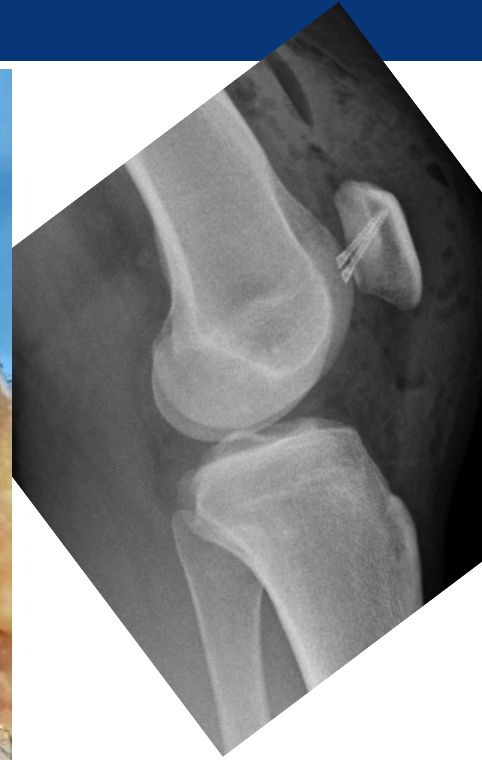
- 2cm²
- Medial side of the patella
- MPFL lesion (midbody)

PATELLA:
OSTEOCHONDRAL
FRAGMENT



Surgery

- ORIF
- Cartilage Suture
- MPFL Suture



PATELLA:
OSTEOCHONDRAL
FRAGMENT

CONCLUSION: FIRST TIME PATELLAR DISLOCATION

