

Irreducible Lateral Patellar Dislocation With Impaction Fracture of Patella and Large Femoral Osteophyte : A Case Report



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Abstract

Introduction: Irreducible lateral patellar dislocation is a rare phenomenon. Different mechanisms can explain irreducible patella dislocation: patellar vertical axis rotation, impaction fracture of the medial patellar facet, presence of lateral femoral osteophyte and patella with a concave medial facet.

Presentation of case: We report the third case of irreducible lateral patellar dislocation on a 86-year-old woman with a patellar impaction fracture of the medial facet trapped on a large lateral and anterior femoral osteophyte. Closed reduction was unsuccessful. CT scan and intraoperative assessment showed an impaction fracture of the medial patellar facet locked on a supporting femoral osteophyte. The anterolateral medial articular capsule was torn. After an open reduction, a medial patellofemoral ligament (MPFL) repair and a lateral patellofemoral ligament release, the patient had no further patellar dislocation again.

Discussion: Patella reduction can prove to be impossible because of several precise mechanisms : vertical axis rotation, impaction fracture of the medial patellar facet with or without lateral femoral osteophyte or patella with a concave medial facet. These mechanisms have to be identified by a Knee scan to avoid obstinate reduction which can provoke tendinous or osteochondral knee injuries. In these cases, we should be ready for an open reduction.

Conclusion: Irreducible lateral patellar dislocation is a rare condition. Several factors can explain such a condition. Knee scan is important to avoid going through tendinous or osteochondral knee injuries. Open reduction is advised.

Keywords: Irreducible; Lateral patellar dislocation; Impaction fracture; Femoral osteophyte ; Case report

Introduction

Patellar dislocation is a well known injury since Midelfart in 1887 [1]. Its incidence is about 6 to 7 per 100 000 [2]. Patellar dislocation represents 3% of all traumatic knee injuries and two-thirds of cases concern young patient under 20 years of age [3]. Acute dislocation frequently occurs in young people after direct blow or twisting mechanism.

However, irreducible lateral patellar dislocation is a rare phenomenon. About 20 % of patients may require a reduction for a persistently dislocated patella [2]. Spontaneous reduction frequently occurs but sometimes external handlings are necessary. The knee is then extended and the patella pushed medially. The irreducible characteristic of this condition can come from a lateral patella dislocation with a medial impaction fracture against the lateral condyle [4]. This phenomenon needs to be identified to avoid tendinous and osteochondral injuries which may appear during obstinate patella reduction trials. We report the third case of post-traumatic irreducible lateral

patellar dislocation with medial impaction fracture against the lateral condyle associated with a retentive femoral osteophyte. This case report is in line with the SCARE criteria [5].

Case Report

A 86-year-old woman was admitted to the Emergency unit after falling on ice while going to the hairdresser. She was complaining off her left knee after accidental torsion of her left lower limb. A past medical history included contralateral knee surgery for instability performed in 1944 without further detail, right-eye cataract, hypertension, bilateral total hip arthroplasty, radiculalgia due to herniated disc, hysterectomy and oophorectomy. The patient was painful with a Verbal Numerical Rating Scale (VNRS) of 7.

Physical left knee examination showed lateral patellar dislocation with bruises and hemarthrosis (Figure 1). The patient had a limited knee range of motion but full knee extension was

possible. Neurovascular examination was normal. Standard x-rays of the knee showed that the left patella was dislocated laterally on a degenerative knee with an important anterior femoral osteophyte (Figure 2). A first attempt to reduce the patellar dislocation was performed using external maneuvers with extension and medial shift. This first reduction trial was attempted under entonox (nitrous oxide and oxygen), morphine and even under sedation using propofol.



Figure 1: Photography showing the clinical examination of irreducible lateral patellar dislocation on the left knee.

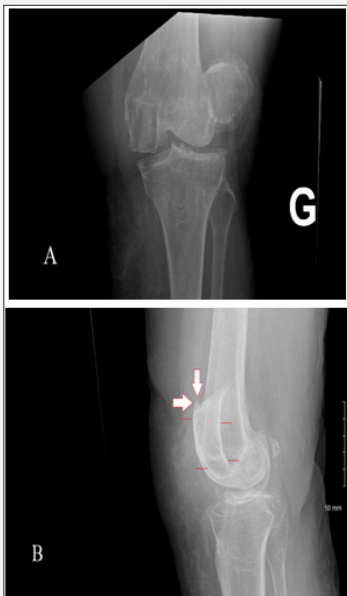


Figure 2 : Anterior-posterior (A) and lateral (B) X-Rays of 86-year-old woman showing dislocated patella locked on the femoral condyle on her left arthrosic knee. On lateral X-Rays (B), the arrows show an important lateral and anterior femoral osteophyte and the four red lines outline patella's position.

A second attempt to reduce the dislocation was performed under sterile conditions using bone forceps under general anesthesia and muscle relaxant. This second attempt was still unsuccessful. A computed tomographic scan was performed because of irreducible state. The CT scan showed the lateral dislocation of the patella, an impaction fracture of the medial patellar facet and an important lateral and anterior femoral

osteophyte hindering reduction (Figure 3). The Patient was taken to the operation theatre under general anesthesia and was prepared for surgery. A 10 centimeters long medial parapatellar incision was performed. A manual exploration revealed a longitudinal medial rupture of the articular capsule, a haematoma and a fracture of the medial patellar facet (Figure 4). The lateral femoral osteophyte was palpable.

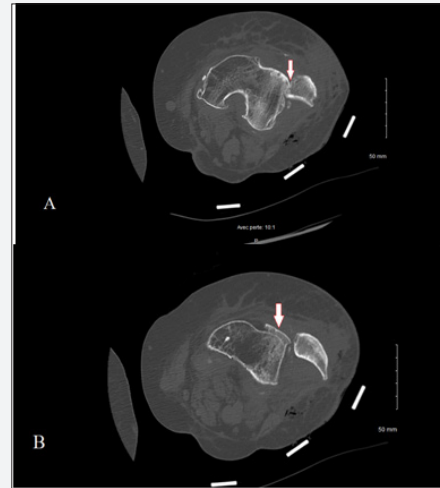


Figure 3 : Pré-operative Axial cuts of CT scan (A, B). The arrows show an impaction fracture of the medial patellar facet (A) and an important lateral and anterior femoral osteophyte hindering reduction of the patella (B).

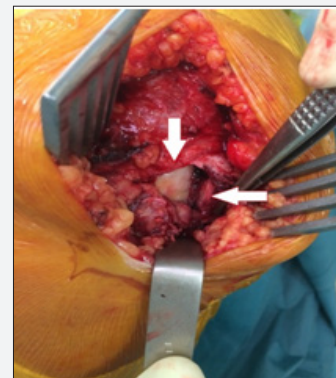


Figure 4: Intraoperative view of left knee. The anterior medial articular capsule was torn (vertical arrow). The horizontal arrow shows a part of the medial patella facet with sequelae of impaction.

The patella was reduced after medial fracture disimpaction. The joint capsule and the medial patellofemoral ligament (MPFL) were sutured while the lateral patellofemoral ligament was released. The lower limb was placed in a splint with full extension for a month together with a direct full weight bearing. The had a post operative radiographic assessment (Figure 5). Patellar instability's factors were: knee joint valgus of 5.8°. The TAGT was measured at 12 millimeters. The Caton Deschamps index was measured at 1,115. There was no recurvatum, no patella alta and no trochlear dysplasia. After one month follow-up, the patella was still reduced. The knee flexion was about

60 degrees and extension was complete. Physical therapie was required to regain normal flexion.



Figure 5 : Post operative radiographies. The anterior-posterior radiography show reduced patella, femorotibial osteoarthritis associated with a kneejoint valgus of 5,8° (A, C). The lateral radiography (B) show reduced patella and an important anterior and lateral femoral osteophyte.

Discussion

Irreducible lateral patellar dislocation is a rare injury. Most of the time, lateral patellar dislocation is spontaneously reduced. Sometimes, the reduction is hindered due to precise mechanisms. Among those mechanisms, vertical axis rotation [6], impaction fracture of the medial patellar facet with [7] or without lateral femoral osteophyte [8], patella with a concave medial facet [9] are described in scientific literature (Figure 6). Other kinds of irreducible patellar are described such as intra articular dislocation [10] or superior dislocation [11]. Table 1 provides further information about published cases of Irreducible lateral patellar dislocation with fracture impaction of the medial patellar facet. Only two published articles before us report the association of fracture impaction of the medial patellar facet with the presence of a lateral supporting femoral osteophyte in a degenerative knee [8,12].

Table 1: Published cases of irreducible lateral patellar dislocation with impaction fracture of medial patellar facet with ou without presence of supporting femoral osteophyte.

Author (year)	Patient	Injury Mechanism	Presence of Supporting Femoral Osteophyte	Associated Injury	Treatment
Hackl [4]	Woman, 63 years old	Fall from a chair; knee torsion and direct trauma.	No	Bony avulsion of the vastus medialis muscle, the medial retinaculum and the medial crus of the patellar tendon	Medial cutaneous incision); Hemarthrose washing and loose bony fragment removing; Medial structures reattachment to the medial patella with anchor and suture; Lateral release.
Phaltankar [13]	Woman, 66 years old	Knee torsion	No	Medial patellar retinaculum	Total knee replacement
Feibel [10]	Woman, 66 years old	Mechanical fall on ice.	Yes		Medial cutaneous incision; Digital disengagement of the patella from the lateral femoral condyle
Lowe [12]	Man, 50 years old	Fall while he was walking down hill	Yes		Medial para-patellar incision, Reduction, Medial patellar retinacular repair
Yerimah [9]	Man, 21 years old	Direct trauma; Blow to the medial side of his knee while he was dancing in a pub.	No	Osteochondral defect on patella medial border	Medial cutaneous incision; Manual patella reduction; Medial patellar retinacular repair.
Delagrammaticas [14]	Woman, 32 years old	Knee torsion during dance aerobics class.	No	Avulsion fracture of medial patellar border	lateral parapatellar incision; Manual patella reduction; Release of the incarcerated lateral tissues.
Grewal [3]	Woman, 32 years old	Direct trauma, fall while she was dancing in a night club.	No	Avulsion fracture of medial patellar border	Closed reduction
Bourgeois (2018)	Woman, 86 years old	Direct trauma, fall on ice while she was going to the hairdresser.	Yes		Medial parapatellar incision, reduction, Joint capsule and the medial patellofemoral ligament (MPFL) repair; Lateral release.

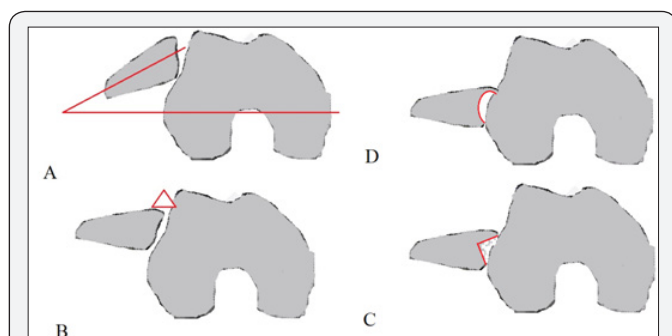


Figure 6 : Different mechanisms to explain how lateral patellar dislocation can be irreducible : (A) patella with a vertical axis rotation, (B) presence of supporting lateral and anterior femoral osteophyte in degenerative knee, (C) fracture impaction of the medial patellar facet (D) patella with a concave medial facet conformation.

Medial patellar Impaction fracture can be compared to Hill-Sachs lesion seen in the shoulder [7]. Reduction is impossible because of osteochondral fracture blocked on the femoral condyl. The presence of supporting osteophyte make the patella reduction even more difficult. Faced with this situation, we recommend a knee scan in order to identify the anatomical ground of the irreducible patellar. Indeed, obstinated reduction trials to reduce the patella can provoke tendinous or osteochondral knee injuries. Surgical treatment seems the most suitable one and must to be adapted to injuries identified on the scan as well as the injuries defined during surgery [13,14].

Conclusion

Irreducible lateral patellar dislocation with impaction fracture of patella and a supporting anterior and lateral femoral osteophyte is a rare condition. This mechanism has to be identified when the patellar reduction is impossible. A Scan seems mandatory and the treatment is often surgical.

Conflict of Interest

The authors declare no conflicts of Interest.

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Ethical Approval

Ethical approval was not required for this study.

Consent

An oral and a written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author's contribution

Michaël Bourgeois: Data collection, Writing the paper.

Jeremie Nallet: Data collection.

Grégoire Faivre: Data collection, Surgeon.

Fanny Mille: Data collection.

Laurent Obert: Supervisor.

Guarantor

The Guarantor is Michaël Bourgeois.

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