Case Report

An unusual case of traumatic medial eversion-dislocation of the patella: a case report

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ABSTRACT

Medial dislocation of patella has been commonly reported as a complication of the surgical release of the lateral patella-femoral ligament. A traumatic medial eversion-dislocation of the patella has not been earlier reported.

We report an unusual case of traumatic medial patellar eversion-dislocation in a young adult patient whose magnetic resonance imaging (MRI) showed a discontinuity in medial and lateral patellar retinacula. However, intraoperatively, the retinacula were found intact, and relocation of the patella was achieved by flipping the patella through a small hole in the patellar tendon. No reconstruction of the ligaments was needed. At 1-year follow-up, the patient achieved full range of movements of the knee, and there were no subjective complaints of instability. In our case, although the patella was medially everted and dislocated, both the retinacula were still intact. Clinicians should be aware that acute traumatic patella medial dislocation and eversion can occur without disruption of the medial or lateral retinaculum. Furthermore, knee MRI may suggest patellar retinacula disruption because of the retinaculum's obscure and tortuous course in patients with these injuries.

The case

- A young adult patient sustained a “dooring” injury to the knee while he was riding on a two-wheeler
- X-Ray revealed a medially dislocated and everted patella
- MRI revealed discontinuous medial and lateral retinacula
- However, intraoperatively, both the retinacula of patella were found intact
- The patella was flipped back in its groove through a hole in the patellar tendon

Lessons learnt

- Patella eversion-dislocation is possible with intact lateral and medial retinacula
- MRI may show discontinuous retinacula because of their tortuous course
- The patella can be reduced back by gentle flipping manoeuvre without the need for any extensive dissection.

Introduction

Medial dislocation of the patella is a known iatrogenic complication of surgical release of the lateral retinaculum [1]. It has also been reported as a complication of an over tight medial patellofemoral ligament reconstruction or tibial tubercle transfer [2]. However, traumatic medial

dislocation of the patella is relatively rare and has been reported only in case reports [1,3,4]. Dysplastic trochlear groove and patella alta may also contribute as etiologic factors in patellar instability [5,6]. Traumatic complete eversion and medial dislocation of the patella have not been reported.

We describe here a case of a young adult patient who sustained a knee injury and presented to us with an initial diagnosis of traumatic eversion-dislocation of the patella with disrupted medial and lateral patellar retinacula. We had decided to surgically reduce the patella and repair the retinacula, as is generally indicated in traumatic dislocations of the

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patella. However, intraoperatively, we found that although there was a complete eversion-dislocation of the patella, the lateral and medial retinacula and other soft tissue restraints were intact. The patella was then flipped back in the groove through a simple manoeuvre. Informed consent was obtained from the patient for documentation and publishing the case report. The patient's age and gender have been anonymised as per the journal's recommendations.

Case report

A young adult presented to us with a recent history of trauma and acute severe pain in the left knee. The patient had a “dooring” injury to the knee while riding on a two-wheeler. The knee, which was flexed on a motorbike, hit a car door that opened up suddenly, resulting in sudden and direct impact on the anterolateral part of the knee joint.

X-Ray and computed tomography scan showed an empty trochlea with a complete eversion and medial dislocation of the patella. The patella was dislocated and lying proximally and medially with its chondral surface flipped anteriorly (Figs. 1 and 2). An expert radiologist interpreted the magnetic resonance imaging (MRI) films. MRI showed a discontinuity in the lateral and medial retinacula and soft tissue oedema in the anterior part of the knee (Figs. 3 and 4). Clinically, moving the patella elicited severe pain; hence, no further reduction was attempted before operative intervention. Surgical management with a repair of disrupted ligaments was planned. An anterior midline incision over the knee was utilised to approach the knee joint. After surgical exposure, we found that both the medial and ligament retinacula were intact with the patella everted and dislocated medially. The medial and lateral patello-tibial ligaments were discontinuous (due to non-visualisation) in the preoperative MRI. However, there was a small defect in the area just medial to the proximal one-third part of ligamentum patellae, at the confluence of the patellar tendon and the medial patellotibial ligament. This defect may have represented a partial injury to the medial patello-tibial ligament. In addition, the lateral patellotibial ligament was not examined in the deeper part; hence, we were unable to reliably confirm its status. The surgeon's finger was inserted through the defect and enlarged with blunt dissection with the finger. The finger was used as a lever to manipulate and push the lateral border of patella laterally, so that the patella flipped and relocated in the trochlear groove with an audible pop (video 1). The defect in the patella was repaired with non-absorbable sutures. We found that the patella was tracking normally when the knee was moved through its full range of motion. Intraoperatively, we

Fig. 1. X-Ray showing the medial eversion-dislocation of the patella.

Fig. 2. CT scan shows the medial eversion-dislocation of the patella.

Fig. 3. MRI shows the discontinuity in the medial and lateral retinacula (MRI on 3 T machine, T2W fat-saturated axial image).

performed the instability testing in 30 degrees of knee flexion by pushing the patella laterally and medially and did not notice any patellar instability. Postoperatively, the patellar translation was examined in 30° of flexion and was found to be approximately 1 cm in medial and lateral direction. Postoperatively, the patient's knee was stabilised in a static long leg knee brace for three weeks. Range of movement exercises of the knee were started on the second postoperative day. Isometric quadriceps exercises were started at 2 weeks. Partial weight-bearing was started at 2 weeks with axillary crutches and then increased as tolerated. Full weight-bearing was permitted at 3-4 weeks after surgery. After 2 months of follow-up, the patient achieved 140° of knee flexion and full extension with no extension lag. Postoperatively, MRI showed patella sitting in the trochlear groove with intact retinacula and showed no evidence of patella alta (Figs. 5 and 6). Postoperative X-ray evaluation showed an Insall-Salvati ratio of 1, which indicated that there was no patella alta. At one-year follow-up, the patient achieved full range of movements of the knee, and there were no subjective complaints of instability or knee pain. The Beighton score for the patient was calculated as 0, which indicated no generalised laxity.

Fig. 4. MRI shows soft tissue oedema in the anterior part of the knee (MRI on 3 T machine, T2 fat-saturated axial image).

Fig. 5. Postoperative MRI shows the patella in its groove, (MRI on 1.5 T machine, T2W image).

Discussion

We aimed to present an unusual case of complete patellar medial eversion-dislocation, which presented with atypical MRI findings of complete medial and lateral ligament disruption, but the postoperative MRI revealed an intact retinaculum because after the patellar reduction, the retinacula were easily visualised on the MRI. To the best of our knowledge, such a case has not been reported in the literature.

Typically, during a lateral patellar dislocation, the medial patella-femoral ligament may be ruptured, and in a medial patellar dislocation, the lateral ligaments including the deep transverse retinaculum, the epicondylopatellar ligament, and the patellotibial ligament may be disrupted [7]. Similarly, in a complete medial patellar eversion-dislocation, we expected the retinacula and the other soft tissue restraints to be torn, but they were found intact intraoperatively.

The stabilising forces of the patella include medial and lateral retinacula [8]. The lateral retinaculum has a superficial and a deep layer [9]. The deep layer consists of the lateral epicondylopatellar band, the

Fig. 6. Postoperative MRI shows no evidence of patella alta (MRI on 1.5 T machine, T2W image).

patellotibial band, and the transverse ligament [9,10]. Other active stabilisers are the vastus medialis, vastus lateralis, vastus lateralis obliquus, and the vastus medialis obliquus [8,11,12]. Most of the medial dislocation cases have been reported as a complication of the surgical lateral patella-femoral ligament release, which occurs due to the loss of lateral restraining and stabilising forces [1,13–15]. A surgical lateral release destabilises the balancing forces on the patella by removing the lateral forces of vastus muscles and transverse ligament. Our literature search in PubMed, using the keywords “medial” and “dislocation” and “patella”, has yielded case reports that have described traumatic medial dislocations as a result of disruption of the lateral retinaculum from the patellar insertion [16]. However, patellar alta and trochlear dysplasia also played a role in the traumatic dislocation [4]. Excellent improvement in Lysholm and pain scores has been reported after deep transverse layer reconstruction of the lateral patella-femoral ligament using autogenous tissue such as gracilis tendon [17], patellar tendon [18], and quadriceps tendon [19] or using the central slip of the iliotibial band by leaving it attached proximally and inserting it to the midpoint of the patella distally [20].

Our case is unique as the MRI reported lateral and medial retinaculum disruption. However, this was due to the non-visualisation of the ligament because the patella was everted, and the fibres of the retinaculum were obscured because of their tortuous course. Intraoperatively, we found that both the medial and lateral retinacula were intact, and the patella was completely everted and dislocated medially. This occurred because of the dooring injury to the knee, wherein the patella was displaced and everted with stretching of both the retinacula, such that it got locked in the medial gutter in the everted and dislocated position. The integrity of the lateral patellotibial ligament could not be reliably confirmed, although it may have been injured in its deep layers. The surgical reduction was achieved by flipping the patella in its position through a small defect in the patellar ligament. If there is no defect found in the ligament, we recommend making a small hole and flipping the patella through the defect. Because both the lateral and medial retinacula and other soft tissue restraints were intact, the patella sat back in the trochlear groove after flipping and was found to be stable through the full range of knee movements.

Clinicians should be aware that acute traumatic patella medial dislocation and eversion can occur without disruption of the medial or

lateral retinaculum. Furthermore, knee MRI may suggest patellar retinacula disruption because of the retinaculum's obscure and tortuous course in patients with these injuries.

Ethics approval and consent to participate

No ethical approval was required for a case report as per local laws.

Consent for publication

The patient's informed consent was obtained for publication of the case report.

Availability of data and materials

All data generated or analysed during this study are included in this published article [and its supplementary information files].

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Authors' contributions

A.G. and D.S. designed the research, analysed and interpreted the report data, and participated in the writing of the manuscript. All authors read and approved the final manuscript.

Declaration of competing interest

The authors declare that they have no competing interests.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jisako.2021.08.001>.

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