

# Patellar fracture after mpfl reconstruction, a case report

## Abstract

We discuss a case of a patellar fracture after medial patellofemoral ligament reconstruction. With a concise overview of current literature we discuss the risks of different techniques and technical problems that could be encountered and should be avoided.

Volume 6 Issue 4 - 2016

**IM Takacs, MP Somford**

Department of orthopedic surgery, Rijnstate hospital, Netherlands

**Correspondence:** IM Takacs, Department of orthopedic surgery, Rijnstate hospital, Wagnerlaan 55, 6814AD Arnhem, Netherlands; Email [itakacs@rijnstate.nl](mailto:itakacs@rijnstate.nl)

**Received:** September 14, 2016 | **Published:** November 16, 2016

## Introduction

Patellar instability with recurrent dislocation of the patella is a disabling condition. It commonly affects young patients and can lead to limitation in sports participation and can even compromise their ability to perform daily activities.<sup>1</sup>

The incidence of patellar dislocation in the general population is nearly 6 per 100,000 persons and is highest in 10- to 17-year-old female patients. It represents 2-3% of all knee injuries. Recurrence after one dislocation can be up to 50%.

Several factors predispose to patellar instability. Femoral antversion, external tibial torsion, valgus knee, patellar or trochlear dysplasia, patella alta, increased tuberosity trochlea distance, vastus medialis atrophy, pes planus and generalized hyperlaxity are all risk factors for recurrent patellar dislocation.

Multiple surgical techniques have been described including medial patellofemoral ligament (MPFL) reconstruction.<sup>2</sup> MPFL acts as soft tissue restraint to lateral subluxation or dislocation of the patella.

Complications such as recurrent dislocation, patellofemoral pain, restricted flexion of the knee, degeneration of the patellofemoral joint and patellar fracture can occur.

We report a case of a patellar fracture with a technique where bone tunnels were drilled in the patella.

## Case

A seventeen year old female with recurrent dislocation of her patella underwent MPFL reconstruction with an autograft. The fixation was with bio absorbable screws in the patella and femur. She sustained a transverse patellar fracture one month after the MPFL reconstruction. During physical therapy she felt a sag of her knee and heard a crack in her knee. At first weight bearing was still possible. After a couple hours weight bearing was not possible anymore and joint effusion arose.

On first evaluation, the cause was thought to be an acute hematoma. After additional imaging a fracture of the patella was seen.

Physical examination showed a profound joint effusion. The post-operative scar was normal. She had mild extension lag with moderate quadriceps function.

The first post-operative X ray showed that the proximal drill hole in the patella is placed rather anteriorly. Only thin anterior cortex remains because of this positioning. X ray and CT scan after one month showed a fracture of the anterior cortex of the patella through the proximal drill hole.

She was managed conservatively with an extension brace and full weight bearing. After 6 weeks she had no residual effusion or extension lag and started quadriceps exercise without resistance (open chain)(Figure 1&2).



**Figure 1** The first post-operative X ray showed that the proximal drill hole in the patella.



**Figure 2** X ray and CT scan after one month showed a fracture of the anterior cortex of the patella through the proximal drill hole.

## Discussion

The MPFL inserts on the supero-medial border of the patella and passes to the medial femoral epicondyle, anterior to the adductor tubercle and proximal to the medial collateral ligament. It has its function from full extension to about 30 degree of flexion.

Repair or reconstruction of the MPFL can be used as treatment for recurrent patellar dislocation. It can be used as a stand-alone surgery or in conjunction with other modalities such as tuberosity transpositions, lateral release or/and trochlear plasty.

Several different surgical techniques are described. Autografting as well as allografting is described. Different techniques of attaching the graft to the patella have also been proposed, including looping the graft through tunnels in the patella, docking the graft into a tunnel with an arthroscopic cortical button, anchoring the graft into tunnels with interference screws, attaching the graft to the patella using suture anchors, or suturing it to the retinaculum. Femoral attachment techniques include docking into a tunnel, suture anchors, or looping the graft around the adductor magnus tendon.<sup>3</sup>

A recent report on a large series reported a 20.3% complication rate after MPFL reconstruction. Several recent reviews report complication rate up to 40%.<sup>4-8</sup>

Patellar fractures are described after drilled tunnel fixation of a

MPFL graft.<sup>9-11</sup> Complete patellar bone tunnels have been associated with patellar fractures. Transverse tunnels have also been associated with patellar fractures. In general patellar fractures can occur with any transpatellar fixation.

Damage to the anterior cortex seems to be a determining factor in the reason for patellar fractures. Considering this during placement of the drill tunnels can probably prevent this break out.

In our case no traumatic event occurred. Therefore a surgical technique error is probably the reason for break out. The position of the tunnel seems crucial in preventing breakout.

Techniques without placing drill holes in the patella are also described. Using a part of the quadriceps tendon and flipping it down is one example. There is no evidence that one technique is superior compared to another in measures of outcome, but patella fractures without drilling the patella are not reported.

## Acknowledgments

None.

## Conflicts of interest

None.

## References

1. Koh JL, Stewart C Patellar instability. *Orthop Clin North Am.* 2015;46(1):147–157.
2. Chouteau J Surgical reconstruction of the medial patellofemoral ligament. *Orthop Traumatol Surg Res.* 2016;102(1 Suppl):S189–S194.
3. Reagan J, Kullar R, Burks R MPFL reconstruction: technique and results. *Orthop Clin North Am.* 2015;46(1):159–169.
4. Stupay KL, Swart E, Shubin Stein BE Widespread Implementation of Medial Patellofemoral Ligament Reconstruction for Recurrent Patellar Instability Maintains Functional Outcomes at Midterm to Long-Term Follow-up While Decreasing Complication Rates: A Systematic Review. *Arthroscopy.* 2015;31(7):1372–1380.
5. Burnham JM, Howard JS, Hayes CB et al. Medial Patellofemoral Ligament Reconstruction With Concomitant Tibial Tubercle Transfer: A Systematic Review of Outcomes and Complications. *Arthroscopy.* 2016;32(6):1185–1195.
6. Shah JN, Howard JS, Flanigan DC, et al. A systematic review of complications and failures associated with medial patellofemoral ligament reconstruction for recurrent patellar dislocation. *Am J Sports Med.* 2012; 40(8):1916–1923.
7. Mulliez A, Lambrecht D, Verbruggen D et al. Clinical outcome in MPFL reconstruction with and without tuberositas transposition. *Knee Surg Sports Traumatol Arthrosc.* 2015
8. Parikh SN, Nathan ST, Wall EJ et al. Complications of medial patellofemoral ligament reconstruction in young patients. *Am J Sports Med.* 2013;41(5):1030–1038.
9. Dhinsa BS, Bhamra JS, James C et al. Patella fracture after medial patellofemoral ligament reconstruction using suture anchors. *Knee.* 2013;20(6):605–608.
10. Lippacher S, Reichel H, Nelitz M Patellar fracture after patellar stabilization. *Der Orthopäde.* 2010;39(5):516–518.
11. Longo UG, Berton A, Salvatore G et al. Medial Patellofemoral Ligament Reconstruction Combined With Bony Procedures for Patellar Instability: Current Indications, Outcomes, and Complications. *Arthroscopy.* 2016;32(7):1421–1427.