

Patellar instability in a prosthesis knee: MPFL plasty using hamstring tendon

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Abstract

Introduction: instability of the patella remains a frequent cause of failure following arthroplasty; requires treatment and a precise radiological assessment. Several therapeutic options are possible, including ligamentoplasty of the medial patellofemoral ligament, which is increasingly used, thus proving its effectiveness.

Observation: we report the case of an octogenarian patient with gonarthrosis of the knee that has been progressing for several years. He benefited from a knee prosthesis, the consequences of which were marked by a progressive lateral tilt of the patella.

Technique: installed in the supine position with resumption of the old approach, sampling of the half tendon was carried out with preparation of the graft on the table. The careful release of the joint and preparation of the graft placement sites then the approach to the lateral side of the patella allowed us to expose the external wing on which an external release of the patella was carried out. Fixing the graft was made, with transtendinous passage on the patellar tendon and quadriceps. Fixation on the femoral side was made by two anchors. Immobilization maintained for 45 days.

Discussion: The surgical management of patellar instability on total knee prosthesis involves a diversity of surgical techniques which can be used alone or in combination depending on the etiology. Procedures involving soft tissues ranging from simple external release to MPFL plasties, as well as bone procedures which may require changing prosthetic parts in the event of a rotation defect.

Conclusion: MPFL plasty is effective in the management of post-arthroplasty patellar instability and has its place in the treatment of patellar dislocations following total knee prosthesis. It is offered either as a complement to other procedures and in particular to a prosthetic revision.

Keywords: Instability; Dislocation; Subluxation; Prosthesis; MPFL; Dislocation.

1. Introduction

Patellar instability, characterized by the abnormal movement or dislocation of the patella (kneecap), poses a significant challenge in the realm of total knee arthroplasty (TKA). Despite the advancements in surgical techniques and implant designs, it remains a prevalent cause of postoperative complications and dissatisfaction among patients. Understanding the multifactorial nature of patellar instability is crucial in its effective management following TKA. A comprehensive assessment of the underlying etiology is paramount for tailoring an appropriate treatment strategy. This involves a thorough evaluation of factors contributing to patellar maltracking, such as soft tissue imbalance, anatomical variations, and biomechanical abnormalities. Identifying the specific biomechanical deficiencies responsible for patellar instability

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is essential for guiding surgical decision-making. Among the various surgical interventions available, medial patellofemoral ligament (MPFL) ligamentoplasty has emerged as a promising approach for addressing patellar instability post-TKA. The MPFL plays a crucial role in stabilizing the patella by restraining excessive lateral displacement during knee motion. Damage or attenuation of the MPFL can result in patellar instability, necessitating surgical reconstruction to restore its function.

2. Observation

We report the observation of an 80-year-old man who has for several years presented with left knee osteoarthritis progressively evolving in intensity with limitation of walking range. The surgical indication for a total knee prosthesis was appropriate with a classic internal paraparellar anterior approach, and the medial side was sutured at the end of the operation with separate stitches with VICRYL 2. The postoperative results were simple with good recovery of walking and mobility. One month later the patient presented knee pain with discomfort in flexion. Three months postoperatively, the patient reported a clicking sensation during forced flexion during the physiotherapy session. The chronology of radiological evolution allows us to appreciate the worsening of the lateral tilt of the patella gradually increasing on each image. Our patient benefited from patellofemoral views to assess the patellar tilt and inclination which was at 23°. The CT scan demonstrated rotation of the femoral implant at 3° of external rotation without rotation of the tibial implant. There was no rotation problem of the femoral and tibial implants, the patellar height was respected, without signs of early loosening, with tilting of the patella and a TAGT angle of 23°. Our decision was to do an MPFL plasty with lateral release of the patella.

3. Technique

With the patient placed in a supine position, the old approach was repeated. A sample of the half tendon was taken using the same route with preparation of the graft on the table by lashing both ends. Careful release of the joint with preparation of the graft placement sites. Approaching the lateral side of the patella allowed us to expose the external wing on which an external release of the patella was carried out to reduce tension and lateral traction during flexion movements. Fixing the graft was made in such a way as to respect the bone capital of the patella. Thus we proceeded with a transtendinous passage on the patellar tendon and quadriceps with tensioning of the graft at 30° of flexion and appreciation of the patellar slide thumb free. Fixation on the femoral side was made by two anchors FIBERTAK NOTLESS screws at level femoral 1cm from the epicondyle and 1.5cm from the adductor tubercle. The testing was satisfactory in flexion up to 60° with a flexible and stable slide of the patella. Closure was done by separate stitches with VICRYL 2 with skin closure on drainage and immobilization by ZIMMER splint. The control x-ray shows good alignment of the patella centered next to the notch. Immobilization will be maintained for 45 days with full weight bearing allowed. The adapted rehabilitation protocol was 0-30° flexion during the first 3 weeks followed by flexion up to 60° from D21 to D45, thus allowing protection of the graft and sutures and preventing stiffness.



Figure 1 Post-operative radiographic evolution



Figure 2 Resuming the old approach with removal of the crow's feet

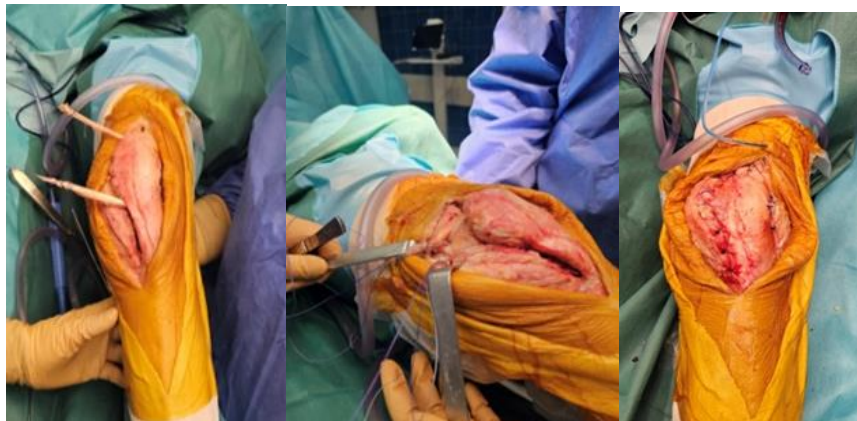


Figure 3 Fixation of the graft on the medial epicondyle

4. Discussion

Distal realignment of the patella has proven its effectiveness in subluxations after TKA, it remains an invasive procedure especially in elderly patients, posing risks of fracture of the anterior tibial tuberosity (ATT) and skin necrosis. The treatment of patellofemoral instability on TKA includes a range of surgical techniques which can be used alone or in combination depending on the etiology present, in particular procedures involving the soft parts ranging from simple external release and MPFL plasties, as well as bony procedures that may require changing prosthetic parts in the event of a rotation defect [1][2]. Asada and al. published the first case of MPFL plasty for patellar dislocation on TKA [3]. Goto and al. also published a case. The two studies report good results at respectively 2 and 1 years of follow-up and underline the importance of the preoperative assessment with CT study of the positioning of the implants [4]. Gennip and al. [5] reported nine cases with patellar dislocation or subluxation after knee arthroplasty. Seven of the nine patients had a preoperative CT scan to study the positioning of the implants and the TAGT. Only one patient was not satisfied clinically with persistence of subluxations. Radiological improvement was observed in all patients. Lamote published a series of six cases treated by MPFL plasty in which only one patient had a persistent sensation of patellar instability [6]. The importance of the preoperative assessment and especially the CT scan in the therapeutic strategy of patellar instability on TKA [8]. Camrout and al reported a case of reconstruction of the MPFL for recent dislocation of the patella after patellofemoral arthroplasty, in their case, it was not possible to stabilize the patella by repair of the medial capsule and lateral retinacular release before a successful reconstruction of the MPFL [7]. Nakajima and al also reported failure of lateral release and resurfacing of the patella [9]. These results suggest that MPFL reconstruction may be more promising than medial capsular repair or lateral retinacular release in stabilizing the patella.

5. Conclusion

Ligamentoplasty is effective in the treatment of post-arthroplasty patellar instability . It must therefore have its place in the treatment of patellar dislocations on knee prosthesis, after a complete etiological assessment. It can be proposed either as a complement to other procedures and in particular to a prosthetic revision; it is important to systematically

carry out a complete etiological assessment with a CT scan. Thus, a prosthetic rotation anomaly prompts a change of the femoral implant.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

Contribution of the authors

All authors participated in the development of this work. All authors also declare that they have read and approved the final version of the manuscript.

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