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ORIGINAL PAPER

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Antero-medialisation of the tibial tubercle for patellar instability

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Abstract We reviewed 19 patients (24 knees) with patello-femoral instability treated surgically with antero-medialisation of the tibial tubercle and lateral retinacular release. Twenty-two knees had recurrent patellar dislocation and two patellar subluxation. Lateral retinacular release was performed arthroscopically in 15 knees. Average follow-up was 52 (16–86) months. There was one postoperative haemarthrosis and one failed fixation, which needed surgical revision. The average Lysholm score improved from 63.3 to 98 and only one knee had persistent patello-femoral pain postoperatively. The patellar tilt angle improved from 9.4° to 5.5°. There were no redislocations. We find that the surgical technique produces a consistent correction of patellar instability, but long-term studies are needed to confirm whether it can prevent arthritic degeneration.

Résumé Nous avons examiné 19 malades (24 genoux) avec une instabilité rotulienne traitée chirurgicalement par antéro-médialisation du tubercule tibial et ouverture de l'aileron externe. Vingt-deux genoux avaient une luxation rotulienne périodique et deux une subluxation rotulienne. La section de l'aileron externe a été faite sous arthroscopie dans 15 genoux. Le suivi moyen était de 52 (16–86) mois. Il y avait une hémarthrose postopératoire et un échec de fixation qui a nécessité une révision chirurgicale. Le score moyen de Lysholm a été amélioré de 63,3 à 98 et un seul genou avait une douleur rotulienne persistante postopératoire. L'angle d'inclinaison rotulien a été amélioré de 9,4° à 5,5°. Il n'y avait pas de nouvelle luxation. Nous pensons que cette technique chirurgicale corrige correctement l'instabilité rotulienne, mais des études à long terme sont nécessaires pour confirmer si elle peut prévenir la dégénérescence arthrosique.

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Introduction

The management of patellofemoral pain and instability that does not respond to non-operative treatment remains controversial. Although medial tibial tubercle transfer is usually successful for the correction of patellar instability, the relief anterior knee pain is less predictable [7–9]. The oblique osteotomy described by Fulkerson [2] results in combined anterior and medial transfer of the tibial tubercle, which decreases the patellofemoral and lateral forces [3]. Tibial tubercle medialisation will prevent recurring instability, but may not influence the long-term development of osteoarthritis and patellofemoral pain [8].

Patients and methods

Between 1997 and 2002 we performed a Fulkerson osteotomy on 24 knees (in 19 patients) for recurrent patellar dislocation (22 knees) and patellar subluxation (two knees). All patients were skeletally mature and had symptoms of patellofemoral instability. None had responded to non-operative treatment.

The authors retrospectively reviewed 14 women and five men. The mean age of the patients at the time of the surgery was 22 years (15 to 33). The mean follow-up was 52 months (16 to 86). Three patients had previous proximal realignment surgery, which failed to correct the instability. The Lysholm scoring scale was used to access knee function [6]. The patellar tilt angle was defined by a line connecting the medial and lateral edges of the patella and the horizontal line [4]. The tibial tubercle was osteotomised, rotated anteromedially and fixed with two screws. The displacement (10 to 15 mm) was defined in accordance with the patellar tracking. The lateral release was performed

subcutaneously or arthroscopically. The release was considered adequate when the patella could be everted to 90° laterally. If severe patellar cartilage degeneration was found, shaving of the facet was undertaken. A vacuum drain was left for 24 h. After drain removal the patient started partial weight-bearing with crutches and quadriceps muscle exercises were initiated.

Results

Arthroscopic lateral retinacular release was performed in 15 knees and subcutaneous release was used in the remaining cases. In three cases with recurrent dislocation patellar chondral lesions were found at arthroscopy. The average Lysholm score improved from 63.3 preoperatively to 98 postoperatively. Patellofemoral pain was present in 15 knees preoperatively and postoperatively in only one knee. The sulcus angle in all knees averaged 139.5° (SD 9.9°). The Blackburne–Peel index [1] remained unchanged (1.09 and 1.06) and the patellar tilt angle improved from 9.4° to 5.5°. Fifteen patients considered the result "excellent" and nine considered it to be "good". There was one case of postoperative haemarthrosis and one failed fixation, which needed surgical revision. Removal of the screws was performed in three cases. There were no redislocations reported at follow-up.

Discussion

Studies have demonstrated deterioration of long-term clinical results of the Elmslie–Trillat procedure due to patellofemoral pain [5, 8]. Nakagawa et al. found osteoarthritic changes in 42% of the cases with an average follow-up of 161 months [8]. These facts suggest that tibial tubercle medialisation effectively corrects the instability, but cannot prevent patellofemoral joint degeneration. In our study, with an average follow-up of 52 months, preoperative patellofemoral pain was present in 15 knees. All but one case had resolution of pain, but this could have been due to the unloading of the lateral facet. A careful technique is necessary to create a precise osteotomy tapering distally to the anterior tibial cortex to decrease the risk of postoperative tibial fracture. The three patients with previous proximal realignment surgery had patellofemoral pain and recurrence of the instability, which improved markedly after the osteotomy. Fulkerson's osteotomy is a safe technique that produces a consistent correction of patellar instability and patello-femoral pain, but long-term studies are needed to confirm whether it can prevent arthritic degeneration.

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