

Paper #32

High Tibial Derotational Osteotomy for Distal Extensor Mechanism Alignment in Patients with Inwardly Pointing Knee Due to Increased External Tibial Torsion: Technique and Functional Results

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Summary:

This retrospective study showed that patients with patellofemoral pain and inwardly pointing knees due to increased external tibial torsion had improved functional outcomes regarding pain, instability and ability to climb stairs following high tibial derotational osteotomy.

Abstract:

Purpose

The aims of this study were to determine functional outcomes of patients who underwent a high tibial derotational osteotomy (HTDO) for anterior knee pain and inwardly pointing knee due to increased external tibial torsion, and to identify which factors were associated with lower clinical outcomes.

Methods

Patients with patellofemoral pain with inwardly pointing knee and patellar maltracking due to increased external tibial torsion ($>30^\circ$) who were treated with a HTDO and had a minimum of two years follow up, were included in this study. The Fulkerson and Kujala patellofemoral joint scores were assessed preoperatively and at final follow up. Age, body mass index (BMI), history of prior surgery, mild increase femoral anteversion, association of lateral retinaculum release and grade of patellar cartilage disease at time of surgery were analyzed.

Results

Sixty HTDOs in 54 patients were included in this study. Functional outcomes were assessed retrospectively with a mean follow-up 6.8 years (range 2.1 to 14.6). Mean age at the time of surgery was 30.5 years (range 18 to 61). The mean Kujala score was improved from 47.5 (range 12 to 66) preoperatively to 93 (range 58 to 100) postoperatively ($p < 0.0001$). The mean Fulkerson score improved from 40.6 (range 12 to 68) to 91.6 (range 41 to 100) ($p < 0.0001$). Sub scores for pain improved from 8.6 (range 0 to 20) to 30.4 (range 10 to 35) ($p < 0.0001$) while instability sub score improved from 6.4 (range 0 to 20) to 17.9 (range 10 to 20) ($p < 0.0001$). The ability to climb stairs showed a similar increase from 6.9 (range 0-15) to 17.9 (range 5-20) ($p < 0.0001$). Patients with a prior history of surgery ($p=0,043$), with patellar full-thickness chondral injuries ($p 0,0174$) and patients over age of 50 ($p =0,0104$) had significantly lower clinical outcomes.

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Conclusion

Patients with patellofemoral pain and inwardly pointing knees due to increased external tibial torsion had improved functional outcomes regarding pain, feeling of instability and the ability to climb stairs following high tibial derotational osteotomy. Prior knee surgery, patellar full-thickness chondral injuries and age over 50 had negative effects on outcomes.

Study Design: Retrospective case series, level of evidence, IV.

Keywords: Patellofemoral pain syndrome; anterior knee pain; distal extensor mechanism realignment; external tibial torsion; tibial malrotation; high tibial derotation osteotomy; inwardly pointing knee.