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Patellar Fracture Following Patellofemoral Arthroplasty

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Summary:
Lower BMI, a reduction in patellar thickness postoperatively, more extensive patellar bone resections, and larger trochlear components were associated with an increased risk of patellar fracture following patellofemoral arthroplasty, although outcome was not significantly affected.

Abstract:
PURPOSE
Advanced isolated patellofemoral osteoarthritis is commonly treated with patellofemoral arthroplasty (PFA). Currently, there is a paucity of data regarding patellar fracture after undergoing this procedure. The goals of this study are to (1) determine the factors that are associated with patellar fracture following PFA and (2) compare outcomes of patients with and without this postoperative complication.

METHODS
A retrospective review of the medical record for patients undergoing patellofemoral arthroplasty for the treatment of osteoarthritis by a single surgeon at our institution from 2003 to 2011 was conducted. Patients with at least two-year follow-up were included. Patient demographics, previous surgeries, patellar thickness, performance of lateral release, Insall-Salvati ratio, component size, time to fracture, and fracture type and location were recorded. Outcome was assessed using the Knee Society clinical rating system, Tegner Activity Level scale, and UCLA Activity Score. Postoperative radiographs were reviewed for the presence of patellar fracture. Clinical outcomes and potential risk factors were compared for patients with and without patellar fracture.

RESULTS
We identified 77 knees in 59 patients that met inclusion criteria. There were 54 females and 5 males; 70 female knees and 7 male knees, with 18 patients who underwent bilateral PFA. The mean age of the patients was 56 (range 36 – 82) years with a mean follow-up of 4 (range 2 – 9) years. Seven (9.1%) patients had patellar fractures after PFA at a mean of 34 (median 28, range 16 – 64) months postoperatively. All were type I fractures (stable patellar component with intact extensor mechanism), which were treated nonoperatively. Lower BMI ($p=0.03$), change in patellar thickness ($p<0.001$), amount of bone resected ($p=0.001$), and larger trochlear component size (medium & large) ($p=0.01$) were associated with a greater incidence of fracture. Fractures were prevented by increasing the patellar height postoperatively compared to preoperatively ($p=0.001$). However, there were no statistically significant differences in clinical and functional outcomes between patients with and without patellar fracture (Table 3).

CONCLUSION
Our data suggests that BMI, patellar thickness, amount of bone resected, and trochlear component size affect the risk of type I patellar fractures following PFA. Patients with this postoperative complication, however, demonstrated no significant difference in clinical or functional outcomes at a mean follow-up of four years.