

## Should the Patella be Resurfaced during Primary Total Knee Arthroplasty?

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**Response/Recommendation:** While the literature supports that patellar resurfacing (PR) during total knee arthroplasty (TKA) results in fewer reoperations, patients without patellar resurfacing (NPR) have better KSS total and functional scores at various follow-up time periods. NPR was also associated with shorter operation times. These results need to be evaluated cautiously, as they were reported across various follow-up intervals and implant designs. Future studies are required to assess the implications of patellar resurfacing for surgical and patient-reported outcomes.

**Level of Evidence:** Strong

### **Rationale:**

Total knee arthroplasty (TKA) involves the manipulation of the femur and the tibia, but the decision to resurface the patella remains controversial. In the past decade, a trend towards an unsurfaced patella has occurred in the United States (US), from 4.1% in 2012 to 10.3% in 2021 [1]. However, fewer patellae are resurfaced internationally, with only 35% of primary TKAs from all registries outside the US resurfacing in 2010[2]. In a 2023 article, the AAOS strongly recommended the lack of difference between PR and NPR in TKA [3]. Numerous articles have discussed or even compared PR to NPR using small, single-institutional prospective and retrospective studies, case series, and meta-analyses. However, a meta-analysis of randomized controlled trials assessing the effectiveness of patellar resurfacing by comparing various pre-operative and postoperative outcomes and patient-reported outcomes has been lacking.

When analyzing 18 articles, PR was associated with fewer reoperations when comparing 2,582 RPs to 2,599 NPRs with an odds ratio (OR) of 0.70 [0.59, 0.83] ( $P < 0.0001$ ). However, the study of six articles at 1-year follow-up revealed that both the KSS test and the KSS function test significantly favored NPR, with a mean difference of 1.22 [0.40, 2.05] ( $P = 0.004$ ) and 1.58 [0.42, 2.73] ( $P = 0.007$ ), respectively. Two articles revealed a similar trend at a 5-year follow-up, with a mean difference of 1.84 [0.09, 3.59] ( $P = 0.04$ ) and 2.28 [1.18, 3.38] ( $P < 0.0001$ ), respectively. Other follow-up intervals (e.g., less than 1 year, 3 years, and 10 years) showed inconsistent results when comparing the KSS function to the KSS test. However, between the two groups, anterior knee pain OR 0.60 [0.33, 1.07] ( $P = 0.69$ ), the VAS pain score mean difference ( $P = 0.13$ ) and satisfaction OR 1.51 [0.78, 2.92] ( $P = 0.22$ ) were not significantly different between the two groups.

The decision to resurface the patella or not may not be binary. Currently, patellar resurfacing is performed with various patellar components and techniques, which could affect the outcome of

surgery. For example, a study showed that an anatomic patellar component could have more normal kinematic patterns with a mobile-bearing posterior stabilized (PS) TKA as opposed to a fixed-bearing PS TKA, while subjects with a dome patella could achieve similar kinematics regardless of TKA type [4]. Another study showed that the patellofemoral contact stresses do not change significantly after NPR TKA, but increased significantly after PR with both the dome-shaped and the conforming components [5]. Although PR has shown to reduce the rate of revision in both minimally stabilized (MS) and PS patella, MS knees with PR have the lowest rate of revision [6]. Additionally, new procedures such as patella electrocauterization and denervation can be employed to address some of the complications related to TKA [7, 8]. The diversity in patient demographics should also be considered. Although selective patellar resurfacing has been mentioned in the recent literature, an updated investigation of the factors influencing surgeon's decision on selective patellar resurfacing has been lacking [9,10]. Some studies have favored routine resurfacing in selected groups, including females, patients with inflammatory arthritis or obesity, and those who find stair climbing imperative [11]. However, no official guidelines are established. These factors may indicate that the decision to resurface the patella or not could be made selectively by intraoperative examination of the joint and addressing the patient's needs.

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