

## **Radiographic and Technical Factors Associated with Patellar Clunk Syndrome following Posterior Stabilized Total Knee Arthroplasty**

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**Introduction:** The patellar clunk syndrome is a well-known complication of total knee arthroplasty (TKA). Although patellar clunk syndrome was described over twenty years ago, technical factors associated with the development of this syndrome have not been well established. To our knowledge, this is the largest single surgeon, single institution study to report on the radiographic and technical factors associated with patellar clunk syndrome in posterior stabilized TKA.

**Methods:** From 2001 until 2012, all patients undergoing primary TKA by a single surgeon, at a single institution using only posterior stabilized components were identified. Revision TKA and infection cases were excluded. All patients who were diagnosed and treated arthroscopically for patellar clunk were identified. Patients were matched with controls by sex, surgeon, and date of surgery. Operative notes and immediate pre- and post-operative radiographs were reviewed to determine radiographic and technical factors associated with patellar clunk.

**Results:** 2271 patients underwent primary posterior stabilized TKA. A total of 75 knees in 68 patients were diagnosed and treated arthroscopically for patellar clunk for an incidence of 2.67%. Preoperatively patients in the clunk cohort had a significantly more valgus alignment than matched controls (mean 2.6 degrees valgus vs 3 degrees varus,  $p=.042$ ). Postoperatively, the clunk cohort had a significantly greater increase in posterior femoral offset (2.8mm vs 0.65mm,  $p=.0001$ ). Patellar component size less than 38mm was significantly associated with patellar clunk ( $p=.001$ ). Tibial and femoral component size, tibial offset, and patellar length were not statistically significant.

**Conclusion:** Patellar clunk syndrome is a significant complication of TKA. Both radiographic and technical factors are associated with development of patellar clunk. This highlights the importance of technical precision and component selection in primary TKA, especially in patients with predisposing factors for patellar clunk syndrome.

