

Title: Minimum 5-year follow-up for a new cementless patellar component in total knee arthroplasty

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Background: Enhanced implant longevity through biological fixation is achievable using cementless total knee arthroplasty (TKA) but concerns about patellar component failure have lingered because of prior experiences with older total knee and patellar component designs. A new cementless patella design employing additive manufacturing (3-D printing) and compression molding of the polyethylene, which offers biologic fixation technology and interlocking of polyethylene to metal. This study will examine 5-year minimum follow-up clinical and radiographic outcomes and survivorship of this new cementless patellar component.

Methods: This is an institutional registry review of prospectively obtained data on 128 cementless TKA using a new 3-D printed cementless patellar component with minimum 5-year follow-up. Outcomes were determined by comparing pre- and post-operative Knee Injury and Osteoarthritis Outcome Score for Joint Replacement (KOOS Jr.) scores and pre- and post-operative 12 item Veterans RAND/Short Form Health Survey (VR/SF-12). Aseptic loosening as well as revision for any reason were the endpoints used to determine survivorship at 5 years.

Results: KOOS Jr. score improved from 33.25 pre-operatively to 73.32 post-operatively ($p = 0.0001$). The VR/SF-12 scores improved from PH – 29.95 pre-operatively to 46.45 post-operatively ($p = 0.0001$) and MH – 36.51 pre-operatively to 56.31 post-operatively ($p = 0.0001$). Other than for PJI, no patellar revisions were performed. Patellar all-cause survivorship after 5 years was 98.43% and survivorship for aseptic loosening as the endpoint was 100%.

Conclusion: This 3-D printed cementless patellar component shows excellent survivorship at 5-year follow-up. The design of this implant and the ability to obtain cementless fixation offers promise for excellent long-term durability.

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