

## **A Prospective, Randomized Trial of Cemented vs. Cementless Total Knee Arthroplasty of the Same, Modern Design**

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**Introduction:** Highly porous surfaces promoting biologic fixation have renewed interest in cementless total knee arthroplasty (TKA), but the potential for failed ingrowth remains. This investigation compared the clinical outcomes of cemented and cementless versions of the same TKA design at a minimum of 2-years.

**Methods:** This was an IRB-approved, prospective, randomized controlled trial of patients aged 18 to 75 undergoing a primary TKA. Patients with inflammatory arthritis, a BMI > 40 kg/m<sup>2</sup>, infection, or neuromuscular disorder were excluded. Patients were randomized to receive a cemented or cementless cruciate-retaining TKA of the same design. The cementless implant has highly porous fixation surfaces, but otherwise similar features as its cemented predecessor. Knee Society (KSS), UCLA, Oxford Knee, and Forgotten Joint Scores were collected. Patients were asked to rate their knee as a percentage of normal (100% = normal). Power analysis indicated 120 patients necessary to demonstrate a 20% difference in reporting of normal (alpha = 0.05, beta = 0.80). Chi-square and independent t-tests were performed.

**Results:** 120 patients were enrolled (56 cemented, 64 cementless). There was no difference in age, gender, BMI, or ASA score (p=0.1 to 0.9). There was no difference in change in hemoglobin on postoperative day 1 between the two cohorts (-2.5±0.9 vs. -2.6±1.4, p=0.5), but total operative time was decreased in the cementless cohort (82.1±16.2 vs. 93.7±16.7, p=0.001). No differences were seen in any clinical outcome measure (p=0.2 to 0.8). Cemented patients rated their TKA to be 87.0±12.3% of normal versus 87.6±13.8% in the cementless cohort (p=0.8). There was no radiographic evidence of component loosening in either cohort.

**Conclusions:** A recently introduced cementless TKA design demonstrates excellent results without early failure for aseptic loosening, but continued surveillance is necessary to determine its potential long-term benefit.