

**A27**

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**First vs Second Generation DePuy-Synthes ATTUNE Knee System: Did Design Modification Improve Survivorship?**

**Introduction:** In 2013, Depuy Synthes introduced the ATTUNE total knee arthroplasty (TKA) system. However, numerous studies have reported a high rate of loosening of the tibial component due to implant-cement interface debonding. In June 2015, the tibial tray was redesigned to accommodate for better cement fixation. The purpose of this study was to compare outcomes in the 1st and 2nd generation systems.

**Methods:** All patients who underwent TKA with an ATTUNE system by a single fellowship trained adult reconstruction surgeon at an academic center between December 30, 2014 and July 2019 were retrospectively reviewed using an IRB approved prospectively maintained database. Patient demographics, postoperative outcomes, rates and mechanisms of revision/reoperation, and Knee Society Scores (KSS) were analyzed. Univariate analysis was carried out using chi-square with Fisher's exact analysis and t-test.

**Results:** A total 171 patients were identified, of whom 45 underwent bilateral TKA, yielding a total of 216 TKAs. Of the 216 TKAs performed, 161 utilized the 1st generation ATTUNE system and 55 utilized the 2nd generation. There were 23 postoperative complications, with the most common being stiffness requiring manipulation under anesthesia. Within the entire group, there was only 1 case (1st generation ATTUNE) of aseptic loosening of the tibial component. Univariate analysis revealed comparable rates of complications between patients with 1st and 2nd generation ATTUNE devices. There was no significant difference in postoperative KSS scores for either group.

**Conclusion:** This study found a 0.62% failure rate of the 1st generation ATTUNE tibial component in 161 consecutive knees using one packet of cement. However, there was no statistical significance in the rate of other complications between patients using 1st and 2nd generation ATTUNE knee replacement systems. We believe that differences in cementing technique may have been a factor at play in the low rate of failure.