ATTUNE™ Knee System with ATTUNE S+™ Technology – Evidence Update

Two-year Survivorship and Clinical Outcomes of Total Knee Arthroplasty with a New Tibial Design from a Multi-Center Registry

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The authors present a retrospective review of data generated within a multi-center outcome registry. The standard of care follow-up varied between sites therefore standardized registry visit windows were established, which were back-to-back to include all follow-up data. Kaplan-Meier (KM) survivorship was performed with revision of the tibial component and revision of any component as endpoints. For each endpoint two survivorship analyses were performed with differing censoring assumptions. First, unrevised subjects were censored at the last clinical follow-up [clinical assumption (CA)], and second at the date of database extract [registry assumption (RA)].

- A total of 2,626 knees were implanted between September 2017 and November 2021.
- Primary diagnosis was osteoarthritis in 98.9% of cases. The mean age was 67.6 and 55% were female.
- Mean knee society total scores (SD; N) were 45.0 (17.9; 1870) pre-operatively and 90.9 (11.4; 645), 92.4 (9.6; 172), and 94.1 (5.3; 50) at 1-, 2-, and 3-years post-operative.
- The tibial component was revised in 10 cases
  3 – Instability
  2 – Loosening
  2 – Infection
  2 – Pain/stiffness
  1 – Implant fracture

98.6% (97.8--99.0%) survivorship at 3 years for revision of any component*
99.4% (98.9--99.7%) survivorship at 3 years for tibial revision*

Conclusions

ATTUNE™ Knee System with ATTUNE S+™ Technology is performing at or better than the TKA class, as reported within this multi-center outcome registry and two national registries1,2. When using ATTUNE S+ Technology, tibial loosening, an industry-wide challenge, is a low-risk with KM survivorship for the tibia ranging between 98.9% and 99.7% at 3 years post-operatively.

*Registry Assumption
References

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   NJR Disclaimer: The data used for this analysis was obtained from the National Joint Registry ("NJR"). The Healthcare Quality Improvement Partnership ("HQIP"), the NJR and/or its contractor, Northgate Public Services (UK) Limited ("NPS") take no responsibility for the accuracy, currency, reliability and correctness of any data used or referred to in this report, nor for the accuracy, currency, reliability and correctness of links or references to other information sources and disclaims all warranties in relation to such data, links and references to the maximum extent permitted by legislation.

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Two-year Survivorship and Clinical Outcomes of Total Knee Arthroplasty with a New Tibial Design from a Multi-Center Registry

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BACKGROUND

In 2011, the ATTUNE™ Knee System (DePuy Synthes, Warsaw, IN) was released and since that time has performed well according to numerous registry reports and peer-reviewed publications. A new tibial tray design (ATTUNE S+™ Technology) was released in 2017, which included a microblast finish to increase surface roughness, cement-implant interdigitation, and reduce fluid infiltration at the cement-implant interface. In addition, four cement pockets with 45° undercut pockets provide a “macrolock” between the implant and cement.

OBJECTIVES

To assess survivorship of this knee system, including the new tibia, utilizing a multi-center, retrospective case review from a company sponsored registry.

DESIGN AND METHODS

Clinical assessments were summarized at standardized registry visit windows, which were back-to-back and included all follow-up data. Kaplan-Meier (KM) survivorship was performed with revision of the tibial component and revision of any component as endpoints, with two separate censoring assumptions. First, unrevised subjects were censored at the last clinical follow-up [clinical assumption (CA)], and second at the date of database extract [registry assumption (RA)]. Survivorship was not calculated at timepoints where <40 knees were available for follow up. Tibial component survivorship was censored at the time of revision of other components.

RESULTS

A total of 2626 knees were implanted between September 2017 and November 2021. Primary diagnosis was osteoarthritis in 98.9% of cases. Mean age was 67.6 years (range 36–94), 55% were female and BMI averaged 30.3 (range 15 to 54). There were 26 revisions; reasons for revision (N, %) are shown in Table 1. The tibial component was revised in 10 of these cases, for a diagnosis (N) of instability (3), loosening (2), infection (2), pain/stiffness (2), and implant fracture (1). KM estimates for revision of any component and revision of the tibial component (95% CI; N with further follow-up) are presented in Table 2. Plots of the KM survivorship of the TKA construct with 95% confidence interval (shaded) is provided in Figure 1, and for the tibial component in Figure 2. Mean American Knee Society (pre-2011) total scores (SD; N) are shown in Table 3.

CONCLUSION

In an observational registry data setting it is believed that RA tends to overestimate survivorship estimates, whereas CA has the potential to underestimate survivorship; this report included both analysis methods to improve transparency. This knee system with the new tibia component is performing at least equivalently to other knee systems in registries. Tibial loosening is low risk with KM survivorship for the tibia ranging between 98.8% and 99.6% at 2 years postoperatively for both assumptions. Further study is planned to evaluate whether this early success persists with longer follow up.