

Title of Article: Midterm results using a medial pivot total knee replacement compared with the Australian National Joint Replacement Registry data

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Product(s): ADVANCE® Medial-Pivot TKR

Publication Highlights

- Excellent mean post-operative Knee Society Scores and no major revisions for any reason were observed in this prospective study of 50 ADVANCE® Medial-Pivot (AMP) knees with a mean follow-up of 9.96 years conducted in Australia.
- Component survivorship was 98% at 14 years follow-up
- Authors speculate the AMP's higher than anticipated revision rate in the AOA NJRR Annual Report could be due to lack of distinction of rates for the old AMP locking detail and retention of the posterior cruciate ligament (PCL)/ improper balancing
- "The medial pivot knee-type implant in this series provided pain relief, functional improvement and a revision rate, similar to what is reported in the literature after a longer follow-up period, which is reassuring for those who use this type of implant on a day-to-day basis."

Publication Summary

Current Clinical Study

Methods

- Prospective clinical study of **47 consecutive patients (50 knees)** with osteoarthritis (OA)
 - Mean age: 69 years (range, 45-82 years)
 - Male/ Female ratio: 35/12
- Surgical Technique
 - PCL retained in 27 of 50 knees
 - Patella replaced in 42 of 50 knees
- **Mean follow-up (for all 50 knees): 9.96 (range, 1.71-14.0) years**
 - 13 knees lost during follow-up: 5 deaths and 8 patients lost to follow-up

Results

- All knees were clinically stable and the mean flexion at the last follow-up was 110° (range, 70-150)
- **No radiographic evidence of loosening and/or component migration at latest follow-up**
- **Component Survivorship of 98% at 14 years (revision for any reason as the end-point)**
 - One minor revision (2%, 1/50) at 6.64-years for ongoing PF pain (patella button added)
- Excellent mean Knee Society Scores (KSS) at final follow-up (Table 1)
- Neither PCL resection, nor patella resurfacing had an impact on the results statistically.

Table 1. Clinical and functional score results. All scores had statistically significant improvements (p<0.05)

Score	Pre-op	Post-op
KSS	33.5 (range, 12-91)	84.0 (range, 33-100)
KS- Function	50.0 (range, 15-90)	80.0 (range, 45-100)
WOMAC	34.0 (range, 12–86)	22.0 (range, 1-76)

▪ **Complications:**

- 1 Intraoperative: patella fracture treated with cerclage wire and 6 weeks of casting
- 12 Postoperative: manipulation under anesthesia for poor ROM, arthroscopic wash, pulmonary embolism, patella fracture, peri-prosthetic femur fracture

Joint Registry Results

- AOA NJRR listed AMP as having a higher than anticipated revision rate
- Authors reviewed a data subset from AOA NJRR (Sept. 1999-Dec.2010)
- 546 ADVANCE® Medial-Pivot knees/ 262,171 total TKRs (0.2%)
- At 7-year follow-up, there was 6.3% revision rate for AMP and a 4.5% with the other types of TKR for any revision with a primary diagnosis of OA.
- No statistically significant difference in the overall revision rate existed between this current study and of AMP knees of the AOA NJRR results.

Discussion of Registry Data

- **“Possible reasons for the higher revision rate are the faulty tibial insert locking mechanism the initial (AMP) design had, which was subsequently replaced in 1999. The registry data on the Advance Medial-Pivot do not differentiate between the two versions.”**
- Additional possible revision reasons can be attributed to improper imbalance of the implant and retention of the PCL (retention of the PCL may cause an excessively tight gap in flexion, causing stress on the poly-insert and possible early failure).

Study Limitations

- Registry results are not surgeon specific and do not take into account hospital and/or individual surgeons’ volume of knee replacements.
- Implant loosening and lysis have been associated with ligamentous imbalance and component malalignment, factors that are not attributed to an implant.
- Patient data are not matched to AOA NJRR data; thus, a direct statistical comparison may not be accurate.
- This study had a limited number of knees.