Title of Article: Satisfactory Results at 8 years Average Follow-up After ADVANCE® Medial-Pivot Total Knee Arthroplasty*
Author(s): Nobuaki Chinzei1 et al.
1Department of Orthopaedic Surgery, Kobe University Graduate School of Medicine, Kobe, Japan
Citation: Knee, Manuscript Accepted: 14 Oct. 2013; Available Online: 23 Oct. 2013
Product(s): ADVANCE® Medial-Pivot TKR
*- This is an unedited accepted manuscript. During the production process, errors might be found which can affect the manuscript’s content.

Publication Highlights
- This study represents one of the longest mean follow-up periods for the ADVANCE® Medial-Pivot TKA.
- The authors observed significant improvements in Knee Society Scores, range of motion, knee extension, and varus-valgus deformity in this 8-year retrospective study.
- Kaplan-Meier survivorship was 98.3% at the 8-year follow-up and there were no implant-related failures.
- “We confirmed that the features of ADVANCE® MP TKA, such as kinematics in knee motion and less polyethylene wear, may have contributed to our good clinical results, and thus play a key role in long-term implant survival.”
- The authors postulate that the reasons for these results compared to other reports may be due to individual differences in the tibial slope and differences in measurement methods.

Publication Summary

Methods
- Retrospective clinical study of 76 consecutive patients (85 knees)
  - Mean age: 70.2 ± 8.1 years (range, 51–88)
  - Male/ Female ratio: 5/71
  - Mean BMI: 26.5 ± 4.6 kg/m² (range, 17.8–36.2)
  - Primary Diagnoses:
    - Osteoarthritis (OA) in 60 knees (70.6%), rheumatoid arthritis in 22 knees (25.9%), osteonecrosis in 2 knees (2.4%), and osteoarthritis after a high tibial osteotomy in one knee (1.2%)
- Intraoperative Outcomes
  - PCL sacrificed in all knees
  - Total operating time: 111.5 ± 16.5 min (range, 79–164)
  - Average blood loss: 273.9 ± 122.3 mL (range, 91–572)
- Mean follow-up: 93.1 ± 14.3 months (range, 72–132)
  - 4 patients (5 knees) were lost to follow-up (5.9%)

Results
- Knee extension, range of motion (ROM), and varus-valgus deformity improved significantly
- At final follow-up, excellent Knee Society Scores (KSS) were observed and all functional scores improved postoperatively. Table 1 contains a summary of all clinical and functional results.
- Kaplan-Meier survivorship was 98.3% (95% CI, 96.6-99.9) at 8 years (revision surgery as the end-point)
  - One revision (1.2%, 1/85) at 2-years for implant loosening and suspected late deep infection (no infection recurrence reported after a two-stage revision arthroplasty)
  - All other knees achieved solid fixation and did not display any evidence of osteolysis.
Table 1. Clinical and functional outcome results. All outcomes, except knee flexion (*) had statistically significant improvements (p<0.05)

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Pre-op</th>
<th>Post-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee Society Score</td>
<td>36.2 (range, 0-65)</td>
<td>92.1 (range, 65-100)</td>
</tr>
<tr>
<td>Knee Society Functional Score</td>
<td>31.4 (range, 0-75)</td>
<td>73.4 (range, 45-100)</td>
</tr>
<tr>
<td>Knee Flexion (deg.)*</td>
<td>106.2 (range, 20-140)</td>
<td>110.3 (range, 80-130)</td>
</tr>
<tr>
<td>Knee Extension (deg.)</td>
<td>-12.5 (range, -40-0)</td>
<td>-1.1 (range, -15-0)</td>
</tr>
<tr>
<td>ROM (deg.)</td>
<td>94.2 (range, 20-140)</td>
<td>110.6 (range, 60-130)</td>
</tr>
<tr>
<td>Varus-valgus deformity (deg.)</td>
<td>10.7 (range, -9-31)</td>
<td>1.4 (range, -4-5)</td>
</tr>
</tbody>
</table>

Complications

- No intraoperative complications
- 9 postoperative complications occurred and resolved during the study follow-up:
  - 1 knee revision (previously mentioned loosening and suspected late infection), 2 insufficient wound closures, 3 hypoxemias, 2 knees with deep vein thrombosis, and 1 knee with superficial vein thrombophlebitis

Study Limitations

- This is a mid-term study with a retrospective design.
- Additional follow-up with a larger patient size is needed to determine the long-term effects.

Overall Conclusion

- “Patients undergoing ADVANCE® Medial-Pivot TKA achieved excellent clinical and radiographic results without any implant-related failures at mid-term follow-up.”