5 Year Follow Up Data for Cementless Total Knee Arthroplasty Patients

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INTRODUCTION

- Cemented fixation of total knee arthroplasty (TKA) has been shown to have long term issues resulting in cement degradation & implant loosening over time.
- Cementless TKA as a solution to this issue has gained popularity due to the advancements in biomaterials & use of current generation polyethylene.
- These innovations have led to improved survivorship of modern cementless TKA implants & adaptation by orthopedic surgeons.
- Favorable results using this implant have been published, though most literature to date has been limited by short term follow-up.
- The purpose of this study was to evaluate patient clinical & radiographic outcomes after cementless total knee arthroplasty with a minimum follow up of 4.5 years.

METHODS

- A retrospective cohort study was performed on 28 primary cementless TKAs.
- Components utilized the same 3D printed design & manufacturer with a minimum of 4.5-year follow-up.
- A single surgeon at a single institution preformed all TKAs between 2013 - 2016.
- Patients underwent cementless TKA based on an intraoperative evaluation of bone quality.
- Patients’ charts were reviewed for demographics, TKA revisions, range of motion, Knee Society Knee Scores (KSKS) & Function Scores (KSFS), postoperative Knee Injury & Osteoarthritis Outcome Scores for Joint Replacement (KOOSJR), & perioperative complications.
- Radiographs were evaluated for malalignment, subsidence, radiolucent lines, osteolysis, & component loosening.
- Two tailed independent t-test & chi-squared analysis was used with statistical significance defined as p < 0.05.

RESULTS

<table>
<thead>
<tr>
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<th>Cementless TKA</th>
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<tbody>
<tr>
<td></td>
<td>N=28</td>
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<tr>
<td>Average Follow-up (Months)</td>
<td>60±4.8</td>
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<tr>
<td>Average Age</td>
<td>66.6±8.8</td>
</tr>
<tr>
<td>BMI</td>
<td>32.39±6.7</td>
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<tr>
<td>KOOSJR Score</td>
<td>84.56±16.17</td>
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<tr>
<td>KSKS pre-op</td>
<td>46.18±11.42</td>
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<tr>
<td>KSKS post-op</td>
<td>98.18±3.96</td>
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<tr>
<td>KSFS pre-op</td>
<td>47.32±11.18</td>
</tr>
<tr>
<td>KSFS post-op</td>
<td>98.21±4.12</td>
</tr>
<tr>
<td>Pre-op Extension</td>
<td>3.75±2.24</td>
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<tr>
<td>Pre-op Flexion</td>
<td>116.96±5.32</td>
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<tr>
<td>Post-op Extension</td>
<td>0</td>
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<tr>
<td>Post-op Flexion</td>
<td>132.54±4.61</td>
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</tbody>
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- Average follow up was 5 years.
- 8 patients underwent bilateral TKAs & 20 underwent unilateral TKAs.
- 1 radiograph image showed 2 mm of non-progressive varus subsidence that did not require intervention.
- 1 patient required a revision of their femoral component for ligamentous instability following a fall.
- There were no cases of aseptic loosening requiring revision.
- There were no cases of infection.

CONCLUSION

- The 4.5 year follow up clinical & radiographic results of cementless TKA are promising.
- There were no cases of aseptic loosening requiring revision with an average follow up of 5 years.
- These results show promising KOOSJR scores, high KSKS & KSFS scores as well as acceptable post-operative range of motion.
- Our study demonstrates how the advancement in biologic fixation through highly porous coating, improvements in immediate tibial baseplate structural fixation, & utilization of current-generation polyethylene have contributed to excellent outcomes for cementless TKA.
- As the proportion of younger, more active, & obese patients receiving primary TKA continues to increase, cementless TKA can become a viable option for these patients.
- This study is clinically significant as outcome data remains positive for longer term follow up with patients with cementless TKAs.
- This is clinically relevant as cementless total knee arthroplasty remains a good alternative to cemented TKA in certain patients.