Computer Assisted vs. Manual TKA: Outcomes at 5 years

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Introduction

Computer assisted surgery (CAS) used in TKA has been shown to produce superior implant alignment with fewer outliers compared to manual TKA. However, short term studies regarding outcomes have been equivocal, and there are no long-term studies comparing functional differences between CAS and manual TKA. The purpose of this study was to determine whether any differences in 5-year clinical, functional, or radiographic outcomes exist between patients who underwent either CAS or manual TKA.

Methods

- 40 manual and 38 CAS TKA performed by one surgeon
- Groups identical with regard to age, sex, body mass index, diagnosis, surgical technique, implants, and perioperative management
- 61 patients available for 5-year follow-up
- Pre and post-operative mechanical axis assessed
- Knee Society, UCLA activity scores quantified clinical/functional outcomes

Results

- No significant difference between CAS and manual TKA for these measures at 5-year follow-up (see Figure 1):
  - Knee and Functional scores
  - UCLA activity scores
  - ROM

Discussion

This study found similar clinical, functional and radiographic outcomes at 5-year follow-up between manual and CAS TKA consistent with the short-term results found previously in the same patient cohort. We continue to believe that there are learning effects afforded by working with a navigation system which can be a factor in cumulative accuracy with regard to femoral component rotation and positioning, tibial slope, component size selection, and mechanical axis.

Conclusion

- No statistically significant differences in 5-year clinical or functional outcomes exist between CAS and manual TKA
- Use of CAS may improve a surgeon’s manual technique through intraoperative training effects

References


UCLA Activity Score

1. Wholly inactive, dependent on others, and can not leave residence
2. Mostly inactive or restricted to minimum activities of daily living
3. Sometimes participates in mild activities, such as walking, limited housework and limited shopping
4. Regularly participates in mild activities
5. Sometimes participates in moderate activities such as swimming or could do unlimited housework or shopping
6. Regularly participates in moderate activities
7. Regularly participates in active events such as bicycling
8. Regularly participates in active events, such as golf or bowling
9. Sometimes participates in impact sports such as jogging, tennis, skiing, aerobics, ballet, heavy housework or backpacking
10. Regularly participates in impact sports

5 Year UCLA Score

<table>
<thead>
<tr>
<th>Manual</th>
<th>TKA</th>
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<tbody>
<tr>
<td>n</td>
<td>33</td>
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<tr>
<td>Mean</td>
<td>5.3</td>
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<td>95% CI</td>
<td>(4.8, 5.9)</td>
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Manual and CAS Clinical and Functional Outcomes