Why Consider Partial Knee Arthroplasty?

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Disclosures

I have the following relevant financial relationship with a commercial interest to disclose:

• Zimmer Biomet Royalty, Consultant
• ArthroSurface Ownership
• Orthopaedic Technology Group Ownership
What Do We Know About PKA vs TKA?

- Higher patient satisfaction\(^2\)
- Fewer surgical complications\(^3\)
- Shorter hospitalization with PKA\(^4\)

Reduced Risk of Complications as Reported in One Multi-Centre Study\(^3\)

- TKA: 11%
- PKA: 4.3%
What About Function in PKA?

- Functional score higher for PKA vs TKA\textsuperscript{5-7}
What about QOL in PKA?

• 65 cement PKA implanted in 62 patients < 60, at 10 years FU


**KOOS**

<table>
<thead>
<tr>
<th>Component</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>Pain</td>
<td>86 ± 12 (21 to 100)</td>
</tr>
<tr>
<td>Symptoms</td>
<td>83 ± 13 (27 to 100)</td>
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<tr>
<td>ADL</td>
<td>80 ± 20 (21 to 100)</td>
</tr>
<tr>
<td>Sport</td>
<td>66 ± 28 (0 to 100)</td>
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<tr>
<td>QOL</td>
<td>78 ± 26 (30 to 100)</td>
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**SATISFACTION**

- 94% satisfied or enthusiast
- 3% no change
- 3% disappointed
What About Kinematics in PKA?

• Knee kinematics which resembles normal during stair climbing\(^8\)

*In Vivo Determination of Knee Kinematics for Subjects Implanted With a Unicompartmental Arthroplasty*

Jean-Noël A. Argenson, MD,* Richard D. Komistek, PhD,†
Jean-Manuel Aubaniac, MD,* Douglas A. Dennis, MD,† Eric J. Northcut, MS,‡
Dylan T. Anderson,† and Serge Agostini, MD‡
Long term results of PKA

- Peer reviewed results
  - 90% survivorship at 20 years: M/G™ Uni fixed-bearing knee\(^9,10,11,12\)
  - 94% survivorship AUS Registry at 10 years (ZUK)

Standing AP radiographs after 13 years
- Long axis of the femoral components perpendicular to the tibia and parallel to the long axis of the tibia
- No evidence of loosening
Despite Results
UKA is Under Represented

• 8% of knee replacements worldwide$^{13,14}$

• Roughly 30% of US Orthopedic Surgeons reported to AJRR they perform UKA$^{15}$

• Most are done by a small group of enthusiasts

Surgeons Performing Knee Arthroplasty

- 30% UKA
- 70% TKA Only
Why Do Most Orthopaedic Surgeons See These X-Rays.....
Envision this Solution?
Rather than an Ideal UKA Candidate?
What Factors Influence this Decision?
Early History of UKA was Controversial

- 1980’s poor results reported by influential surgeons\textsuperscript{16,17}
- Led to confusion concerning the indications for and value of the procedure
- 1990 UKA comprised approximately 1–2\% of the knee arthroplasty cases performed in US\textsuperscript{18}
- Few Orthopedists received training
Why the Early Poor Results?

I. Implant Design
   ◦ Fixation, size, coverage, and constraint

II. Polyethylene
   ◦ RAM extruded, terminally radiated oxygen stored and too thin
Early Poor Results Continued

III. Poor technique
   ◦ Inaccurate instrumentation
   ◦ Poor inter-component alignment
   ◦ Intentional overcorrection\textsuperscript{16}

IV. Poor patient selection
   ◦ Post patellectomy\textsuperscript{16}
   ◦ Inflammatory OA\textsuperscript{19}
• Now we have 20 year results that rival TKA$^{9,10,11,12}$

• But – majority of Orthopedists remain resistant to performing UKA’s
Is There a Lack of Indications for UKA?

• 1989: Kozinn and Scott JBJS Current Concepts: “Ideal UKA Patient”

• 1993: Stern, Becker and Insall, UKA indicated in only 6% of patients: limited UKA to low activity, elderly, <82Kg with single compartment disease

  ◦ HOWEVER on direct intra-operative visualization of 228 KA patients, 15% had isolated, single compartment arthritis
  ◦ Majority excluded for weight and activity
What percent of patients undergoing total knee arthroplasty are candidates for UKA?

2 Orthopedists, one who performed UKA and another who only performed TKA reviewed 280 sequential patients who had undergone 320 TKA’s.
Stanford VA Study

• Applied Very Conservative PKA Indications:\(^{23}\):
  ◦ Standard exclusions: inflammatory OA, instability, prior osteotomy, flexion contracture > 10’

NO Patellofemoral or opposite compartment joint space narrowing or subchondral irregularities.

• Using conservative criteria up to 26% of patients undergoing TKA are likely candidates for UKA\(^{23}\)
Is There a Lack of Indications for UKA?

No!

• The incidence of single compartment OA appears to be 15 – 25%\(^{21,23}\)

• AND, if mild to moderate PF OA accepted, as has been demonstrated by several authors, UKA may be indicated in up to 50%\(^{24,25,26}\)

• It is probable that over 25% of knee arthroplasty patients would be suitable for UKA\(^{24,25,26}\)

Low utilization does not appear to be related to a lack of indications.
• Many Orthopaedic Surgeons received little to no training in PKA
• Education or Experience may have been negative
• Most will perform a TKA rather than refer for a PKA
• Concerned about Disease Progression
Risk of Progressive Arthritis?

• Revision for progressive arthritis is <10% at 15 – 20 years$^{10,11,12,27,28}$

• AND, should this be considered a failure?

18 years “normal” knee function

“A Primary TKA”
Why Not Just Do a TKA?

• UKA has lower surgical morbidity\(^3\)
• Patients prefer UKA’s
  ◦ Higher proportion of “forgotten knee”\(^{29}\)
  ◦ Higher activity levels and better ROM\(^{30,31}\)
  ◦ More normal kinematics\(^{32}\)
• UKA is a cost effective solution\(^{24,33,34}\)
The decision to proceed with a UKA is complex.

- Based on careful assessment of indications
- Surgeon training and expertise
- Openness to new information
- Willingness to do what may be best for the patient rather than what is most comfortable for the surgeon

My Advice – Get trained, Go Watch, Start in Non-MIS
References


