

Modular Knee Arthrodesis as Definitive Treatment for Periprosthetic Infection, Bone Loss, and Failure of the Extensor Mechanism after Total Knee Arthroplasty

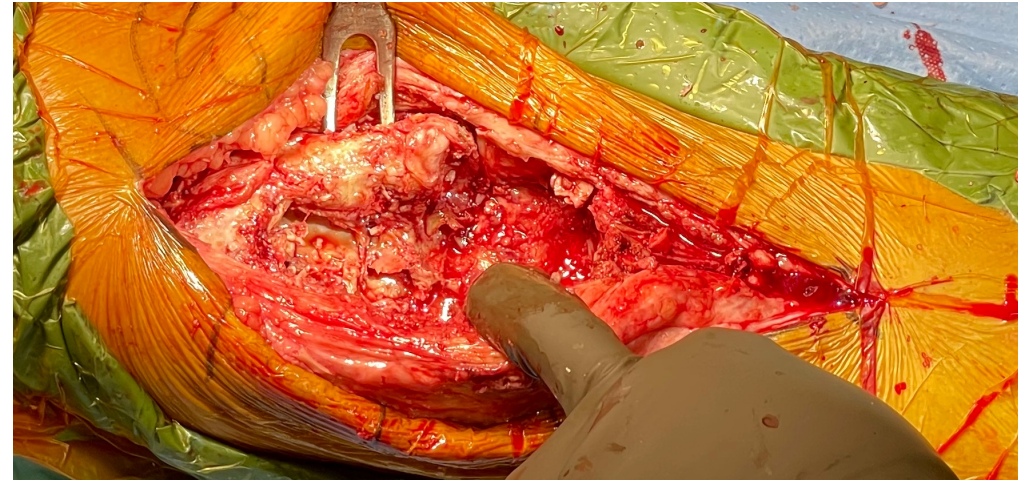
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Introduction

- Periprosthetic joint infection (PJI) after total knee arthroplasty (TKA) can result in:¹⁻³
 - Bone Loss
 - Soft Tissue Loss
 - Leg Length Discrepancies
 - Dysfunctional Extensor Mechanism
- Above Knee Amputation (AKA) is an Established Salvage Treatment¹⁻⁴
- Modular Knee Arthrodesis (MKA) is an Alternative Salvage Treatment^{1,2,4}
 - Provides Rigid Stability
 - Maintains Leg Length
- **Goal:** Report Outcomes of a MKA as Definitive Treatment for PJI after TKA



Methods

- Retrospectively reviewed 8 patients implanted with MKA at 2 institutions between 2016-2022
- All patients:
 - History of PJI after TKA
 - At least 1 Two-Stage Revision with 6 weeks of intravenous (IV) Antibiotics
 - Chronic Infection diagnosed by a Board-Certified Infectious Disease Physician
 - Ineligible for Repair of Failed Extensor Mechanism
 - Extensive Bone and Soft Tissue Loss
- Medical Records reviewed for Demographics, Complications, and Outcomes
- Radiographs reviewed for Placement of MKA

	MKA n=8
Age (years), mean (range)	69.63 (57-77)
Women, n (%)	4 (50.0%)
BMI (kg/m²), mean (range)	34.47 (24.96 – 47.61)
Former Smoker, n (%)	4 (50.0%)
Type II Diabetes Mellitus, n (%)	4 (50.0%)
ASA Score, n (%)	
II	2 (25.0%)
III	6 (75.0%)
Follow-up (years), mean (range)	2 (0.3 – 6.6)

Table 1. Demographics

BMI=Body Mass Index, kg=kilograms, m=meter,
 ASA=American Society of Anesthesiologists,
 MKA=Modular Knee Arthrodesis

Results

	MKA n=8
Nonoperative Complications, n (%)	2 (25.0%)
Infection	1 (12.5%)
Nondisplaced Distal Tibial Canal Fracture	1 (12.5%)
Reoperations, n (%)	2 (25.0%)
Superficial Irrigation and Debridement	1 (12.5%)
Mechanical Failure	1 (12.5%)
Ambulation at Most Recent Follow-Up, n (%)	
Unassisted	1 (12.5%)
Cane/Crutches	4 (50.0%)
Walker	3 (37.5%)

- All patients Ambulated with Physical Therapy on Postoperative Day 1
- All patients Satisfied with Outcome
 - No patient elected to proceed with AKA
- Nonoperative Complications:
 - 1 Intraoperative Culture grew Bacillus; Successfully Treated with IV Vancomycin
 - No patient required Revision of MKA for Infection
 - 1 Nondisplaced Tibial Canal Fracture that Healed Uneventfully

Table 2. Outcomes

MKA=Modular Knee Arthrodesis

Reoperation, Patient 1



Figure 1. Draining sinus tract and superficial infection treated with antibiotics, superficial irrigation, debridement, and placement of antibiotic cement with retainment of MKA 45 days after implantation.



Figure 2. Additional draining sinus tract treated with antibiotics and removal of superficial antibiotic cement with retainment of MKA 74 days later. No additional reoperations 3 years postoperatively.

Reoperation, Patient 2



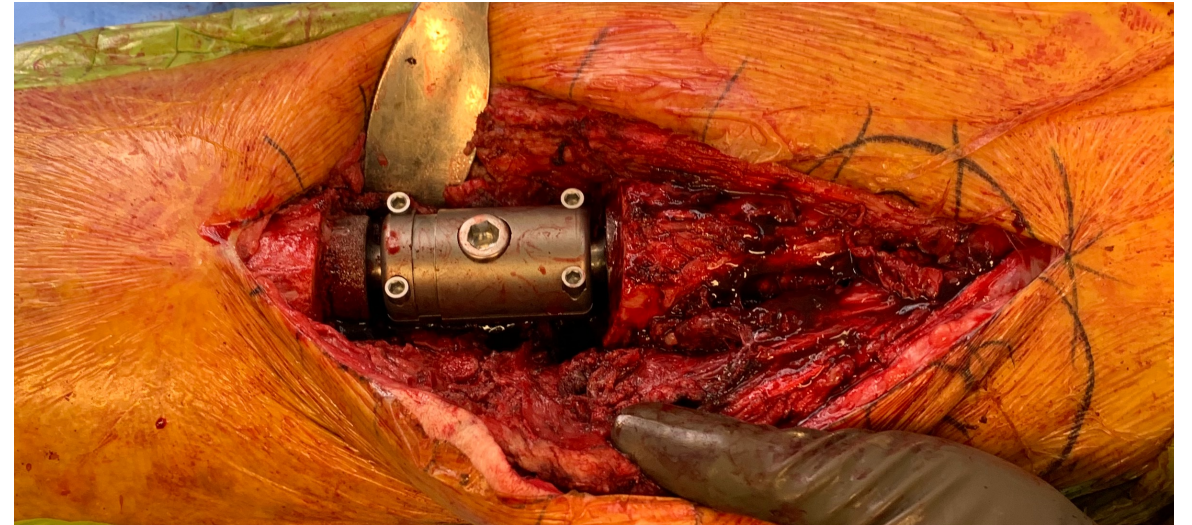
Figure 3. Revision 6.4 years after fusion for failure of proximal diaphyseal connector.



Figure 4. Broken proximal diaphyseal connector with excessive wear of locking collar.

Conclusion

- Knee Arthrodesis is Viable Alternative to Above Knee Amputation for Knees Not Amenable to Revision TKA
- Allows
 - Retainment of Extremity
 - Early Postoperative Ambulation
- Modular Components
 - Allow for Restoration of Leg Length
 - Multiple Points for Failure, especially in Active Patients
 - Possibility of Mechanical Implant Failure Years Postoperatively



Thank You



Beth Israel Lahey Health 
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EXCEPTIONAL CARE. WITHOUT EXCEPTION.

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