Unicompartmental Knee and Total Hip Replacement in the Outpatient Setting

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Epiphany

- 54 year old patient
- Insured
- Admitted at 7:30AM Monday
- UKA
- Home at 9:30AM Tuesday

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Unicompartmental Knee Replacement (UKA)

- OA confined to one part of the knee
- Quicker recovery
- Less pain after surgery
- Less blood loss
Osteoarthritis

- Normal cartilage covers the ends of the bone
- Allows the bones to move easily against each other
Osteoarthritis

- “Wear and tear”
- Cartilage deteriorates
- Motion along exposed surface is painful
Knee Anatomy

- 3 Compartments
  - Medial
  - Lateral
  - Patellofemoral
Knee Alignment

- Knee feels 3 – 4 times body weight
- Tibiofemoral joint
  - Medial compartment
  - 60- 70% of weight
- Medial compartment arthritis 75%

GOALS

• Enough surgery to address pathology
• Restore function
• Acceptable long term outcomes
• Minimize risk
Total Knee Replacement
Current Indications

- Isolated medial compartment disease ***
- Intact ACL
- Intact MCL
- No inflammatory arthritis
Diagnoscopy

- 3 mm arthroscope
- Done under local anesthetic
- Confirms isolated single compartment disease
UKA Pre-op

- Tranexamic Acid
- Bupivicaine Spinal
- Adductor Canal Block
- Multimodal anesthesia
  - Acetaminophen
  - Nerve stabilizers (Gabapentin, Lyrica)
  - Ondansetron
  - IV Decadron

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Muscle Sparing

- Smaller device
- Not necessary to dislocate patella
- No disruption of quadriceps
UKA Postoperative

• Early ambulation with nursing
• Continuous passive motion
• 2 doses of antibiotics
• DVT prophylaxis
• Discharge within 23 hours
Modern UKA Results

• Patients under age 60 have survival rates above 90% at 10 years


UKA Results Compared to TKA

- 15 year survival was comparable (89% UKA, 79% TKA)
- UKA had better ROM, were more satisfied and had comparable Bristol function score.

UKA Results Compared to TKA

23 patients with TKA/UKA
- Significantly better ROM with UKA
- 11 patients no preference
- 12 patients preferred UKA

Dalury DF, Fisher DA, Adams MJ, Gonzales RA. Unicompartmental knee arthroplasty compares favorably to total knee arthroplasty in the same patient. Orthopaedics. 2009 Apr 32(4)
UKA vs TKA Complications

- Norweigian Registry
- UKA was associated with a lower risk of infection compared with TKA (relative risk, 0.28 [95% confidence interval, 0.10 to 0.74]; p = 0.01).

Failure mechanisms after unicompartmental and tricompartmental primary knee replacement with cement. Furnes O, Espehaug B, Lie SA, Vollset SE, Engesaeter LB, Havelin LI.
UKA vs TKA Complications

- 3449 patients
- DVT Rate: (1.6%)
  - TKA 2.2%
  - UKA 0.3%
  - The risk-benefit ratio for TKR that has been used to produce national guidelines may not be applicable to UKR

UKA vs TKA Complications

• Multicenter Study

• TKA higher rates of:
  • Manipulation (p < 0.0001)
  • ICU Admission (p < 0.049)
  • Transfusion (p < 0.036)

• OVERALL: TKA 11%, UKA 4.3%

OUTPATIENT HIP REPLACEMENT

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We Care.

High quality care at a lower cost.
Total Hip Replacement

- Patient Selection:
  - Moderate to Severe Hip Disease

- Goals:
  - Pain relief
  - Restoration of motion
Anterior Approach

• Utilizes the natural interval between the Sartorius and the Tensor Fascia Lata
Anterior Approach

• No detachment of hip abductors (no limp)
• No detachment of external rotators (no dislocation)
Anterior Approach

• Faster functional recovery
• No hip precautions
• Minimal Heterotopic Bone
Surgical Table
Femur

Figure 8

Figure 9

Figure 10

Figure 11
MANAGE RISK

- Patient Variables
- Equipment Variables
- Staff Variables
- Surgeon Variables

“Avoid battle until you can count on certain victory”
- Sun Tzu

“Amateurs think tactics, professionals think logistics”
- Captain Griffey
Hip Replacement

- Retrospective Review - inpatient
  - N=70
  - 40% home POD#1
  - Transfusions=0
  - Complications=1
    - Non-fatal PE POD#12
Early Discharge - BMI

- Avg = 27.85
- Range 23.5 – 37.7

- BMI<30=12 (70%)
- BMI<35=27 (96%)
Early Discharge - Age

- Avg = 59.5
- Range 50 – 74

- Age < 60 = 16 (57%)
- Age < 65 = 22 (78%)
Major Comorbidities

- POD#1=6/28 (21%)
- POD#2=14/29 (48%)
- POD#3=6/12 (50%)
- POD#4=1/1 (100%)
ASA

• ASA 1  A normally healthy patient
• ASA 2  A patient with mild systemic disease
• ASA 3  A patient with severe systemic disease
• ASA 4  A patient with severe systemic disease that is a constant threat to life
• ASA 5  A moribund patient who is not expected to survive for 24 hours, with or without an operation
BASC Criteria

- ASA 1 – 2
- BMI <35 (<30 preferred)
- Age <65 (<60 preferred)
- Stable social situation
- Sane, intelligent, motivated
BASC Unacceptable

- ASA 3 – 4 (severe systemic disease)
  - OSA, CAD, Diabetes, COPD, Renal Impairment
- BMI >35
- History of DVT/PE
- Unstable Mental or social situation that would preclude safe discharge to homecare/VNA

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Published data – risk factors

- Review of 1012 patients undergoing THA or TKA
- 70 total complications (6.9%)
- 59 complications occurred > 24 hours after surgery (84% of all complications)
- Risks = COPD, CHF, CAD, cirrhosis


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Equipment

- Hana table
- Power
- Fluoro
- Sterile processing
Staff

- Tech
- Circulator
- Radiology tech
- Postop nursing staff
Surgeon

- Experience
- Transfusion rate
- Readmission rate
- Infection rate
- Dislocation rate
THA Pre-op

- Tranexamic Acid
- Bupivacaine Spinal
- Multimodal anesthesia
  - Acetaminophen
  - Nerve stabilizers (Gabapentin, Lyrica)
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THA Postoperative

- Early ambulation with nursing
- 2 doses of antibiotics
- DVT prophylaxis
- Discharge within 23 hours
Reassess Periodically

- Surgical time: 65 – 102 min (avg 86 min)
- Time to discharge: 7.5 – 23.8 hrs (avg 18.1 hrs)
- Blood loss: 100 – 600 mL (avg 250 mL)
- Decrease in Hb: 0.4 – 4.6 (avg 3.5)
- Complications: No readmissions
  No transfusions
  1 dislocation
Outpatient Results

- 119 outpatient THA compared to all inpatient THAs by single surgeon via DA Approach
- No difference in complications or blood loss
- Overall cost
  - Outpatient $24,529
  - Inpatient $31,327
- Conclusion – outpatient THA safe and cost-effective for appropriately selected patients

Outpatient Results

- 27 patients selected for outpatient THA
- 24 patients home day of surgery
- 1 readmission at 11 days for seroma formation
- No outpatient procedure specific complications or readmissions

Outpatient Results

- 113 patients with 87 in an “outpatient protocol”
- 86 of the 87 outpatient patients home on day of surgery
- No significant medical complications and no readmissions at 2 weeks
- Single infection at 3 weeks postop

Outpatient minimally invasive total hip arthroplasty
Via a modified Watson-Jones approach: technique and results
Chen D, Berger RA. Instr Course Lect 2013: 62:229-36

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Future

- Collect data on outcomes
- Periodic review
  - Minimize risk
  - Improve process
- Total knee replacement
- Bundled payment