Ambulatory Knee Arthroplasty

Harlan B. Levine, MD
Hartzband Center for Hip & Knee Replacement
Hackensack University Medical Center
Hackensack, New Jersey
Disclosure

- Zimmer
  - Consultant

- Biomet
  - Consultant
Total Knee Arthroplasty

- Standard of care
- Introduced in 1968
- Success > 90% @ 20 years
- Prevalence ↑; TKA > THA
Total Knee Arthroplasty Issues

- Hospital stay
- Lengthy rehab
- Capable physicians
Total Knee Arthroplasty – Patient Issues

- Pain
- Nausea, Emesis, Constipation
- Post-Op orthostasis
- Transfusion
- Thromboembolic
Evolution
Evolution

Gluck's prosthesis 1890

Early Total Condylar Install 1970s

Current LPS
Ambulatory ≠ MIS
MIS Aims

- Less invasive approach
- Maintain standard of care
- Improve outcomes
MIS Orthopaedic Evolution

- 1990’s—Midvastus/Subvastus (Engh)
- 1995-----Repicci Knee
- 1998-----Albrektsson/Carlsson MG MIS UKA
- 1998-----Vaughan Mini TKA
- 2001-----Coon MG EM side cutting guides
- 2002-----Coon/Tria Nexgen QS TKA
- 2005-----MIS Implants
MIS Goals

↓ Pain
↓ Blood loss
↓ LOS
↓ Disability
↓ Morbidity
↑ Faster rehabilitation
↑ Improved satisfaction
Greater Early Range of Motion (ROM) 
SLR On Day of Surgery
"If I have been able to see further than others, It is because I have stood on the shoulders of giants."
Sir Isaac Newton.
MIS 2 INCISION THA
MIS HIP
Length of Stay

Hackensack University Medical Center

Days

Patient
Hospital stay was shorter than the stay with conventional THA

270/300 patients from 3 centers discharged to home within 24 hours
Transition to Ambulatory TJA from Traditional TJA

- Paradigm shift
  - Hospital culture
  - Physical Therapy
  - Nursing
  - Administration
  - Discharge Planning
  - Other MDs

- Patient expectations
“A man’s got to know his limitations”
ASC INITIAL EXPERIENCE

- 3 OR Unit
- Multiple Anesthesiologists
- Physical Therapy Unit on premises
- Individual nursing
- Adequate autoclaves & central supply
- Working relationship with a blood bank
ASC INITIAL EXPERIENCE

- 5x / week home PT readily available
- Visiting Nurse Service readily available
- Frequent office contact!
- Early office follow up
ASC INITIAL EXPERIENCE

1st Case 6/30/08

370 TJA
–331 THA
–39 Knees
39 Knee Arthroplasty

32 TKA

5 UKA

2 PFA
ASC INITIAL KNEE EXPERIENCE

- Age (yrs)  
  53.3 (37–79 yo)

- BMI (kg/m²)  
  30 (21.1-44.8)

- ASA score  
  1-24
  2-13
  3-2

- Surgical Time (min)  
  43 (31-68)
ASC INITIAL EXPERIENCE

- Complications

  1. emergency room visit – overnarcotized
  2. anterior hip dislocation
  2. I&D for hematoma – 1 TKA, 1 THA
<table>
<thead>
<tr>
<th></th>
<th>KSS</th>
<th>KSSF</th>
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<tbody>
<tr>
<td>Pre-op (39 pts)</td>
<td>39.6</td>
<td>61.6</td>
</tr>
<tr>
<td>PO 1 year (19 pts)</td>
<td>94.9</td>
<td>93.2</td>
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<tr>
<td>PO 2 years (6 pts)</td>
<td>98</td>
<td>92</td>
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“Comparison of outpatient versus inpatient total knee arthroplasty”

Kolisek FR. CORR 2009

- Two matched cohorts
  - 64 pts 23 hrs
  - 64 pts 2.3 days

- No perioperative complications
- No readmissions
- 2 yr f/u, no difference in KSS
Effectiveness of Clinical Pathways

- Reduce length of stay
- Facilitate effective resource use
- Preserve quality of care
- Maintain or improve patient satisfaction or safety

Effectiveness of clinical pathways for total knee and total hip arthroplasty: literature review
  - Kim S. JOA 2003

Effects of clinical pathways in the joint replacement: a meta-analysis
  - Barbieri, BMC Med 2009

Success of clinical pathways for total joint arthroplasty in a community hospital
  - Walter FL. CORR 2007
Technique
Skin Incision

- Traditional
- Mini-Incision Sub-Vastus
- Mini-Incision Mid-Vastus
- Quad-Sparing Incision
ANALGESIA PROTOCOL

- Peri-operative
- Post-operative
- Out-patient
PRE OPERATIVE

Cocktail

- Celecoxib 400 mg
- Famotidine 20 mg
- Pregabalin 100 mg
- Scopolomine patch
- +/- Oxycontin 10 or 20 mg

Normovolemic Hemodilution
PERI OPERATIVE

- No Foley catheter
- Mechanical compression on non-operative extremity
- In operating room prior to procedure:
  - metoclopramide 10mg
  - ondansetron 4mg
  - dexamethasone 8mg
  - Appropriate Antibiotic
INTRA OPERATIVE

- Hyperbaric Bupivicaine Spinal Anesthetic
INTRA OPERATIVE

- Heated IV fluids – KEEP PATIENT WARM!

- Local infiltration of 0.25% bupivicaine with epinephrine (1:200,000) - avg. 1cc/ kg.

- Heparin 1,000 units-1,500 units IV push prior to incision / tourniquet
OUTPATIENT PROTOCOL

- Percocet (5/325mg) po q4h
- +/- Oxycontin
- Celecoxib 200mg po bid
- Pregabalin 50mg po bid
- Famotidine 20mg po daily
- Stool Softeners
POSTOP / OUTPATIENT REGIMEN

- Venous Compression Stockings

- Mechanical compression device (RR only)
  - Foot Pump for TKA
  - SCD for THA

- Cryotherapy (Recovery room & home)
ANTI COAGULATION PROTOCOL

Create a system that works within the framework available to you

- POD #1—warfarin 10mg
- POD #2—warfarin 5 mg
- POD #3 thru 2 week f/u

- THA--LMWH
- TKA-- ASA 325mg po bid or enoxaparin
Starting Out

- Thin patient
- Minimal deformity
- Atrophic arthritis
- Younger
- Motivated
Poor ambulatory candidates

- Deficient or scarred skin
- Impaired skin healing
- Prior intra-articular surgery
- Obese (extremity)
- Heavy muscled?
- Medical Comorbidities
- Your mother’s friends
BECOME PREDICTABLE
BRIEND OR STAFF

Develop highly motivated, interested and talented team(s)

Train them and let them train you
BEFRIEND ANESTHESIA

Develop highly motivated, interested and talented team(s)

Seek out people willing to try something new
ENSURE ADEQUATE SUPPLY LINE

- Sign on implant vendor as integral team member
  - Ensure adequate implant inventory
  - Guarantee adequate instrumentation
- Streamline operating set up (drapes, instruments, etc.)
- Arrange sufficient supply of power tools
PRE OP EDUCATION

- Office Patient Educator
- Printed Literature
- Video- DVD
- Internet Information Sites- Office Web Site
DISCHARGE PLANNING

- Must be open minded and flexible
- Arrangements must be made well in advance
BOTTOM LINE

- Familiar surgical technique
- Not a steep learning curve
- Multiple potential patient benefits
- Potential benefits to the whole healthcare delivery system
Thank You