

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

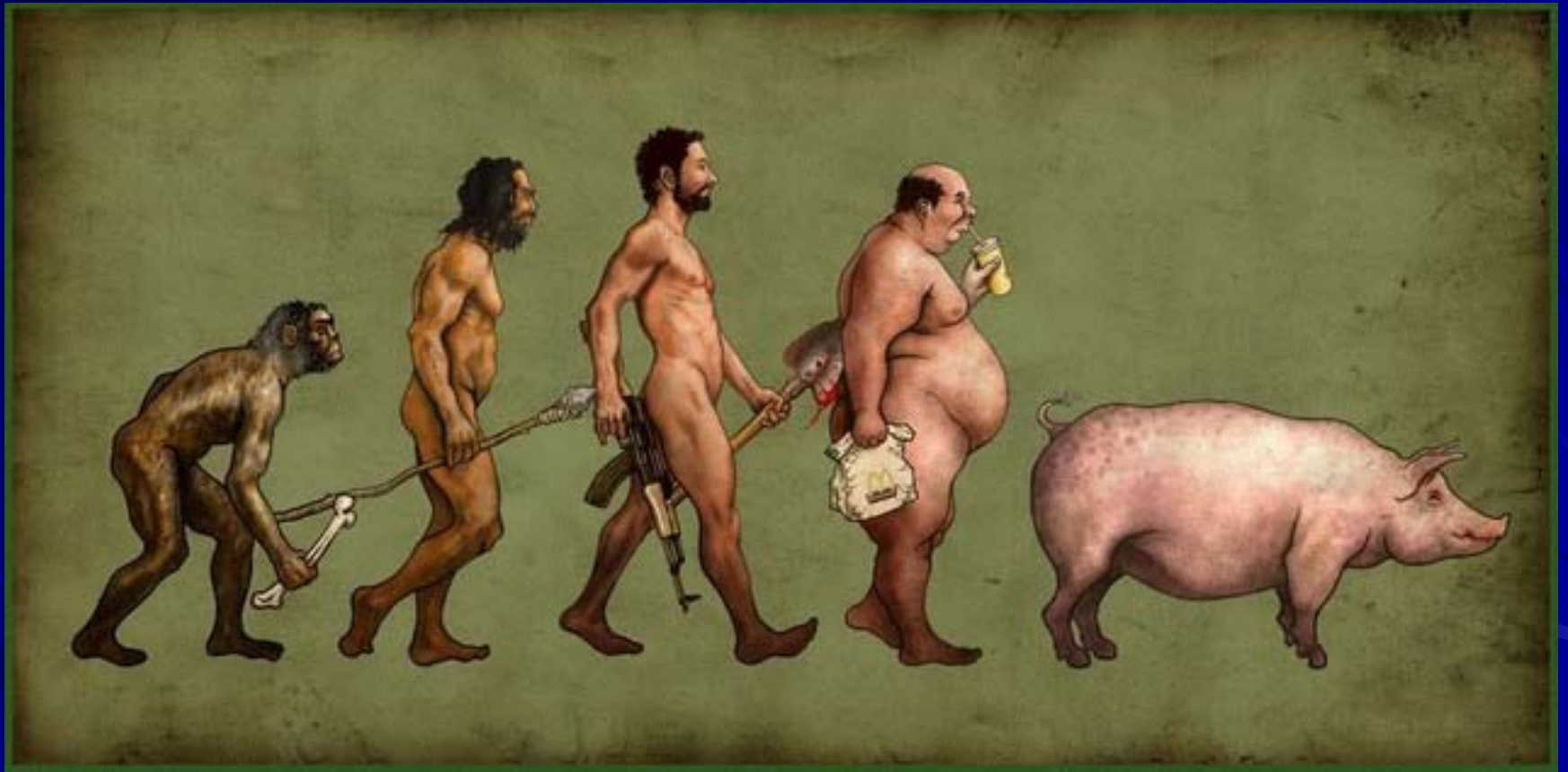
Total Knee Arthroplasty Issues

- Hospital stay
- Lengthy rehab
- Capable physicians

Total Knee Arthroplasty – Patient Issues

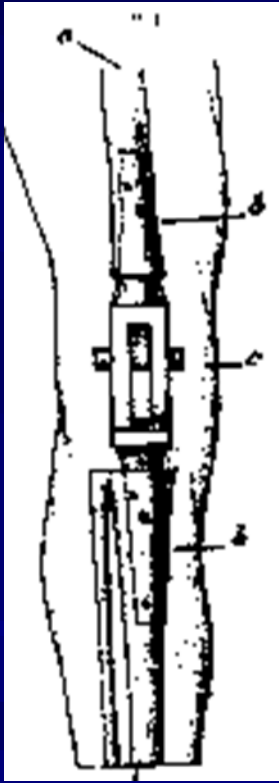
- Pain
- Nausea, Emesis, Constipation
- Post-Op orthostasis
- Transfusion
- Thromboembolic

Evolution



Evolution

Gluck's prosthesis
1890



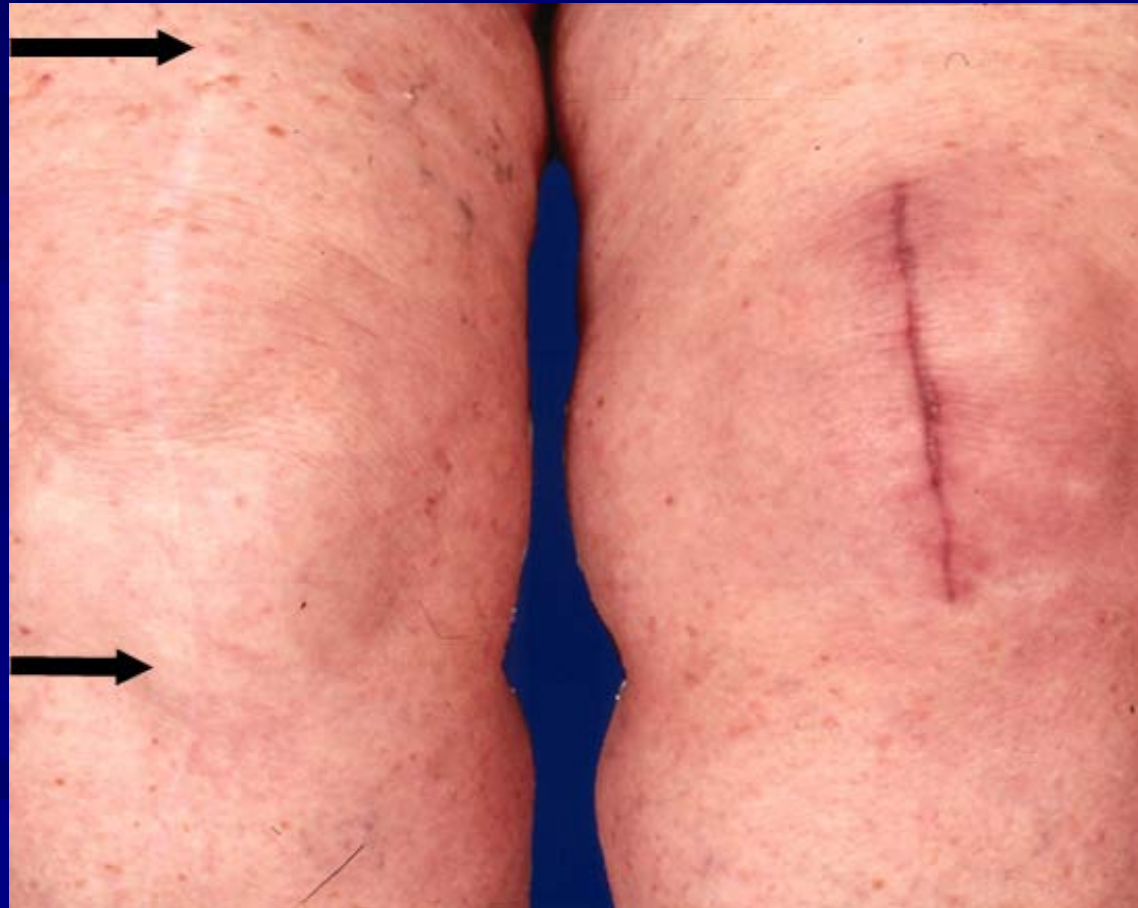
Early Total Condylar
Install 1970s



Current LPS



Ambulatory \neq 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

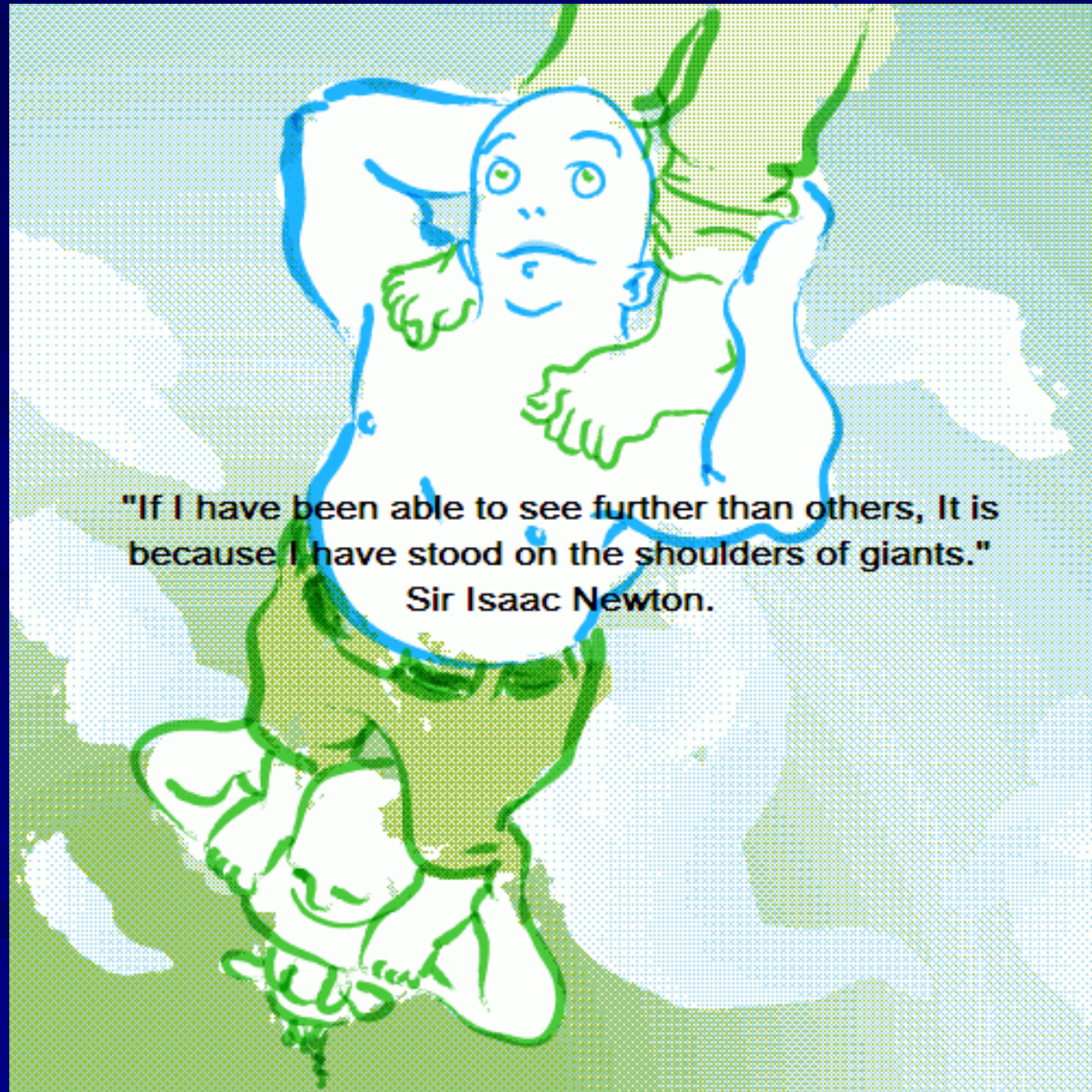
MIS Goals

- ↓ Pain
- ↓ Blood loss
- ↓ LOS
- ↓ Disability
- ↓ Morbidity
- Faster rehabilitation
- Improved satisfaction

Greater Early Range of Motion (ROM) SLR On Day of Surgery



MIS Introduced Ambulatory TJA



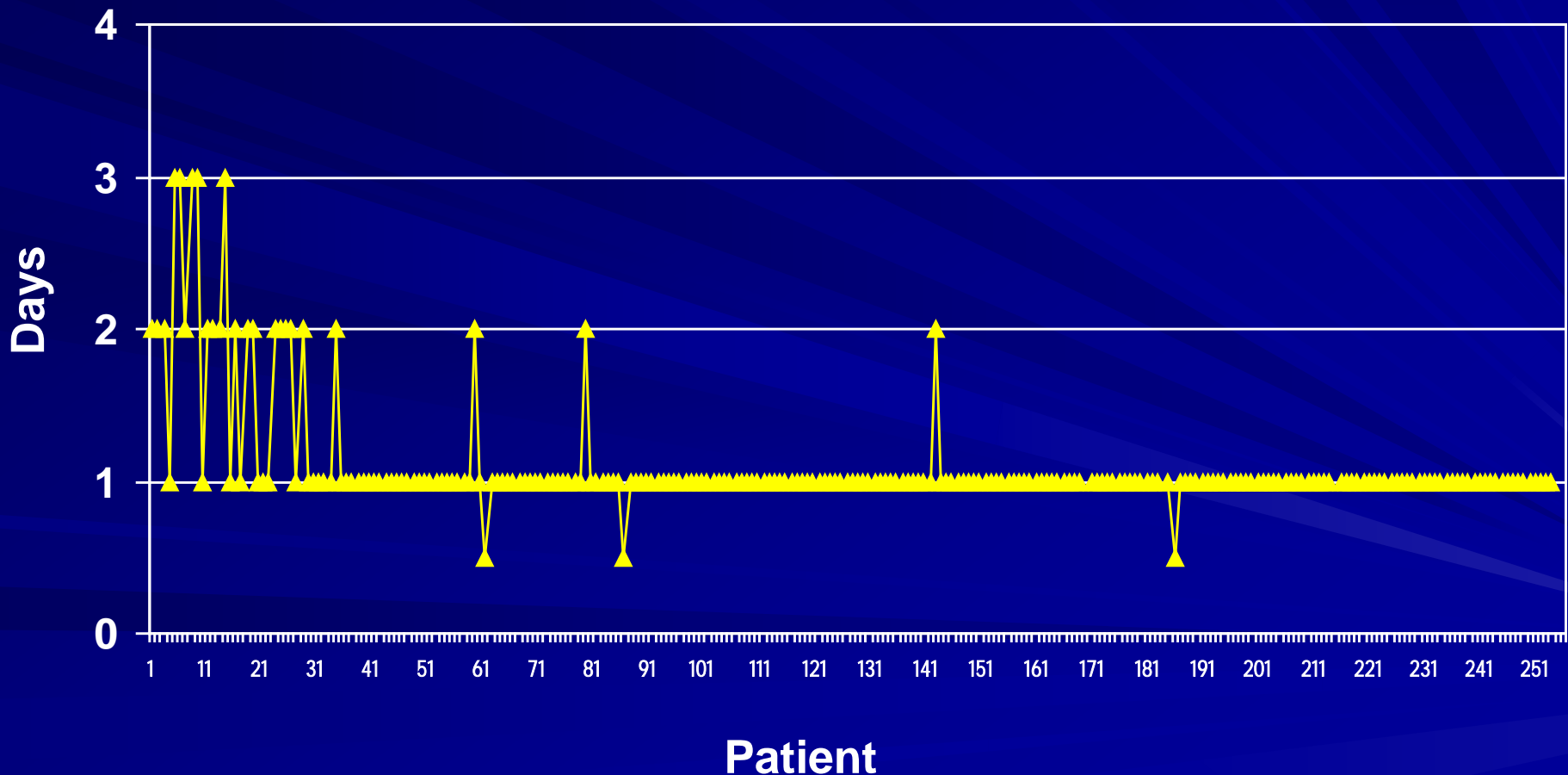
MIS 2 INCISION THA



MIS HIP

Length of Stay

Hackensack University Medical Center

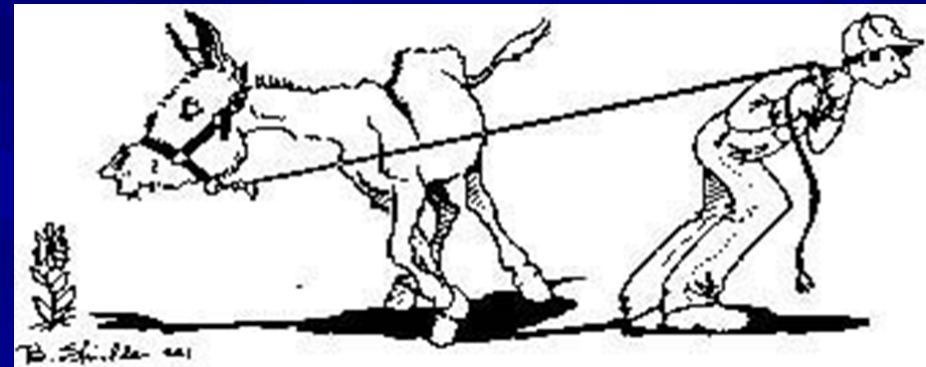


MIS 2 INCISION THA

- ❑ 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)

□ ASA score

1-24

2-13

3-2

□ BMI (kg/m²)

30 (21.1-44.8)

□ 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

Results

	KSS	KSSF
Pre-op (39 pts)	39.6	61.6
PO 1 year (19 pts)	94.9	93.2
PO 2 years (6 pts)	98	92

“Comparison of outpatient versus inpatient total knee arthroplasty”

Kolisek FR. CORR 2009

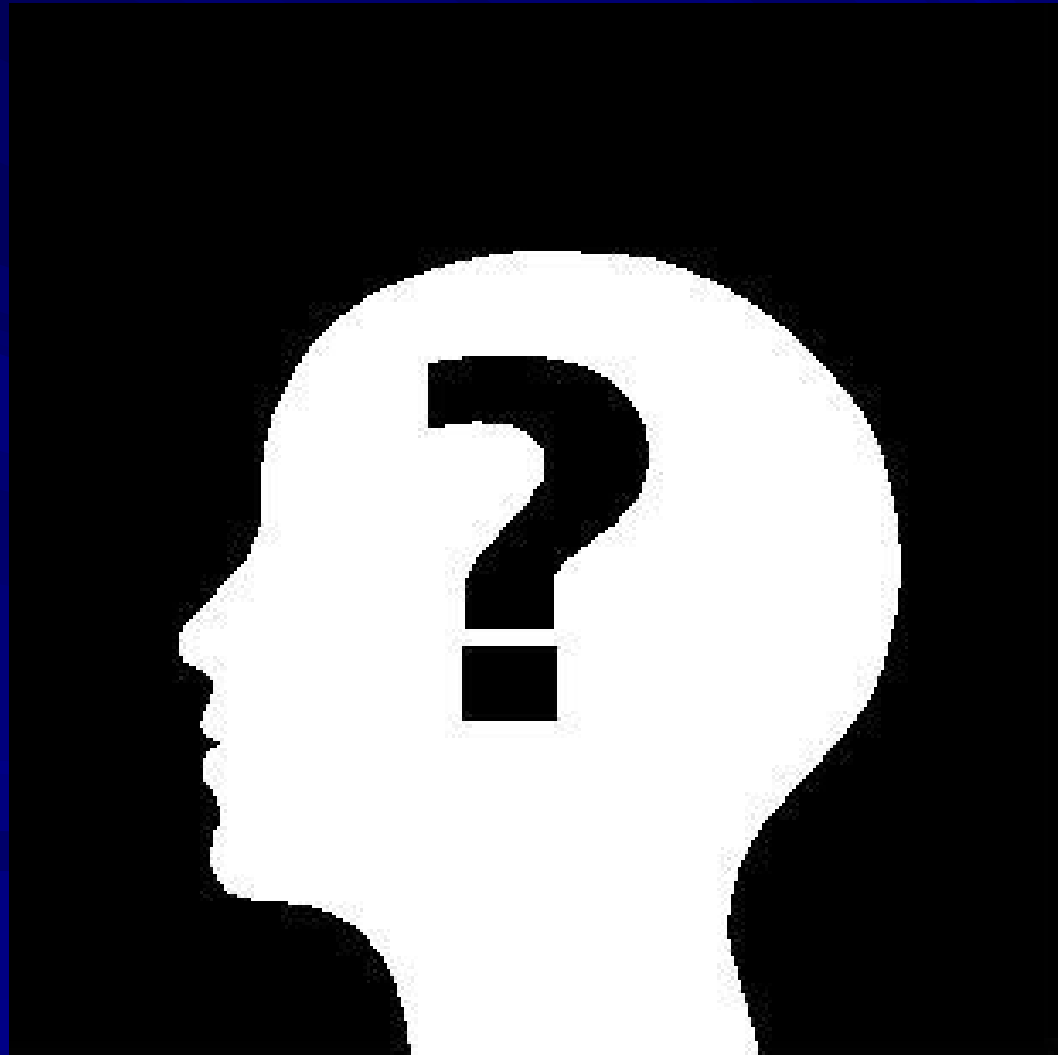
- Two matched cohorts
 - 64 pts 23 hrs
 - 64 pts 2.3 days
- No perioperative complications
- No readmissions
- 2 yr f/u, no difference in KSS

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

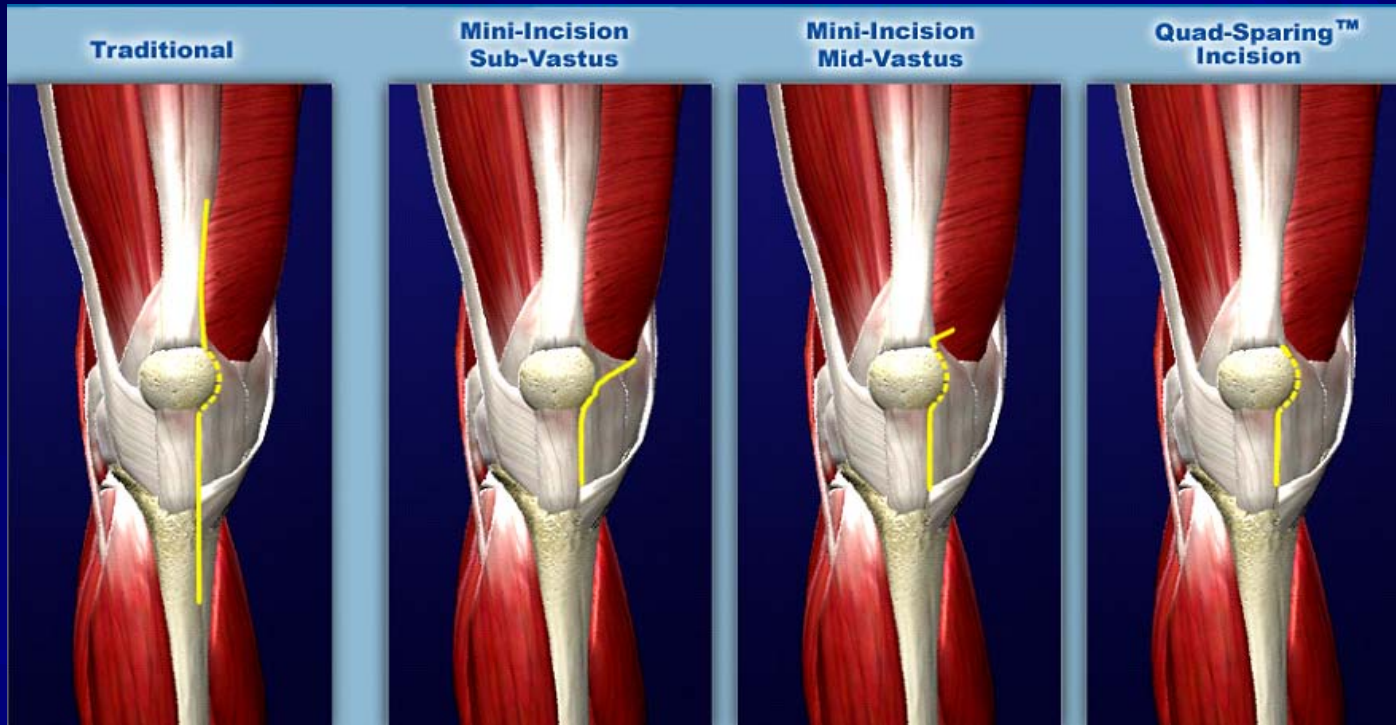
Technique



Skin Incision



Muscle Dissection

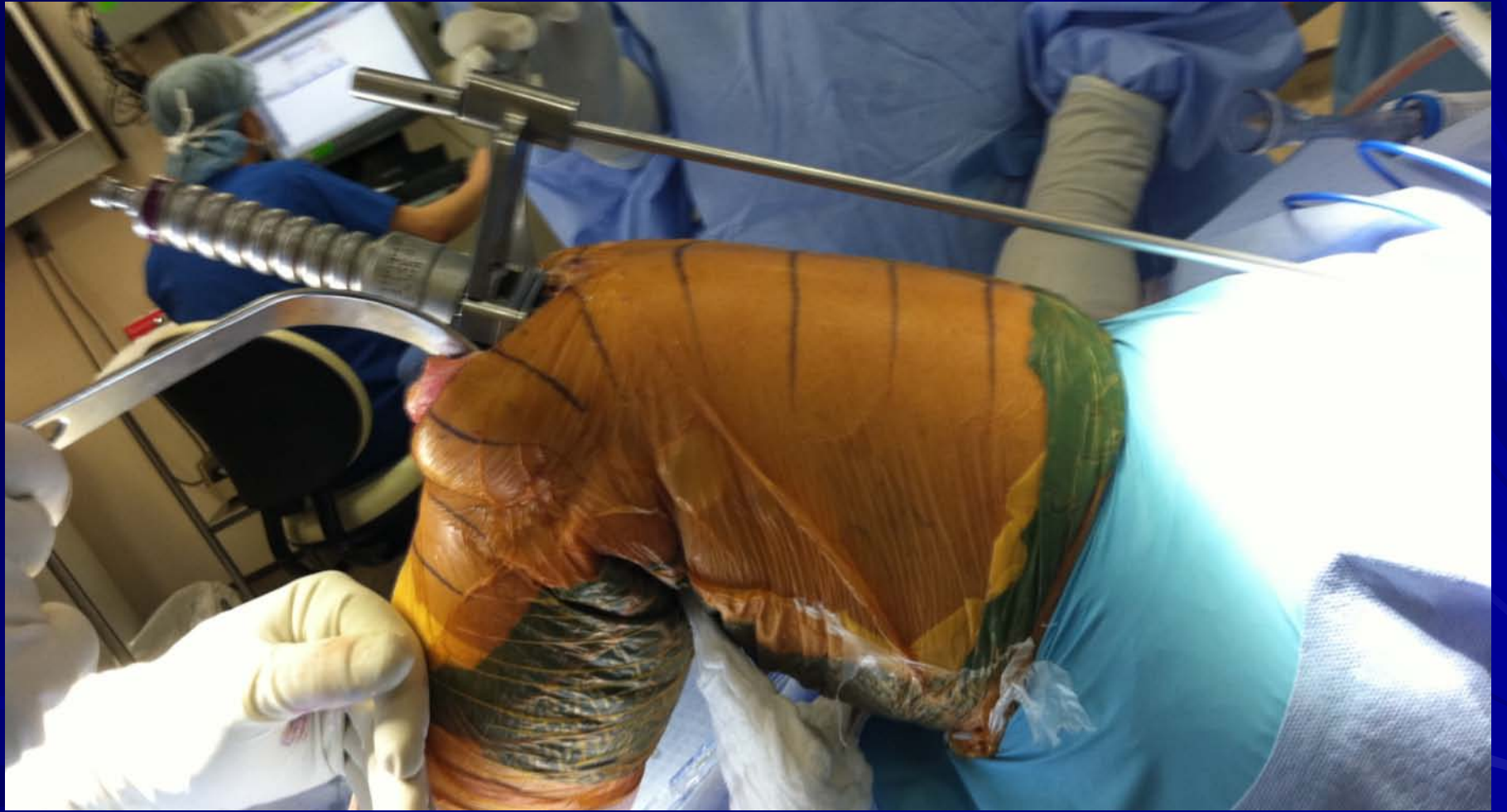














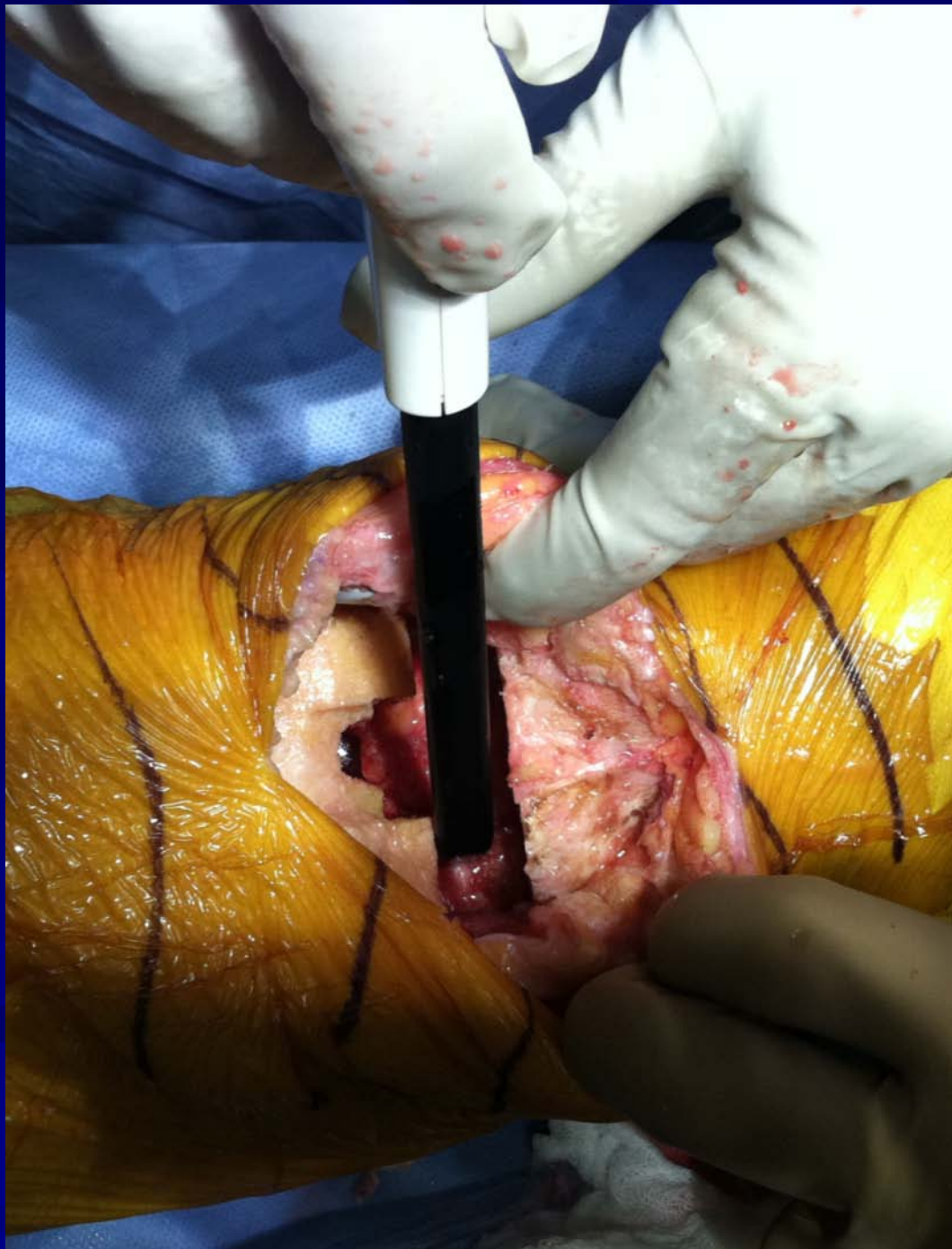




















ANALGESIA PROTOCOL

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:
 - metaclopramide 10mg
 - ondansetron 4mg
 - dexamethasone 8mg
 - Appropriate Antibiotic

INTRA OPERATIVE

❑ Hyperbaric Bupivacaine Spinal Anesthetic



INTRA OPERATIVE

- ❑ **Heated IV fluids – KEEP PATIENT WARM!**
- ❑ **Local infiltration of 0.25% bupivacaine 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

BEFRIEND 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

