



MIS Meets CAOS
Scottsdale, AZ
October 27, 2006

Lessons Learned after >2,000 Consecutive, Posterior, Single-Incision LIS THA's
Todd V. Swanson, MD
Las Vegas, Nevada, USA

The Acronym Alphabet Soup

- MIS—No THA minimally invasive
- Mini-incision
 - Implies small incision only
 - Nothing magical about 10cm
 - Base₁₀ society
 - 10 fingers & toes
- LIS—“less Invasive”

5/5/06 Posterior Approach L/MIS THA 2 DDC

History

I began working on small incision posterior approach in May 1997

The Journal of Arthroplasty Vol. 20 No. 7 Suppl. 3 2005

Early Results of 1000 Consecutive, Posterior, Single-Incision Minimally Invasive Surgery Total Hip Arthroplasties

Todd V. Swanson, MD

Since then, 1,005 additional LIS THA's with 6 mo f/u

5/5/06 Posterior Approach L/MIS THA 3 DDC

Now >2,000 LIS THA's

- Second 1,005
 - 1,235 THA's from 5/02 – 4/06
 - 230 excluded
 - Minimum 6 months follow-up
 - 1,005 remaining for study

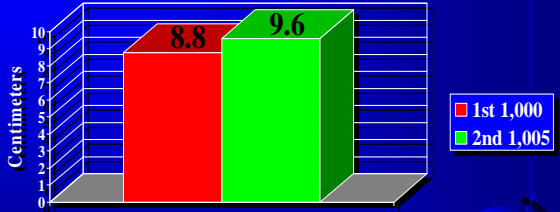
5/5/06 Posterior Approach L/MIS THA 6 DDC

Lessons Learned after >2,000 MIS THA's

- Excessively small incisions detrimental
- Deep dissection: “Less is More”
- Balance the hip
- Repair the capsule
- Autologous blood rarely necessary
- Local anesthetics work wonders
- Rehab for motion

5/5/06 Posterior Approach L/MIS THA 7 DDC

Incision Length (cm)



Centimeters

8.8 (6-16 cm) 9.6 (7-16 cm)

(Incision length \approx BMI / 3)

5/5/06 Posterior Approach L/MIS THA 8 DDC

1997 Incision



5/5/06

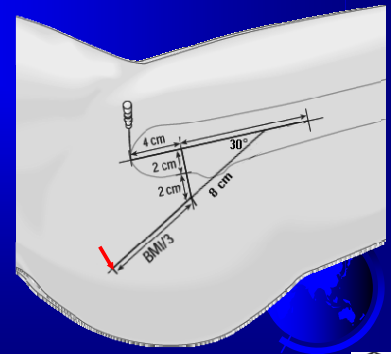
Posterior Approach L/MIS THA

9



Incisions

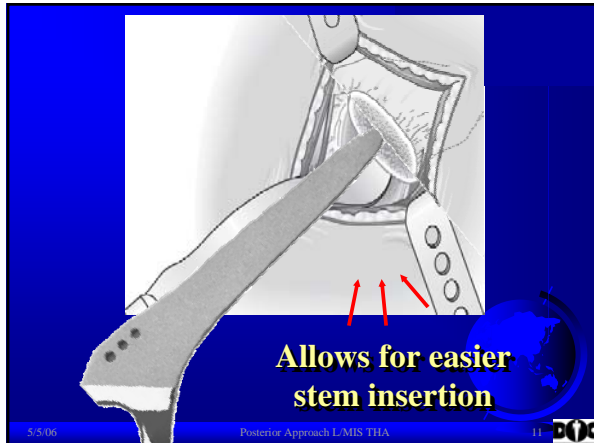
- More posterior than previous to assist with femoral component insertion



5/5/06

Posterior Approach L/MIS THA

10



5/5/06

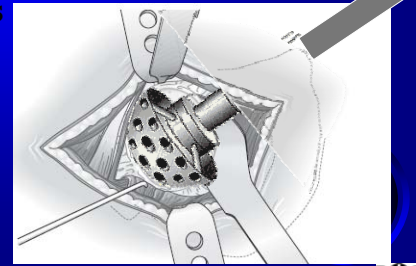
Posterior Approach L/MIS THA

11



Incisions

- Small accessory incision for acetabular placement in heavy patients



5/5/06

Posterior Approach L/MIS THA

12



Deep Tissue Dissection “Less is More”

- Often unnecessary to release
 - Superior & anterior capsule
 - Piriformis and quadratus
 - Gluteus maximus tendon
- Remove acetabular osteophytes only when impinging



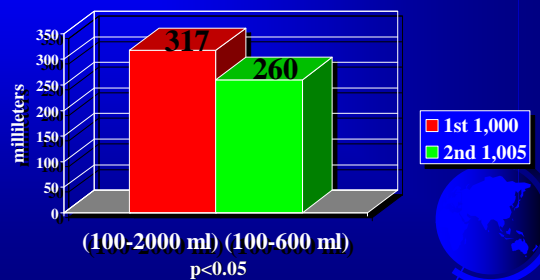
5/5/06

Posterior Approach L/MIS THA

13



Intra-Op Blood Loss (ml)

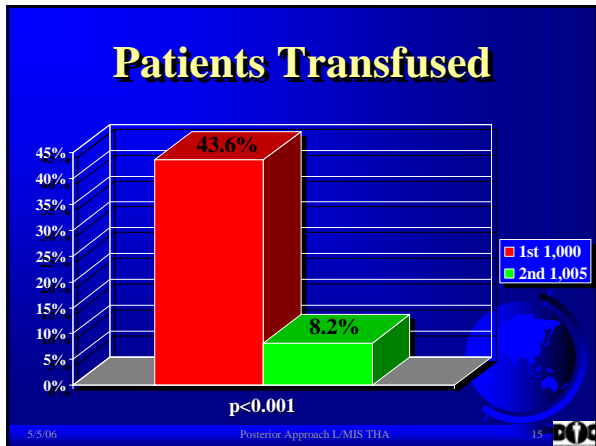


5/5/06

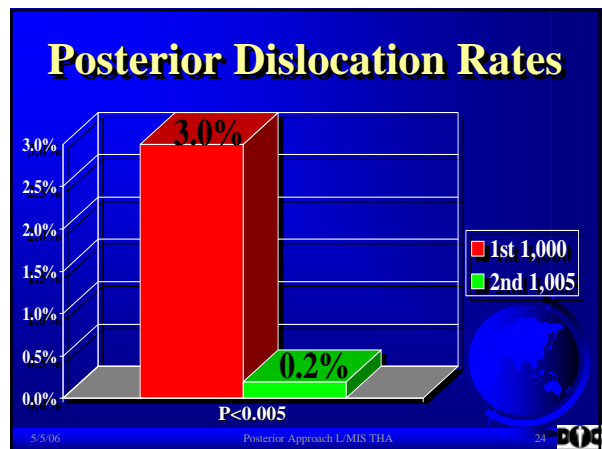
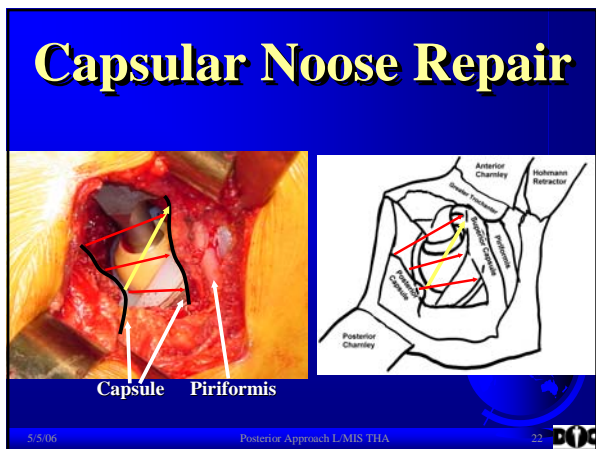
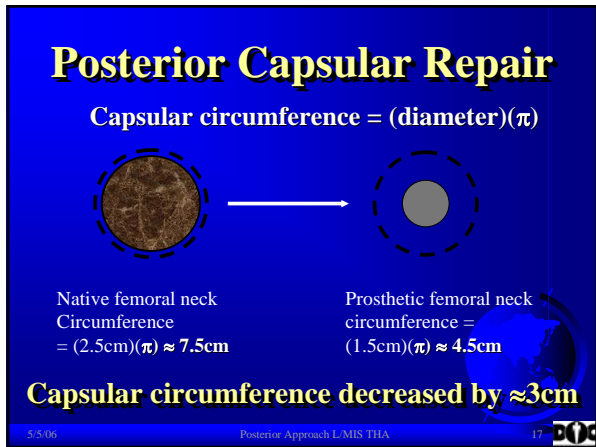
Posterior Approach L/MIS THA

14





- ### Balance Soft Tissue Structures
- Offset stems
 - Selective releases
 - Tendons
 - Capsule
 - Posterior capsular repair/advancement
- 5/5/06 Posterior Approach L/MIS THA 16 DDC



Change in Post-Op Protocol Rehab for Motion (like TKA)

- No abduction pillow
- No dislocation precautions
- Ambulate immediately
- Begin ROM exercises first day post-op
 - Hip flexion / external rotation
 - “Figure-4”



5/5/06

Posterior Approach L/MIS THA

25



Pain & Nausea

- Pre-emptive pain management
 - Pre- and post-op analgesics
 - Local injections
- Pre-emptive anti-emetics
 - Pre-op
 - Post-op



5/5/06

Posterior Approach L/MIS THA

26



Pain Management

- Pre-emptive Celebrex or Mobic day of surgery
- Toradol
- Ultram
- Oxycodone or hydrocodone
- Patient controlled analgesia (PCA) as backup only (patients rarely use)

5/5/06

Posterior Approach L/MIS THA

27



Local Injections

- Blocks--psoas
- Capsule
 - Bupivacaine or ropivacaine
 - Ketorolac
 - Morphine
 - ±Steroid
 - (Clonidine)
- Skin/sub-Q



5/5/06

Posterior Approach L/MIS THA

28



Nausea Management

- Pre-emptive anti-emetics
 - Metoclopramide (Reglan)
 - Ondansetron HCl (Zofran)
- Post-operative prochlorperazine (Compazine) x 24 hours
- Minimize narcotics
- Generous hydration



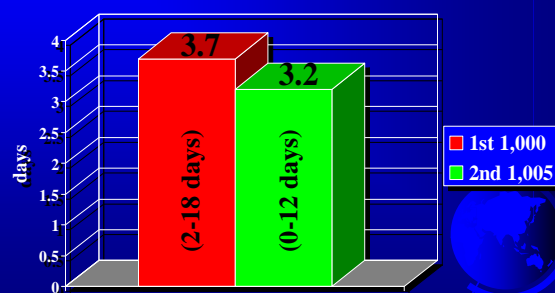
5/5/06

Posterior Approach L/MIS THA

29



Hospital Stay (days)



5/5/06

Posterior Approach L/MIS THA

30



Comparative Studies: Mini-inision vs Standard

- Most studies poorly designed
- Many suggest no difference/no advantage
- Some show disadvantages/risks

5/5/06

Posterior Approach L/MIS THA

31



Comparative Studies (Positive)

Author	Design	N	Conclusion	Comment
DiGioia, J Arth, 2003	Prospective with matched controls	33 MI vs 33 standard	Improved limp, distance walked, stairs @ 3 & 6 mo	Incision length 11.7cm vs 20.2cm
Swanson, AAOS, 2003	Prospective with historical controls	100 MI vs 50 standard	Less blood loss, OR time, pain, hospital stay, compls; quicker functional return	Incision length 10-14cm vs 20-25 cm
Sculco, J Arth, 2004; ICL, 2004; J Arth, 2004; OCNA, 2004	Prospective, with matched controls	42 MI vs 42 standard	Reduced LOS, better cosmesis, sl higher HHS's	Incisions 8.8cm vs 23.0 cm

5/5/06

Posterior Approach L/MIS THA

32



Comparative Studies (Positive)

Author	Design	N	Conclusion	Comment
Waldman, Orthopedics, 2003	Prospective, surgeon choice	31 MI vs 91 standard	Shorter hospital stay, fewer complications	Incision length 10cm vs 18cm
Goldstein, J Arth, 2003	Retrospective	85 MI vs 85 standard	Less intra-op blood loss; better cosmesis	Many obese; 13cm vs 36 cm

5/5/06

Posterior Approach L/MIS THA

33



Comparative Studies (Neutral)

Author	Design	N	Conclusion	Comment
Ogonda, JBJS-A, 2005 (Ireland)	Prospective, randomized	109 MI vs 110 standard	Safe, reproducible; no difference	Incision length 9.2cm vs 16cm
Asayama, J Arth, 2004 (Athens, GA)	Prospective, randomized	50 MI vs 50 standard (direct lateral)	Less intra-op blood loss; o/w no difference	Incision length <10cm vs 14-18cm
de Beer, J Arth, 2004 (Ontario)	Prospective, matched-pairs	30 MI vs 30 standard (direct lateral)	No difference	Incision length 7.7cm vs 13.9cm
Ciminiello, J Arth, 2004 (Philadelphia)	Prospective, surgeon choice, matched pair	60 MI vs 60 standard (direct lateral)	No difference	Incision length <5 inches vs >5 inches

5/5/06

Posterior Approach L/MIS THA

34



Comparative Studies (Negative)

Author	Design	N	Conclusion	Comment
Teet, J Arth, 2006 (Irvine)	Retrospective review	73 MI vs 54 Standard	More varus cemented stems	Incision length <12cm vs >12cm
Woolson, JBJS-A, 2004 (Stanford)	Retrospective, surgeon choice	50 MI vs 85 standard	More wound compls, acetab malposition, cementless fem comp malsizing	Initial experience by 3 surgeons = <17 cases/ surgeon

5/5/06

Posterior Approach L/MIS THA

35



Summary

- LIS THA is as safe as standard THA
 - When appropriate techniques used
 - When surgeon appropriately trained
- Good comparative studies sorely lacking
- Most important advantage may be the "by-products"
 - Soft tissue handling
 - Dislocation reduction
 - Analgesia
 - Rehab protocols

5/5/06

Posterior Approach L/MIS THA

37

