



Hip Arthroscopy

In the Injured Worker

Benjamin G. Domb, M.D.

Medical Director, American Hip Institute

Director of Orthopedics, Adventist Hinsdale Hospital

Founded 1876
Published daily
since 1892

The Daily PRINCETONIAN

Today's weather:
Possible p.m. rain
mid 50s

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Princeton, New Jersey, Friday, March 15, 1996

©1996

30 Cents

David 43, Goliath 41

Tiger zone defense catches UCLA off guard, keys upset

By GRANT WAHL

INDIANAPOLIS — Long after Pete Carril leaves the coaching profession, last night's scene here will remain imprinted on the national consciousness.

Here was Carril, college basketball's rural church mouse, scurrying about in some postmodern, ethereal dome, outcoaching the 1995 Coach of the Year, UCLA's Jim Harrick.

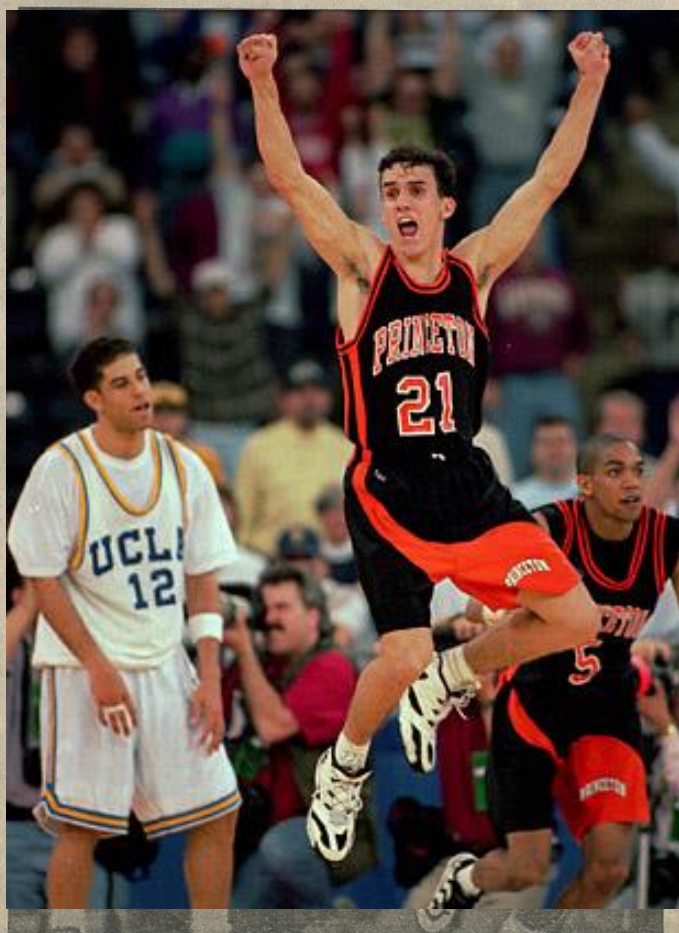
And here were Carril's Princeton Tigers, following his charge and rallying for the most improbable of victories — a 43-41 win over UCLA, the defending national champions.

By now you would think that Carril, after 524 career wins, had exhausted his bag of surprises.

What's more, he has always spurned gimmicks, or at least what he calls gimmicks — the fast break, the slam dunk, and with occasional exceptions, the zone defense.

Yet last night Carril's Tigers opened up in a zone defense. Not a straight-up, two-three zone, but a gimmick — a quirky, amoeba-like hybrid of man-to-man and zone defenses.

"We threw a little junk in there



Princeton stuns defending champs; campus explodes

By DAN WEWERS

INDIANAPOLIS — You could sense it spreading throughout the arena last night in Indianapolis. Belief. Belief in miracles.

Belief in the improbable. Belief in the impossible — an incredible 43-41 Princeton victory over the defending national champion UCLA (23-8) last night at the RCA Dome in Indianapolis before a crowd of 31,569. The upset was perhaps the greatest Princeton victory under men's basketball head coach Pete Carril.

The Tigers (22-6 overall) advance to the second round of the NCAA tournament's Southeast Region. They face Mississippi State (23-7), who defeated Virginia Commonwealth, 58-51, last night, at 7:10 p.m. Saturday.

"This marks a big step for our team," junior captain Sydney Johnson said. "We just proved to ourselves that we can beat people. (Carril) was talking earlier and said, 'It doesn't matter if I believe... It matters if you believe.'"

Upset fever

This belief — this upset fever — was contagious. It took hold of Princeton after the opening five minutes, when senior forward Chris Doyal drained his team's first three-pointer. It then took hold of the crowd, first the Princeton supporters, then the Mississippi State fans, and then the entire arena. By game's end, it had taken hold of UCLA.

Down, 41-34, with five minutes, 38 seconds remaining, things looked grim for the Tigers. Princeton had battled to a 19-18 halftime deficit and kept it close through most of the second half, as Princeton somehow managed to capitalize on UCLA's mistakes. At the 10:34 mark, the score was tied, 31-31. But a 10-3 UCLA run gave the Bruins a seven-point lead and forced a Carril timeout.

Johnson came out of the break at 5:38 and drained a long-range three pointer to cut the lead to four. Sophomore center Steve Goodrich grabbed a rebound and dropped in a basket. Belief grew. With 2:58 remaining



Sports Medicine



KERLAN·JOBÉ
ORTHOPAEDIC CLINIC



Orthopaedics

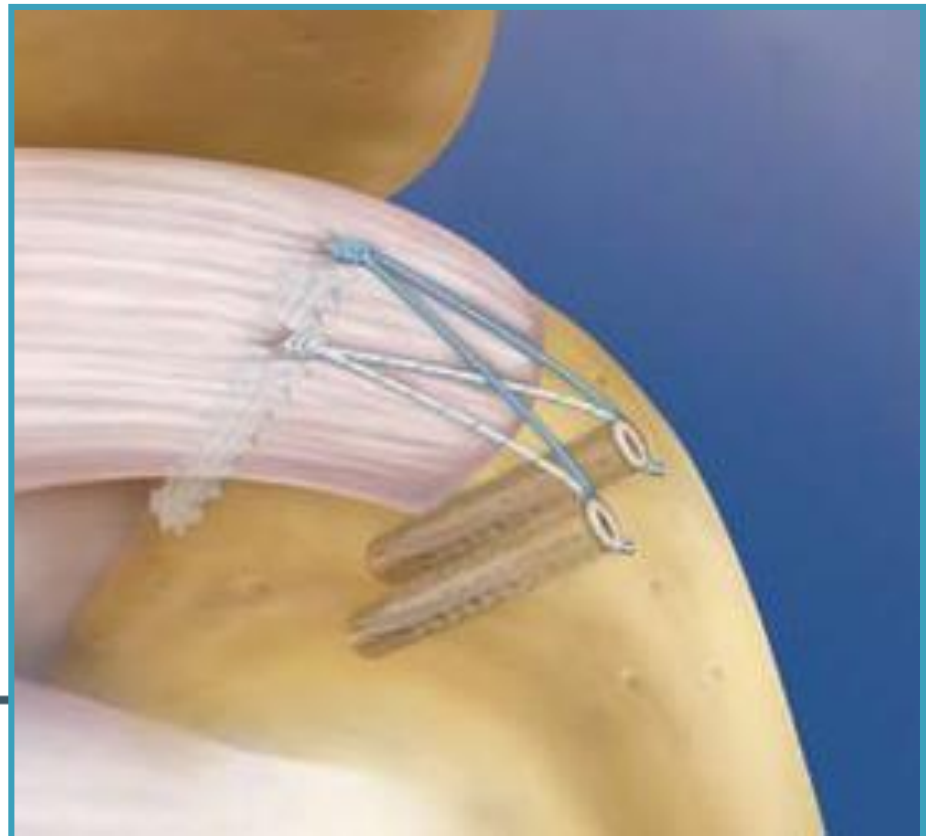
How to Advance the Field of Sports Medicine?



SHOULDER

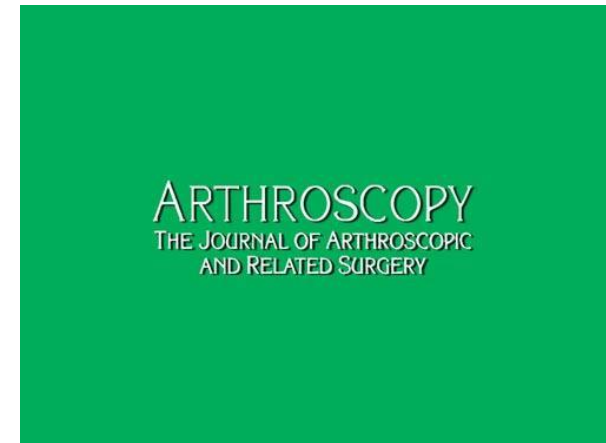
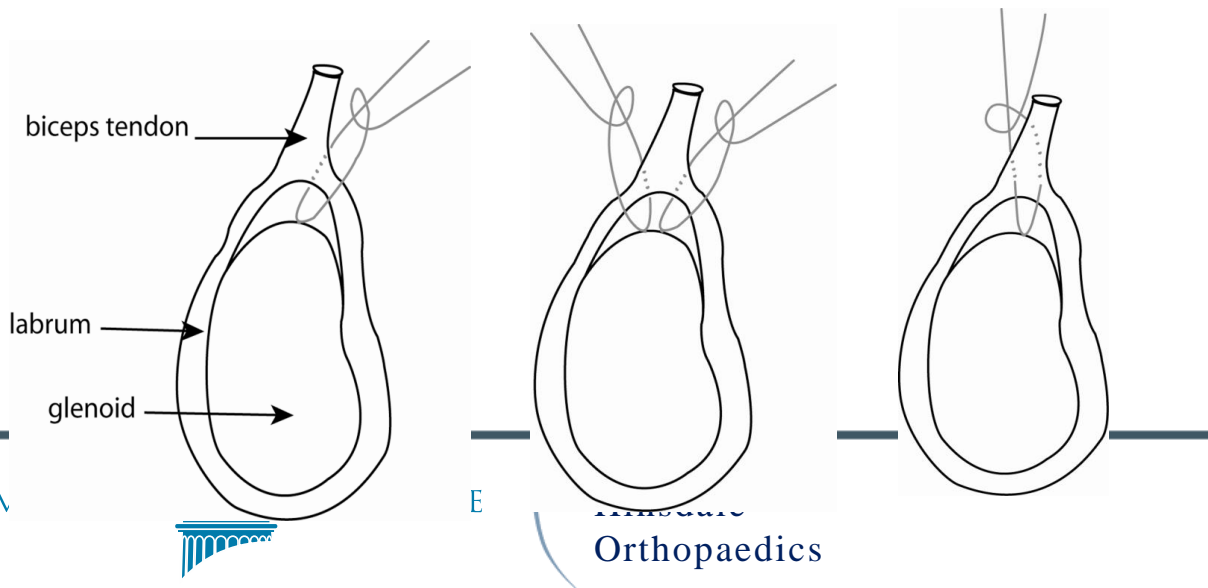
- Rotator Cuff Tears: Arthroscopic Suture Bridge
 - Domb et al, 2008

THE JOURNAL OF BONE & JOINT SURGERY
J B & J S



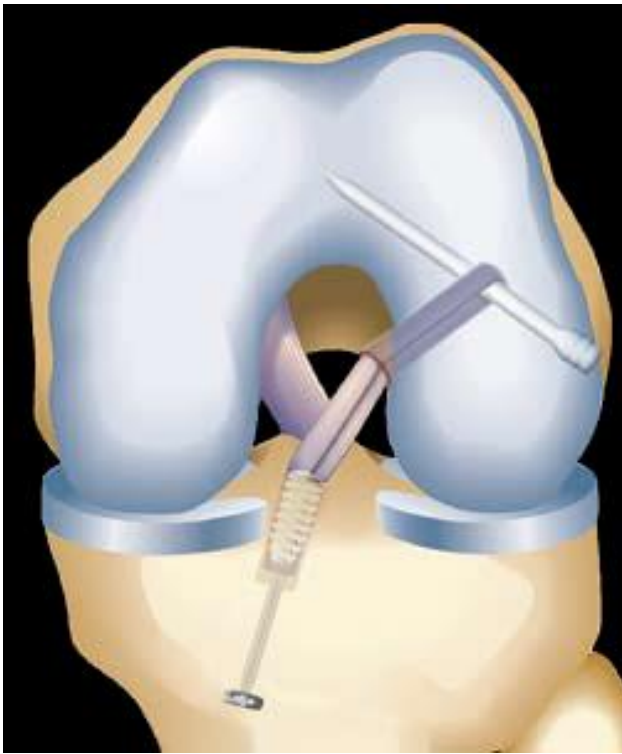
SHOULDER

- Labral Tears and Dislocations
- Biomechanical Comparison of 3 Suture Anchor Configurations for Repair of Type II SLAP Lesions
 - Domb et al, *Arthroscopy*, 2007.



KNEE

- Incision-less ACL Reconstruction



Why not think of the hip like the shoulder and knee?



Why not think of the hip like the shoulder and knee?

- Shoulder:
 - Labral repairs
 - Rotator cuff repair
- Knee:
 - Repair meniscus tears
 - Reconstruct ACL tears
- Hip:
 - Pain has traditionally been diagnosed as “early arthritis” ...

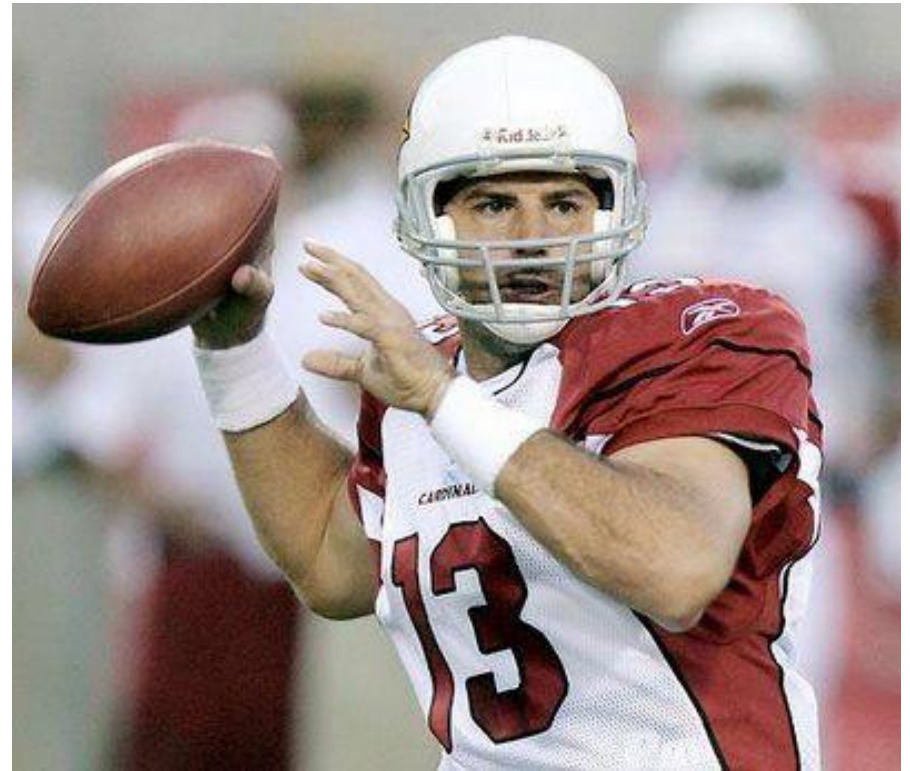
“You’ll Eventually Need a Total Hip Replacement...”



AMERICAN INSTITUTE

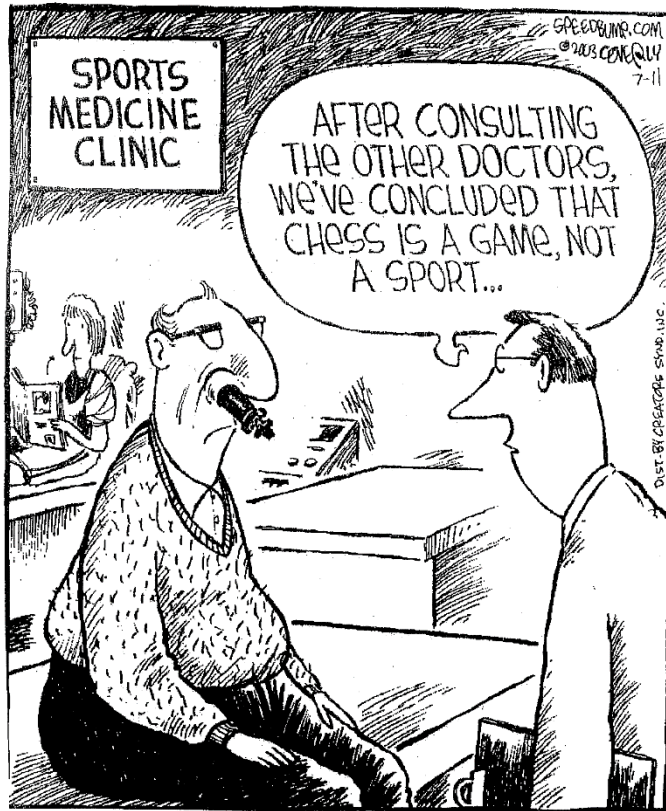
- #1 Center in Country by Volume for Hip Arthroscopy
- Non-profit foundation for research and education

Hip Injuries in Sports



Do Workers Injure Their Hips?

SPEED BUMP



Do Workers Injure Their Hips?



Hip Arthroscopy for Labral Tears in Workers' Compensation

A Matched-Pair Controlled Study

Christine E. Stake,^{*} MA, Timothy J. Jackson,^{*†} MD,
Jennifer C. Stone,^{*} MA, and Benjamin G. Domb,^{*‡§||} MD
*Investigation performed at Hinsdale Orthopaedics, Hinsdale, Illinois,
and American Hip Institute, Westmont, Illinois*

Do Workers Injure Their Hips?



- First ever study in orthopedic literature to show positive results in WC
- First study on hip arthroscopy in WC

Hip Restoration: Outline

Assessment

Who is a Candidate?

What Are the Injuries?

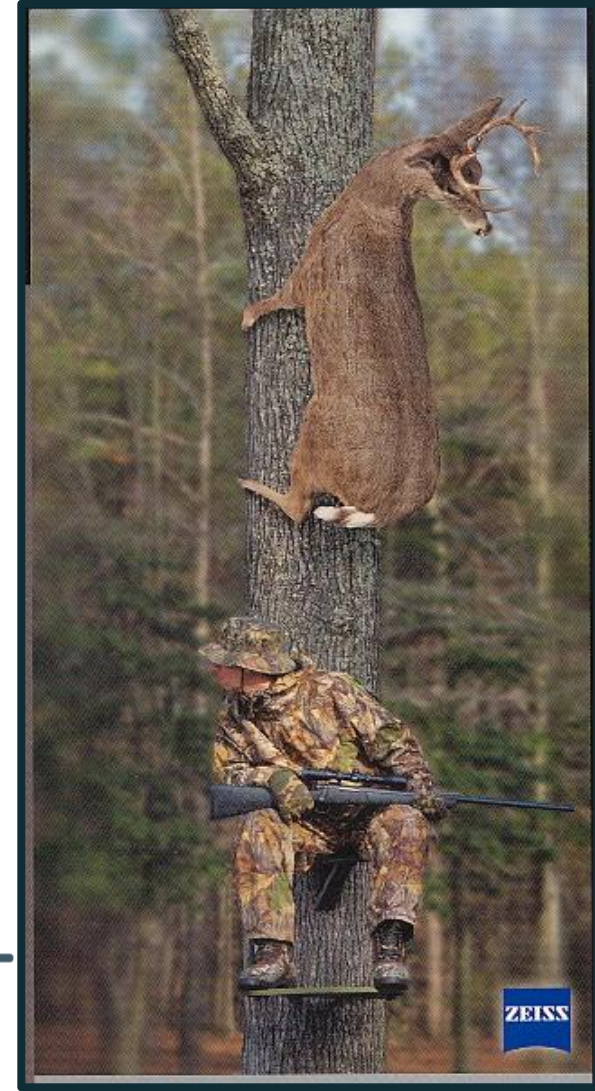
A Case of One Worker

Causation of Hip Injuries

Surgery and Outcomes in WC

Hip Injuries: Diagnostic Dilemma

- ONE OF THE MOST FREQUENTLY MISSED OR MISDIAGNOSED PROBLEMS IN ORTHOPEDICS TODAY



Diagnostic Dilemma

- 60% of patients needing arthroscopy were initially misdiagnosed!!!
- Average 7 months!!!
 - Byrd , 2001.
- Surgery on the wrong site had been recommended in 17%!!!!!!
 - Clohisy et al, 2006



Assessment

Pain is hard to localize

- Misinterpreted as
 - Spine problems
 - Sciatica
 - Knee pain
 - Bursitis
 - Groin pulls



Assessment

Characteristic Exacerbations

- Straight plane activities relatively well-tolerated
- Torsional/twisting activities more problematic
- Prolonged hip flexion (sitting) uncomfortable
- Rising from seated position often painful (catching)
- Inclines more difficult than level surfaces
- Symptoms with entering/exiting an automobile
- Dyspareunia
- Difficulty with shoes, socks, hose, etc.

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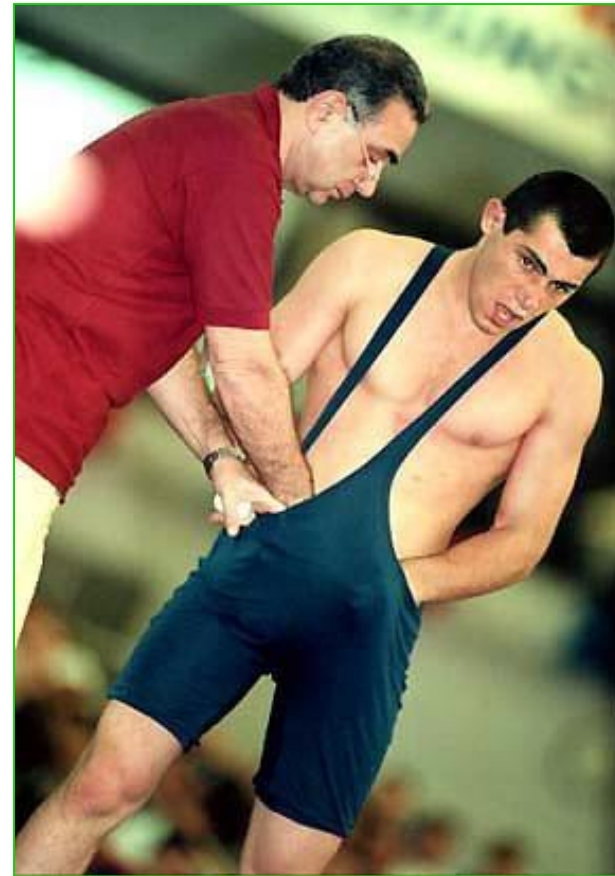
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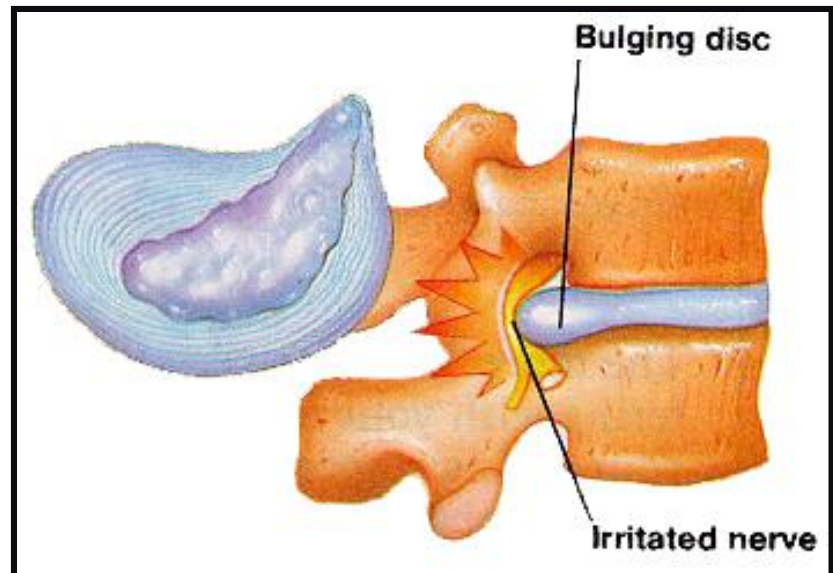
Physical Examination

Uniquely challenging



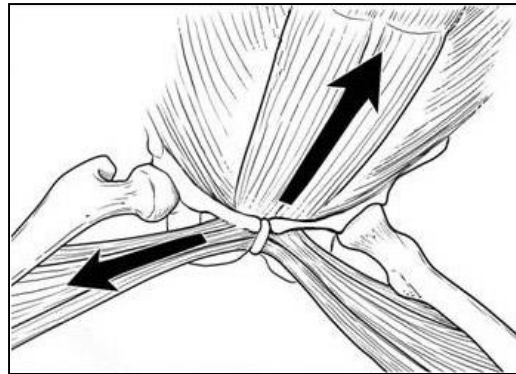
Assessment

- Coexistent Disease
 - Hip & Lumbar Spine disease



Assessment

- Coexistent Disease
 - “Sports Hernia” (athletic pubalgia)
 - Reduced hip ROM
 - ➔ Compensatory pelvic motion
 - ➔ increased stress on pelvic stabilizers



Assessment

- Secondary Disorders
 - Trochanteric bursitis
 - Gluteal symptoms



Imaging Protocol

- X-rays:
 - **Specific views for the hip**
- Diagnostic injection
- MR arthrogram
- CT with 3D recons

Physical Examination

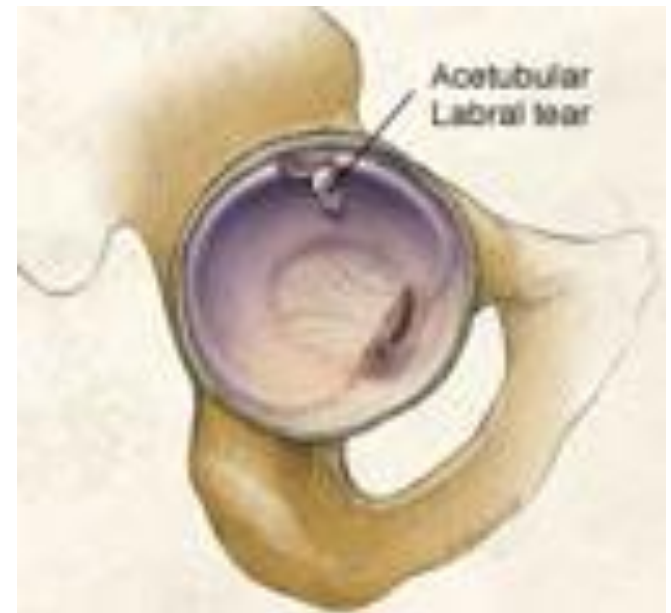
“The diagnostic gold standard is still the history and physical. The MRI helps convince the patient, not the physician, that surgery is necessary.”

Frank Jobe, M.D.



Hip Arthroscopy: What are the Injuries?

- Labral tear
- CAM lesion
- Pincer lesion
- Cartilage damage



Hip Arthroscopy: Who is a Candidate?

1. Acute injuries
2. Chronic injuries
3. Early arthritis

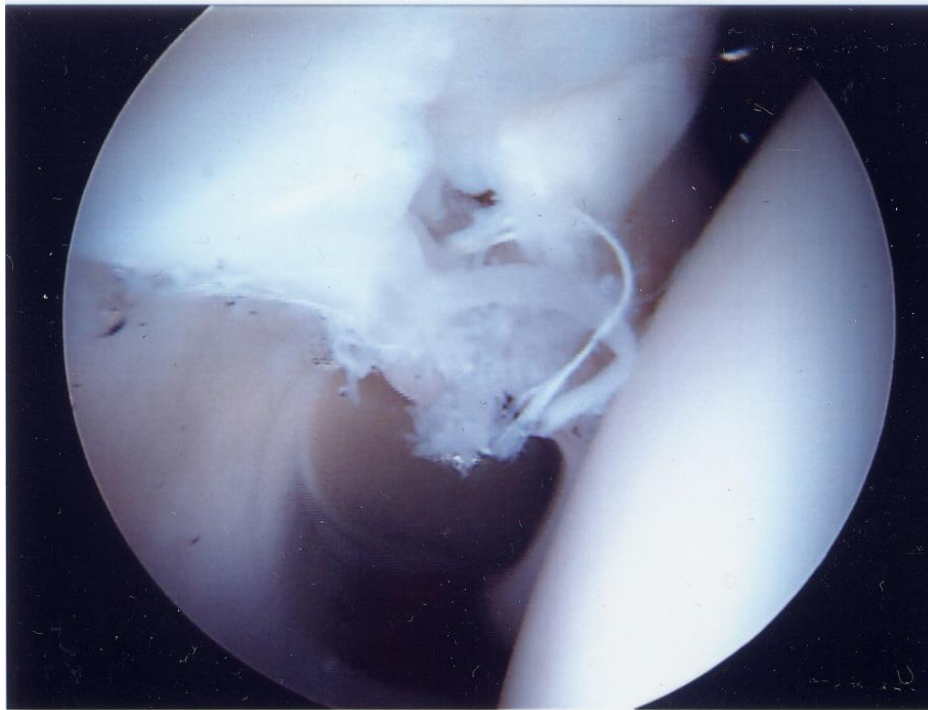
Hip Arthroscopy: Who is Not a Candidate?

- Must have a diagnosis
- Must screen out fraudulent cases
- Objective Criteria:
 1. Specific physical exam findings
 2. Documented results of diagnostic injection
 3. Abnormalities on X-ray or MRI

Hip Arthroscopy: Goals

1. Repair and preserve the joint
2. Delay or prevent arthritis
3. Avoid hip replacement

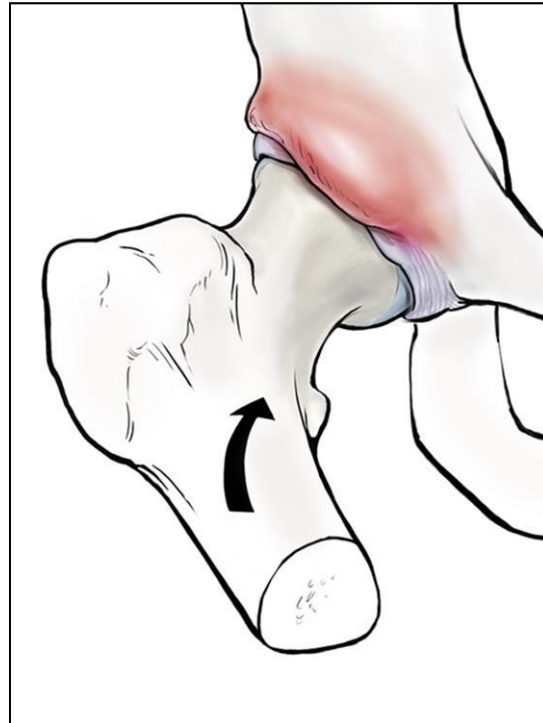
Labral Tear



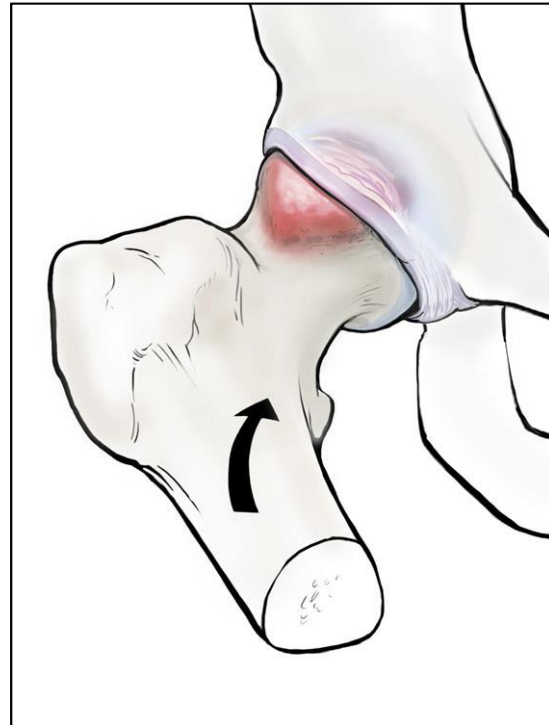
Labral tears → Arthritis



Pincer Impingement



Cam Impingement



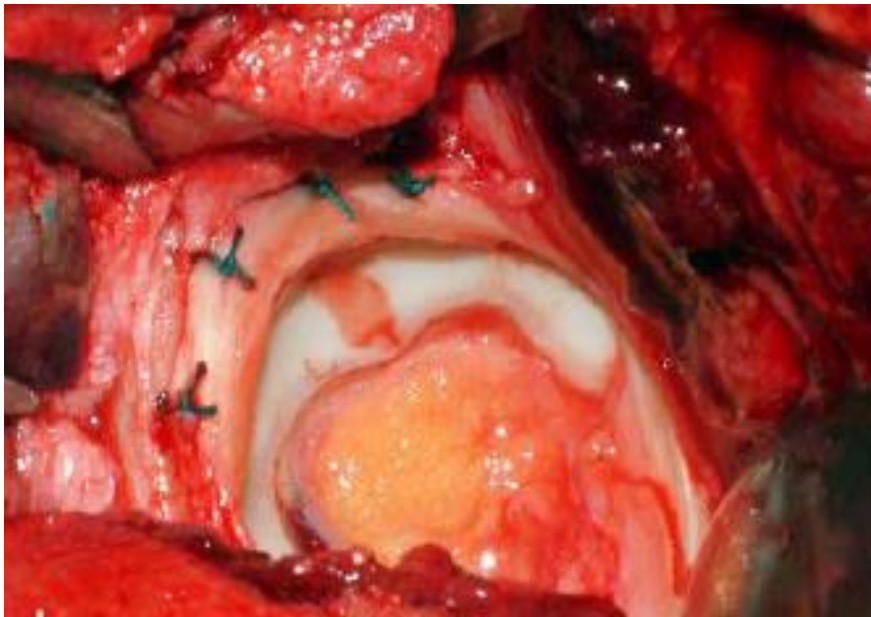
- **Rotator Cuff Tear:**
associated with shoulder impingement

- **Labral Tear:**
associated with hip impingement

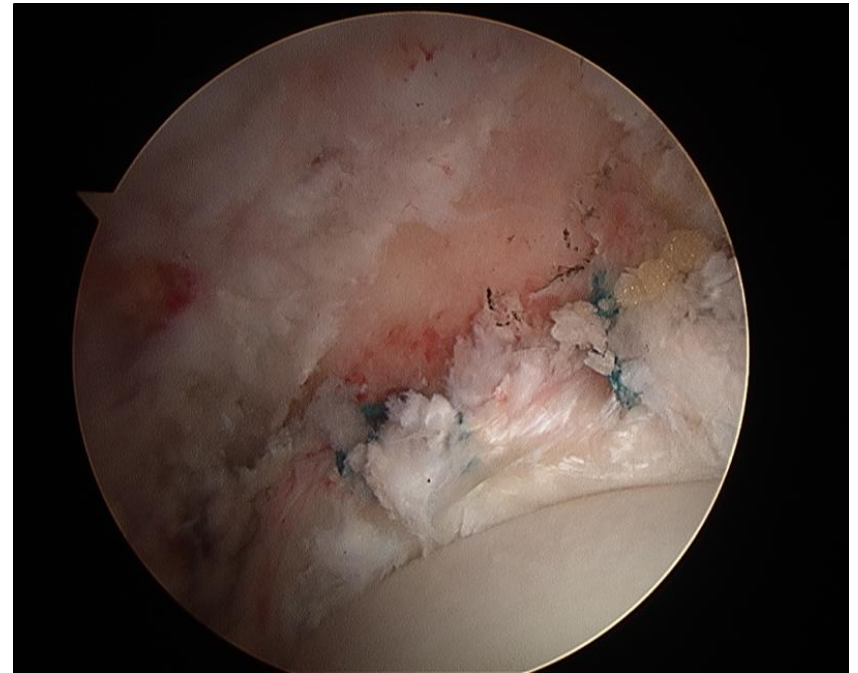


Repair the Labrum

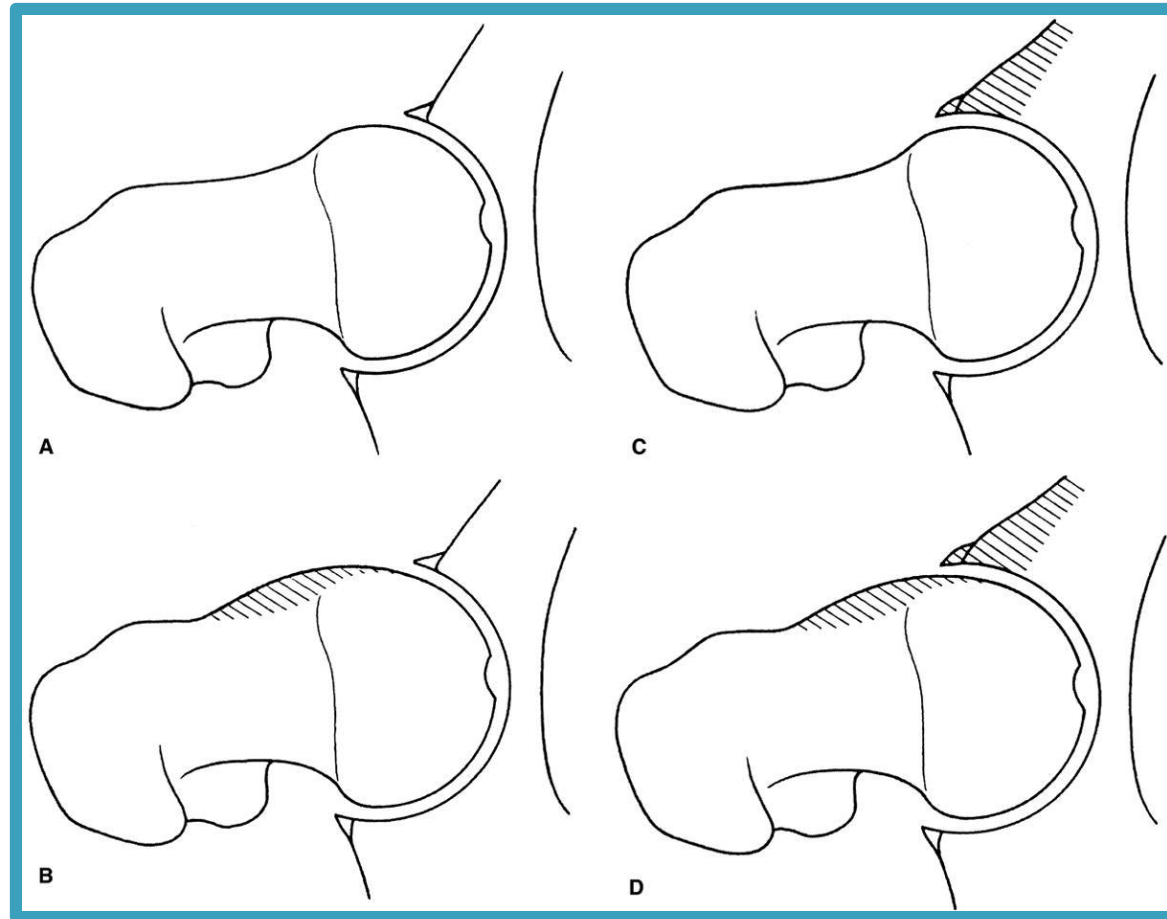
Open Repair



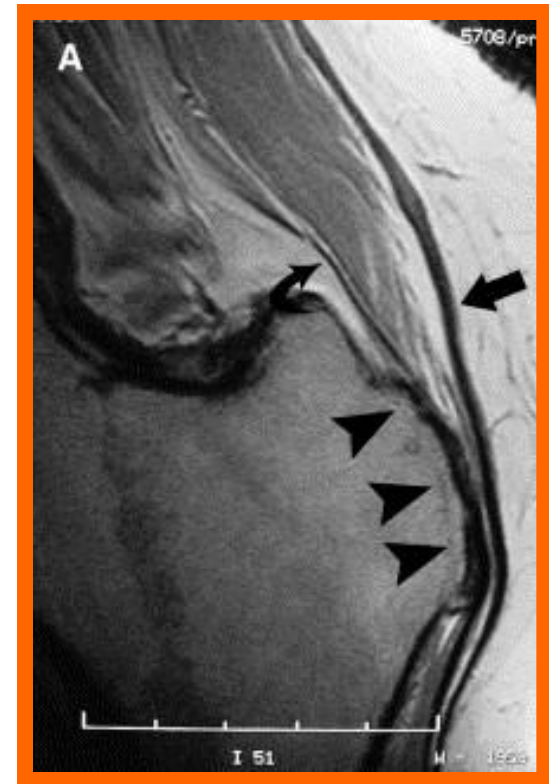
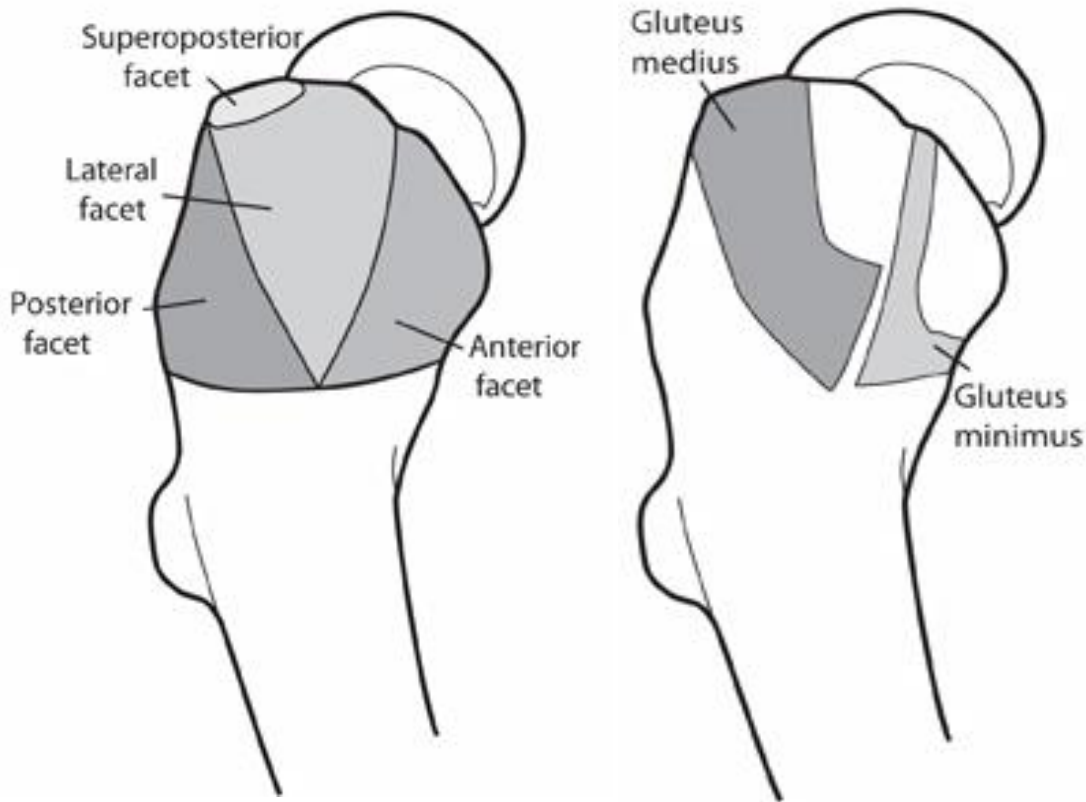
Arthroscopic Repair



Correct the Bone Lesions



Gluteus Medius Tears



- Muscular attachment here
- Also continues anteriorly to cover insertion of minimus

ARTHROSCOPY
THE JOURNAL OF ARTHROSCOPIC
AND RELATED SURGERY

Partial Thickness Tears of the Gluteus Medius:
Rationale and Technique for
Trans-Tendinous Endoscopic Repair

Rima Nasser, M.D.

Itamar Botser, M.D.

Benjamin Domb, M.D.

Gluteus Medius



Outcomes of Endoscopic Gluteus Medius Repair With Minimum 2-Year Follow-up

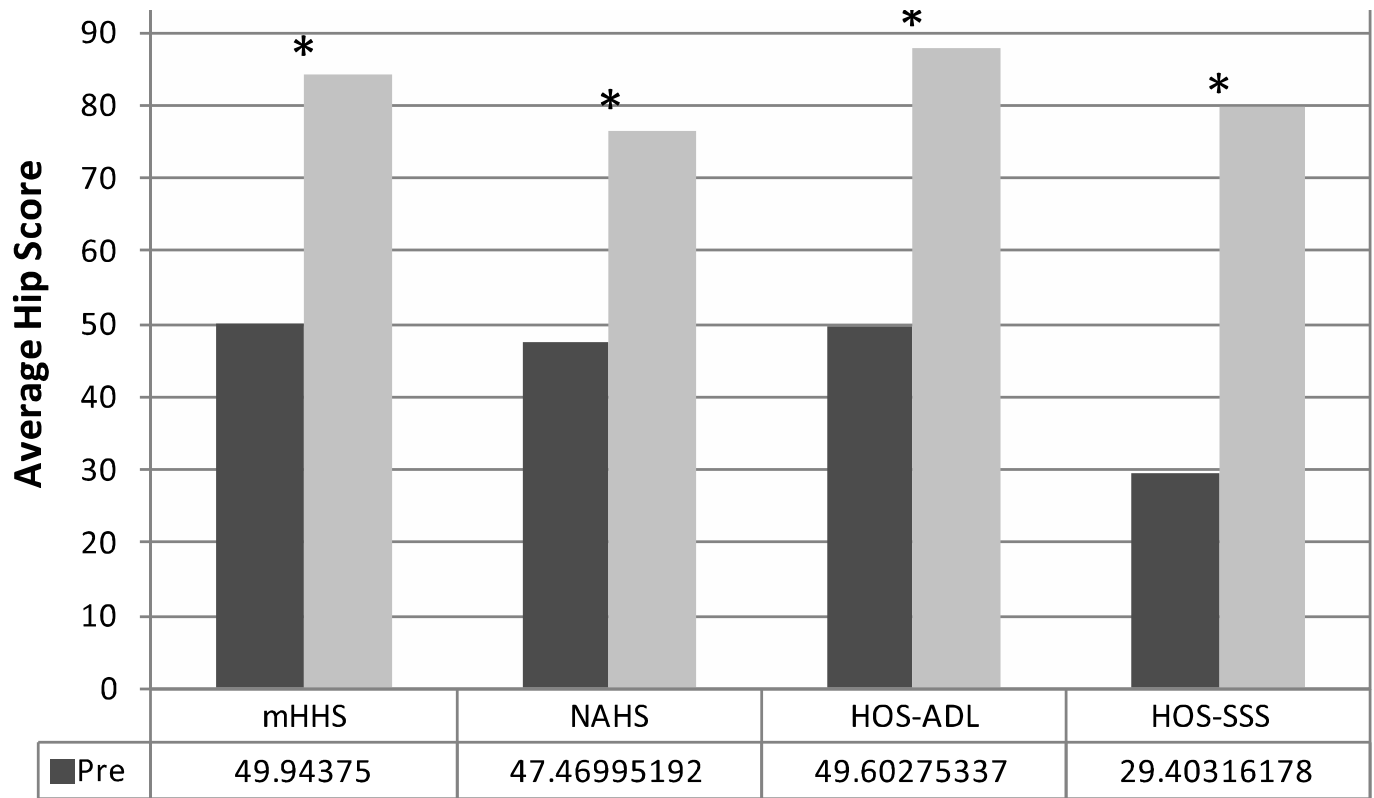
Benjamin G. Domb,^{*†} MD, Itamar Botser,[‡] MD, and Brian D. Giordano,[§] MD
Study performed at Hinsdale Orthopaedics, Hinsdale, Illinois

- 15 patients, avg age 58 (44-74)
- 6 partial, 9 full-thickness

Gluteus Medius



Outcomes of Endoscopic Gluteus Medius Repair With Minimum 2-Year Follow-up



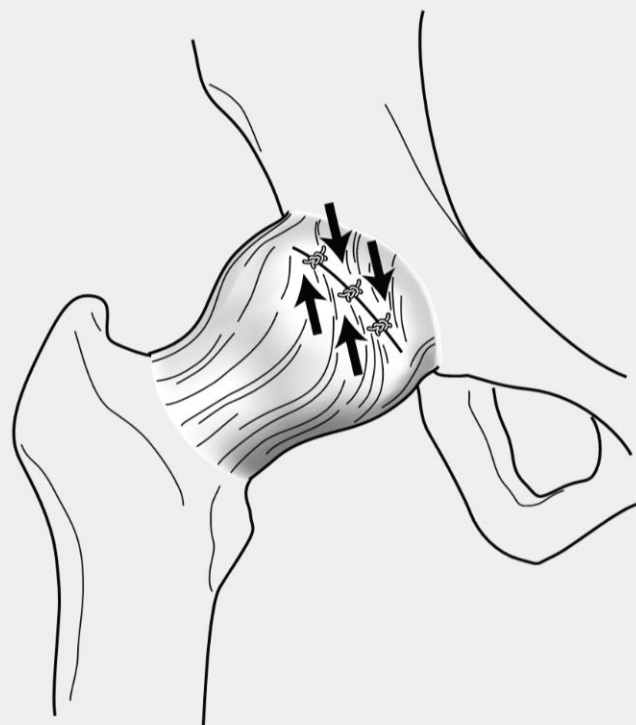
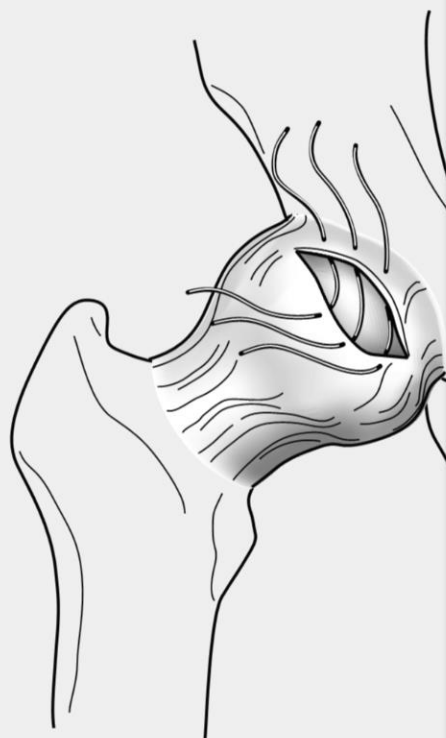
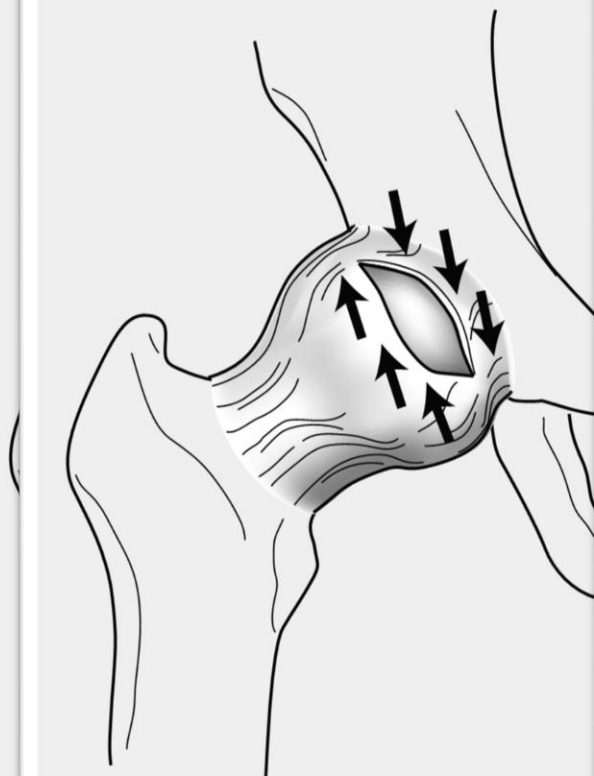
Arthroscopic Capsulotomy, Capsular Repair, and Capsular Plication of the Hip: Relation to Atraumatic Instability

Benjamin G. Domb, M.D., Brian D. Giordano, M.D., and Marc J. Philippon, M.D.

ARTHROSCOPY
THE JOURNAL OF ARTHROSCOPIC
AND RELATED SURGERY

INSTABILITY IN THE HIP

Capsular Plication with Inferior Shift



Capsular Plication in Borderline Dysplasia



Arthroscopic Capsular Plication and Labral Preservation in Borderline Hip Dysplasia

Two-Year Clinical Outcomes of a Surgical Approach to a Challenging Problem

Benjamin G. Domb,^{*†‡§} MD, Christine E. Stake,[†] MA, Dror Lindner,[†] MD, Youssef El-Bitar,[†] MD, and Timothy J. Jackson,^{†||} MD

- 22 patients with borderline dysplasia
- Arthroscopic labral repair and capsular plication

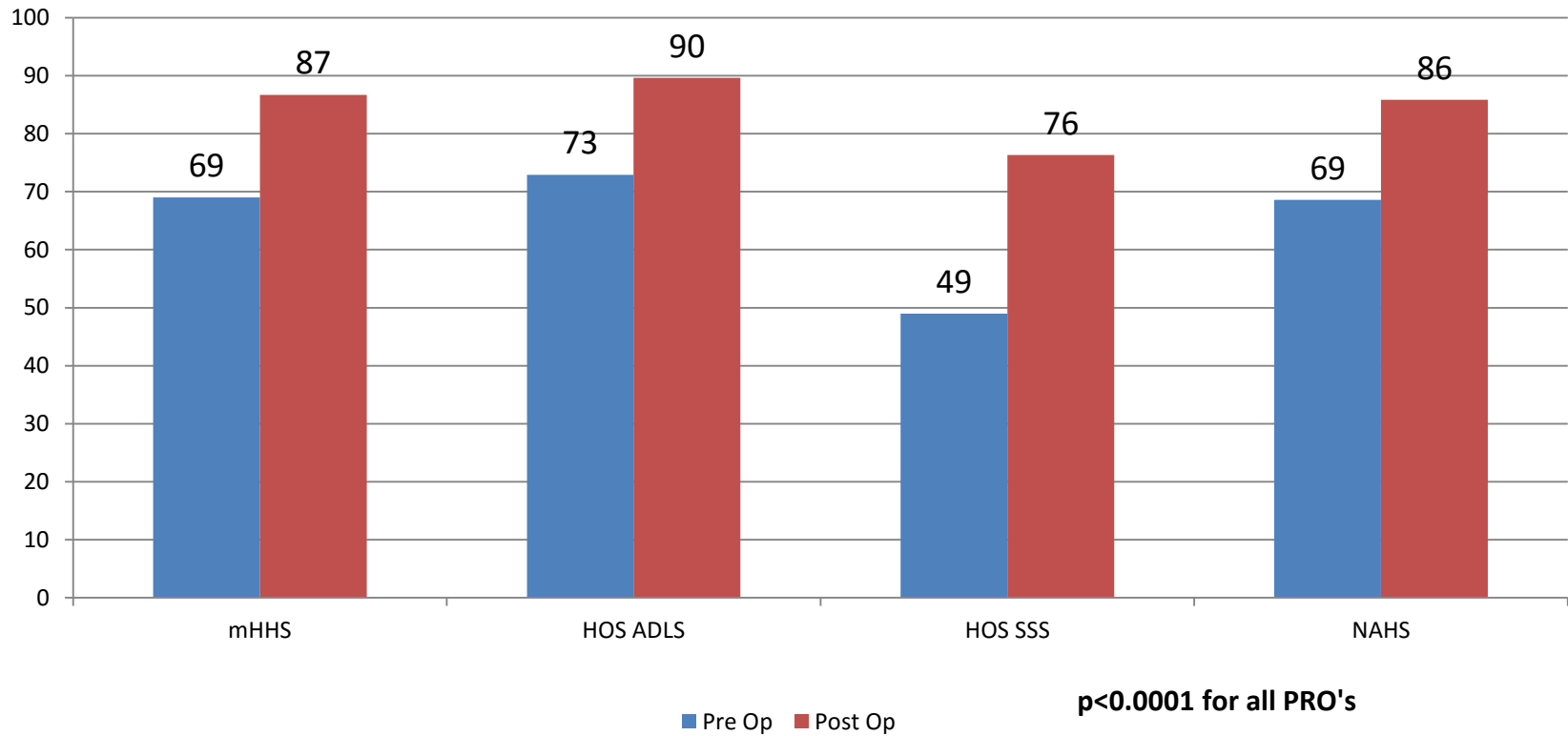
Capsular Plication in Borderline Dysplasia



- Inclusion criteria:
 - Lateral CE angle 19-25
 - Evaluated for consideration of PAO
 - Minimum 1 year post op
- Exclusion:
 - Previous hip surgery
 - LCP
 - age >40
 - Tonnis grade ≥ 2
 - Dysplasia

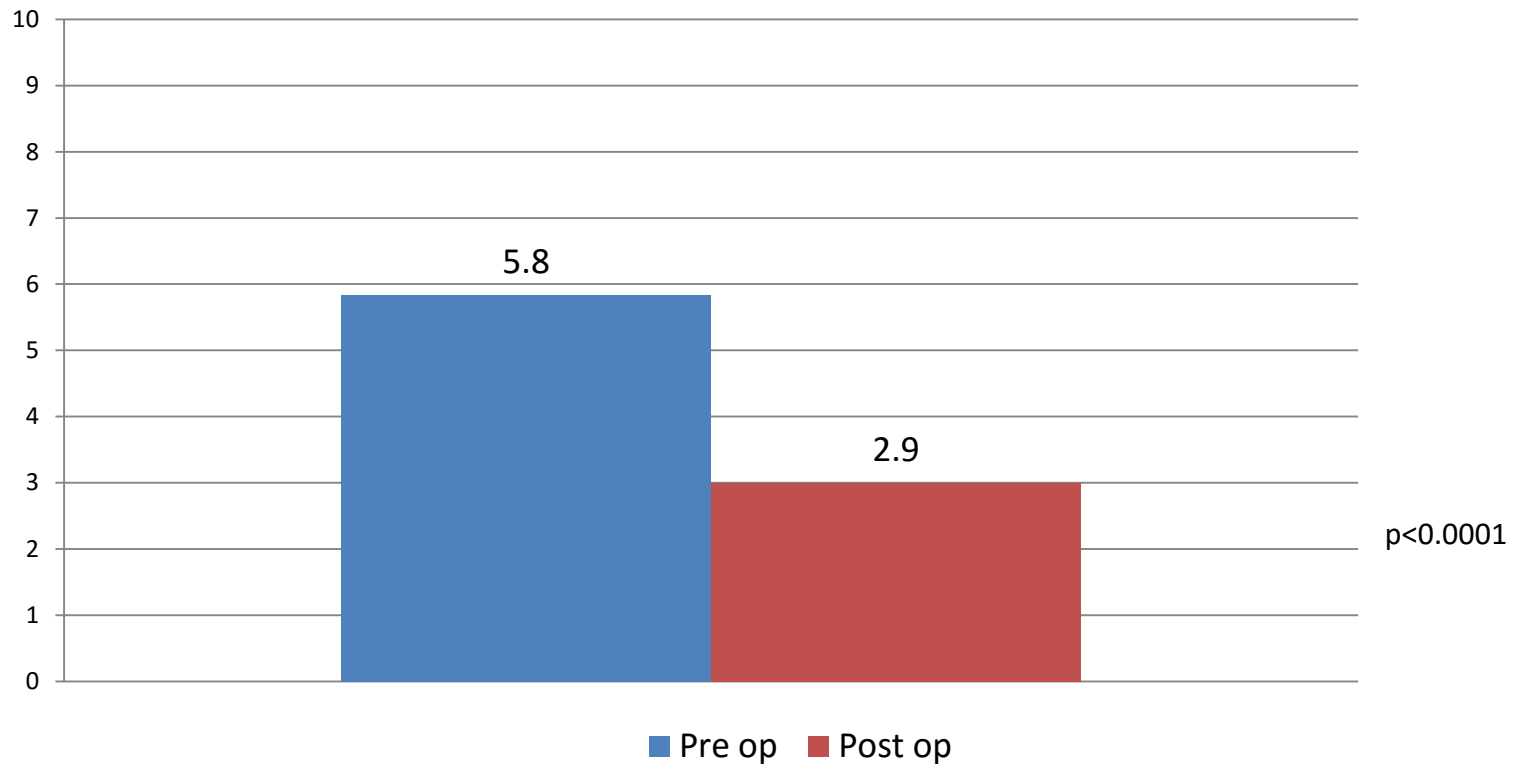
Results

Patient Reported Outcome Scores



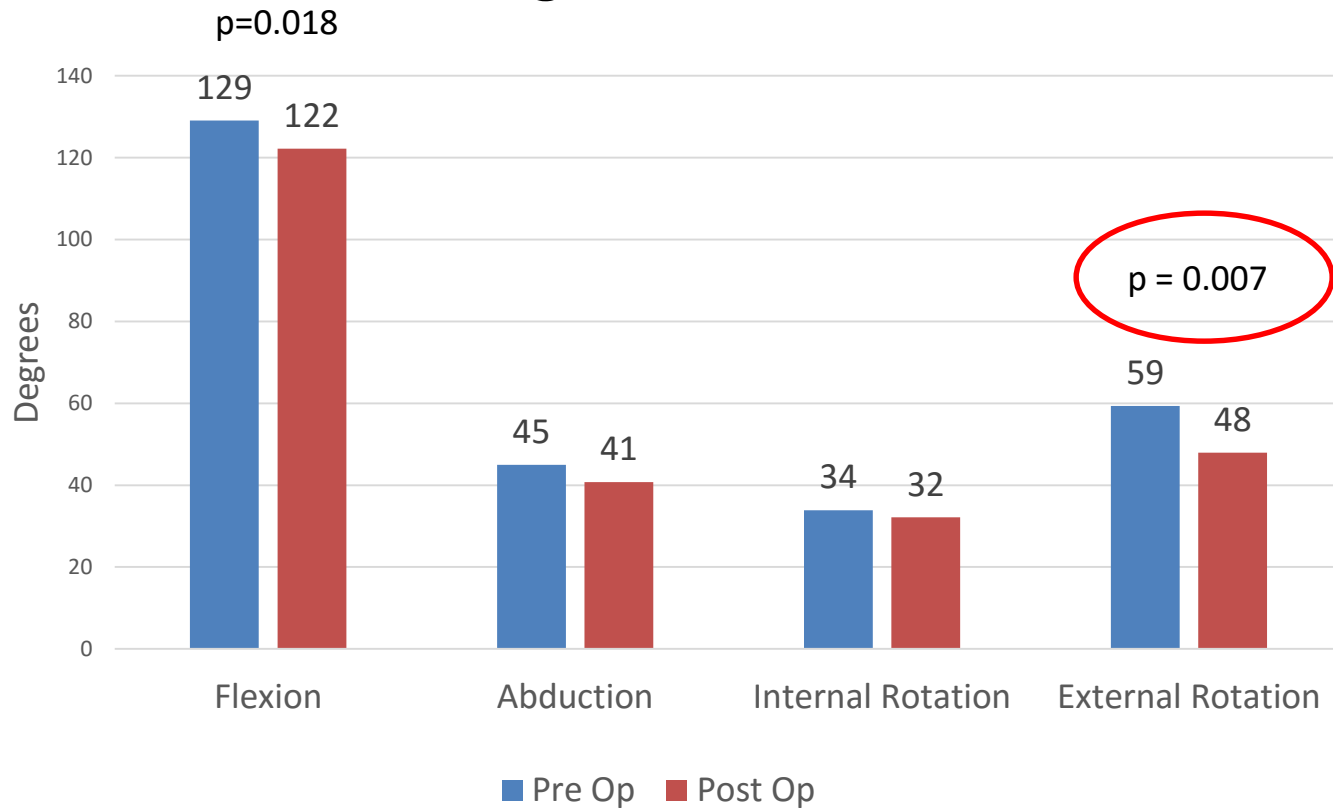
Results

Visual Analog Scale



Results

Range of Motion



A Case of One Worker

42 Year Old Worker

- 4 months left groin pain
- Gradual onset while at work
- Diagnosis: chronic “groin pulls”



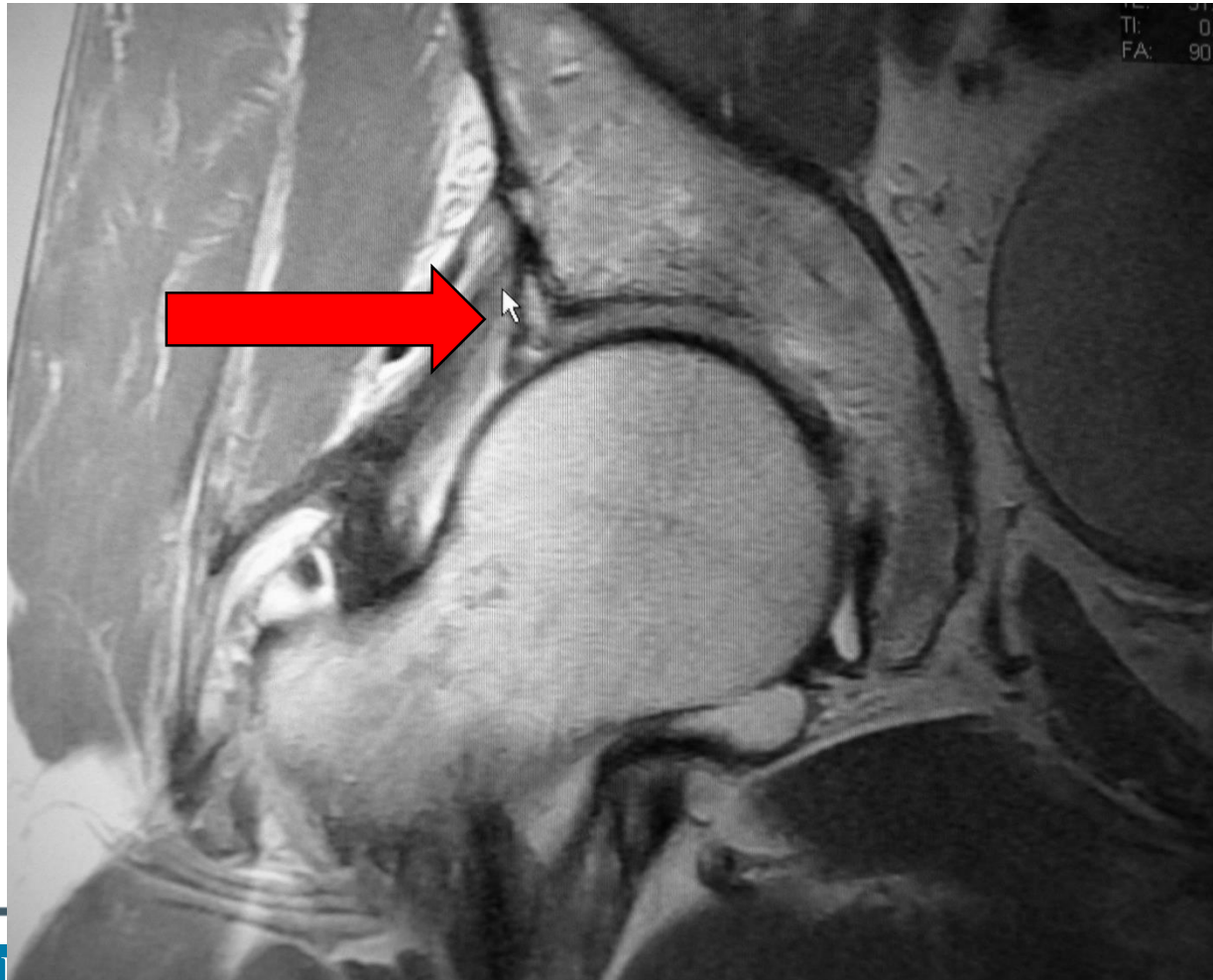
42 Year Old Worker

- Physician's advice:
 - probably had some “early, mild, arthritis” and that he would need a hip replacement some time in the future...

42 Year Old Worker

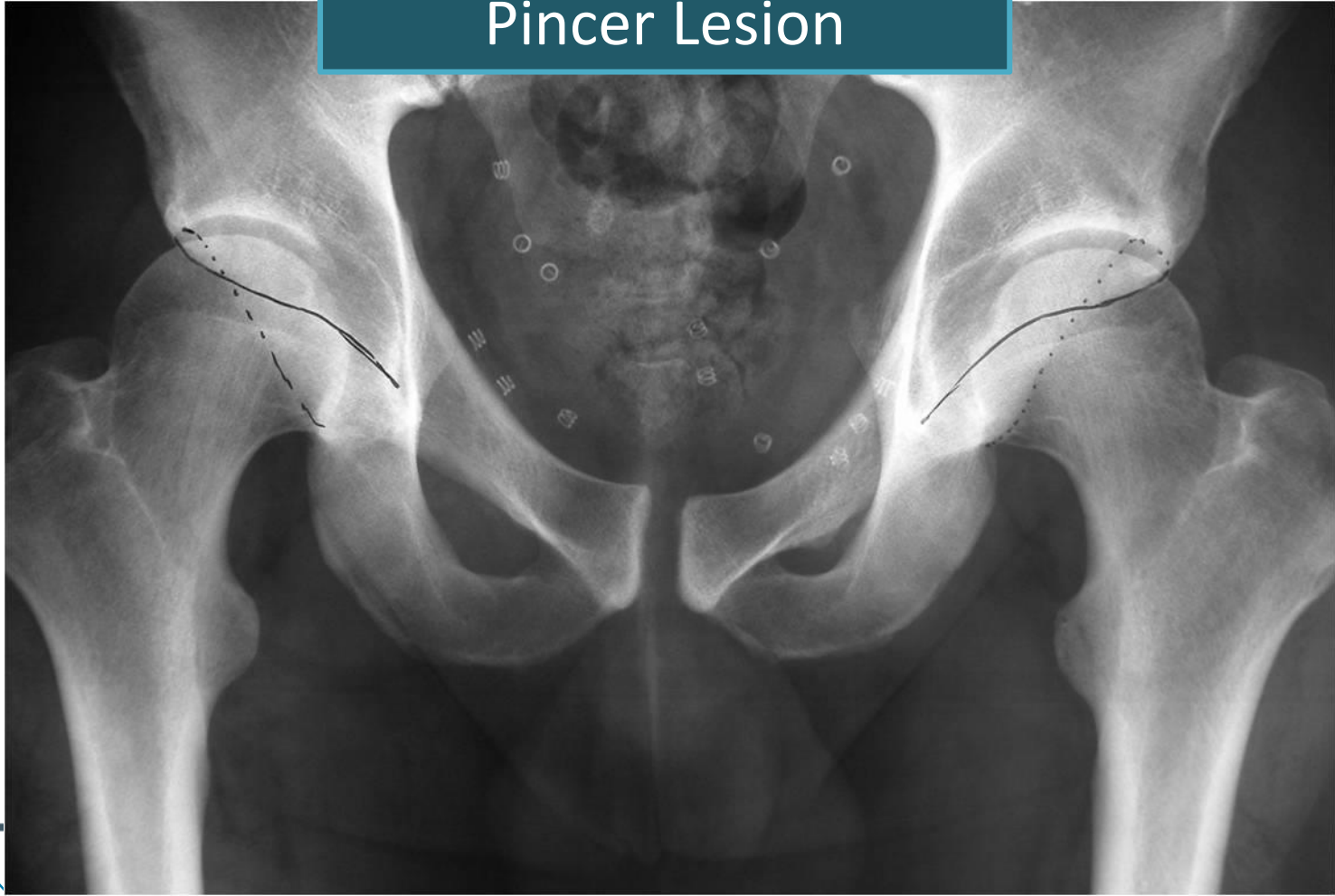
- Additional 3 months of PT
- Persistent pain
- Unable to return to work

Labral Tear



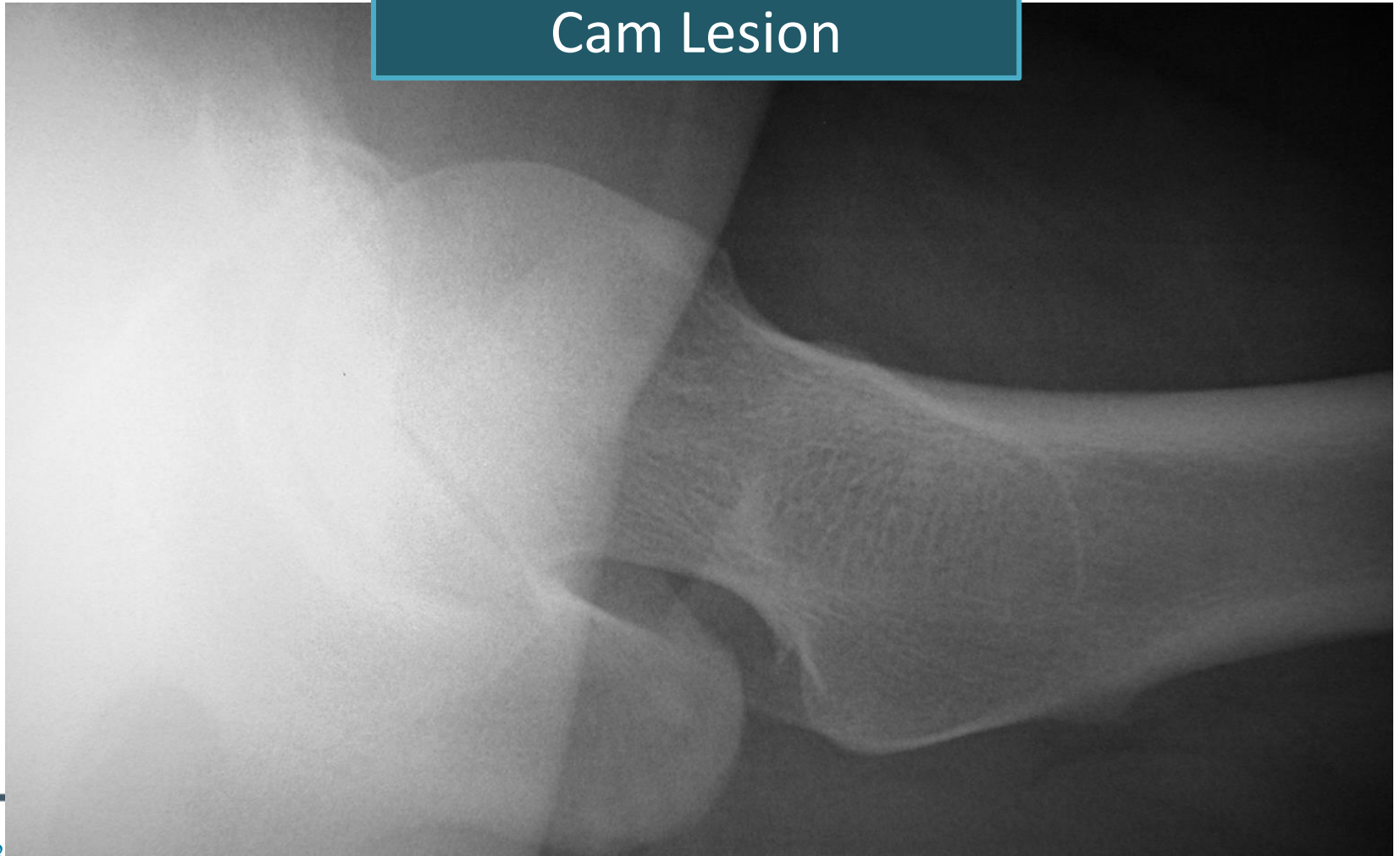
Normal X-Ray?

Pincer Lesion

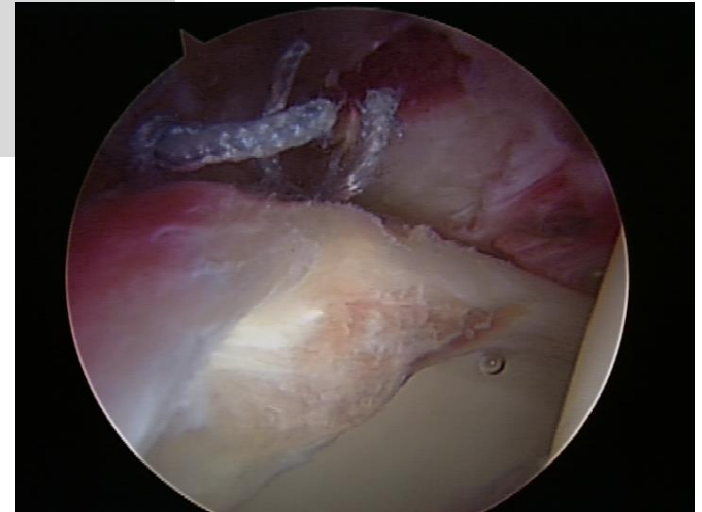


Normal X-Ray?

Cam Lesion

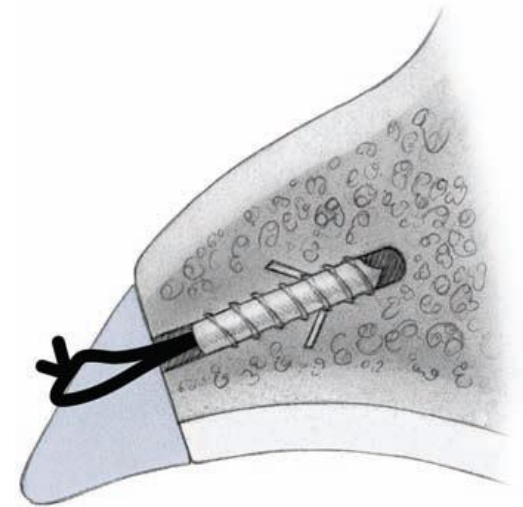


Labral Repair

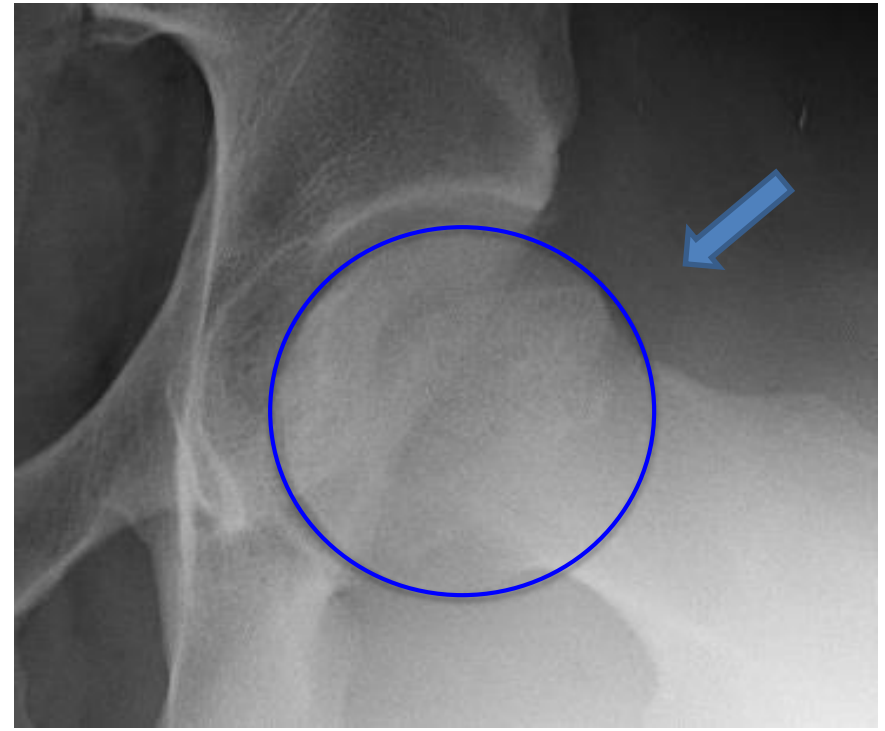
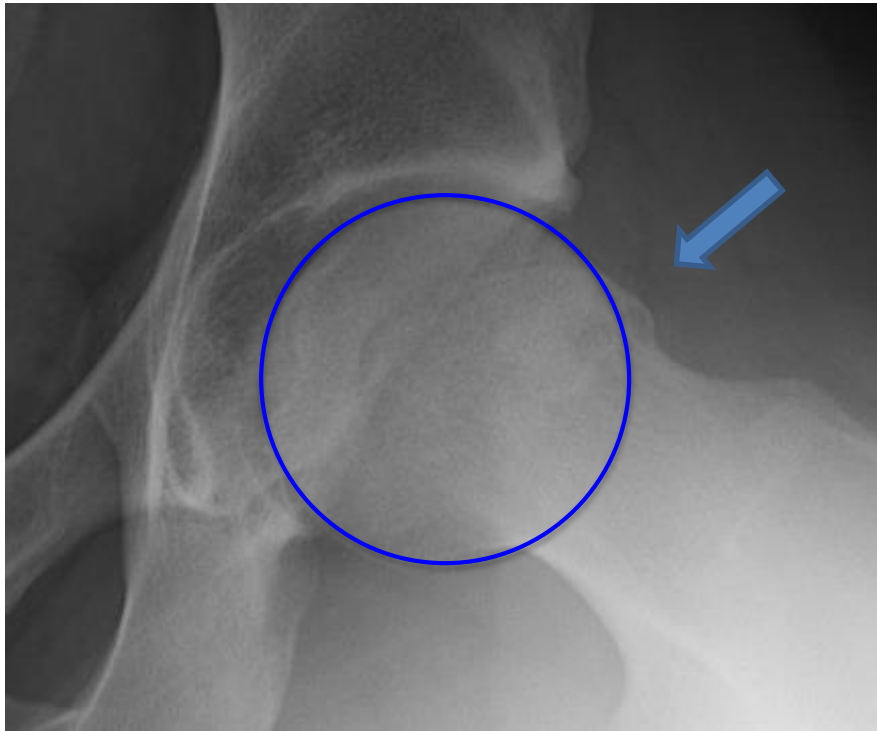


Labral Base Refixation

○ Domb, BG. *Arthroscopy* 2010.



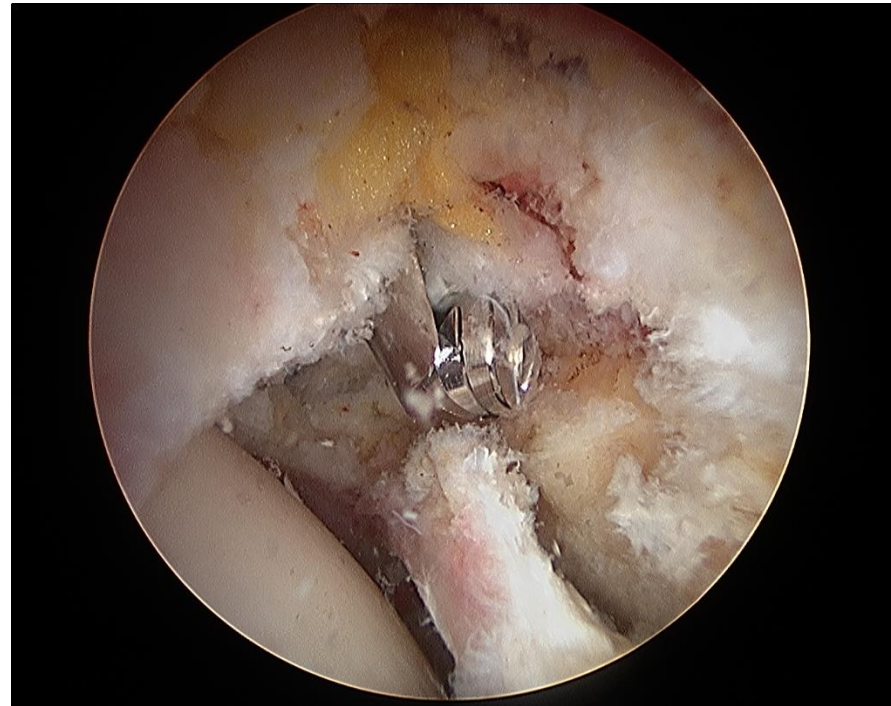
Femoroplasty for Cam Lesion



Pincer Lesion: Acetabular Rim Trimming

Acetabuloplasty

- Remove the spur



Post-Operative Course

- Outpatient surgery
- Began stationary bike next day
- Returned to full work in 4 months



Hip Arthroscopy: Standard Recovery

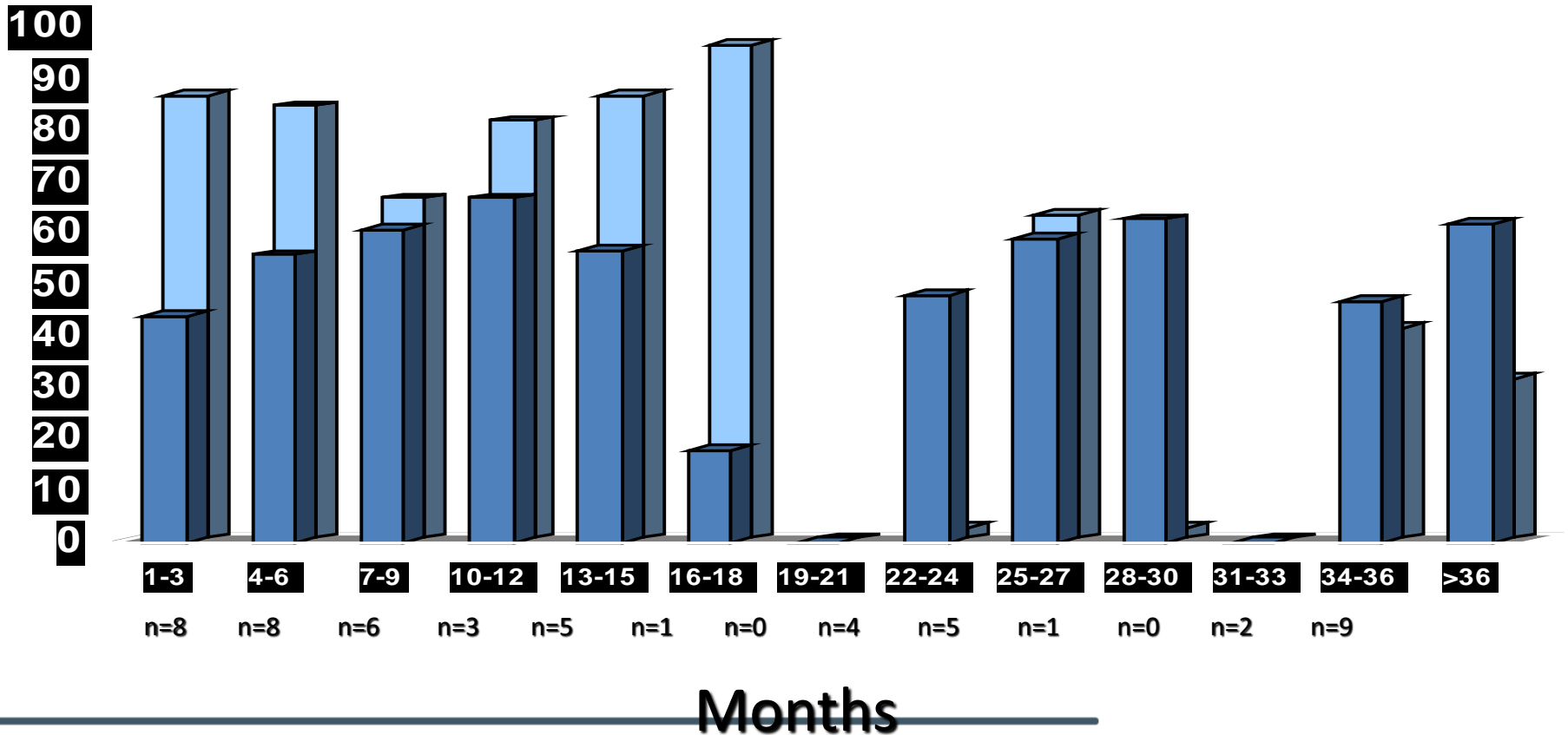
- Outpatient surgery
- Begin PT next day
- Crutches 2 – 6 weeks
- 3-4 months PT
- Sedentary work at 2 weeks
- Light duty around 3 months
- Full work 4-6 months
- MMI 6-8 months
- FCE if necessary

Hip Arthroscopy: What if We Wait or Delay Surgery?

- Results are worse with time

Results

Duration of Symptoms



Hip Arthroscopy:

What if We Ignore the Problem?

- **RAPIDLY DEVELOP ARTHRITIS**
 - Domb et al, *American Journal of Orthopaedics*, 2004
- **TOTAL HIP REPLACEMENT**



Orthopaedics

Hip Causation:

What is Caused by the Injury, What is Not?

Pathology	Caused by Injury?
Labral Tear	YES
Cartilage Injury	YES
Gluteus Medius Tear	YES
Cam Lesion	NO
Pincer Lesion	NO
Impingement	NO

Hip Causation:

Is a Labral Tear Caused by Impingement, vs. by Injury?

- Impingement, cam lesions, pincer lesions
 - These are structural features
 - Do not independently cause labral tear, cartilage damage, or hip pain
- Causation
 - Temporal relationship to onset of pain
 - Mechanism

Do Workers Injure Their Hips?



Hip Arthroscopy for Labral Tears in Workers' Compensation

A Matched-Pair Controlled Study

Christine E. Stake,^{*} MA, Timothy J. Jackson,^{*†} MD,
Jennifer C. Stone,^{*} MA, and Benjamin G. Domb,^{*‡§||} MD
*Investigation performed at Hinsdale Orthopaedics, Hinsdale, Illinois,
and American Hip Institute, Westmont, Illinois*

Background

- It has been suggested that WC portends inferior clinical outcomes
- Minimal research on WC patients in hip arthroscopy



Do Workers Injure Their Hips?



- First ever study in orthopedic literature to show positive results in WC
- First study on hip arthroscopy in WC

Study Methods

- Compared group of WC patients to non-WC patients
 - Matched by age, gender and diagnosis
 - Assessed outcomes by patient-reported outcome measures

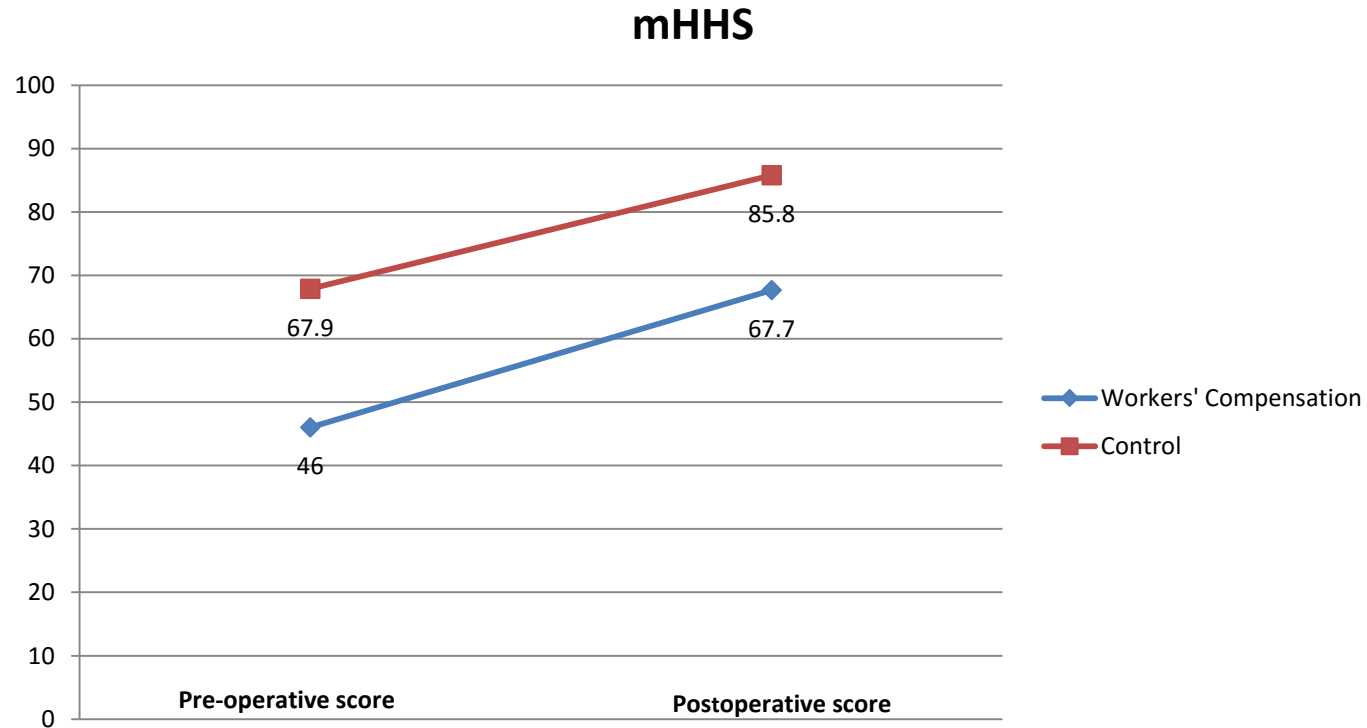


Demographics

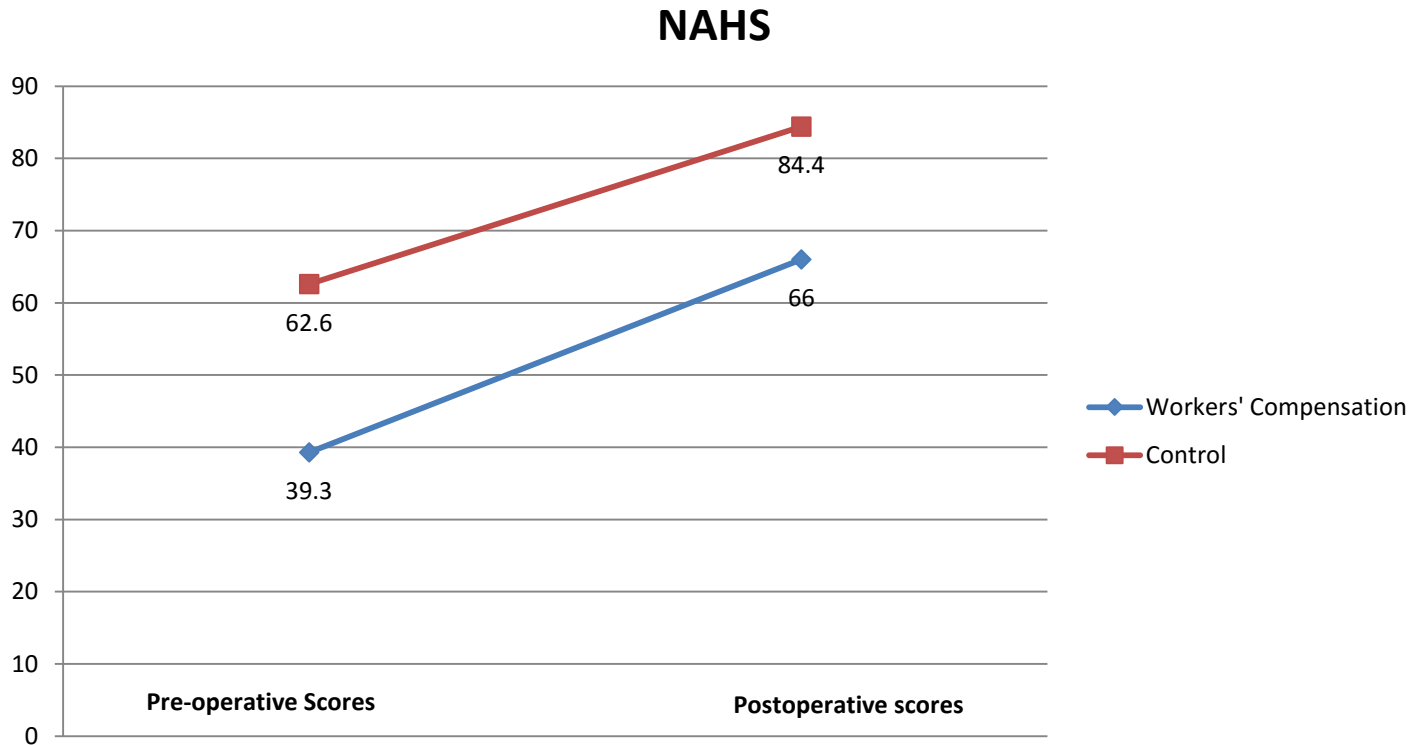
- Job Classification
 - 40% – Light
 - 25% – Medium
 - 35% – Heavy
- Most common mechanisms of injury
 - Slip/fall
 - Lifting
 - Twisting/rotating



Modified Harris Hip Score



Non-Arthritic Hip Score



Conclusion

- Both groups showed significant improvement post surgery
- WC patients improved as much as non-WC
- WC patients had more severe injuries than non-WC



Diagnostic Dilemma

Origin of hip pain can be difficult to identify



Hip Arthroscopy: Challenging Surgery

- A **NEW** field
- Requires specific training
 - Must train more orthopedic surgeons
- **Tremendous opportunity to help patients and workers**



AMERICAN INSTITUTE

- #1 Center in Country by Volume for Hip Arthroscopy
- Non-profit foundation for research and education

Thank You

www.AmericanHipInstitute.org



Benjamin G. Domb, M.D.

Medical Director, American Hip Institute

Director of Orthopedics, Adventist Hinsdale Hospital