

Hip Arthroscopy:
Traumatic Acetabular Labrum Tears in
Athletes

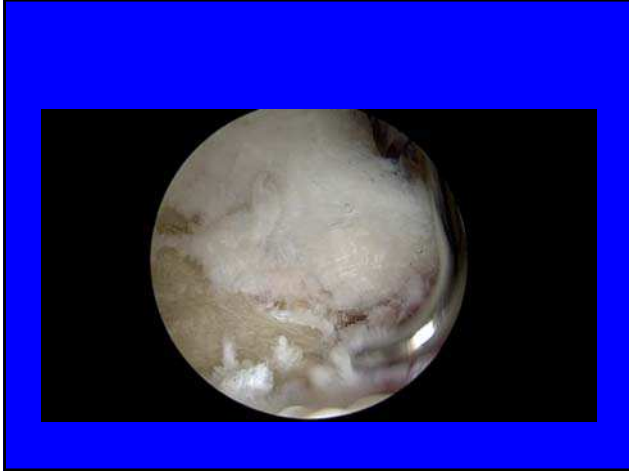


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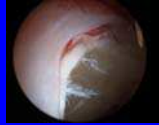
22-year old professional wakeboarder





Hip Labrum Function and Anatomy

- Triangular Fibrocartilage encircling hip socket (other than transverse ligament)
 - Aids in stability
 - Deepens joint/distributes pressure
 - Resists lateral/superior femoral head motion
 - Provides seal to maintain joint fluid/pressure



Stability

- Labrum increases surface area of acetabulum by 60%
- Labrum increases volume of acetabulum by 120%
 - Tan et al, Am J Orthop, 2001
- High circumferential tensile stiffness increases hip stability (similar to meniscus)



Labrum "Seal"

- Ferguson, et al, J Clin Biomech, 2000
 - 1200 N compression applied across labrum
 - Labrum "sealed" a layer of pressurized fluid
 - No contact between articular cartilage of femoral head/acetabulum
- In absence of labrum:
 - Solid matrix strains across cartilage increased from 3% to 20%



Labrum Seal/Stability

- Crawford et al, CORR, 2007
 - Compared to venting the capsule (43%), creation of a small 1.5cm tear in the labrum decreased the force by 60% to distract the femur 3mm
 - This created tear also significantly affected torque/displacement



Proprioception

- Free nerve endings and sensory end organs have been isolated in the labrum
 - Kim and Azusa, Clin Orthop, 1995



Does Labral Pathology Cause Arthritis?

- Inverted labrum noted on THA: Cause of Primary Osteoarthritis of the hip?...
 - Harris et al, JBJS, 1979



Does Labral Pathology Cause Arthritis?



- Labral tears associated with early-onset OA...
 - Byers, Ann Rheum Dis., 1970
 - Altenberg, South Med J, 1977
 - Fitzgerald, Clin Orthop, 1995
 - Byrd, Arthroscopy, 1996
 - Farjo, Arthroscopy, 1999
 - McCarthy, Clin Orthop, 2001
 - Seldes, CORR, 2001
 - Groh et al, Curr Rev Musculoskelet Med, 2009

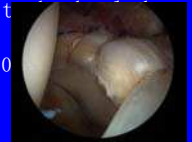
Labrum Resection



- Labrum resection leads to 40% quicker rate of articular cartilage consolidation
- Lateralization shifts load to acetabular rim = increases Femoroacetabular contact pressures
 - Ferguson et al, J Biomech, 2000
- *Resection: Increased contact stress by

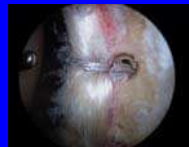
Labrum Repair: Do they Heal?

- Labrum heals via fibrovascular scar between labrum and capsule and/or bone
- Phillipon, sheep study= 10/10 surgically repaired labra healed by 12 weeks
- On 2nd look arthroscopy:
 - 9 of 9 labrum repairs found to be healed and stable
 - Krueger et al, Arthroscopy, 200



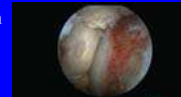
Labrum Repair vs Resection

- Patients treated with labrum refixation recovered earlier and had superior results compared to those patients treated with resection (Open FAI tx, 2-yr f/u) (80% excellent vs 28% excellent)
 - Espinosa et al, JBJS, 2006



Labrum Repair versus Resection

- Larson/Giveans, Arthroscopy, 2009
 - 36 hips with labrum debridement
 - 39 with labrum refixation
 - HHS, SF-36, visual analog
 - Subjective outcomes improved in both groups
 - HHS scores significantly better for refixation group
 - Most recent follow up:
 - 66.7% good/excellent in debridement
 - 89.7% good/excellent in refixation

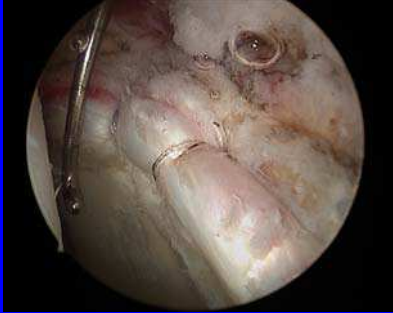




Summary

- Literature relatively scant
- In my opinion: Labral repair is preferred
- Future:
 - Increasing evidence to support repair
 - Improved technology to facilitate repair
 - Increased patient demand for repair
 - Preventing DJD/THA with appropriate repair/FAI surgical treatment ?

Case Examples

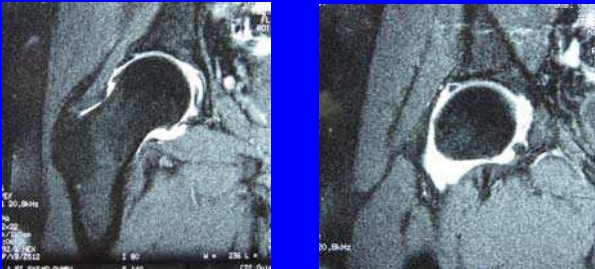


41-y/o marathon runner

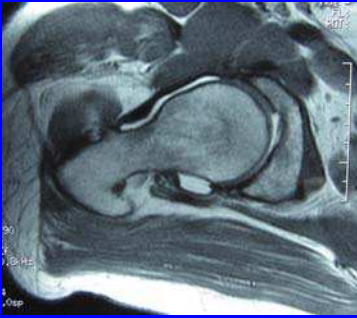
- 4 month history of groin pain
- No improvement with NSAIDs, PT, rest



MRI



MRI- CAM







Post-Op

- Distance Running by 10 weeks
- No pain
- Back to work as Sheriff at 2 months



27-year old rodeo athlete



Inverted Labrum



Inverted Labrum



Thanks...

