

Hip pain in the soccer athlete

When, and how, to address hip impingement/labral tears










5/28/19

Ryan Fader MD



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DISCLOSURES

- NONE





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Hip Impingement: How did we get here?

1912

First arthroscopy  
Severin Nordentoft  
Denmark, Sweden

1931

First Hip Arthroscopy by Dr.  
Burman (cadaver)

1939

First Hip Arthroscopy in live  
patient

1957 and 1959

Labral tears identified  
(open approach)

1986

Labral tear identified  
through scope\*

2003

FAI described  
Ganz

Present

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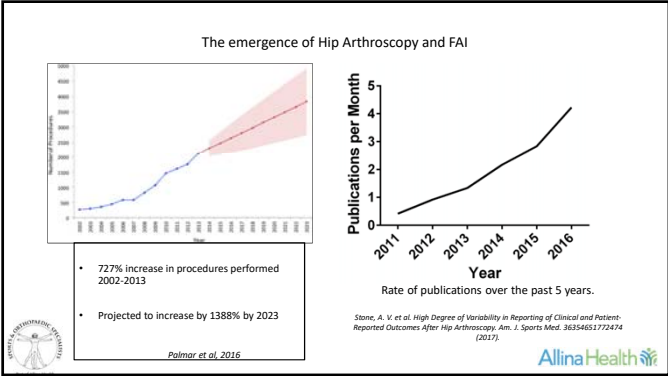
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Table 1. Selected Publications Documenting the Increase in the Use of Hip Arthroscopy

Publication Authors	Years of Analysis	Patient Group	Surgeon Group	Rate of Increase
Maradit Kremers et al. <sup>2</sup>	2005-2013	10,042 privately insured (and Medicare) patients: 18-64 yr of age	Administrative claims data from the United States	4.6-fold
Sing et al. <sup>3</sup>	2007-2011	8,227 privately insured patients: 10-69 yr of age	Administrative claims data from the United States	250%
Degen et al. <sup>4</sup>	1998-2012	12,194 patients from all payers (public and private) (any age)	Comprehensive database from a single state in the United States	95-fold
Truntzer et al. <sup>5</sup>	2007-2014	2,581 privately insured (and Medicare) patients: 10-89 yr of age	Administrative claims data from the United States	117%
Montgomery et al. <sup>6</sup>	2004-2009	3,447 privately insured patients: 10-69 yr of age	Administrative claims data from the United States	365%
Boric et al. <sup>7</sup>	2006-2010	1,574 patients from all payers (public and private) (any age)	ABOS Part II examination from the United States	666%

ABOS, American Board of Orthopaedic Surgery.

2. Maradit Kremers H, Schil DK, Van Hecke HV, et al. Trends in utilization and outcomes of hip arthroscopy in the United States between 2005 and 2013. J Arthroplasty 2017;32:750-755.

3. Sing DC, Feist BT, Top AT, Zhang RL. Age-related trends in hip arthroscopy: A large cross-sectional analysis. Arthroscopy 2015;31:2307-2313.e2.

4. Degen MA, Bernard BA, Pan TJ, et al. Hip arthroscopy utilization and associated complications: a population-based analysis. J Hip Preserv Surg 2017;4:240-249.

5. Truntzer JR, Dapkin LM, Hogue DJ, Adams GD, Sahrmann MB. Hip arthroscopy in the United States: An update following coding changes in 2011. J Hip Preserv Surg 2017;4:250-257.

6. Montgomery JR, Top AT, Nelson T, et al. Trends and demographics in hip arthroscopy in the United States. Arthroscopy 2013;29:653-660.

7. Boric KJ, Chen V, Valone RH, Feist BT, Top AT. Trends in hip arthroscopy utilization in the United States. J Arthroplasty 2013;28:140-145.

Harris JD. Editorial Commentary: A Hip Scope Scoping Review on Surgical Outcome Reporting-If You Want to Know the Answer, You Have to Ask the Question. Arthroscopy. 2018;34:1329-1331.

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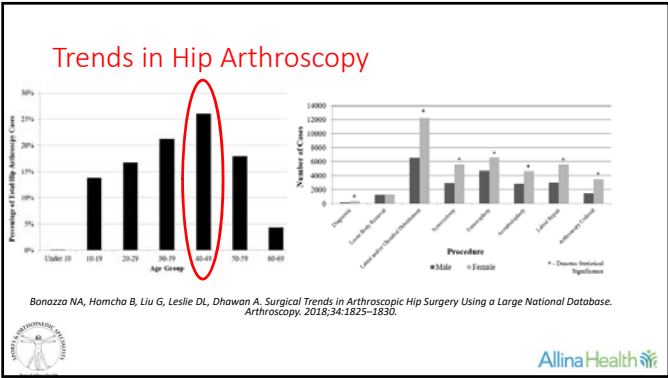
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### Hip Impingement ("FAI") and Labral tears


What is hip impingement?

**NORMAL**


**CAM**


**MIXED**

**PINER**



Pinching of labrum





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### Types of Impingement


- Intra-Articular
  - CAM
  - Pincer
  - Mixed (65%)
- Extra-Articular
  - Sub-spine impingement\*
  - Ischio-femoral impingement
  - Trochanteric-Pelvic impingement

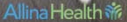
**NORMAL**

**CAM**

**MIXED**

**PINER**





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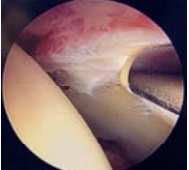
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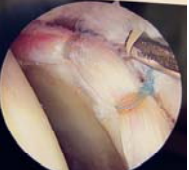
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### Etiology of Labral Tears

- Trauma (14%)
  - Usually repetitive trauma
- Femoroacetabular Impingement (43%)
- Capsular Laxity/Instability (25%)
- Dysplasia (4%)
- Degenerative (14%)





90% of patients with labral pathology have underlying structural abnormalities in femoral or acetabular morphology



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Why it is important: altered mechanics leading to OA


- When the labrum fails.....
  - Hip pain
  - Rate of articular cartilage compression (up to 40% quicker)
  - Contact stress (up to 92% higher) between the femoral and acetabular cartilage layers
  - Loss of suction seal may lead to loss of fluid dynamics
  - Loss of suction may to joint instability
  - Early DJD



From: J Bone Joint Surg Am. 2014 Apr 23;96(8):e1-10. doi: 10.1007/s12216-014-0070-9. Epub 2014 Mar 6.

**The hip fluid seal—Part II: The effect of an acetabular labral tear, repair, resection, and reconstruction on hip stability to distraction.**

Burnett et al. \*Presented At: American Society of Hip and Knee Surgeons, 2014, San Francisco, CA.



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The Diagnostic Delay:

- Clinical presentation is variable
- Diagnosis often missed initially
- Burnett et al *JBJS* 2006
  - 66 patients diagnosed with labral tear on arthroscopy
  - Mean time to diagnosis **21 months**
  - 3.3 health care providers** seen prior to diagnosis







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STEP 1: Establishing the source

*"Is this pain coming from inside the joint, outside the joint, or elsewhere?"*

*How do these patients present??*





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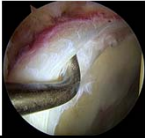
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### “Intraarticular Disorders”

- **Labral Tears**
  - Hypertrophic tears (dysplasia)
  - Hypotrophic labra
- **Chondral Injury**
  - Focal chondral defects
  - AVN
- **Ligamentum Teres Tears**
  - Partial
  - Complete



- **Femoroacetabular Impingement**
  - CAM
  - Pincer
- Synovitis
- Loose Bodies
- Tumors
  - Synovial chondromatosis
  - PVNS

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### HIP PAIN: LOCATION, LOCATION, LOCATION

Anterior	Lateral	Posterior
Hip Joint	Greater trochanter	Referred pain: spine
Hip Flexors	Iliotibial band	stenosis, disk, facets
Iliopsoas	Meralgia paresthetica	SI joint
Stress fracture	Gluteus Medius Tear	Hip extensors
Inguinal Disruption		External rotators
L3 nerve root		Hamstrings
Ishiofemoral Impingement		Piriformis
Microinstability		



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### INTRA-ARTICULAR SYMPTOMS

- Groin pain associated with hip activity
- Complaints of pain in the front, side or back of the hip
- Pain may be described as a dull ache or sharp pain
- Patients may complain of a locking, clicking, or catching sensation in the hip
- Pain often occurs to the inner hip or groin area after prolonged sitting or walking
- Difficulty walking uphill
- Restricted hip movement
- Low back pain
- Pain in the buttocks or outer thigh area

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HISTORY

Demographics:	17 yo female, high school soccer player
CC:	"Right hip pain"
HPI:	<ul style="list-style-type: none"><li>• 9 months of RIGHT hip pain – "front of hip"</li><li>• Insidious onset</li><li>• Initially worse with soccer, daily sitting, deep flexion exercises, and activity/pivoting</li><li>• IN SEASON at time of presentation</li><li>• Feels the pain in the front of the hip/groin. Some lateral pain, some radiation into buttock with increased activity</li><li>• No numbness or tingling</li><li>• Mild ipsilateral SI pain</li><li>• TREATMENT SO FAR: rest, NSAIDs, home exercises</li></ul>
PMH:	None
PSH:	None
Allergies	NKDA



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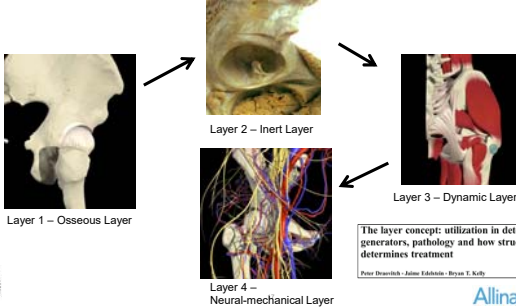
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"The Layer Concept" – The Anatomical Approach to Determining Hip Pain



Layer 1 – Osseous Layer



Layer 2 – Inert Layer

Layer 3 – Dynamic Layer

Layer 4 – Neural-mechanical Layer

The layer concept: utilization in determining the pain generators, pathology and how structure determines treatment

Peter Dravitsch - Justin Edelman - Bryan T. Kelly



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EXAM

Antalgic gait

Tender over hip flexors, TFL, gluteus musculature

Limitation motion:



- Flexion: 110 (pain with terminal)
- Extension: 0
- IR: 5 degrees
- ER: 40 degrees

Strength:

- 3/5 hip flexors
- 4+/5 adductors
- 4/5 glutes

Special Tests:

- ++ FADIR
- ++ Subspine sign (deep flexion)
- + Butterffly test
- + lateral rim impingement
- + anterior pain with FABER



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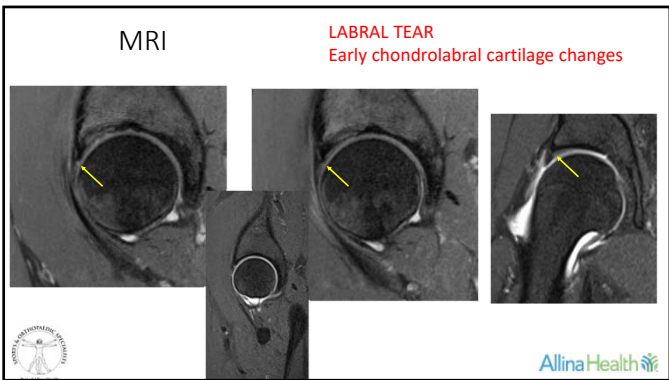
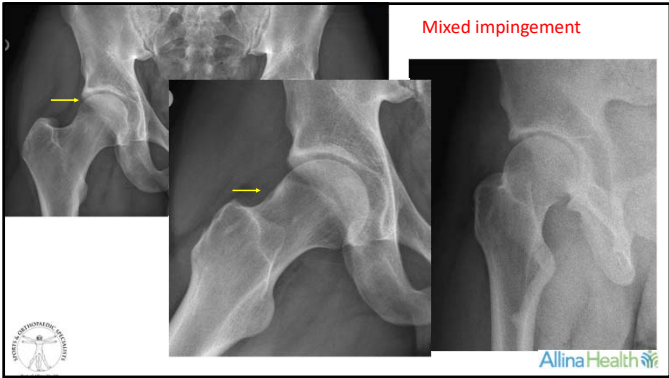
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**Decision point:**

1. Timing/patient demographics

- in season athlete? what part of the season?
- sport?
- level of athlete?
- occupation/life plans
- recency of injection?

2. What has treatment to date consisted of?

3. Treatment Options available

- Short period of shut down, trial of NSAIDS
- Skilled hip centric PT\*
- Intra-articular injection

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### Injection and PT

- Ultrasound guided
- **Important component of assessment**
  - Evaluates relief of pain associated with triggering activities
  - Provides key insight on etiology of pain
    - Intra vs extra-articular


**Helps guide treatment algorithm**

**May help calm down intra-articular symptoms and keep in the game**





HIP CENTRIC Physical therapy (more to come)



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### Outcomes of intra-articular corticosteroid injections for adolescents with hip pain

Jennifer Tangtiphaiboonatana, Alan L Zhang, Nirav K Pandya

*Journal of Hip Preservation Surgery, Volume 5, Issue 1, January 2018, Pages 54-59.*

- 19 hips, mean age of 15.1
- All treated with IA injection
- Mean follow up 29 mo
- 10/19 (52%) went on to need surgery
- Avg time to conversion: 12.8 months
- CAM/Pincer present in 90% of those needing surgery- these patients more likely to need surgery
- No diff in presence of labral tears in op and non-op group (100% vs 87%, p=0.47)
- Adolescents with no bony abnormality – 90% improved with CSI alone



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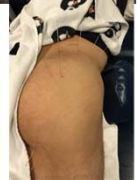



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**HIP CENTRIC PT\*\***

+++ BFR  
+++ Dry Needling



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...back to our patient

- 2 weeks of shut down
  - 14 day trial NSAID
  - Underwent intra-articular injection
  - Skilled hip centric PT
- ↓
- Pain free, completed 8 weeks PT  
Was able to compete through rest of the year
- ↓
- Maintained strength, but increase in intra-articular symptoms at end of year



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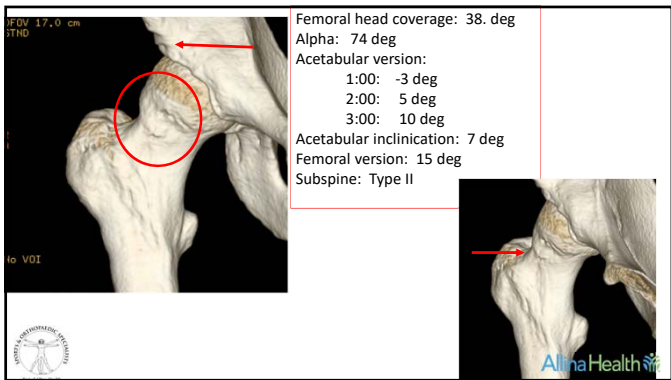
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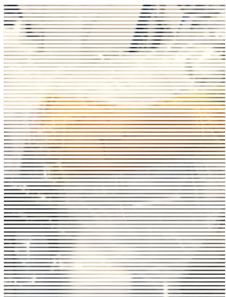
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Surgical management



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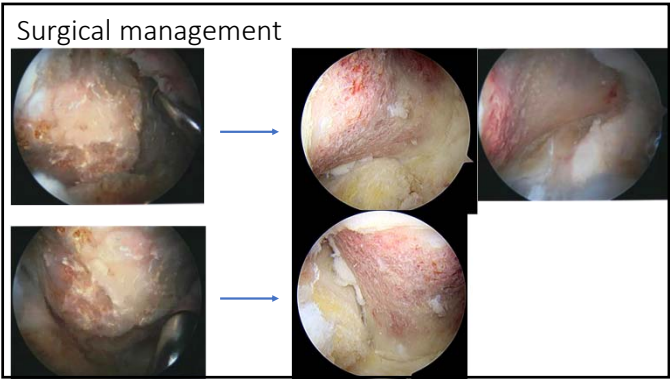
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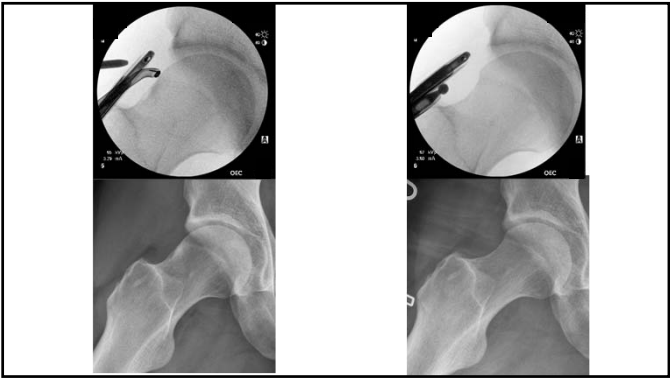
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