


Anterior Hip & Groin Pain

Contemporary Diagnostic & Management Strategies

Dr. Alison Grimaldi

PHYSIOTHERAPIST, RESEARCHER & EDUCATOR

Joint Related Pain & Bony Impingements



ANTERIOR HIP & GROIN PAIN

Joint Related Pain & Bony Impingements

Capsulolabral Deficiency

Part 2

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Key Morphological Variants

Femoral Morphology	Acetabular Morphology	Capsulo-labral Deficiency
<p>Cam Morphology (FAI) ✓</p> <p>Coxa Valga/Vara ✓</p> <p>Coxa Brevia ✓</p> <p>Femoral Version Retroversion ✓</p> <p>Anteversión ✓</p>	<p>Overcoverage (FAI) ✓</p> <p>Retroversion (FAI) ✓</p> <p>Dysplasia Type I & II ✓</p>	<p>Labral Deficiency ✓</p> <p>Congenital Hypermobility ✓</p> <div style="border: 2px solid black; padding: 2px;"> <p>Acquired Cap-lig Deficiency</p> <p>Trauma</p> <p>Iatrogenic</p> <p>Focal overload</p> </div>

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Capsulo-ligamentous Disorders



Acquired Trauma

Focal overload

Iatrogenic

Acquired secondary to:

- Trauma – EOR overload or distraction force
- Focal Overload
 - 2° to Dysplasia or Fem anteversion
 - Functional overload
- Iatrogenic – Induced surgically

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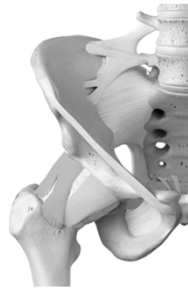
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Anterior Ligaments

Ligaments reinforce ≈ 60% capsule

<p>Iliofemoral Ligament</p> <ul style="list-style-type: none"> - Lateral Arm - Medial Arm 	<p>Limits</p> <p>Ext, ER, IR in Ext</p> <p>Ext, ER</p>
<p>Pubofemoral Ligament</p> <p>ER * in Ext</p> <p>Abduction</p>	<p>Focal overload in Ext, ER, Abd</p>

Martin et al 2008, Sato et al 2012



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Zona Orbicularis

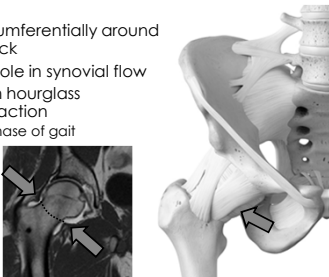
Wraps circumferentially around femoral neck

Important role in synovial flow

Acts like an hourglass

Resists distraction

- Swing phase of gait
- Kicking



Ito et al 2009

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Iatrogenic Capsular Damage

T capsulotomy is common

Larger opening for osteoplasties

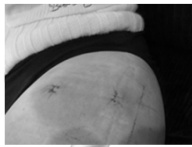
Many surgeons do not repair

Some perform capsulectomy

Post scope: may be left with absence of portion of IFL & anterior ZO

Beware! It's possible for a patient's hip to sublux or dislocate anteriorly post hip arthroscopy

Chang et al 2013, Matsuda 2009, Ranawat et al 2009, Sansone et al 2013, Wylie et al 2016, Yeung et al 2017



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Iatrogenic Instability Post Scope

Stability post-scope reduced by:

- Labral debridement
- Acetabular rim trimming
- Capsulotomy (damage to IFL)
- Prolonged traction (stretching capsule/ligs)
- Iliopsoas tendon release



Sansone et al 2013, Matsuda 2009, Ranawat et al 2009

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Effects of capsular repair post scope

Compared outcomes post scope with fully repaired vs partial repair of capsule

Improved outcomes if capsule is completely repaired:

- Patients who underwent CR of the hip capsule demonstrated superior sport-specific outcomes
- Revision rate: 13% in the PR group, 0 in full repair group

Repair critical for anterior stability in hip Ext & ER

Frank et al 2014

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Implications for Management

Ongoing hip pain post scope

➡ **Consider possible instability esp if:**

- No capsular repair
- Labral debridement
- Acetabular rim trimming
- Capsulotomy/ damage to IFL Lig
- Prolonged traction/stretching capsule/ligs
- Iliopsoas tendon release
- Global Hypermobility

➡ **Optimise dynamic stability**

Some require surgical repair





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Clinical Indicators of Focal Anterior Instability

Interview Features:
Pt may report, clicking, popping, heaviness of leg, giving way, reduced balance

Physical Features:

Axial Distraction	Dial Test	Relocation Test	FABER
			
Apprehension	Increased ROM No firm end-feel Poor recoil	Less apprehension Less pain Increased ROM	Pain/Apprehension SN:54; SP:90 Ranawat et al 2017




Ranawat et al 2017, Reiman et al 2019

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Clinical Indicators of Focal Anterior Instability

Physical Features: Diagnostic Utility Study

Apprehension/HE-ER Test	AB-HE-ER Test	Prone Instability Test
		

Reproduction of the patients anterior hip pain

Arthroscopically identified hip instability as a reference standard

AB-HEER test – moderately useful for ruling out instability


Prone Instability Test – moderately useful for ruling in anterior instability (Low quality evidence, one study only)

Hoppe et al 2017, Reiman et al 2019

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Radiological Indicators of Capsular Insufficiency



- > Vacuum sign on Fluoroscopy
Canham et al. 2016
- > Capsular Laxity on MRA
 1. thinning of the joint capsule (<3 mm) lateral to the zona orbicularis (or absence post-op)
 2. [Marker]
 3. widening of the anterior hip joint recess (>5 mm)
 4. [Marker]

Magerkurth et al. 2016

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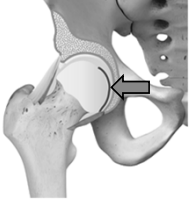
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Ligamentum Teres

Originates from transverse acetabular ligament
Inserts into Fovea Capitis of femoral head




Cerezal et al 2010, RadioGraphics;30:1637-1651

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Ligamentum Teres

- Proprioception (still conjecture) & blood supply
- Possible role in synovial flow – 'windscreen wiper effect'
- Secondary restraint (to capsular ligs), loaded particularly in extremes of range – F/ER; Ext/IR
- Forms a sling under HOF in deep Flexion-Abd



Prevents subluxation of HOF

Kivlan et al 2013, Martin et al 2012, 2013, Phillips et al 2012

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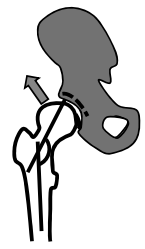
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Ligamentum Teres – Mechanism of Injury?

Often associated with:

Bony factors
Neck-shaft angle >140°
Centre edge angle < 23°
Higher roof angle >13°
FAI

Soft tissue factors
Hypermobility



Increased shear force


Impingement & associated subluxation forces

Martin et al 2012, Botser et al 2011, Devitt et al 2017, O'Donnell & Arora 2017

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Ligamentum Teres – MOI?



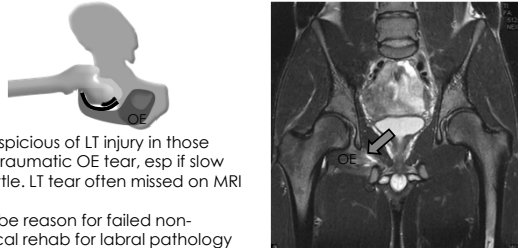
Inferior shear in F/AB especially with

- superior impingement
- inferior acetabular insufficiency
- capsular laxity

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Ligamentum Teres – MOI?



Be suspicious of LT injury in those with traumatic OE tear, esp if slow to settle. LT tear often missed on MRI

May be reason for failed non-surgical rehab for labral pathology
Kaya et al 2014

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Ligamentum Teres Tears in Athletes

Frequency of LT tears-imaging:
Dancers 55 %
Other Athletes 22 %
(Dancers also higher % with AD, borderline AD & coxa valga)

Dancers had larger OE than non-dancing athletes
Positive adaptation?
Mayes et al 2016, 2017, 2018

LT damage at hip arthroscopy:
≈ 70% of athletes with FAI vs 50% of others (usually PT Tear).
Higher incidence in athletes due to higher ranges & forces?



Botser et al 2011, Devitt et al 2017, O'Donnell & Arora 2017

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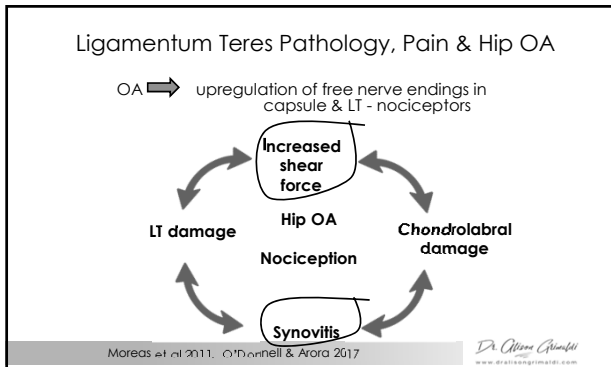
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Clinical Indicators of Ligamentum Teres Tear

Interview Features:
Take a careful Hx re trauma & sporting activities – forced/repetitive EOR; F/ABD/Rotn; distraction/drag
When symptomatic, often irritable hip, slower to settle
Often co-exist with chondro-labral damage & synovitis
May report mechanical symptoms, signs of instability, particularly in the presence of reduced bony or capsulo-ligamentous stability.

Physical Features: +ve Lig Teres test:
Hip Flexion 70°
Take to full Abd, then back 30°
Full IR & ER
Positive test is pain reproduction

O'Donnell 2013, 2017, 2018

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Management of the patient with hip pain & capsulolabral deficiency

Load Management

- Minimise time spent in end range positions - *Ext/ER; F/Abd
- Listen to joint response to load – want to avoid/minimise any inflammatory processes
 - Night ache, morning stiffness
 - FABER can be useful barometer

Exercise

- * Need good local muscular support
- deep hip flexors, GMin, DER's
- Address individual impairments while avoiding adverse joint loads

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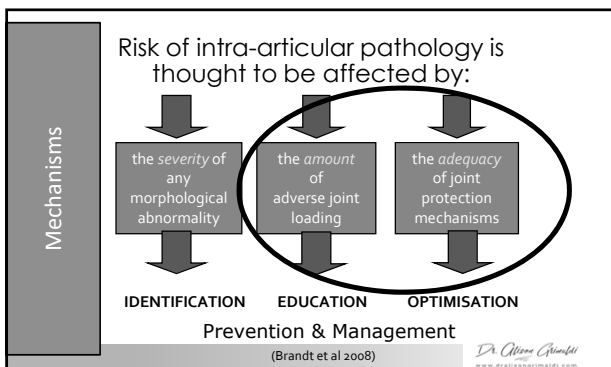
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Coxa Valga/Vara ✓	Retroversion (FAI) ✓	Congenital Hypermobility ✓
Coxa Brevia ✓	Dysplasia Type 1 & 2 ✓	Acquired Cap-lig Deficiency ✓
Femoral Version ✓		Trauma ✓
Retroversion ✓		Iatrogenic ✓
Anteversión ✓		Focal overload ✓

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