



Standard of Care: Hip Labral Tears

ICD 9 Codes: 726.5: Enthesopathy of hip

Case Type / Diagnosis:

The labrum of the hip enhances joint stability and decreases forces transmitted to the articular cartilage by creating a seal that helps to keep synovial fluid within the articular cartilage, thereby preventing direct contact between the femoral head and the acetabulum.¹ Labral tears can lead to joint instability with consequent labral fraying and chondral degeneration.² The labrum also provides proprioceptive feedback through free nerve endings which, in a pathological joint, can be a source of pain.²

Etiology of labral tears:

Traumatic injuries

The labrum is susceptible to traumatic injury from shearing forces in weight-bearing. Direct trauma to the hip, including motor vehicle accidents and slipping or falling without hip dislocation are common causes of labral tears. Sports in which there is repetitive hip external rotation, such as in ballet, soccer, hockey, and golf have been known to cause labral tears also.² Hyperflexion and squatting motions can be sources of mechanical injury to the labrum. Despite all of these known causes of labral tears, up to 74.1% are not associated with any specific event or cause.¹

Femoral Acetabular Impingement (FAI)

FAI is described as decreased joint clearance between the femur and acetabulum. There are 2 types of FAI.

Cam Impingement: occurs when the femoral head has an unusually large radius, causing abnormal contact between the femoral head and acetabulum, especially with active motions of hip flexion combined with adduction and internal rotation. This impairment in joint mechanics leads to anterosuperior labral and chondral lesions.²

Pincer impingement: occurs when an abnormally shaped acetabulum creates an overcoverage onto the femoral head. This overcoverage can be general (deep acetabulum) or anterior (acetabular retroversion). This impairment in joint mechanics causes posteroinferior chondral lesions.²

Pincer impingement appears to be more common in middle-aged female athletes, whereas cam impingement is more common in young athletic males.²

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Dysplasia

Defined as a shallow acetabular socket, dysplasia results in decreased coverage of the femoral anteriorly and laterally, compromising the stability of the joint. This can lead to joint hypermobility and compression of the labrum, resulting in tears.²

A reduction in acetabular or femoral anteversion can cause pinching of the labrum at the acetabular rim during combined flexion adduction motions.

Chondral Lesions

Labral tears have been found to result in degenerative changes to the acetabular articular surface. McCarthy et al³ reported that 73% of patients with labral pathology have chondral damage.

Prevalence of anterior tears:

Labral tears are reported more often in females than in males. This may be due to the fact that females are more likely to have hip dysplasia.^{3,4}

Studies conducted in Japan revealed that posterior labral tears were more common than in studies conducted in Europe and in the United States.³ It is suspected that the sitting on the ground and squatting positions in Japanese culture may put more stress on the posterior aspect of the hip.¹

Possible reasons for prevalence of anterior tears include¹:

- less blood supply to anterior region of labrum resulting in decreased potential for repair
- anterior labrum tissue is mechanically weak due to presence of loose, irregularly arranged connective tissue
- region that is subject to high forces due to the anterior orientation of both the femoral head and acetabulum with decreased bony constraint anteriorly; the stability of that region therefore comes from the labrum, joint capsule and ligaments

The most common mechanism of injury is an external rotation force while the hip is hyperextended. However, there may not have been a traumatic event, but rather repetitive microtrauma associated with repeated twisting and pivoting.³

Symptoms:

Common symptoms associated with a labral tear include pain, clicking, locking, instability, catching, giving way and/or stiffness. Intra-articular hip pathologies can refer pain to the anterior groin, buttock, greater trochanter, thigh and/or medial knee.⁶ Typically, patients report a long duration of symptoms, averaging 2 years.⁷ This may be due in part to the fact that it remains difficult to recognize labral tears as the source of hip pain.

Radiographic diagnosis: CT scans cannot reliably detect labral tears⁴. MRI's produce both false-positive results and an underestimation of labral pathology and has only a 30% sensitivity and a 36% accuracy. MRI arthrography produces better results, with reported specificity of about 91%.⁵ Direct observation of the labrum by arthroscopy continues to be the gold standard for diagnosis.¹

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Common symptoms and clinical examination findings associated with intra-articular and extra-articular sources of pain²

Intra-articular pathology: (labral tears, chondral lesions, osteoarthritis, synovitis, loose bodies, avascular necrosis and/or inflammatory arthritis).

Common Symptoms:

Groin pain
Clicking, giving way

Clinical Examination:

Groin pain/limited range of motion (ROM) with FABER test⁸
Groin pain and/or clicking with Scour test⁸
Groin pain with straight leg raise test⁸

Femoral Acetabular Impingement:

Common Symptoms:

Anterior pinching pain with sitting

Clinical Examination:

Anterior pinching pain with the impingement test⁹

Degenerative Changes:

Common Symptoms:

Medial thigh pain
Morning stiffness

Clinical Examination:

Painful and/or limited internal rotation ROM
Limited flexion ROM

Capsular Laxity:

Common Symptoms:

Instability

Clinical Examination:

General hypermobility with Beighton's scale¹¹ (see Appendix)
Increased external rotation ROM with the leg roll test¹² (see Appendix)
Increased motion and/or apprehension with long-axis femoral distraction

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Extra-articular pathology: (muscle strains and/or tendonitis)

Common Symptoms:

Superficial groin, lateral hip or posterior hip pain

Lateral or anterior snapping

Clinical Examination:

Tenderness to palpation

Pain with stretching, and/or resistance to involved structures

Indications for Treatment:

Indications for treatment include pain, loss of function and mobility

Contraindications / Precautions for Treatment:

Acute hip pain with fever, malaise, night sweats, weight loss, and night pain may be indicative of tumor, infection, septic arthritis, osteomyelitis or an inflammatory condition.² A fracture may be present if there is a history of traumatic injury, pain with weight-bearing and inability to walk, and pain in all planes of motion. A history of corticosteroid use and alcohol abuse may put a patient at risk of developing avascular necrosis.²

Evaluation:

Medical History: Review past medical history (PMH), pertinent diagnostic tests, imaging and workup, physicians' notes in longitudinal medical record (LMR).

History of Present Illness: Chief complaint or mechanism of injury, date of injury or duration of symptoms, treatment to date, reason for referral, prior level of function, current functional limitations, previous Physical Therapy, and past or current use of orthotics. Also inquire about patient's own goals.

Social History: Family/social support, employment, physical activity level, hobbies, sports, ADL's and any pertinent functional limitations.

Medications: Note relevant medications including NSAIDS, muscle relaxants and other analgesics.

Examination This section is intended to capture the most commonly used assessment tools for this case type/diagnosis. It is not intended to be either inclusive or exclusive of assessment tools.

Observation: Note excessive lordosis; weight bearing intolerance on affected lower extremity; excessive external rotation of hip or lower extremity; note single limb stance right versus left. Note patient's functional mobility during transfers and bed mobility. Leg length discrepancy, altered foot biomechanics

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Pain: Typical pattern is chronic, intermittent aching and/or clicking localized over anterior groin. Pain complaints are aggravated with hip rotations in weight-bearing and with combined motions of hip flexion, adduction and internal rotation.¹ Prolonged standing or sitting may provoke and intensify symptoms; walking, running and/or climbing functions will likely be limited. Use Lower Extremity Functional Score (LEFS) to determine functional limitations and assist in goal setting and treatment planning.

Palpation: The hip joint is deep and not easily palpable, but surrounding structures may show signs of pathology. The surrounding structures include hip flexors, adductors and abductor muscles, in addition to inguinal ligament and psoas bursa.⁸ Directly palpate over greater trochanter, iliac crest, anterior superior iliac spine (ASIS), posterior superior iliac spine (PSIS), ischial tuberosities, sacroiliac, lumbosacral and sacrococcygeal joints;⁸ explore if other associated areas of hypersensitivity (sciatic nerve, lower back, ITB).

ROM: Active and passive ROM especially comparing hip ROM and joint play right to left; active and passive ROM of knee joint; active ROM of lumbar spine; muscle length of hamstrings, gastrocnemius, quadriceps, iliotibial band and plantar fascia.⁸

Strength: Pelvic stability; and hip muscle strength, specifically hip abductors, which are often weak in greater trochanteric bursitis; abdominal muscle strength, which would contribute to core stability versus instability.

Sensation: Patient may report numbness or parasthesia-like symptoms in the upper thigh that do not follow any dermatomal segment; if a dermatomal pattern is present, e.g. L 4-5, consider lumbar spine pathology.

Tests: Thomas test, leg length measurement, resisted hip abduction, ligamentous stability, passive internal rotation of hip, passive hip adduction, Faber test, Scour test and resisted SLR, neural tension tests.⁸ When positive, these last 3 tests indicate the presence of any intra-articular pathologies, not necessarily only labral tears.

Gait: Note if antalgic, uneven stride; decreased stance on affected limb; cadence; ask patient to increase speed to brisk walk and note further impairments; note balance and safety with locomotion; assess stair climbing ability. Assess standing balance with single limb stance. Patient may walk with hip in external rotation as an improper correction of femoral anteversion.¹ Note, if any, type of device(s): cane, shoe lift.

Functional Outcomes: Consider using the Lower Extremity Functional Scale (LEFS).

Differential Diagnosis: Lumbar disc disease, hip osteoarthritis, osteomyelitis, fracture, avascular necrosis, chondral lesions, congenital disorders, tumor, hernia, SI joint pathology, greater trochanteric bursitis, iliotibial band syndrome, iliopsoas tendonitis, synovitis and systemic disease such as rheumatoid arthritis and systemic lupus erythematosus.²

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Assessment:

Establish Diagnosis and Need for Skilled Services.

Problem List:

Potential Impairments:

- Pain
- Decreased ROM
- Decreased muscle strength
- Posture dysfunction
- Impaired muscle performance
- Limited function (see subjective portion of examination)
- Knowledge deficit regarding condition, self-management, home program, prevention

Prognosis: Other than in the presence of trauma, labral tears often remain undetected for long periods of time.¹ Surgical interventions have been proven effective for short-term management of pain and decreased function, but the long-term outcomes remain unknown.¹ The role of physical therapy in these cases is to increase function and decrease pain, evaluate and treat associated impairments and educate the patient on strategies to increase function.

Goals:

1. Independent self-management of pain, posture, joint protection.
2. Decrease pain per VAS score
3. Increase ROM
4. Increase strength
5. Improve gait efficiency and quality
6. Maximize function and return to previously active lifestyle (use of LEFS)
7. Independence with home exercise program

Age Specific Considerations: Some studies suggest that labral abnormalities occur naturally with aging, whereas other studies associate labral tears with joint pathology and pain.¹ However, the reported age range of people with hip pain and labral tears is from 8 to 75 years.

Treatment Planning / Interventions

Established Pathway ___ Yes, see attached. X No

Established Protocol ___ Yes, see attached. X No

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Interventions most commonly used for this case type/diagnosis.

This section is intended to capture the most commonly used interventions for this case type/diagnosis. It is not intended to be either inclusive or exclusive of appropriate interventions.

Hickman and Peters¹⁰ concluded that physical therapy has not proved to be of significant benefit to patients with hip labral tears and do not recommend it to patients. However, Lewis and Sahrman¹ have found that physical therapy can in fact be beneficial when used appropriately. They suggest that the physical therapy intervention should focus on decreasing anteriorly directed forces on the hip by correcting muscle imbalances and faulty movement patterns. Patients should also be educated in avoiding pivoting motions in which the acetabulum rotates on the femur, especially in a loaded position. They also suggest modification of functional activities, such as:

- avoiding sitting with -knees lower than hips
 - legs rotated or crossed
 - hip flexor muscles contracted
 - pressure on femur; i.e., weight-bearing should be on ischial tuberosities
- avoid excessive hip hyperextension, especially while walking on treadmill, with prone hip extension and with lunges
- avoid weight-training of quadriceps (leg press), hip flexors (straight leg raises or sit-ups) and hamstrings(curls) to prevent excessive forces applied to the hip
- functional activities should be pain free
- cycling using upright bicycle instead of recumbent bicycle to avoid excessive hip flexion and constant recruitment of hip flexors to maintain feet on pedals

Interventions most commonly used for this case type/diagnosis.

1. Therapeutic exercises for pelvis and lower extremity, especially strengthening deep external hip rotators
2. Gait training for efficient and effective pattern; correct any faults, especially knee hyperextension, which causes hip hyperextension during stance phase¹
 - Consider assistive device as appropriate
3. Orthotic consultation / heel lift as appropriate
4. Instruction in home exercise program
5. Low impact conditioning exercise such as recreational exercises and aquatic therapy
6. Manual therapy, including joint glides and long axis distraction

Frequency & Duration:

The frequency and duration of follow up treatment sessions will be individualized based on the specific impairments and functional limitations with which the patient presents

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during the initial evaluation. On average, the frequency may range from 1-2 times per week for 4-6 weeks.

Patient / family education:

1. Joint protection techniques
2. Proper use of assistive device
3. Patient education
 - Posture
 - Positioning
 - Home exercise program
 - Pain self-management

Recommendations and referrals to other providers:

1. Orthopedist
2. Orthotist
3. Physiatrist
4. Primary Care Physician (PCP)
5. Pain Management Clinic

Re-evaluation

Reassessment should be completed every thirty days in the outpatient setting unless warranted sooner. Possible triggers for an earlier reassessment include a significant change in status or symptoms, new trauma, plateau in progress and/or failure to respond to therapy.

Discharge Planning

Commonly expected outcomes at discharge: Patient will have met goals with focus on self-management of symptoms, and exercise and activity modification and progression.

Transfer of Care (if applicable): If no improvement or progress towards goals, return to referring physician for further medical management.

Patient's discharge instructions: Exercise guidelines, education regarding symptom management and activity modification, home exercise program, postural correction, self-management of symptoms. Follow up with referring physician as needed.

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APPENDIX

Joint Hypermobility:

The Beighton Hypermobility Score¹¹ is used to assess hypermobility of peripheral joints and of the spine. It constitutes four maneuvers, which should be performed bilaterally for the first three.

- 1) Extend the 5th MCP joint more than 90 degrees, oppose the thumb to the forearm.
- 2) Extend the elbow more than 10 degrees beyond neutral (0 degrees)
- 3) Extend the knee 10 degrees beyond vertical (0 degrees)
- 4) Place both palms on floor without bending knees

One point is awarded for the ability to perform each of four maneuvers, with the first three being performed bilaterally, for a total of 9 points. A Beighton score of ≥ 4 is considered indicative of generalized hypermobility.

Roll Test:¹²

With patient lying in the supine position, the examiner rolls the hip of the affected extremity into external and internal rotation. This test should invoke guarding or spasm, especially with internal rotation.

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