Iliopsoas tendinopathy pdf

The pelvis connects the trunk and lower extremities. Hip, ball and socket joint, allows 3 degrees of freedom. The hip movement range (ROM) includes approximately 120° flexion, 20° extensions, 40° hijacking, 25° suction and 45° each internal rotation and external rotation. The resting position of the hip is considered to be 30° flexion and 30° abduction. Psoas and lyacus muscles come from the lumbar spine (transverse processes t-12 and L1-5) and pelvis (superior anterior lumbar crest), respectively, and are innervated by upper lumbar nerve roots (i.e. L1, L2, L3). These muscles converge to form the iliopsoas muscle, which inserts into the smaller trochanter of the proximal femur like the iliopsoas tendon. The psoas main tendon exhibits a characteristic rotation through its course, transforming its ventral surface into a medial surface. The ilial part of this tendon has multiple lateral positions, and most lateral muscle fibers of the iliacus muscle insert on the smaller trochanter without entering the main tendon. The iliopsoas muscle passes through the anterior pelvic edge and lumbar capsule in the groove between the anterior inferior lumbar spine laterally and the iliopectineal medial eminence. The musculotin junction is consistently located at the level of this groove. The Iliopsoas muscle acts as a lumbar flexor and an outer rotator of the femur. An ilio-infratrochanteric muscle bundle, which is probably related to the iliopsoas tendon, has been described. This muscular bundle stems from the interspinous incisure and anterior inferior lumbar spine (above the origin of the rectus femoris muscle), courses along the anterolateral edge of the iliacus muscle, and inserts without a tendon on the anterior surface of the smaller trochanter. The Iliopsoas bursa lies between the musculotin junction and the pelvic edge. This bursa is the largest in the body and can spread proximally to the lumbar fossa or distal to a smaller trochanter. Communication between this bursa and the hip joint occurs in approximately 15% of all adults. Various terms have been used to describe and classify tendon injuries. Tendonitis is usually associated with acute injury, through which the failure of tendon fibers and disruption of the vascular peritendinous connective tissue produces an acute inflammatory reaction in the tendon. Tendinitis can be acute, subacute, or chronic, depending on the duration of symptoms. Peritendinitis is a condition in which an acute injury produces an inflammatory reaction only in the soft tissues surrounding the tendon, without disturbing the tendon fibers. On the other hand, tendinosis is often associated with chronic microtraum into the tendon, such as repeated overload. In the case of tendinosis, fiber failure tends to be characterized by failure of intrasubstance compared to periendinous disruption, which occurs with tendinitis. Microscopic findings in tendinosis include degeneration, angiofibroblastic proliferation, myxoid degeneration, fibrosis and occasionally chronic inflammation. Iagnocco A, Filippucci E, Riente L, Meenagh G, Delle Sedie A, Sakellariu G, et al. Ultrasonic imaging for rheumatologist XLI. Sonographic evaluation of the hip joint in patients with OA. Clin Exp Rheumatol. 2012 Sep-Oct. 30(5):652-7. [Medline]. Contreras ME, Dani WS, Endges WK, De Araujo LC, Berral FJ. Arthroscopic treatment of cracking the iliopsoas tendon through the central department of the hip: a pilot study. J Bone joint Surg Br. 2010 June 92 (6):777-80. [Medline]. Ilizaliturri VM Jr., Camacho-Galindo J. Endoscopic treatment of hip cracking, iliotibial band, and iliopsoas tendons. Sports Med Arthrosc. 2010 June 18(2):120-7. [Medline]. Anderson CN. 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It also acts as a stabiliser of the lumbar spine and pelvis[2]. Iliopsoas pathological conditions have been shown to be an important cause of hip pain and/or dysfunction and include asymptomatic hip cracking syndrome, tendinitis, bursitis and impingement[2]. In addition, conditions related to iliopsoas muscle have been involved in lumbopelvic disorders such as low back pain and seat, intense groin pain, especially in the athletic population, and even pain in the thigh and knee(1). It is worth noting that Iliopsoas tendinitis means inflammation of the tendon or the area surrounding the tendon. Studies have revealed the presence of inflammation in the acute phase of this condition, however, it is well established that chronic pathologies of the tendon lack an inflammatory process. Rather, they are characterised by unsuccessful tendon maintenance and degeneration[4]. Therefore, it is probably more accurate to classify this condition as tendinopathy, as opposed to tendonitis, when reference is made in general. Overall, iliopsoas tendinopathy refers to a condition that affects the insertion of muscle into the femur and may occur with repeated hip flexion and other biomechanical system deficits resulting in chronic degenerative tendon changes[1]. In addition, due to the close proximity of the Iliopsoas tendon and associated bursa, inflammation of one of these structures inevitably causes inflammation of the other. Therefore, iliopsoas tendinitis and iliopsoas bursitis are commonly described as synonymous because clinical presentation, evaluation and management are almost identical[5]. The clinically relevant anatomy of the iliopsoas muscle complex consists of three muscles that include iliacus, psoas major and psoas minor. Iliacus comes from the lumbar phosphorus and binds to the psoas tendon and a smaller trochanter of the femur. The psoas main also inserts into a smaller trochanter of the femur through the psoas tendon and arises from many structures, including transverse processes of the lumber vertebrae, intervertebral plate plates and vetebral body margins of T12 to L5 and tendinous arches. Finally, the smaller psoas comes from the vertebral bodies T12 and L1 and has an attachment to the iliopectineal eminence and lumbar fascia. Psoas minor is present in only 60 % of individuals[6]. Psoas main and illiacus muscles merge around levels of L5-S2. Before connecting to a smaller trochanter, the iliopsoas travels from the pelvis, into the thigh area, under the inuital ligament, where it passes through the ante acetabulum, between the anterative inferior lumbar spine (transversely) and the iliopectineal eminenence (medially). The largest bursa of the hip joint is the iliopsoas bursa, which is located deep into the iliopsoas musculoed junction and in front of the hip capsule. The exchange has been reported to communicate with the hip in ~ 15% of patients [7]. Nerve power supply: The iliacus component of the iliopsoas muscle is the innervated femoral nerve (composed of the anterior arm of L2-L4)[8]. The Psoas component of the iliopsoas muscle is innervated by the direct branches of the lumbar plexus (front rami L1-L3)[8]. Vascular power supply: Iliolumbar artery & medial femoral circumcision artery[8]. Function: Flexor of the thigh and torso Assists in the external rotation of the femur Lateral flexor of the lower spine Tendinopathy's etiology fibrillary tendon architecture and is proposed to be the result of a microtraum that occurs from chronic tendon overuse[1]. Although the exact etiology is not fully established, the two most commonly described causes of irritation of the iliopsoas tendon include either acute injury or excessive pain in repeated microtraum[5]. Acute trauma is uncommon, but may result in an injury to the movable apparatus or a fracture of the avulsion of a smaller trochanter[2]. This usually results from eccentric muscle contraction or brisk flexion against prolonged force exceeding the capacity of the tendon[9]. Overuse of injuries involving iliopsoas can result from any activity requiring repetitive hip flexion, repetitive external rotation or repetitive flexion of both hip and torso. Some examples of activities that can predispose individuals to injury include ballet, cycling, rowing, tilted running, track and field, football and gymnastics[5]. Psoas tendinopathy is commonly referred to as the hip dancer or jumper's hip, as the biomechanicity of these movements (i.e. repetitive hip flexion in the externally rotated position) predispose the individual to injury[10]. One study found that more than 90% of ballet dancers report audible clicks, pop or a snap in the hip[11]. Adolescents have relatively reduced flexibility of lumbar flexors during growth spurts, potentially put them at greater risk[5]. Rheumatoid arthritis has been reported as one of the main causes of iliopsoas bursitis[12]. Epidemiology In general, pathological conditions of iliopsoas, such as tendinitis, bursitis, cracking and percolation, were considered to be the main cause of chronic groin pain in approximately 12-36% of athletes and in 25-30% of athletes with acute groin injury[2]. However, it is most commonly found when kicking athletes such as footballers, it can also occur in the neathletic population[1]. It is more often reported to work in young adults (the maximum age group is in the thirties)[1]. Slightly more prevalent in women[5]. Clinical presentation The clinical presentation of iliopsoas tendinopathy is variable, depending on various factors. Iliopsoas tendionopathy, which is not symptomatic, is often characterized by a palpable and audible snap that occurs from flexion and hip enlargement[11]. Persistent tendon irritation can lead to tendon inflammation, underlying bursa or both. Chronic irritation is unlikely to be associated with inflammation, but instead is characterised by painful degeneration and tendon fibrosis[9]. History History of insidious deep weaknesses or anesthesia of the hip joint is common[5]. Initially, the pain is provoked by the onset of activity, which decreases shortly afterwards. Symptoms can lead to constant pain during activity that decreases only with rest and, finally, the presence of pain with both activity and rest[5]. Diagnosis is usually delayed and the average estimated time between symptoms and diagnosis is between 32-41 months[13]. Intermittent groin pain, usually described as deep pain[1]. Symptoms are worse with activity (especially digging) and relieved with rest[1]. Other aggravating factors may include tying shoelaces that rise from the seated position after prolonged sitting and inclined walking[5]. Audible clicking or sensibility from the hip or groin area (1). Radial symptoms along the anterial thigh towards the knee may be reported[13]. Dysfunction of the psoas muscle is often associated with various complaints about the lumbosaceal region, which may include lower back pain, discomfort in the area of the butched or femur bones and inability to stand fully upright[3]. Observation of physical examination: The patient may hold the affected hip joint in a slightly bent and externally rotated position (a sign of hypertonicity of the psoas)[5]. Postural observation may reveal an ante inclined pelvis and increased lordosis of the lumbar spine[5]. Walking: The shortened length of the step may be obvious on the affected side. In addition, increased knee flexion may be observed during the heel and mid-heel strike phase(5). Palpation: Increased sensitivity with deep palpation of the iliopsoas musculoed junction in the triangle of the femur. Palpation of the inguinal lymph nodes in this area should be unknown[13]. Pain may be present when inserting the iliopsoas tendon into a smaller trochanter, which can be palpated under the buttocks (with the patient in a prone position)[2]. Range of motion: Passive hip enlargement may be limited and/or cause pain (normal ~15 degrees)[13]. Active or resisted hip flexion can reproduce pain. Functional/orthopaedic testing: Thomas test or modified Thomas test: may help to identify excessive hypertonicity in lumbar flexors[1]. Iliopsoas test: withstood hip flexion, with the hip joint in the external rotation (carried out with the patient in a position on the back). Any weakness and/or signs of pain are a positive test(1). Ludloff sign (isolated strength muscle evaluation iliopsoas): in a seated position with the knees extended, the patient is asked to lift the heel of the affected side off the table. Any weakness and/or signs of pain shall be considered a positive test (1). Stinchfield test: the patient performs an active straight leg raise (SLR) to 45 degrees. Then the patient resists the decreasing force, which is applied to the anterior thigh. Pain and/or weakness indicate involvement of the psoas muscle or intra-articular pathology[14]. Cracking hip maneuver: the affected hip joint is placed in a bent, hijacked and externally rotated position. The hip joint is passively moved into elongation and internal rotation. A positive test is palpable or audible cracking located in the inuinal region. Pain caused by this manoeuvre may indicate iliopsoas tendinitis or bursitis[5]. Other: Reciprocal inhibition of antagonistic muscles and dysfunction along the kinetic chain may spojené so psoas psoas Additional testing should therefore include an assessment of signs of hip abductor weakness, spinal instability, lower cross syndrome, increased foot pronaction and dysfunctional breathing[15]. Differential diagnosis Other reported causes of anterior hip pain: Workup Laboratory Analysis Laboratory studies, indicated only if the diagnosis is unclear, may include CBC count, erythrocyte sedimentation rate or C-reactive protein, rheumatoid factor, anticyclic citrullinated peptide antibodies, antibodies to myrtic antibodies, and urine analysis. These tests are useful in considering pathology of the abdomen and pelvis, which can be presented as groin pain, such as colon cancer, diverticulitis, prostatitis, salpingitis, renal calculus, appendicitis and psoas abscess[5]. Medical imaging radiography Is usually not indicated for soft tissue disorders and findings are not common in cases of iliotendonitis, but X-ray sgraphs can be used as an initial imaging study if another bony pathology (i.e. loose bodies, osteitis pubis, etc.) or in the presence of red flags is suspected [16]. In a child or adolescent with hip pain[19]. Ultrasonography Diagnostic Ultrasound (US) is a noninvasive and accessible option to evaluate muscle tendon injuries. Findings usually reveal a thickened tendon. Iliopsoas bursitis is associated with excessive amounts of fluid in the iliopsoas bursa, which is usually visualized in the U.S. The US allows a dynamic view of the muscle and therefore reveals any tendon cracking that may be present[16]. The USA is used to induce needles with injections of lidocaine and corticosteroids (described below)[16]. The diagnostic accuracy test is not always optimal because this display option is highly user-dependent[5]. Magnetic resonance imaging (MRI) Is currently the MRI standard criterion for assessing hip and pelvic symptoms. One study, which focused on imaging to determine the cause of hip pain in endurance athletes, compared X-ray scans, radionuclide bone scans and MRI scans. The results revealed that MRI is the most sensitive imaging modality[20]. It provides the most accurate assessment of the tendon and bursa iliopsoas[16]. MRI findings in the assessment of musculotin injuries: Spin-echo T2-weighted images will show increased signal strength, which is associated with swelling and inflammation. Musculotin injury of greater severity with associated bleeding will show high signal strength with images weighted T1 and T2 weighted images[5]. Evaluation of peritendinitis - periendinous tissue will show the increased fluid that is detected on spin-echo T2-weighted images or short T1 inversion recovery (STIR) sequences as the focus of the high-intensity signal surrounding the normal tendon[5]. Tendinosis - spin-echo T1-weighted images will demonstrate increased signal strength in the tendon, which is associated with myxoid degeneration or Spin-echo T2-weighted images may show an abnormal signal (usually smaller than that seen in T1-weighted images) or a normal signal(5). The lidocaine injection lidocaine challenge test involves either an interventional radiologist or an orthopedic surgeon administering lidocaine injections into the iliopsoas tendon through the anesthibile aspect of the femoral triangle (led by the U.S.). If pain relief is achieved after injection, the diagnosis of iliopsoas tendinopathy(2) is confirmed. Leadership of conservative management Conservative management of psoas tendinopathy promotes relative rest, change in activity as well as exercise[2]. Soft tissue techniques such as myofascial relaxation can be helpful in helping in reducing muscle tightness and can be beneficial due to the proposed neuromodulative effect. Manual treatment of lumbar capsule mobilisation, lumbar spine, pelvis and other joint mobility deficits[1]. Range of motion, stretching and strengthening exercises should focus on hip flexors and antagonistic muscle groups. Rehabilitation Acute phase The main goal of the first stage is to reduce the symptoms of pain, reduce muscle cramps and reduce any swelling. If the patient has stopped engaging in the activities of everyday life, getting the patient back to these activities is also an important goal of this first phase. The acute rehabilitation phase involves relative rest (avoiding any pain-provoking activities), ice, medication and light stretching. Ice: Valid for 20-minutes, every few hours for the first 1-3 days. Medications: Short-term course of nonsteroidal anti-inflammatory drugs (NSAIDs). Gentle stretching will help in reducing muscle cramps. To avoid stretching, do not stretch soon-after the period icing as icing can raise the pain threshold of individuals, making them less sensitive to pain. The selected section of iliopsoas is held for 20 seconds, followed by a 30-second rest and repeated five times. The stretch should remain pain free at all times and the patient should bring his consciousness to take dull, deep breaths while holding the stretch[21]. Recovery phase The main objective of the second phase is to restore range of motion (ROM), strength, endurance and proprioception. Finally, a sport-specific activity is included. ROM: Stretching routine for iliopsoas complex continues and engaging in proper warm-up and cool-down with exercise is emphasized. Injury to the iliopsoas muscle may be associated with increased lumbar lordosis and an anesthesia. Achieving neutral postural can be worked on as stretching and strengthening relevant muscle groups. Stretching: Stretching the swath helps to bring the ante pan to a neutral position. Doing so will take tension from the iliopsoas muscle, reducing the likelihood of tension or cramps. All sections at this stage take place as described in the acute phase (hold for 20 seconds, relax for 30 seconds, repeat 5x[21]. Strengthening: The strength of the hamstring muscle group will increase the posterior forces of the pelvis, reducing the stress of iliopsoas pulling on the pelvis nonetheless. Abdominal strengthening exercises should be done with the knees and hips bent at 90 degrees allowing the iliopsoas to relax and the pelvis to stay neutral. Gluteus maximus strengthening also plays a role in achieving a neutral pelvic position. Strengthening is carried out daily (4 sets of 10 to 15 repetitions)[21]. Endurance training: Improved muscle endurance iliopsoas can be achieved overtime with repetitive movements (hip flexion or external rotation of the femur) performed at low resistance. Some examples include cycling, walking, machine staircase climbing. Endurance exercises should result in no pain, and there should be sufficient rest time between endurance workouts. Finally, an individual should work until endurance sessions are carried out daily, gradually increasing the duration of the activity[21]. Maintenance phase Continue stretching iliopsoas and rectus femoris muscles. Gradually increase the resistance used with strengthening exerices (i.e. seated iliopsoas strengthening with ankle weight, hip bending on the back (straight legs increase) with ankle weight, seated external rotation strengthening with ankle weight, seated outer rotation with resistance belt). Advancing strengthening exercises for iliopsoas and hamstrings - gradually advancing resistance can be achieved either by increasing the number of repetitions performed or by increasing the weight, as tolerated by the individual. I.e. Standing hip flexion (machine), prone and seated hamstring curls (machine), advanced lunges with step-ups (lunges are performed at a slower pace ensuring a smooth and controlled rhythm)[21]. Return to sport (RTS) The patient should be asymptomatic or able to tolerate pain before considering RTS. The range of motion, elasticity and strength of the lumbar flexors and antagonistic muscles should be restored to the level of the conlateral side. Sport-specific activities/exercises should be relatively painless[21]. Surgical intervention Surgery is only considered when minimal improvement is achieved in a longer non-operative management study involving: at least 3 months of a specialised conservative care plan, including rest, change in activity, physical therapy, non-steroidal anti-inflammatory drugs (NSAIDs) and corticosteroid injections[2]. There are two surgical techniques reported in the literature that involve either complete or partial relaxation of the iliopsoas tendon. In general, good results, including reduced pain and no significant residual weakness, have been reported in both procedures[5]. Another peritendinous corticosteroid injection injection consists of a local anesthetic that is combined with a corticosteroid. One study evaluated the results of patients after injection into iliopsoas bursa in patients with tendinopathy to the iliopsoas muscle. The results showed a significant improvement after 1 month after injection. In addition, the study reported that the majority of patients experienced a remarkable decrease in pain 15 minutes after the injection[5]. Forecast When correcting basic biomechanical deficits, the overall forecast is good. Early identification of these deficits can play a role in preventing the development of chronic symptoms. However, as mentioned above, the diagnosis of iliopsoas tendinopathy is diagnosed approximately two years after the onset of symptoms[1]. Recovery may be delayed in such cases. The patient should not return to the game until he has reached a full and painless range of motion[1]. References ↑ 1.00 1.01 1.02 1.03 1.04 1.05 1.06 1.07 1.08 1.09 1.10 1.11 1.11 1.12 1.13 1.14 1.15 1.16 1.17 1.18 1.19 1.20 1.21 Micheo W. Muskuloskeletal, Sports and occupational medicine. Samples Medical Publishing; 2010 December 2010. ↑ 2.0 2.1 2.2 2.3 2.4 2.5 2.6 2.7 Anderson CN. Iliopsoas: pathology, diagnosis and treatment. Sports Medicine Clinics 2016;35(3):419-33. ↑ 3.0 3.1 Kuchera W, Kuchera ML. Diagnosis and manipulative treatment: Thorax area. ↑ Khan KM, Cook JL, Kannus P, Maffulli N, Bonar SF. Time to abandon tendinitis myth: painful, overuse of tendon conditions have non-inflammatory pathologies. ↑ 5.00 5.01 5.02 5.03 5.04 5.05 5.06 5.07 5.08 5.09 5 .10 5.11 5.12 5.13 5.14 5.15 5.16 5.17 5.18 5.19 Garry JP. Iliopsoas tendinitis [Internet]. Background, epidemiology, functional anatomy. Medscape; 2019 [cited as 2020Sep24]. 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