

Adductor/Groin Injuries

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This injury is one many try and put off seeing an injury specialist for because of where it is. The adductor muscle group is one of the most sensitive (I find) but can have a simple cause and treatment but the road to recovery can be lengthy.

Some adductor problems have nothing to do with the adductors but are referred from tightness and weakness of the hip structures or the back. The adductor muscle group can get injured acutely and cause considerable pain when walking and anything to do with lifting the leg.

A chronic groin problem can cause a challenge to the therapist as there are a number structures such as tendons and bursa (13 in the hip) that can cause symptoms.

It is vital to localise the area of abnormality. This can be as simple as an acute onset of pain strongly suggestive of a muscle strain. However pain can be vague and felt in different areas simultaneously. It is important to establish the time course of pain. Pain that is worse after exercise, especially the following morning and gradually lessens during exercise is indicative of an inflammatory condition like tendinopathy. Pain that becomes progressively worse with exercise may suggest a stress fracture, bursitis or muscle strain. The movements which cause pain need to be established as many muscles cross the hip joint. Pain on kicking may involve the hip flexors iliopsoas or rectus femoris, a twisting injury would lead to an adductor strain, sit-ups may indicate a problem with rectus Abdominis or a hernia. The most common bursa to cause groin pain is the iliopsoas. It's also important to look at the back and hip if previous injuries have occurred in these areas. Pro-Am Sports Injury Clinic has had a few cases now where the main complaint was groin pain but treatment consisted of one simple treatment to relax the external rotators of the hips.

Anatomy

There are five adductor muscles which help to pull the leg back towards the midline. The Pectineus, adductor brevis and adductor longus which originate from the pelvis and insert on to the thigh bone. The adductor magnus and gracilis are longer and insert onto the inside of the knee (bi-articular). During walking the muscles are used to keep the leg towards the middle to maintain balance. They are used extensively in sprinting, horse riding and hurdling. This may explain why when injured it can be difficult to move the leg forward as in walking. If weakness is present in the hip flexors the adductors will take over and this can be a cause of injury.

In addition to their role in adducting the hip, the adductor muscles can also flex the extended hip and can extend the flexed hip. For example in activities such as climbing up hill when the hip is flexed, the adductor muscles are forceful hip extensors. The adductor muscles also have the ability to assist in hip rotation. When the hip is flexed the adductor muscles rotate the hip in and when the hip is extended, the adductors rotate the hip out. Adductor magnus is the main adductor muscle which assists in hip rotation.

Other groin muscles to take into consideration

- Hamstring muscles
- Piriformis, obturator internus, gemelli
- Sartorius and quadriceps
- Gluteal muscles

- Psoas/iliopsoas
- Tensor fascia latae/iliotibial band

Adductor/Groin muscle strain

This injury usually occurs with sudden changes in direction. It is acute in nature but can develop into chronic tendinopathy. Pain is localised tenderness with pain on passive abduction (leg out to side) and pain on resisted adduction (squeezing legs together (may need to be combined with hip flexion)). Varying the degree of rotation of the leg whilst performing resisted adduction can give some idea of which adductor muscle is injured. The types of activities affected will be sitting and then lifting your leg to get up and lifting your leg out to the side as in getting out of the car. The forward swing of the walking gait may also be painful particularly going up stairs. If torn you may not be able to walk due to pain.

Treatment involves initial rest using RICE principle. Early stretching is usually not advised you usually give it 4 days after the injury before commencing any stretching or strengthening. This does not mean you cannot try gentle range of motion exercises (but within your pain free range only).

As pain subsides the athlete can commence early isometric exercises. As there may be a loss of core stability, low load exercise is essential to reduce overload on the adductor group and enhance force closure. This should be started as soon after injury as possible. Regaining full, pain-free hip range of movement must be an early objective in the management of this injury. For an optimal return to sport and prevention of recurrence of groin injury, strengthening of the adductor group is dependent on full hip range of movement being present. When it has been determined that bleeding has stopped in the muscle and there is no risk of haematoma, calcification and myositis ossificans, the following treatment modalities could be introduced;

- Hydrotherapy - to regain hip range of movement and early muscle conditioning

Manual techniques such as;

- Gentle soft tissue release techniques
- Hip mobilisation techniques
- Hold/relax techniques
- Early neural mobilisation
- Isometric and concentric, eccentric exercises
- Early proprioceptive activity
- Cardiovascular activity if possible.

Strengthening

Muscle strengthening regimes vary among therapists. The progression of the strengthening exercises for adductor muscle injury follows the same principle as any muscle rehabilitation. It is essential to address the core muscles as weakness in these may stop the injury from healing and becoming chronic in nature (muscle imbalance).

Rehabilitation tips

The following exercises are only suggestions which may be included in the rehabilitation programme. Bridging is an excellent exercise and can be introduced as soon as pain allows.

- Bridging – place thera-band around knees and take hips into slight abduction then lift bottom
- Bridging – place ball or pillow between knees then lift bottom
- Isometric adduction (squeeze ball between knees)– supine - start with knees and hips flexed and progress to knees extended and hips neutral
- Co-activation of adductors with abdominals – squeezing ball between knees whilst performing situps.
- Hip stabilisation – one leg balance

Start functional sports specific exercises as early as possible and gradually increase the programme to include dynamic exercises.

Address factors such as foot biomechanics and technique early in the rehabilitation.

Management of an adductor strain is complicated by the strong desire for early return to sport by both players and coaches. When a player returns to sport too soon there is a danger that the muscle sustains repetitive micro trauma leading to scar tissue and ongoing inflammation resulting in recurrence of injury. It is essential to discuss time scales with the patient and explain the injury fully so that they understand the consequence of returning too soon to sport.

Chronic Groin injuries

When a groin injury becomes chronic it can be a great challenge to the therapist. It takes a lot of history taking as the injury will have more than one cause.

Groin injuries are often of the overuse type and typically the athlete will have had pain for a considerable period of time. The "holy trinity" of chronic groin injuries are the sports hernia (disruption to the inguinal canal without an apparent hernia), osteitis pubis (inflammation or degeneration of the pubic symphysis) and chronic adductor tendinosis (degeneration or wear at the origin of the adductor tendons of the inner thigh). Athletes may develop one, two or all three of the above. All of these conditions are thought to be caused by repetitive shearing forces acting across the pubic symphysis (the joint at the front of the pelvis where the two pubic bones meet). The pubis symphysis has a poor blood supply making healing a slow process.

What the unfortunate sufferers often have in common is poor pelvic stability. They are unable to stabilise the lower abdomen and pelvis whilst performing the twisting and turning movements needed for their sport. When this group of muscles are examined for muscle imbalances we invariably find that their mobilisers' the hamstrings, adductors (inner thigh), hip flexors (kicking forward) and rectus abdominus (six pack muscle), have become shortened and their principal stabilisers: the transverse abdominals (deep abdominal) and posterior gluteus medius have become long, weak and inhibited. The mobilisers are attempting to stabilise as well as mobilise and perform neither role particularly well.

To help correct this imbalance we would typically involve shortening and stabilising the transverse abdominals (abdominal hollowing), multifidus (low back push down) and gluteals (squats, leg extension, one leg balance etc). Weakness in the core muscles can place added stress onto the adductors and cause an acute strain.

Other structures to look at when treatment is not working

Iliolumbar ligament

The iliolumbar ligament can refer pain into the groin and adductor region. The iliolumbar ligament extends from the transverse process of the fifth lumbar vertebrae to the posterior part of the iliac crest. It links together the sacrum and fifth lumbar vertebrae preventing L5 moving forward in respect to S1. This ligament is thought to be a frequent source of groin pain and is worth considering in sports which involve rotation of the spine such as racket sports and golf.

Rectus Abdominus

Known as a ""high"" groin injury where it is not actually the groin muscles that are affected but it is the lower abdominal muscles that become inflamed as they insert into the pelvis bone. The pain radiates down into the groin mimicking the groin pull.

Adductor magnus or biceps femoris?

Getting a correct diagnosis is essential for the rehabilitation process. Two muscles which can be confusing are the hamstrings and adductor magnus. The insertions of these muscles are very close and cause similar symptoms. Many people will self diagnose themselves with a hamstring injury when it the adductor magnus. this is because the adductor magnus helps the hamstrings with extension as in squats and lunges (playing squash).

Neural tension?

Altered neuro dynamics describes the inability of the nervous system to move concurrently with changes in body position. The spinal cord and peripheral nerves are a mobile elastic structures which are designed to move and adapt to any changes taking place in body position. However physiological and mechanical dysfunction can occur which affects the nervous system resulting in pain and decreased range of movement.