

Review Article

Sportsman's hernia

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ABSTRACT

Sportsman's hernia is a complex entity with injuries occurring at different levels in the groin region. Each damaged anatomical structure gives rise to a different set of symptoms and signs making the diagnosis difficult. The apprehension of a hernia is foremost in the mind of the surgeon. Absence of a hernia sac adds to the confusion. Hence awareness of this condition is essential for the general surgeon to avoid misdiagnosis.

Keywords: Sportsman's hernia, Gilmore's groin, Athletic pubalgia

INTRODUCTION

Sportsman's hernia also described as Gilmore's groin is an entity which is becoming increasingly common amongst athletes especially professional athletes such as footballers, hockey players etc.^{1,2} The diagnosis is difficult to make as symptoms are varied. The underlying pathology may range from nerve problems to bony disorders. This may lead to increasing complexity in the decision making process.

ANATOMIC CONSIDERATIONS

Awareness of the anatomy of lower abdomen and groin is essential for clinical assessment of chronic groin pain.² Typically, the abdominal wall has a series of layers from superficial to deep as skin, fascia, external oblique muscle and fascia, internal oblique muscle and fascia, transversus abdominis muscle and fascia and transversalis fascia with peritoneum. Before insertion into the midline, the superior fibers of internal oblique aponeurosis split around the rectus muscle forming anterior rectus sheath with external oblique aponeurosis and posterior rectus sheath with transversus abdominis. The inferior fibers of external oblique aponeurosis and transversus abdominis

insert only anterior to the rectus muscle making it an area of potential weakness. The only structure protecting this area is the transversalis fascia. The aponeurosis of internal oblique and transversus abdominis fuse medially to form the conjoint tendon before insertion into the pubic tubercle. The conjoint tendon inserts anterior to rectus abdominis on the pubis. The inguinal canal passes from the deep to superficial ring parallel to the inguinal ligament. The deep ring is in transversalis fascia and superficial ring is in aponeurosis of external oblique muscle. The pubic aponeurosis complex is formed by confluence of fibers from transversus abdominis, conjoint tendon and external oblique. The pubic aponeurosis is in continuity with the origin of adductor muscle and gracilis. Hence many times referred to as rectus abdominis-external oblique aponeurosis. The pubic symphysis acts as a fulcrum for the forces generated at anterior pelvis. Sportsman hernia is usually attributable to weakness or damage to these structures.^{3,4}

PATHOLOGY

The condition (Sportsman's hernia) continues to be a topic for debate. In majority of cases there is no frank hernia sac yet the patient experiences intense pain.^{2,4}

Therefore, it is most likely attributable to an injury to muscular and fascial attachments of anterior pubic bone. A series of injuries or tears may be seen. These include transversalis fascia and posterior inguinal wall, insertion of distal rectus abdominis, conjoint tendon and its distal attachment of anterior superior pubic bone or external oblique aponeurosis. Majority of cases are attributed to isolated tear of rectus abdominis muscle. However, operative exploration has revealed multiple injury sites in multiple structures of the local area. Gilmore has described the extensive injury in soccer players to present with chronic groin pain.² Injuries in Gilmore's groin comprise of torn external oblique aponeurosis and conjoint tendon accompanied with avulsion of conjoint tendon from the pubic tubercle leading to dehiscence between the conjoint tendon and inguinal ligament.² Usually there is no hernia seen in this patient. Another mechanism could be a complex injury to flexion adduction apparatus of the hip. However, the most widely accepted pathology is a disrupted rectus tendon attached to the pubis along with weakened posterior abdominal wall.⁵ This is usually an end result of imbalance between comparatively strong hip adductors in contrast to weak lower abdominal muscles. The strong pull of adductors particularly against a fixed lower extremity in presence of a relatively under conditioned abdominal muscle creates a shearing force across the pelvis resulting in a muscular overload with subsequent attenuation or tearing of abdominal wall musculature.

CLINICAL FEATURES

The classic presentation is an individual complaining of sudden onset of gradually increasing lower abdominal, deep groin and proximal adductor pain.⁶ The duration of pain is variable and may persist for several months. Pain usually resolves with rest and cessation of sporting activities. Acute hyperextension of the trunk with hyper abduction of hip can lead to rupture of the distal rectus abdominis or adductor aponeurosis. The pain may radiate to the adductor region, perineum, rectus muscle, inguinal ligament and testicular areas. Aggravating factors include sudden acceleration, twisting, kicking movement, sit-ups, coughing and sneezing. Symptoms due to bony lesion may co-exist.⁷

Physical examination

This includes examination of potential sites of injuries. These include lower abdomen, adductor and symphyseal pain. The pain should co-relate with symptoms. Lower abdomen muscles should be palpated for tenderness. There may be localized tenderness at just above pubic tubercle or the affected site, tenderness at rectus insertion, lateral edge of rectus, conjoint tendon, superficial inguinal ring and posterior wall of inguinal canal. Symptoms will be recreated if the patient performs a resisted sit-up with leg extended and feet flexed while the examiner palpates rectus abdominis insertion.

Proximal adductor musculature (adductor longus, gracilis, pectineus) should also be palpated. Resisted adduction in flexion and extension will elicit pain and discomfort. The exact site of tenderness can be confirmed by injection of local anaesthetic at various sites and to look for relief of pain.

The consensus meeting had suggested that the criteria for diagnosis should include three out of the following five clinical signs to establish a diagnosis.^{1,2,6,7}

- Pin point tenderness over pubic tubercle at the point of insertion of conjoint tendon.
- Palpable tenderness over the deep ring.
- Pain or dilatation of external ring with no obvious hernia sac.
- Pain at the origin of adductor longus tendon.
- Dull diffuse pain in the groin radiating to perineum, inner thigh or across midline.

INVESTIGATIONS

X-ray

Plain X-ray of the pelvis in AP view and lateral view of proximal femur will demonstrate bony lesions such as osteitis pubis, pelvic avulsion fractures, stress factors, degenerative hip diseases, dysplasia and pelvic neoplasms.¹

MRI

MRI can demonstrate partial or complete tear of the rectus muscle, conjoint tendon and in a few cases bone marrow edema in the pubis.⁶ It can also reveal adductor strains, lateral tears, osteitis pubis, iliopsoas bursitis and occult stress. MRI has 68% sensitivity and 100% specificity for rectus abdominis pathology.

Dynamic USG

This will enable visualization of the posterior inguinal wall defect when it is displaced anteriorly rather than becoming taut as the patient strains during the procedure. However, this test is operator dependent and therefore reproducibility is questionable.⁶

Diagnostic injections

It is particularly beneficial to determine primary source of groin pain.⁷ A positive response to USG guided intra-articular anesthetic injection suggests intra-articular source of pain. USG guided injection in the symphysis helps in diagnosis of osteitis pubis. Significant number of bony lesions are amenable to diagnostic injections which can also be treated by the same therapy.

TREATMENT

Persistent pain is the commonest symptom. Radiological investigations will not demonstrate any well-defined lesion leading to therapeutic dilemma.

Factors that influence the choice of the therapeutic option include

- Timing
- Duration of sporting activities
- Conservative treatment
- Level of activity
- Degree of limitation in athletic events

Non-surgical treatment

A trial of conservative treatment is the first option.⁸ This includes 6-8 weeks of rest followed by focused programmed resistance, hip adductor strengthening and stretching exercises. This is followed by gradual return to full activity. Conservative treatment focuses mainly on core strength, endurance, co-ordination, extensibility deficiency, imbalance at the hip and abdominal muscles and dynamically stabilizing the pelvic ring.

A phase rehabilitation protocol is usually advocated.^{8,9}

Phase 1: First 2 weeks focuses on massage and strengthening.

Phase 2: 3rd and 4th week focuses on abdominal muscle strengthening.

Phase 3: Week 5 is where functional activities like running are considered.

Phase 4: Week 6 where athletes return to sports specific activity.

Roughly after 10 to 12 weeks of this protocol, the athlete is free of pain and fit to re-enter competitive sports.

USG guided steroid injection into rectus abdominis insertion site, or the adductor tendon will help in temporary relief of pain.¹⁰ Results have proved that there is no absolute cure for pain by conservative therapy. This is due to the fact that there is considerable overlap in various lesions thereby rendering conservative therapy of limited value.

Surgical treatment

A wide spectrum of surgical procedures has been described which include:

- Open repair of rectus abdominis, extensor oblique, transverse abdominis and transversalis fascia.^{11,12}

- Open repair with mesh re-enforcement or laparoscopic approach have also been suggested. Open repairs usually include plication of transversalis fascia, re-approximation of conjoint tendon to inguinal ligament and approximation of external oblique aponeurosis.
- Success rate of these repairs are quite reassuring. Open repair involves plication of transversalis fascia thereby repairing the posterior wall deficiency. Laparoscopic approach may aid in rapid recovery, return to sports, improved visualization and an ability to perform bilateral repairs. Laparoscopic mesh placement for strengthening the posterior wall is usually practiced.^{12,13} There is a usual preference for open repair as results are more promising.

The principles of surgical technique are:

- Reattachment and re-tensioning of rectus abdominis to pubis and broadening of its insertion.
- Stabilization of conjoint tendon to rectus abdominis interface.
- Reinforcement of posterior wall of inguinal canal.

If the adductor longus is involved, it can either be injected by steroids at the time of surgery. Nerve release or division may be necessary in few rare cases. In patients wherein athletic pubalgia (AP) and femoro-acetabular impingement (FAI) co-exist, both disorders may require surgical treatment in staged or concurrent fashion.^{14,15}

CONCLUSION

Sportsman's hernia is a distinct syndrome of lower abdomen and groin pain seen in individuals pursuing athletic sports. It can lead to significant disability. A careful history, physical examination and imaging is necessary to arrive at diagnosis. Trial of conservative therapy is mandatory in all patients. In event of failure, surgical intervention is warranted.

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