

Abdominal Wall Muscle Tears in Hockey Players

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Abstract

W. T. Simonet, H. L. Saylor, III and L. Sim, Abdominal Wall Muscle Tears in Hockey Players. *Int. J. Sports Med.*, Vol. 16, No. 2, pp. 126-128, 1995.

Accepted after revision: August 2, 1994

Groin pain in athletes may be due to muscle strains, referral of pain from internal organs, and/or hernia. This study includes ten elite level hockey players unable to continue their careers due to groin pain. These patients did not present with the typical causes described above, including hernia. They were explored surgically and were found to have tears in the floor of the inguinal ring which were repaired either directly or with a synthetic mesh reinforcement (seven cases). All the patients have subsequently returned to hockey. Because these patients presented with symptoms similar to hernia, but did not have a hernia at the time of surgical exploration, they were considered to have a condition previously described as "sportsman's hernia".

Key words

Sportsman's hernia, hernia, groin, inguinal

Introduction

Groin pain is common in sports. There are multiple causes, including strains of the abdominal muscles, hip flexors, or adductors (6). Referral of pain from internal organs, such as ureteral colic, can present as lower abdominal or groin pain. Causes which are more rare include osteitis pubis, as well as stress fractures of the pelvis (1). Hernias, either inguinal, umbilical, femoral or incisional, can cause similar symptoms of pain (4,5). Work-up of these conditions includes physical examination and bone scanning for stress fracture or osteitis pubis. Other imaging modalities, including MRI (magnetic resonance imaging) scans and intravenous pyelograms, are also used. Treatment of these various conditions is well described and usually quite successful.

In spite of aggressive work-up and treatment, there are a group of patients who present with pain in the lower abdominal wall and inguinal region who do not fit into any of the above conditions. They present with symptoms similar to

hernia, but do not have herniation on examination or at the time of surgical treatment. Taylor et al. (6) reported a series of nine patients, only two of which had a hernia on examination. This condition has been called "sportsman's hernia" by Malycha and Lovell (4), who describe a series of fifty athletes in Australia. Hackney (2) recently reported fifteen cases including one female and referred to the condition as a "sports hernia". Smedberg et al. (5) also described a large series of athletes presenting hernia-like symptoms but no findings of hernia upon exam. Similar findings were also noted by Ekberg et al. (1). Various types of repairs were used by these authors. Most involved direct repair of abdominal musculature. We report a series of 10 patients who were participating in elite or professional ice hockey who incurred abdominal muscle tears without hernia. These patients were treated either with a direct repair, or with a synthetic patch graft. The latter technique has not been previously documented in the literature for treatment of this condition.

Materials and Methods

A series of ten patients presented to the senior author (WTS), a team physician for a professional hockey team, either as personal patients or as referrals for a second opinion. All patients had previous workups, including plain X-ray, MRI scan, ultrasound, or bone scan, none of which showed any significant abnormality. It is noteworthy that differentiating the diagnosis of this condition from other conditions, especially in the acute stage, can be difficult. The diagnostic tests listed above may exclude other sources of pain, but a precise history and physical examination are most important.

The patients had symptoms ranging from three months to four years with a mean of 9.6 months. Ages ranged from 28-32 with a mean of 25.5 years. All patients reported an acute onset of pain usually during a strenuous maneuver while playing or training for ice hockey. Some could remember an audible or palpable pop and others simply remembered the acute onset of pain. The pain was in the lower abdominal area and usually radiated towards the testicle. Occasionally, the pain began in the adductor region. The pain in all ten cases eventually localized to the lower abdominal wall inguinal region, in the area of the internal inguinal ring. All patients were disabled from their usual level of sport due to an aggravation of pain when attempting to skate.

Physical examinations revealed no hernia in any patient. All had tenderness along at the internal inguinal ring and/or along the floor of the inguinal canal. The tenderness sometimes was increased by straining maneuvers. The remainder of the physical examination was entirely normal.

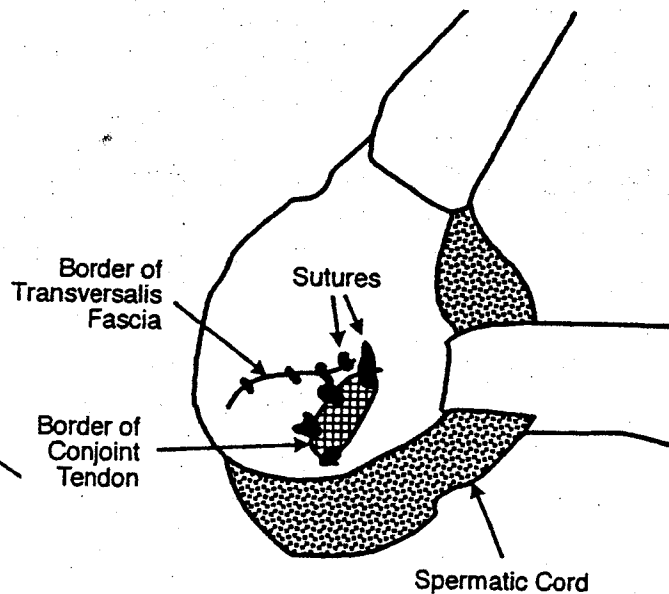
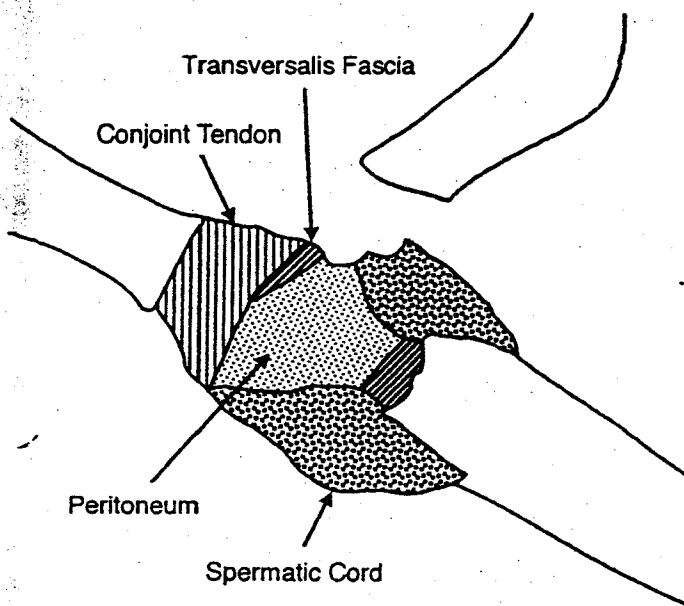


Fig. 1 Photograph and drawing of a surgical dissection of a sportsman's hernia. The patient is an ice hockey player with a tear in the internal inguinal wall. The peritoneum does not protrude through the defect.

Fig. 2 Photograph and drawing of a mesh repair of a sportsman's hernia.

At the time of surgery, all patients were explored through a standard incision for repair of a hernia. Surgical findings in all the patients were partial or complete tears in the floor of the inguinal ring (Fig. 1). This floor represents the internal oblique musculature. There was no direct or indirect herniation of the viscera in any of the cases

patients in the series received a general anesthesia and were hospitalized one or two days. The final five patients received a local anesthesia and were not hospitalized. These variations represent an evolution of techniques, rather than experimental variables.

Surgical repair consisted of a direct Bassini type of muscular reapproximation or placement of a synthetic (Marlex) mesh patch graft over the internal inguinal floor (3; Fig. 2). The synthetic mesh patch was used on the final seven patients of this series, because the general surgeon (HLS) felt that this technique provided a stronger repair with less initial morbidity, as well as a more rapid return to activity. The first

Results

All patients returned to play professional or elite-level hockey. At a follow-up interval ranging from six months to four years, all patients reported improvement of their symptoms. Two patients had occasional episodes of discomfort but were not disabled by the recurrences. Two other patients had additional complaints of groin pain, but on the contralateral

After patients were considering surgical exploration on the contralateral side.

Discussion

The sportsman's hernia (4) is now recognized as a condition afflicting certain athletes. It has previously been described mostly in soccer players, but also commonly in runners and rugby players (2,4,7). A few cases have also been noted from net sports and others (2,4), and we extend the list to include ice hockey.

The exact cause remains unknown. We agree with previous authors (5,6) who have speculated that the condition represents a congenital weakness in the abdominal muscles which make up the floor of the inguinal ring. It is proposed that unusual stresses in this area can cause tearing of the internal oblique musculature which results in pain that is often significantly disabling to athletes. In all of our ten cases we found a distinct thinning or tear in the internal oblique muscle at the inguinal ring (Fig. 1). We recognized that this was not a consistent finding in reports by others (2,4,5); nevertheless, we feel it is the true pathology of the sportsman's hernia, at least in ice hockey players. It is not known whether the natural history of this condition would progress to a typical direct hernia of the peritoneum.

Non-operative treatments for this condition are ineffective. We have attempted to treat patients with periods of rest, ranging from three to sixteen weeks, without success. We have also attempted various modalities of physical therapy, as well as the use of oral-inflammatory medications and local cortical steroid injection, none of which have improved symptoms more than transiently. Preoperative workup, including MRI scans, X-rays, bone scans and ultrasound, have not been effective in diagnosing any significant pathological findings related to this condition, and we consider them to be useful only to rule out other conditions.

In our experience, patients with this condition present a very typical syndrome. The symptoms include, pain and tenderness along the inguinal ring and inguinal floor area which is sometimes increased with straining maneuvers. Other authors have reported a more gradual onset (2,5), but most of our patients referred to a specific precipitating event. Other than a finding of slight tenderness at the inguinal ring site, the physical exam is usually normal and negative for actual herniation. Non-operative treatment fails but with surgical repair symptoms improve quickly and hockey players can return to play approximately three months following surgery.

Our experience with sportsman's hernia is similar to that of previous authors (2,4,6). However, there is no reported use of a synthetic mesh patch which, in our subjective opinion, decreases initial morbidity without sacrificing the ultimate result. We have also found that the condition can be successfully treated under local anesthesia, on an outpatient basis. Since the sportsman's hernia is not an actual hernia, we have not attempted to treat it with laparoscopic technique and we do not know if laparoscopy would offer any advantages.

Conclusion

Groin pain in elite hockey players is a common and disabling problem with many potential causes. Patients with pain in the inguinal canal region who have failed non-operative treatment may be suspected of having a tear of the internal oblique muscle. This condition may be more common than has been previously recognized, as there are no objective findings on physical examination nor is there any definitive diagnostic test. Our experience with ten such patients indicates that they will benefit from surgical repair of the defect and may return to compete at their previous level of ice hockey. The use of a synthetic mesh reinforcement appears to allow rapid rehabilitation with low initial morbidity. In our hands, the surgery can be done under local anesthesia without hospitalization.

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