

# Sports hernia

Joseph F. Diaco MD<sup>a</sup>, , FACS, Daniel S. Diaco MD<sup>a</sup>, FACS and Lisa Lockhart CRNFA<sup>a</sup>

<sup>a</sup>St. Joseph's Hospital, Tampa, FL

Available online 9 February 2005.

Pubalgia is a general term used to describe severe groin and hip pain in the professional athlete. The etiology of this condition can range from adductor tendon injuries, to hip injuries, to abdominal wall injuries. One of the least understood and most perplexing problems is the sports hernia. This diagnosis should be considered in athletes who do not respond to conservative treatment of pubalgia. Only recently has this entity become a known cause of persistent groin pain in the athlete. Some surgeons still do not believe this condition exists. We evaluated 96 professional athletes who underwent surgery for sports hernias. Thirty patients (31%) had adductor pain associated with either lower abdominal or inguinal pain. There were 92 patients (96%) who returned to their preinjury levels of performance. One should not offer surgery unless the groin pain has been present for at least 3 months. The authors describe the laparoscopic preperitoneal approach to repair these injuries. With the proper method of diagnosis and the expertise of an experienced laparoscopic surgeon, the athlete can return to active participation in sports within 3 to 6 weeks after surgery.

**Keywords:** sports hernia; laparoscopic repair; diagnosis and treatment

---

## Article Outline

[Data analysis](#)

[Results](#)

[Symptoms](#)

[Physical examination](#)

[Radiology tests](#)

[Treatment](#)

[Nonoperative treatment](#)

[Operative treatment](#)

[Discussion](#)

[References](#)

---

Sports hernia, according to our experience, refers to a complex injury to the lower abdomen or groin, secondary to injury of the transversalis fascia or the rectus muscle of the abdominal wall. Most often a true hernia cannot be felt. It is often associated with adductor tendon pain and is often bilateral. The pain is not present at rest. The pain causes diminished or complete cessation of the athletic activity.

## **Data analysis**

The patients that had surgical treatment from 1998 to 2003 served as our database for the study. All 96 patients were followed by office visits, contact with team trainers, or by personal interviews with the athletes and were followed until the athletes returned to previous levels of competition. Only 25 of the patients (26%) were interviewed after surgery by the authors. Patients operated on after December 2000 were not included in this database because of incomplete follow-up. Successful results included only the patients who returned within 3 months of surgery to preinjury levels of performance, with little or no pain. Unsuccessful results were defined as minimal or no improvement, with inability to return to professional activity. All patients were advised that surgery may not cure their condition and that long-term results were not known.

## **Results**

Ninety-three patients (97%) returned to preinjury levels of performance with little or no pain. One patient had adductor release surgery 4 months after laparoscopic repair. Two patients had little relief of their symptoms at 6 months after surgical repair. It is of interest that both failures were soccer players who returned to play and complained of similar pain and restriction of activity as before their surgical correction. Two patients had a previous open repair for their sports hernia, with both being modified Bassini repairs. There was one mesh infection early in our experience that resulted in removal of the mesh. It is important to note that his symptoms, despite mesh removal, were abolished, and the patient returned to full preinjury level of performance. Ninety players (94%) returned to full activity within 6 weeks of surgery.

## **Symptoms**

Groin pain associated with running, cutting, or bending was present in all 96 of our patients (100%). Coughing and sneezing resulted in a similar pain in 18 patients (19%). The pain was unilateral in 67 patients (70%) and bilateral in 29 patients (30%). All patients remembered a specific activity that resulted in the injury. All patients (100%) had no pain with rest, but the symptoms resumed after activity. If groin pain persisted for 3 months or longer and no other causes were found, then the patient was offered the surgical option of exploration of sports hernia.

## **Physical examination**

Tenderness is often elicited by external pressure over the lower rectus muscle attachment to the pubic bone or tenderness over the conjoined tendon. This is accomplished by invaginating the scrotum with one's finger through the external ring medially. This results in tenderness and pain similar to what athletes experience with exercise. Pain with resistant adduction of the hip occurred in 71 patients (74%). No patient in our series had a definite palpable hernia, but 10 patients (10%) had an impulse felt with coughing at examination. An impulse is defined as a sensation of pressure on the invaginated finger with coughing and/or straining. There is no part of the examination that is pathognomonic for the diagnosis of a sports hernia.

## **Radiology tests**

Only 11 patients (11%) had abnormal magnetic resonance imaging studies. Computed tomography scans were used when we suspected other causes of inguinal pain. Bone scans were performed if osteitis pubis was suspected. Three patients (3%) had positive bone scans that were consistent with osteitis pubis that did not respond to conservative treatment after 3 months. Surgical treatment was offered to all 3 patients because the symptoms were more indicative of sports hernia than that of osteitis pubis. All 3 underwent surgery for treatment of a sports hernia, and all returned to their previous level of competition with complete resolution of their symptoms. Interestingly, the radiograph picture of osteitis pubis persisted for months after surgical repair of their sports hernia. In our experience, the radiograph picture of osteitis pubis can coexist with a true sports hernia and that only surgical repair of the sports hernia will result in resolution of the patient's symptoms.

## **Treatment**

### **Nonoperative treatment**

All of our patients had at least 3 months of conservative treatment before surgery, which consisted of physical therapy, antiinflammatory medications, and steroid injections. Because of failure of conservative treatment, they were referred to our hernia center.

### **Operative treatment**

Open surgical repair has been described by Myers and coworkers<sup>1</sup> and consists of reattachment of the inferior edge of the rectus muscle with or without adductor tendon release. Other open repairs included modified Bassini, Lichtenstein, and plication procedures.<sup>2</sup>

Laparoscopic repair consists of preperitoneal insertion of a 3 × 6 inch piece of polypropylene mesh, covering all potential groin defects from the lateral superior ramus of the iliac bone to across the midline (Fig. 1).



(76K)

Figure 1. Right inguinal hernia defect covered with polypropylene mesh, secured with tacks. All potential hernia defects were covered.

---

## Discussion

Athletic pubalgia syndrome consists of lower abdominal or groin pain often associated with adductor tendon complaints. It was first described in the European literature<sup>3</sup> and followed in the American literature in the early 1990s.<sup>4</sup> The treatment of sports hernias is surgical repair of the inguinal floor. No repair should be attempted until conservative measures have failed. The earliest repair should not be attempted before 6 to 8 weeks of conservative treatment. All of the repairs in this study occurred 3 or more months after the initial injury. At operation, diverse pathology was found. Most often, injury occurred to the conjoined tendon or transversalis fascia resulted in subtle direct weakness in the medial portion of the groin (82%) ([Figure 2](#) and [Figure 3](#)). Other findings consist of a combination of mature hematomas, rectus muscle tears, or minute tears in the transversalis fascia (18%).

---



(73K)

Figure 2. Right inguinal direct subtle hernia defect, with disruption of the lower rectus and conjoined tendon.

---



(71K)

Figure 3. Left inguinal direct subtle hernia defect, with disruption of the lower rectus and conjoined tendon, with visible mature hematomas.

---

A condition known as Gilmore's groin was described in 1988, along with Dr Gilmore's surgical repair technique consisting of multiple closures of the fascial layers.<sup>5</sup> Myers and coworkers<sup>1</sup> described a modified Bassini repair for the same condition. Open repair is a proven effective method for the treatment of sports hernias. However, the return of the athlete can take 6 months or longer with this open technique. Our experience is that the laparoscopic repair results in less pain and quicker return to normal activity than the open technique. The results from the study were very similar to the results published by Meyers and coworkers<sup>1</sup> and Ingoldby.<sup>2</sup> Laparoscopic repair most often results in the athlete returning in 4 weeks or less. Laparoscopic repair is a logical treatment for sports hernias because there is no anterior disruption of the abdominal wall resulting from repairing the defect through normal tissue. We have shown that the posterior reconstruction of the inguinal area with mesh results in stabilization of the anterior pelvis in a relatively short time. Most athletes can return to normal activity in 6 weeks. We start our athletes back with limited physical activity and then jogging and running within 3 weeks. They can resume weight lifting and contact in 4 to 6 weeks. Although there are a multitude of operations for this condition, laparoscopic repair appears to be significantly better than the other techniques because of a quicker return to normal activity. In our series, it is interesting to note that only 1 patient needed adductor tendon release after laparoscopic repair of his sports hernia.

Surgical repair of sports hernias, whether corrected by laparoscopic or open surgery, results in a greater than 90% return to normal preinjury levels. Only with continued research will a standardized treatment be considered the gold standard for this condition. Laparoscopic surgical repair should be considered one of the standards of care for the treatment of sports hernias.

---

## References

- 1 W.C. Meyers, D.P. Foley and W.E. Garrett *et al.*, Management of severe lower abdominal or inguinal pain in high-performance athletes, *Am J Sports Medicine* **28** (2000), pp. 2–8.
- 2 C.J.H. Ingoldby, Laparoscopic and conventional repair of groin disruption in sportsmen, *Br J Surg* **84** (1997), pp. 213–215.
- 3 P. Renstrom and L. Peterson, Groin injuries in athletes, *Br J Sports Med* **14** (1980), pp. 30–36.

4 D.C. Taylor, W.C. Meyers and J.A. Moylan *et al.*, Abdominal musculature abnormalities as a cause of groin pain in athletes, *Am J Sports Med* **19** (1991), pp. 239–242.

5 O.J.A. Gilmore, Gilmore's groin Ten years experience of groin disruption—A previously unsolved problem in sportsmen, *Sports Med Soft Tissue Trauma* **3** (1991), pp. 12–14.