Numerous injuries can affect the complex pelvic anatomy, which must be ruled out to determine that an athlete has athletic pubalgia. Once a definitive diagnosis of athletic pubalgia has been made, a treatment plan must be established. Typically, athletes undergo a lengthy period of conservative management that includes rest, anti-inflammatory medication, and rehabilitation. In some cases, particularly when pain is primarily related to strain of the adductor longus tendon, conservative management may alleviate symptoms and allow return to a high level of sport performance. Surgery is usually considered after six to eight weeks of rehabilitation has failed or when pain is experienced immediately upon return to activity. Lapsoscopic repair or open repair may be performed, and most surgical procedures involve reinforcement of the abdominal wall (often using mesh) or reattachment of the rectus abdominus to the pubis and surrounding ligaments. Because surgical repair has not yet been definitively determined to provide best results, factors such as postoperative complications and rehabilitation duration must be measured when considering surgical management. Patients are often unable to return to athletics for six to twelve weeks after surgery, and postsurgical pain lasting for up to a year has been reported. This report presents two different surgical options.

### Patient A

**Background**

A 19-year-old football player developed significant groin pain after returning a kick during a game. After reporting the problem to an athletic trainer the next day, he was referred to the team physician. He was initially diagnosed with an adductor strain and was allowed to continue football participation as tolerated. Despite the use of an anti-inflammatory medication, administration of therapeutic modalities (i.e., ultrasound, electric stimulation, and ice), and application of a compression wrap, his symptoms increased and affected both extremities. Physical therapy was prescribed for a period of approximately two months. Tenderness in response to palpation at the adductor magnus origin persisted, limited rehabilitation progression was realized, and function decreased. Diagnostic ultrasound and MRI were ordered by the team physician, which revealed adductor tendonitis, adductor calcification, and pubis symphysitis. At five months after the initial injury, the team orthopedist referred the athlete to a general surgeon who had experience in management of athletic pubalgia. He was seen by the surgeon six months after the initial injury.

**Treatment**

The general surgeon found the athlete’s adductor muscles to be tender and weak and determined that his symptoms were consistent with athletic pubalgia. The athlete was...
then referred back to the team orthopedist for bilateral cortisone injections into the origins of the adductor muscles. The injections provided transient relief, but symptoms returned within two weeks as his activity level increased. Physical therapy was continued during this period. Due to the recalcitrant nature of the athlete’s symptoms, a determination was made that he would benefit from bilateral herniorrhaphies. During this procedure, a piece of Marlex™ mesh was fitted beneath the external oblique, which was sutured to the inferior pubis, the lateral aspect of the inguinal ligament, and the medial aspect of the rectus abdominus fascia to reinforce the weakened inguinal wall.

Rehabilitation
Following surgery, the athlete rested for six weeks. He then began light lower extremity strengthening and slow jogging. He experienced immediate pain when starting to jog and stopped the activity. At 10 weeks postsurgery, and despite continued pain, the athlete began working out aggressively three times a week in an attempt to return to football. The workouts included lower extremity strengthening and sprinting. At 14 weeks postsurgery, the athlete participated in preseason football practice sessions. Physical therapy was ordered to increase his flexibility and strength, ultrasound treatments were initiated, and he was prescribed an anti-inflammatory medication. Despite this intensive effort to manage the problem, his symptoms did not subside and he decided to sit out the season.

With further rest, the athlete’s symptoms began to subside, and at six months postsurgery, he was able to run without an increase in symptoms. At seven months postsurgery, he began sprinting, and he was able to run pass routes at full speed. He was able to participate in weight training without exacerbation of symptoms, and he estimated that his symptoms were 95% resolved. Approximately one year after surgery, he participated in spring football practice. He experienced some pain, but it was largely controlled with the use of an anti-inflammatory and pain medications.

Patient B

Background
While making a pole vaulting approach, a 20-year-old male athlete reported having felt a pull in his left adductor muscle, which he had previously strained one year earlier. His physical exam revealed that he was tender to palpation over the superior aspect of the adductor magnus, he had limited range of motion of his left hip in all planes, and he was unable to actively adduct his thigh. Range of motion and strengthening exercises were initiated, and electric stimulation, manual therapy, and ice were administered. Two weeks after injury, the athlete continued to be symptomatic. The physician diagnosed a rectus femoris strain and pubic symphysis and prescribed an anti-inflammatory medication. Despite these therapeutic interventions, the athlete’s symptoms increased, and at three weeks after the initial injury, he began to have pain during sitting and breathing. He was then referred to the team orthopedist. His level of pain prohibited participation in any athletic activity and adversely affected his ability to perform activities of daily living. The orthopedist could not provide a definitive diagnosis of the athlete’s problem, but he expressed concern about the possibility of athletic pubalgia. The athlete sought the opinion of another physician, who diagnosed a hematoma. Over time, the athlete’s symptoms progressively worsened and became bilateral. He was then referred to a surgeon who had special interest in athletic abdominal injuries, and a diagnosis of bilateral athletic pubalgia was made.

Treatment
The surgeon recommended a pelvic floor reconstruction, which would involve a reattachment of the rectus abdominus fascia to the pubis. The procedure requires a long period of recovery rehabilitation, and return to play would have been prohibited for at least three months. The athlete was unsatisfied with the length of recovery that would be required and therefore began to search for another option. He learned about an alternative surgical technique being used in Europe called the Shouldice repair. This technique is less invasive than a pelvic floor reconstruction and can be used when there is a large defect within the transverse fascia of the inguinal canal and the musculature is intact. The primary benefit this procedure is a substantially shorter recovery time. The technique involves a doubling of each abdominal layer and does not use a mesh reinforcement material. The athlete was seen by a European surgeon who specializes in this technique and underwent the surgery.

Rehabilitation
Following the surgeon’s protocol, the athlete began walking almost immediately after the surgery. At two
weeks postsurgery, he was able to walk comfortably, and then began performing moderate- to high-level strengthening exercises for his groin, hip, and core musculature. At 19 days after surgery, he was able to jog a four-mile distance. Sport-specific activities were initiated at three weeks postsurgery, which the athlete tolerated well. Over the next several weeks, he progressed to full athletic activity, and he was able to resume pole vaulting without significant pain at eight weeks after the surgery.

Comparison of Outcomes

Although the time between onset of symptoms and surgery was shorter for patient A, he had a very long recovery time and was not able to resume high-level activities until he was 10 weeks post-surgery. Furthermore, he was unable to return to football until one year after surgery and still needed medication for pain management. He continued to experience some pain at two and a half years after surgery, which was likely attributable to the development of scar tissue around the mesh material that was used for his surgical repair. He has recovered full strength and normal range of motion, and he is able to sprint. Patient A had numerous pathologies that were identified by the MRI study, which may have complicated his recovery.

Patient B had a considerably short recovery time: less than one week of inactivity, compared to six weeks for patient A. Once he began postsurgery activity, he was able to progress quickly to jogging and sport-specific activities. Within four months after surgery, he had recovered full strength and normal range of motion and experienced only intermittent discomfort. (See Table 1 for comparison of outcomes.)

Summary

Diagnosis of athletic pubalgia often proves to be difficult due to the broad differential diagnosis of groin pain in athletes, the variability of symptoms and physical exam findings, and the often inconclusive results of diagnostic imaging. A definitive diagnosis is not typically made until after a prolonged period of rest, rehabilitation, and modification of activity fail to alleviate symptoms.4

Once athletic pubalgia has been diagnosed, the need for surgical treatment must be determined and if so, the type of surgical procedure that is indicated. There is limited information that compares the effectiveness of surgical versus nonsurgical management. One study1 found that operative treatment of athletic pubalgia provided symptom resolution in 60% of patients and decreased symptoms in 20%. At present, there is no specific surgical procedure that is widely-accepted as superior to others or clearly supported by research evidence.1

Neither of the surgical procedures reported for the two cases has been studied extensively, but the differences in outcomes experienced by the two athletes illustrate some important points. After a surgical repair that involves use of mesh material, patients sometimes report a sensation of something in the muscle that causes discomfort.5 Most surgical procedures for treatment of athletic pubalgia require a prolonged period of rehabilitation before a progressive return to athletic activity is permitted.4 The less-invasive procedure, such as that received by patient B, allows a faster return to athletic activities.

Given the enigmatic nature of the pathology associated with athletic pubalgia, diagnostic uncertainty, and variation in treatment options, further research is clearly needed to optimize the identification and management of the condition.

References


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**Table 1: Comparison of Recovery Among Participants**

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<tr>
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<th>Participant A</th>
<th>Participant B</th>
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<tbody>
<tr>
<td>Period of inactivity</td>
<td>6 weeks</td>
<td>10 days</td>
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<tr>
<td>Time until return to running</td>
<td>10 weeks</td>
<td>19 days</td>
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<tr>
<td>Time until return to sport</td>
<td>1 year</td>
<td>8 weeks</td>
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<td>Duration of symptoms post surgically that inhibited activity</td>
<td>Greater than 2 years</td>
<td>12 weeks</td>
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