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Obturator Nerve Entrapment

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Abstract:

Purpose: To describe a case of obturator nerve entrapment, a previously unreported cause of chronic groin pain in athletes.

Case summary: A 23-year-old man, an elite Australian rules footballer, presented with a 2-year history of groin pain. Conservative treatment was unsuccessful. Examination postexercise revealed adductor weakness and medial thigh paraesthesia. Diagnosis of obturator nerve entrapment was confirmed by EMG and nerve block. Surgical neurolysis was performed. The patient returned to sport and has remained symptom free.

Discussion: Although intrapelvic obturator nerve entrapment has been reported following surgical trauma, no cases of sport-related entrapment have been described.

Relevance: Obturator nerve entrapment should be considered as a potential cause of chronic groin pain in athletes.

Key Words: Nerve entrapment syndromes—Groin pain—Athletics.

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Chronic groin pain is a common and often disabling problem suffered by athletes from many sports. The sports physician may be confronted by a difficult diagnostic challenge due to the fact that there are many potential causes of pain and many anatomical structures that are susceptible to injury or damage. Common causes of chronic groin pain reported in athletes include adductor muscle strain, osteitis pubis, and inguinal herniae (1).

We present a case report of a footballer with chronic groin pain who had obturator nerve entrapment, a previously unreported cause of groin pain in athletes.

CASE REPORT

A 23-year-old man, a professional Australian rules footballer, presented with a 2-year history of left groin pain. The pain began insidiously and was initially felt only during strenuous football games. As the problem progressed, it was felt during less strenuous exercise. The pain commenced as a deep ache, centered on the adductor origin and radiated down the medial aspect of the thigh to the knee. No night or rest pain was present. The pain resolved during a period of protracted rehabilitation for an unrelated shoulder injury but returned on resumption of football. There was no past history of local trauma to the region.

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On examination, he had a full range of active and passive hip movements. On the left side, forced hip internal rotation was painful with a positive hip quadrant, Thomas test, and femoral slump test. There was also left-sided posterior inguinal wall weakness with an incidental left testicular varicocele. Neurological examination was normal.

Plain x-ray of the pelvis demonstrated a small avulsion fragment from the left pubic tubercle (Fig. 1). A scintigraphic bone scan showed increased uptake in the region of the pubic tubercle but was otherwise normal (Fig. 2). He was initially treated with physiotherapy, soft tissue massage, osteopathic muscle energy techniques, and stretches. The condition failed to settle with these conservative modalities, and the region of the pubic tubercle was injected with local anaesthetic and corticosteroid without benefit. A trial local anaesthetic injection of the left sacroiliac joint was performed without change in his pain pattern.

Because of the posterior inguinal wall weakness, he was referred for a surgical opinion. He underwent an uncomplicated inguinal hernia repair and a conventional 6-week postoperative rehabilitation program. On his return to football, however, his pain recurred.

The patient was then examined whilst symptomatic after a prolonged bout of strenuous exercise. He was found to have 3/5 weakness of resisted adduction on the left side. A pectineus stretch (which is performed by the patient passively externally rotating and abducting the affected hip whilst standing) accurately reproduced his pain. He also had an area of paraesthesia on the medial aspect of the distal left thigh. Electromyography demonstrated denervation changes of the adductor muscles.

FIG. 1. Antero-posterior x-ray of the pelvis demonstrating a small avulsion type fragment from the left pubic tubercle.

He was referred to an orthopaedic surgeon with the provisional diagnosis of a left obturator nerve entrapment. His obturator nerve was injected with local anaesthetic under fluoroscopic control (Fig. 3); this reproduced his postexercise adductor weakness and paraesthesia, and relieved his aggravating pectineus stretch. The obturator nerve was then surgically decompressed via an anterior approach. At surgery, the nerve was found to be compressed by a thick fascia over adductor brevis, which was divided and the nerve mobilized. The patient returned to training 8 weeks after surgery and has remained pain-free for 24 months. His electromyographic studies have returned to normal.

DISCUSSION

The obturator nerve arises from the ventral rami of the second, third and fourth lumbar nerves. It descends through the psoas muscle and passes into the lesser pelvis curving antero-inferiorly to pass through a fibro-osseous tunnel under the pubic ramus. Within the tunnel, the nerve divides into two main branches (anterior and posterior) as well as a branch to obturator externus. The anterior branch supplies adductor longus, brevis, gracilis, and, occasionally, pectineus. Its cutaneous division provides the innervation of the skin and fascia of the distal two thirds of the medial thigh. The posterior branch supplies adductor magnus and obturator externus. Its sensory division descends to supply the articular capsule, cruciate ligaments and synovial membrane of the knee joint (6).

FIG. 3. antero-oblique x-ray of the pelvis demonstrating radiological localization of the obturator nerve block. Iodinated contrast material is shown passing into the obturator canal.

The course of the obturator nerve places it at risk from compression within the pelvis as well as within the tunnel. The nerve may be compressed within the true pelvis from pelvic fractures, pelvic hematomas, retroperitoneal masses, and intrapelvic tumours. Normal life events such as pregnancy can develop complications that lead to obstetrical obturator nerve palsy (2).

Whilst in the obturator tunnel, the nerve is well protected from direct trauma; however, complications of gynecological or orthopaedic surgery may directly traumatize the nerve (7,9). In a single case report, Kopell et al. (4) described obturator tunnel syndrome related to inflammatory changes in the adjacent pubic bone in osteitis pubis. No athletic or sport related cases of obturator neuropathy or injury have been reported.

Other diagnostic possibilities include obturator herniae, which have been associated with obturator nerve entrapment. This entity is rare and difficult to diagnose but may respond to surgical intervention (5,8).

The mechanism of the entrapment is unclear. The clinical, electrophysiological, and surgical findings in this case suggest the entrapment occurs at the level of the distal obturator foramen and proximal thigh

FIG. 2. ^{99}m-Technetium radionucleotide scintigraphic bone scan demonstrating increased uptake in the region of the left public tubercle and symphysis.

rather than in the obturator tunnel. The surgical findings of nerve entrapment by fascia and vessels over obturator externus and adductor brevis may be the structural accompaniments of this entrapment; however, anatomical studies of the fascial arrangements in this region are singularly lacking (3).

Obturator nerve entrapment should be considered as a possible cause of groin pain in the sporting population. The diagnosis of obturator nerve entrapment is made by identifying the typical symptomatology on history and by examining the patient after exercise for the characteristic neurological abnormalities. The diagnosis is confirmed by electromyography and may be assisted by a diagnostic local anaesthetic obturator nerve block. The definitive treatment of this problem is surgical, although conservative management may have an as yet undefined role.

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