INGUINAL SURGERY IN ATHLETES WITH CHRONIC GROIN PAIN: THE 'SPORTSMAN'S' HERNIA

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Fifty athletes with chronic undiagnosed groin pain underwent surgical exploration and inguinal hernia repair. Six months later, all athletes were sent questionnaires to assess their return to sport, level of pain (using analogue pain scores) and the overall result of their surgery. Operative findings revealed a significant bulge in the posterior inguinal wall in 40 athletes. Forty-four athletes (88%) replied to the questionnaire. Forty-one athletes (93% of respondents) had returned to normal activities. Pain scores indicated a marked improvement in their level of pain ($P < 0.001$). Thirty-three athletes (75%) rated the result as good and 10 (23%) as improved.

It is concluded that athletes with chronic groin pain who are unable to compete in active sport should be considered for routine inguinal hernia repair if no other pathology is evident after clinical examination and investigation.

Key words: athletic injuries, hernia, inguinal.

Introduction

Persistent disabling groin pain in active sportsmen is a frustrating diagnostic and management problem for both the athlete and the physician. The difficulty of accurate diagnosis has been described in reviews by Hughes and Maguire, Corrigan and Shenstone and in particular Zimmerman who has presented a comprehensive differential diagnosis of chronic groin pain.[1–3] Reported causes of chronic groin pain in athletes include adductor tendinitis, adductor avulsion and gracilis syndrome, pubic instability, osteitis pubis, rectus abdominis tendopathy, iliopsoas injury, spinal abnormalities, hip abnormalities and inguinal hernia.[4–11]

Following clinical examination and investigation there remains a group of patients who have unexplained groin pain. The condition has been described in various ways: the most common being conjoint tendon injury, sportsman's hernia or crypt hernia. Smodlova has reported anecdotal accounts of relief of pain and return to sport in 8 weeks after a Bassini type hernia repair.[12] Smedberg identified a high incidence of undiagnosed inguinal hernias in athletes with chronic groin pain using herniography.[11]

In Australia, there have been many reports of success following surgery to the inguinal canal. This prospective study was undertaken to determine the role of surgical exploration and repair of the inguinal canal in fifty athletes with undiagnosed chronic groin pain.

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Methods

SUBJECTS

Fifty athletes who were referred by other practitioners for diagnosis and management of chronic groin pain were studied between June 1986 and February 1990. All patients were assessed by history, clinical examination, pelvic X-ray, bone scan where appropriate and, after 1987, herniography. Clinical examination concentrated on the lower back, hips, pelvis, scrotum, inguinal canals and groin musculature.

All patients had a typical history of chronic groin pain exacerbated by sport.

The pectineus, adductors (magnus, brevis and longus) and gracilis were examined by palpation, passive abduction, adduction against resistance and hip flexion. The rectus abdominus was examined by active contraction with both legs elevated and by palpation of its origins. The hips were tested using Patrick's test (pressure applied to the knee with the opposite hip stabilized and with the tested hip in a flexed, abducted and externally rotated position with the heel on the opposite knee), observing the full range of movements and by flexion, adduction, internal rotation and compression. The lower back was examined to assess the range of flexion, extension, lateral flexion and rotation. The thoracolumbar area was examined for tenderness. Femoral and

sciatic nerve stretch tests were performed. A neurological examination of the lower limb and affected groin was performed looking particularly for evidence of ilio-inguinal nerve entrapment. The pelvis was examined by palpation of the pubic arches, crests and tubercles, and the pubic symphysis by compression and direct pressure.

The inguinal canal was examined with the patient standing and lying to exclude an inguinal hernia and to note the site of tenderness.

All patients had a plain X-ray of the hips and pelvis with flamingo views of the pubic symphysis to assess pelvic stability. If bony tenderness was found a bone scan was performed. Herniography was included from 1987, at which time 23 patients were assessed by this technique. It showed promise and will be reviewed in a further paper.

Ekberg has reported multiple co-existing causes for chronic groin pain in athletes. Patients were excluded from this study if clinical examination suggested multiple pathology.[13] Patients with chronic groin pain were included in the study if they had failed to respond to rest (at least 3 weeks from training and sport), physiotherapy, anti-inflammatory medications, and had negative clinical examination and investigations for other pathology. All athletes had local tenderness above the inguinal ligament, lateral and superior to the pubic tubercle. Athletes had either ceased playing sport or had marked impairment of performance.

Due to the requirements of general anaesthesia with surgical exploration and repair of the inguinal canal no control group was ethically possible. As a result, rigid inclusion criteria were used and, since athletes returned to sport after 2–3 months, follow-up was undertaken at 6 months. This allowed for initially good results to deteriorate with a further three months of exercise.

OPERATIVE TECHNIQUE

Fifty patients who met the criteria were operated upon by the same surgeon between June 1986 and February 1990. A routine inguinal hernia operation under general anaesthetic was performed through an incision which exposed the inguinal canal and the spermatic cord. The presence of an indirect inguinal hernia was sought in all patients. The posterior inguinal wall was examined for weakness and bulging before a layered repair was performed.

The posterior inguinal wall was repaired in two layers with prolene, the first as a continuous suture from the pubic tubercle to the internal ring, the latter as a loose darn over the same area. The ilio-inguinal and genitofemoral nerves were protected in all patients.

FOLLOW-UP

Upon discharge from hospital patients were encouraged to walk and take physical care of themselves. At three to four weeks they began light training and returned to active sport at six to eight weeks. A postoperative review was undertaken in this period. All patients were sent a questionnaire at six months. They were asked to rate the success of their operation in terms of pain (good, improved, not improved or worse), their ability to participate in sport and then asked to complete an analogue pain scale from zero (no pain) to ten (severe pain) to compare their pre-operative and postoperative pain.

STATISTICAL ANALYSIS

A Student's *t*-test and standard error of difference between means was applied to data from the pain scale.

Results

Fifty patients were operated upon between June 1986 and February 1990.

All were males who were actively involved in sport and had an average age of 25.4 years (16–53). All patients knew of athletes who had been successfully treated in this manner. The aims of the study were fully explained to them. The mean duration of symptoms was 9 months (2–48). Twenty-six patients had stopped playing sport because of chronic groin pain whilst 24 had noted impairment in performance.

Forty-three athletes came from the football codes, two were tennis players, one was a long distance runner, one a triathlete, one a cyclist, one a cricketer and one a long jumper.

The operative findings revealed a significant bulge in the posterior inguinal wall in forty patients (80%) and no abnormality in seven patients (14%). One patient had a small indirect inguinal hernia, one a lipoma of the cord and one had scarring of the posterior inguinal wall with possible ilio-inguinal nerve entrapment from a childhood herniotomy.

Forty-four patients replied to the questionnaire giving a response rate of 88%. Forty-one athletes (93% of respondents) had returned to normal athletic activities at their pre-injury level. Thirty-three (75%) indicated the result was good, ten (23%) as improved.

While no one was made worse by the operation one patient was no better. He returned to sport but developed contralateral groin pain and was shown to have pubic instability in further pelvic X-rays with flamingo views. Five had not replied to the questionnaire but are known to be playing active sport. They have not been included in the follow-up. Two indicated their result to be good but had not returned to sport.

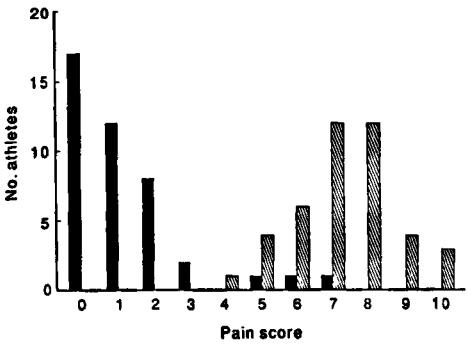

Fig. 1. Pain score results completed at 6 months post-surgery to compare pre-operative (▩) and postoperative (■) pain levels.

Pain scores using an analogue scale were completed by forty-two patients. (Fig. 1.) Two patients who indicated a good outcome, failed to complete pain score scales. The pre-operative mean score was 7.3 (s.d. ± 1.4). The postoperative mean score was 1.2 (s.d. ± 1.6). ($P < 0.001$).

Discussion

Fifty athletes underwent inguinal hernia repair after examination and investigation had failed to demonstrate a cause for their chronic groin pain. Forty patients (80%) were found to have a bulge in the posterior inguinal wall. One patient had an indirect inguinal hernia. This should be excluded at surgery or by pre-operative herniography. Following inguinal hernia repair there was a marked improvement in the mean pain score and 93% of patients were able to return to sport.

Smedberg has reported a high incidence of hernias in athletes with undiagnosed groin pain but found 'incompetence' of the posterior inguinal canal in only seven out of 78 patients.[11] Gullmo noted surgical findings of over-distension of the transversalis fascia in young athletes with groin pain, an abnormality which was suggested pre-operatively using herniography.[14] He suggested that pain in these patients may be caused by distension of the peritoneum or stretching of the ilio-inguinal nerve. Nyhus has noted that modest pain is common at the onset of an inguinal hernia and that patients may experience a dragging sensation and pain in the groin.[15] Zimmerman has suggested that a tear in the conjoint tendon may be the cause of the bulge in the posterior inguinal canal and that occult hernias may be a cause of 'footballer's' groin pain.[3] Berliner biopsied the transversus abdominis aponeurosis in young patients with direct inguinal herniae and a strong family history of hernia and found fragmentation and paucity of elastin fibres.[16] We were unable to show any abnormality in fifteen conjoint tendon biopsies in athletes with chronic groin pain.[17]

These findings suggest that chronic groin pain in athletes may be due to a bulge in the posterior inguinal wall consistent with an incipient direct inguinal hernia. 'Sportsman's hernia' may be the most appropriate descriptive term for this condition. Athletes who are unable to compete in active sport due to chronic groin pain should be considered for routine inguinal hernia repair if no other pathology is evident after careful clinical examination and relevant investigation.

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