

Note on Operative Technique

The approach to the symphysis pubis is through a transverse suprapubic incision, separating the rectus muscles vertically. An autogenous bone graft, retaining the cortex on one surface for added strength, is wedged into a preformed slot cut across the superior part of the symphysis. The size of the graft is about 1 in by $\frac{3}{4}$ in (2.5 cm x 1.9 cm) and about $\frac{1}{8}$ to $\frac{1}{4}$ in (3.2 mm x 6.4 mm) thick. The patient remains on complete bed rest for two to three weeks, followed by graduated weight bearing with crutches.

Discussion

Though the radiographic appearance resembles that described in athletes, there are certain differences, possibly of degree. Instability is common, and is usually manifested by a clicking sensation; sclerosis and marginal irregularity is more intense (Cases 1 and 3). The lesion in Case 2 more closely resembles one due to trauma, and the absence of sclerosis and erosions suggests that infection had not been a major aetiological factor. It is extremely difficult to rule out subacute infection as the primary cause of the lesions in Cases 1 and 3, and indeed an organism was cultured from the lesions in Case 1.

Features common to these three cases are: multiparity; the symptoms starting during or shortly after pregnancy or a pelvic operation; a history of pelvic surgery followed by infection; urinary tract or vaginal infections.

It is suggested that trauma from multiple pregnancies, pelvic operations, or both, together with pelvic sepsis play a part in the aetiology. The mechanism is obscure, but Coventry and Mitchell's theory would explain the clinical and radiological features—viz., that infection in the retropubic space results in venous stasis and thrombosis, which in turn leads to an avascular necrosis of the pubic symphysis.³

These case reports suggest that the lesion may cause disabling symptoms over several months or years. If spontaneous improvement occurs it must take a long time. Probably the instability causes most of the symptoms, and this is supported by the successful relief of long-standing symptoms in Cases 1 and 2 from a stabilization procedure. Nevertheless on the basis of these case reports clearly no policy about the indications for surgery can be put forward.

Summary

In three women with lesions of the pubic symphysis some features resembled osteitis pubis and other changes reported in athletes. The aetiological factors probably include trauma from multiple pregnancies or pelvic operations and pelvic sepsis, while instability of the pubic symphysis is mainly responsible for the symptoms. Spontaneous improvement did not occur in the three reported patients, but in two fusion of the symphysis pubis was effective in relieving the symptoms.

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Lesions of the Symphysis in Athletes*

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Summary

In a radiological study of the pubic symphysis in 37 athletes (26 footballers and 11 others) and 156 young men as controls changes similar to those of osteitis pubis were found in 19 (76%) of the footballers and nine of the other athletes (81%) and 70 of the controls (45%). In the controls there was a significant correlation between their athletic ability and these changes.

The clinical features consist of pain in the region of the pubis which may radiate to the groin or lower abdomen. Clicking may be present and indicates instability. Local tenderness is the only significant sign. Radiographs may show a combination of marginal irregularity, reactive sclerosis, and instability.

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A chronic stress lesion in the iliac component of a sacro-iliac joint was found in 20 out of 37 athletes, and 13 of them had instability at the pubic symphysis.

It is concluded that repeated minor trauma is the primary aetiological factor. Though the radiological appearance may resemble that of osteitis pubis, there was no evidence that infection caused the lesion in this series. Spontaneous remission of symptoms is the most likely outcome. Rest from physical exertion is the most effective treatment, and stabilization of the pubic symphysis is indicated only rarely.

Introduction

Osteitis pubis occurs in men as a complication of operations on the bladder and prostate, being first described by Beer¹ in an English journal. Since then several accounts have appeared,²⁻⁶ mainly from urological departments, while isolated cases of a traumatic lesion of the symphysis pubis resembling an osteitis have also been reported.⁷⁻¹³ Reports of the lesion resulting from athletic activity are rare, though one patient is reported as having developed changes from a basket ball injury.¹² Howse¹⁴ described the condition in an Olympic road walker, and one of us (R.O.M.) has seen it in an international fast bowler at cricket.¹⁵ In a

review of osteitis pubis Coventry and Mitchell found that among 45 patients 20 instances had occurred after pelvic operations, while 10 were associated with urinary tract infection.¹⁶

During the last seven years N.H.H., as orthopaedic adviser to a well-known professional football team, has been consulted on numerous occasions by players complaining of groin pain. Physical examination has shown little other than tenderness over the pubic symphysis. On the other hand, radiological examination has disclosed unsuspected irregularity of the symphyseal margins, accompanied sometimes by instability and widening of the cleft. Radiological examination of such patients is not usual practice and the condition has been diagnosed as a strain of the adductor muscle origins, a diagnosis which is undoubtedly correct in some instances. In view of the positive radiographic findings in some players, we decided to survey all the playing staff of the football club, and to correlate the presence of abnormal radiological features with the presence or absence of a history of groin or lower abdominal pain. This study was supplemented by inclusion of some other athletes with a similar history who were specially referred for investigation and advice.

Professional Footballers and Other Athletes

THE STUDY

Two groups of athletes were studied: group 1—26 members of the playing staff of one professional football club—and group 2—11 athletes (nine footballers, one jockey, and one distance runner) who were specially referred for an opinion because of pain in the groin or lower abdomen. The history of previous injuries with special reference to groin strain and non-specific urethritis were correlated with the radiographs.

The presence or absence of the following radiological abnormalities around the symphysis pubis was assessed: (1) abnormal width of the cleft, accepting 10 mm as the upper limit of normal;¹⁷ (2) marginal irregularity; (3) reactive sclerosis; (4) instability as demonstrated by stress films. A posteroanterior film of the pelvis taken with the cassette close to the symphysis pubis, and the patient standing on each leg in turn. A difference in the height of the superior pubic ramus on each side of more than 2 mm was accepted as abnormal; (5) accentuation of the origins of the gracilis muscle.

In addition the sacro-iliac joints were inspected since instability of the symphysis pubis may be reflected by laxity of one or both of these joints, resulting in subchondral reactive sclerosis in an iliac component.

Results

Of the 26 in group 1, only one had symptoms at the time of the investigation; nine (34%) had instability, 19 marginal irregularity, and 17 reactive sclerosis. We observed changes in the region of the gracilis insertion in 17 players. In no player was the symphyseal cleft above the upper limit of normal. Two had a history of non-specific urethritis, and 14 had evidence of stress sclerosis in the iliac component of one or both sacro-iliac joints.

Of the 11 in group 2, all of whom had symptoms, seven (63%) had instability, four reactive sclerosis, eight marginal irregularity, and two an abnormally wide symphyseal cleft. Four had changes at the gracilis insertion, and six stress sclerosis in the iliac component of one or both sacro-iliac joints. Three in this group had a past history of non-specific urethritis.

The incidence of radiological abnormalities in these two groups is summarized in the table. In group 1, 19 (76%) had a

radiological abnormality, and in 58% there was a correlation with a past history of groin or lower abdominal pain. In group 2, nine (81%) had a radiological abnormality, and all of them had symptoms.

CASE REPORTS

Case 1.—An 18-year-old footballer (group 1) had no symptoms at the time of investigation, but gave a history of pain in the groin and low back. The radiograph (fig. 1) not only demonstrated considerable instability, marginal irregularity, and sclerosis, but also sclerosis in the inferior portion of the iliac component of both sacro-iliac joints.



FIG. 1.—Case 1.—Marginal irregularity, reactive sclerosis, and instability at the symphysis pubis are the principal features. Reactive sclerosis is visible in the inferior portion of the iliac component of the sacro-iliac joints.

Case 2.—A 21-year-old English international footballer gave a ten month's history of increasing pain in the groin, with no history of injury. He had had to rest from some games, and when he did play the pain came on earlier with each game. Considerable tenderness was elicited over the pubic symphysis and pain was produced by stretching the hip adductors. Urine and blood analyses were normal. The radiograph (fig. 2) showed changes consistent with a severe chronic lesion at the pubic symphysis. Despite the wide gap at the symphysis, only minimal instability could be demonstrated. After about three month's rest from football he could resume training, and for the last two years has played regularly for his club and for England, though the radiograph has remained virtually unchanged.

Case 3.—A 26-year-old jockey sustained a fracture of the left ischio-pubic ramus and subluxation of the left sacro-iliac joint as a result of a horse falling on top of him. Despite intensive treatment and rehabilitation, two years later he continues to complain of groin pain spreading down the inner side of the thigh. Though he can ride, the pain prevents him reaching peak performance. The pain is aggravated by twisting round suddenly and forced abduction of the leg. It prevents his running and causes a limp. His symptoms probably result from the changes at the pubic symphysis (figs. 3 and 4). They were not present on the earlier radiographs, and are likely to be secondary to the subluxation of the sacro-iliac joint. Fusion of the pubic symphysis had to be performed because of the longstanding disability, and he is now riding again.

Incidence of Radiological Abnormalities

	Instability	Sclerosis	Irregularity	Wide Cleft	Gracilis	Sacro-iliac Joints
Group 1 26 footballers	9	17	19	0	17	14*
Group 2 11 other athletes	7	4	8	2	4	6*

*Of the 20 with S.I.J. changes, 13 had instability.



FIG. 2—Case 2.—The most significant changes are marginal irregularity and an abnormally wide symphyseal cleft (15 mm) in which fragments of heterotopic ossification are visible.



FIG. 3—Case 3.—An old fracture of the left ischio-pubic ramus is present. Marked reactive sclerosis and marginal irregularity of the pubic symphysis is visible.

Case 4.—A 25-year-old 5,000-metre running champion presented with a chronic pain in the right buttock. The radiograph showed appreciable sclerosis around the right sacro-iliac joint, particularly in the iliac component, and the joint space appeared to be slightly widened in the oblique projection. The changes suggested a mild stress separation of the right sacro-iliac joint with secondary reactive subchondral sclerosis, though other causes of sacro-iliitis had been considered initially in the differential diagnosis. The correct diagnosis was then established by radiological examination of the pubic symphysis, which showed not only appreciable irregularity of the margins, but also a significant degree of instability. Arthrodesis of the right sacro-iliac joint completely relieved his symptoms and permitted him to return to active athletics.

CLINICAL FEATURES

A typical history is of increasing discomfort or pain in one or both groins radiating to the adductor region of the thigh, brought on by physical exertion and relieved by rest. Not uncommonly pain occurs in the suprapubic region and spreads to the lower abdomen. Some movements such as pivoting on one leg, kicking a ball, sprinting, jumping, climbing stairs, and any sudden change of direction will aggravate the pain. A sensation of clicking usually indicates instability of the pubic symphysis, and may be noticed when rising from a sitting position, turning over in bed, or walking over uneven ground. Usually, there is no

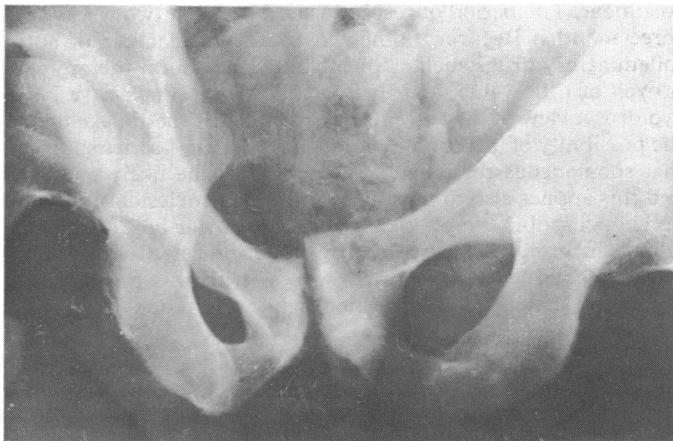


FIG. 4—Case 3.—Instability is particularly well demonstrated when the patient stands on the left leg.

history of definite injury. The only signs of note are tenderness over the symphysis and ischio-pubic ramus and stretching of the hip adductors. Good quality radiographs may show the abnormalities at the symphysis described above. Positive findings are not usually obtained until four weeks after the onset of symptoms, and, as observed in the footballers, these radiological signs tend to persist after the symptoms have subsided. Radiological examination should include the sacro-iliac joints, which are affected not infrequently.

Control Series

THE STUDY

For this part of the investigation we used the pelvic radiographs of 156 young men between 17 and 18 years of age.

They had formed part of a previous investigation of the abnormality designated the tilt deformity of the femoral head.¹⁶ The subjects had been volunteers who, with parental consent, had had a single pelvic radiograph exposed in a standard position. Each of them had completed a questionnaire about his athletic activities between the ages of 10 and 13 and 14 and 18 years. The athletic category for each of these periods was assessed subjectively by reference to their sporting achievements: category A a highly athletic individual; B moderate ability; and C without significant athletic achievement. The designation AA therefore refers to a highly athletic individual before and after the age of 14 and, for example, CA to an individual who had shown no promise before the age of 14 but had been distinguished from 14 to 18.

We inspected the radiographs carefully, with special reference to the symphysis pubis, for the abnormalities found in the professional footballers. Nevertheless, special films to demonstrate instability were not available, and it seemed to us inadvisable to trace all these young men and subject them to further pelvic radiographs. Nevertheless, we did note instability in some, even though the films were taken with the subject supine. Abnormalities were accepted only when they were recognized independently by each of us, and furthermore we accepted minimal changes as being abnormal. The results were then correlated with the previously established athletic categories.

RESULTS

Of the 156 radiographs inspected, 70 had abnormalities at the pubic symphysis. The higher the athletic category, the greater the incidence of abnormalities: 53% were found in category AA, compared with 9% in category CC. Thus a definite correlation probably exists between the level of athletic activity and abnormalities around the pubic symphysis.

Management

Experience with the footballers and other athletes indicates that rest from physical activity is the most reliable method of

treatment. The period of rest has varied between two weeks and three months. Recovery is helped by the regular use of anti-inflammatory drugs such as phenylbutazone. Local therapy has proved of little value, and hydrocortisone injections have been avoided in view of the extreme difficulty sometimes in excluding the possibility of infection. A study of the group 1 series suggests that spontaneous remission of symptoms is the likely outcome and this applies also to most of the more severe lesions in group 2. Though pubic symphysis was stabilized by arthrodesis in one athlete in group 2 (case 3), it must be indicated only rarely. Lettin¹⁹ however, has reported success with this operation in footballers having this condition with restoration of normal activity.

Discussion

A survey of one professional football club has indicated some correlation between a history of pain in the groin or lower abdomen and the radiological abnormalities around the pubic symphysis; the correlation was 58% in group 1 and 100% in group 2 athletes, all of whom had symptoms and were referred specially for this reason. Clearly excessive physical activity as undertaken by professional footballers is likely to result in abnormalities developing at the pubic symphysis. Infection such as non-specific urethritis is an incidental finding and plays no part in the aetiology.

Hence the evidence strongly favours repeated minor trauma as the most important aetiological factor leading to a lesion which may have a similar radiological appearance to that of osteitis pubis. The term osteitis suggests an inflammatory cause, but if infection were a primary aetiological factor we might have seen some evidence of organized periosteal reaction on the upper margins of the superior pubic rami, but this was not the case.

Instability of the symphysis is an indication that the lesion is more serious. Since the group 2 individuals were referred because of symptoms, the expected incidence of instability would be higher in this group and this was the case; 63% in group 2 compared with 34% in group 1. Instability at the symphysis may lead to a secondary chronic stress lesion in one or both

sacro-iliac joints (cases 1 and 4). A sacro-iliac lesion may occur in association with the other abnormalities of the pubic symphysis and in the absence of instability: of the 37 athletes studied, 20 had a chronic stress lesion in the iliac component of a sacro-iliac joint—and 13 of these also had instability at the symphysis. We conclude therefore that the sacro-iliac lesion may be a primary condition, with a similar aetiology to that of the traumatic lesion of the symphysis pubis, or secondary to an instability at the symphysis. Undoubtedly instability of the sacro-iliac joint resulting from major trauma may lead to a secondary stress reaction at the symphysis pubis (case 3), and this confirms the findings of Coventry and Tapper.¹³

The changes that we observed at the gracilis origin could result from chronic stress at the muscle attachment. Though this view is supported by the fact that the gracilis muscle is an internal rotator of the leg, and is consequently greatly employed in controlling a football, we have no proof for our theory.

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General Practice Observed

Study of Dyspepsia in a General Practice as Assessed by Endoscopy and Radiology

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Summary

Fifty consecutive patients presenting in a general practice with dyspepsia were studied. Each patient was referred for a combined barium-meal examination and

cholecystogram, followed by fibroptic endoscopy of the oesophagus, stomach, and duodenum. Thirty patients had a specific lesion of the upper digestive tract and a further four had gall-bladder disease; of these, 16 required surgical treatment. Endoscopy in the remaining 16 patients showed nine with mucosal abnormalities, leaving only seven patients to be classified as normal.

The advantage of having an endoscopy service to supplement radiological investigation of dyspepsia is shown.

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Introduction

There are few previous studies of dyspepsia based on general practice. Weir and Backett¹ studied a population of 1,050 males