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FACTORS AFFECTING THE PROGNOSIS OF MENISCECTOMY IN SOCCER PLAYERS

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ABSTRACT

Meniscectomy is a frequent surgical procedure in young soccer players but the results are unpredictable. A long-term survey was carried out to assess certain fundamental features and to establish the predictive factors which affect the prognosis after meniscectomy.

INTRODUCTION

More than a third of all meniscal injuries occur in sport of which soccer accounts for 69% (Smillie, 1970). However, the results of this procedure can vary enormously due to many factors such as an associated ligamentous injury, the frequency of attacks and the nature of the tear (Muckle, 1982). To study these and other problems a long-term survey (7-12 years) was carried out in 91 soccer players (50 being professional) who had undergone meniscectomy (either partial or complete).

THE STUDY

A computer analysis used an 80 column proforma for each annual player's assessment during the period 1970-81. Pre-operative data compared the history of injury with the clinical, radiological and operative findings. The post-operative survey paid attention to the results of meniscectomy as determined by clinical, radiological and arthroscopic examinations; this section included a special training and playing assessment. The radiological assessment of knee osteoarthritis was based on Fairbank's criteria (1948) namely joint space narrowing, subchondral sclerosis and osteophytosis with both supine and weight bearing views.

RESULTS

The average age of the players at surgery was 23.9 years. The right knee was involved more frequently than the left (1.7:1) and the medial meniscus was removed twice as often as the lateral. Sixteen per cent of all professional players had two or more meniscectomies.

All 91 players developed radiological changes of knee osteoarthritis within 10 years of meniscectomy. Significantly, during the first three years after surgery professional players had accelerated changes both clinically and radiologically (Fig. 1).

Locking of the knee is a common complaint in soccer players with meniscal tears, it occurred in 75% of cases with 10% of players having four or more attacks. The majority (70%) had a second attack within 3 months but less than half of the players (43%) had surgery within 6 months of the original episode. However, frequent locking of the knee carried a poor prognosis and was significantly correlated ($p < 0.001$) with an increased incidence of osteoarthritis later. In the absence of knee problems a delay in surgery did not seem to affect the prognosis.

When the meniscal injury was dramatic as denoted by severe pain, swelling and instability there was a highly significant association with hyaline cartilage damage in the knee at surgery; and the presence of a persistent effusion before meniscectomy was significantly correlated with a refractory swelling after surgery and by a delayed return to training and later poor match agility ($p < 0.001$).

OPERATIVE FINDINGS

The most common lesion was a bucket-handle or oblique tear (71%) often with an extension into the anterior and posterior horns giving the multiple tears of a "footballer's meniscus". These tears did not closely correlate with the rapid development of knee osteoarthritis

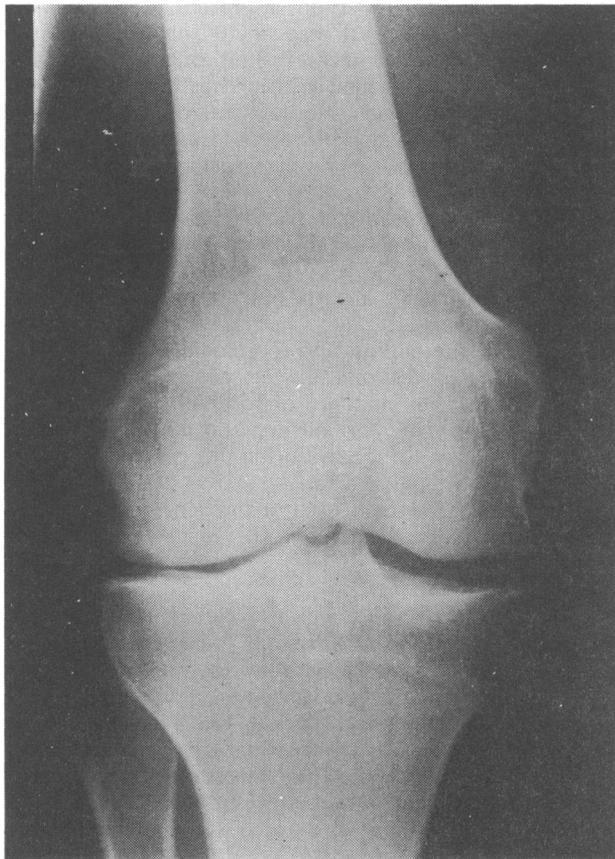


Fig. 1: Osteoarthrosis of the knee in a professional footballer aged 24 who had a lateral meniscectomy 6 years before.

compared to the peripheral detachment. The reason for this fact is that peripheral tears had to be treated by a total meniscectomy whereas bucket-handle tears could be treated by a partial meniscectomy which carried a much better prognosis. Also the location of a peripheral tear indicated an associated coronary or collateral ligament injury and all ligamentous injuries carried a poor long-term prognosis (Fig. 2).

An important observation was that repeated knee injuries after meniscectomy led to a bad eventual outcome and hastened the onset of knee osteoarthrosis especially if a persistent effusion became manifest.

OSTEOARTHROSIS

Surprisingly, the radiological changes of knee osteoarthrosis could be present for many years (5-7 years) without there being much discomfort at rest although exercise-induced pain was found within 4-6 years of meniscectomy. Lack of agility and poor playing ability

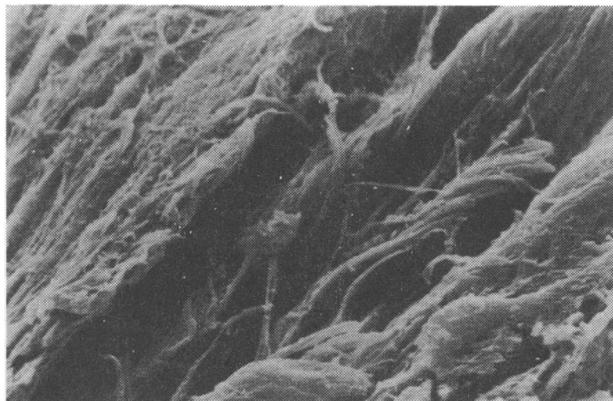


Fig. 2: Electron microscopy study of a tear in the collagen fibres of the body of the medial meniscus (x 2000).

occurred as the radiological changes progressed. The onset of osteoarthrosis was significantly sooner after lateral than after medial meniscectomy and also more severe; and sooner after total compared with partial removal. Thus total meniscectomy of the lateral compartment in the dominant knee carried the worst prognosis (Fig. 3).



Fig. 3: Arthroscopy at 1 year post-total meniscectomy in a professional player. There are numerous small hyaline cartilage fragments in a viscous fluid (obscuring the femoral condyle and tibial plateau).

DISCUSSION

Professional football players offer an ideal group for clinical study because they are uniformly healthy, rigorously supervised and regularly suffer knee injuries. However, a previous survey did not report an increased incidence of joint osteoarthrosis in soccer players (Adams, 1979). The single and most salient feature of this study was that all players suffered some degree of

TABLE I

Factors influencing the outcome after meniscectomy.**Predictive Parameters: Poor Prognosis**

Frequent locking and effusion before surgery
 Marked pain and swelling with instability (original episode)
 Associated ligamentous injury
 Lateral meniscus
 Dominant knee
 Peripheral tear
 Total meniscectomy
 Repeated knee trauma after surgery
 Further meniscectomy
 Chronic knee effusion (post-surgery)

knee osteoarthritis after meniscectomy, with professional players having a more rapid onset. Thus meniscectomy is not a benign procedure (Fairbank, 1948; Tapper and Hoover, 1969) and the contention of early removal (Huckell, 1965; Gear, 1967) can rarely be justified without sound ancillary investigations of which arthroscopy (Dandy and Jackson, 1975) is the most accurate. There is no doubt that a torn meniscus can cause an erosive area chiefly on the femoral condyles and that this area represents attrition against the meniscal fragment (Helfet, 1959). Under these circumstances early arthroscopy and partial meniscectomy by either an open or closed technique offers a speedy cure. However, many meniscal injuries such as multiple tears or a peripheral detachment can only be treated by total excision and under these circumstances the player must guard against a return to training too soon after surgery,

especially if a small effusion is present. Late swelling and pain require careful assessment including arthroscopic examinations, if necessary, although such investigations are seldom needed within the first three years after surgery. The coach should warn players to maintain excellent quadriceps power before and after operation and to avoid training on hard surfaces.

In the fifty professional soccer players joint space narrowing, subchondral sclerosis and osteophytes developed within 3-5 years after meniscectomy compared to 4-7 years in forty-one amateur players. Ten years after surgery all players had some degree of osteoarthritis with the clinical and radiological changes most marked in the professional players who often had been relegated to a lower standard of football because of the poor agility especially on turning and jumping. Fifteen per cent had given up soccer during this period. Thus the presence of radiological changes in the knee should be a factor in the assessment of transfer fees, most players performance falling in the 7-10 year interval after meniscectomy.

In conclusion it can be clearly stated that the knee requires its menisci and although it can function adequately for several years without them wear and tear changes will supervene eventually (Muckle, 1981). Recent studies (Minns and Muckle, 1982) have indicated that part of the meniscal function is to prevent shear forces within the knee. Thus all suspected meniscal injuries demand close and careful scrutiny, especially in sportsmen and women who place enormous demands on their joints.

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