EXETER UNIVERSITY – SPORTS MEDICINE SYMPOSIUM
CHAIRMAN'S OPENING REMARKS

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It is perhaps not inappropriate that this Symposium should be held at St. Luke’s Hall in the University of Exeter because fourteen years ago St. Luke’s College as it then was started an optional course in Sports medicine for their third year physical education students, and was one of the first Colleges in this country to do so. Since then it has been much concerned with all aspects of Sports medicine both on the purely medical side, and on the research side.

AN APPRECIATION OF THE INJURED KNEE

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In 1866 Palmar and Stevens wrote a bawdy play named ‘The Crock’. This was read by both the establishment and members of its audiences. The authors defended their promotion in the Press with the comment that “legs are stable articles and will remain so as long as the world shall last”.

This truisim is relevant to sport and sporting injuries, with increasing leisure time being accompanied by increasing sport participation. Within the existing games organisation there are more competitions being initiated, for instance the introduction of the John Player Cup in rugby, the League Cup in association, the Rank Xerox Trophy in hockey and the Prudential Cup in cricket.

This paper is concerned with soccer and rugby injuries and will concentrate on three important conditions in injury of the knee.
INCIDENCE

Association Football

There is a high incidence of knee injury in soccer. In one first division club over the past four seasons there had been 90 direct trauma injuries, but during the past year there had been no fractures, and during that period there had only been four meniscectomies, one being a revision procedure. There appears to be a higher incidence of damage to the ankle and knee and this is probably reflected in the nature of the game.

Rugby Football Over the Past Ten Years

In the ten years up to 1977 there were 150 injuries of all sorts at Twickenham. Walkden (personal communication) states there has been a high increase in the number of injuries since 1965. Only 3.6% of these injuries were fractures. Of the total number of injuries 50% were in the upper limb, head and neck, ie from the shoulder and arm upwards, which is not surprising.

At the rugby festival in September, 1979, at Wembley 14 teams competed. Each played 15 a side rugby for ten minutes each way. At the end of nine hours of rugby three doctors had collectively dealt with 33 injuries. Very largely these were above the shoulders or arms, being cuts on the head, bruised hands!, sore necks and shoulders and one head injury requiring hospitalisation. There was only one knee injury and this was not serious. There were two back injuries, also not serious.

Adams, 1973, analysed 1,000 cases of injuries in rugby and reported a high incidence of fractures at 15.7%. This is higher than the author’s experience. There were 27.5% ligamentous injuries and 11.3% were injuries to the knee, that is 40% of all ligament injuries were to the knee.

In one first class North London rugby club there are eight teams, therefore, there are 120 person/injury exposures per week for approximately a 32 week season. This is potentially 500 patients per month with an average of 1 in 500 fractures, or one a month. Ligamentous injuries to the knee are more common but, nevertheless, over the past six seasons only 11 have required operative repair. Minor sprains average 1.5 per week.

A discussion of combination injuries and minor derangements will not be considered.

The greater frequency of ligamentous injuries to the knee in rugby relative to association reflects the body collision which occurs in rugby whilst soccer is primarily a non-contact sport.

EXAMINATION AND DIAGNOSIS

Ideally a medical practitioner with a knowledge of trauma and its early management should be at every sports venue. The prime consideration is treatment of the injury with earliest return to normal function.

History

Irrespective of whether a doctor was able or unable to see the prompting incident, he must obtain as accurate an history as possible, this may well be a vital factor in diagnosis. He must ask the patient what happened in detail, and get him to demonstrate the mechanism of injury if possible.

Examination

The attendant should inspect the outline of the knee, note any deformity, swelling or break in the skin, see if there has been any alteration to its colour due to impact or any marking of the skin, then get the patient to point to any particularly painful place if he can locate it accurately.

He should try to assess the range of movement gently and carefully, palpate round the knee and remove the patient if need be to a less dramatic environment for examination — a dressing room.

Movement may be limited by pain or mechanical block. If this is so, unless recovery takes place at once, an ice pack should be put on the injured knee, and a firm bandage before referring to hospital. The vast majority of injuries are simple knocks and merely require reassurance.

The patient should always be reassessed on the next day if in doubt. Many knee problems will declare themselves within 24 hours where there is doubt. Although there is evidence that bone healing cannot be accelerated by supplementary aids, there is no doubt that basic Ice, Compression and Elevation is good basic primary care in a knee injury with nothing more than a minor twist. Instability may show itself after the primary soft tissue trauma has faded and may be assessed.

A suspected haemarthrosis must always be aspirated and is normally an indication of more serious damage to a knee. This must be assessed in hospital. If the haematoma is aspirated by the attending practitioner he should use aseptic precautions. A hot, boggy swelling is a clue to diagnosis.

MENISCAL INJURIES

Such injuries are not infrequent in both rugby and association football. A clear history of a twisting incident is usually given and swelling, often quite considerable, may appear later, sometimes one or two hours after a game. Occasionally the player continues with the game.
certain circumstances where the tear communicates with the synovium and the capsule. This may be essential in combination injuries.

**Fig. 1 Superior surface of meniscus: severe tear.**

The knee may be locked.

**Fig. 2 Inferior surface of meniscus: severe tear.**

On inspection there is usually pain along the line of the knee joint on pressure, most acute at the site of the lesion. Pain will be felt on the medial joint line in a damaged medial meniscus on external rotation of the tibia on the femur. An exception to this is the posterior horn of the lateral meniscus in which pain is felt on the back of the knee on external rotation of the tibia on the femur.

Arthroscopy may confirm the diagnosis and also avoid exploration in the doubtful case where the meniscus is intact. Even should meniscectomy be necessary it is now possible to remove a number of these lesions by a double puncture technique using an arthroscope (Dandy, 1979 — personal communication).

Where the meniscus is torn peripherally but remains stable on viewing through the arthroscope, it is my belief that this appearance may be left to heal spontaneously, particularly if it is only a few millimetres in length. Further, more extensive tears may be repaired in

**Fig. 3 Osteochondritis Dissecans**

It should always be remembered that locking may be caused by a loose body as well as by a torn meniscus and also that severe temporary spasm may result from pain on compression of an injured patella, bearing on the femur.

**INFRAFELLAR SYNDROME**

Less dramatic injuries are seen in the line of the infrapatellar ligament from the lower pole of the patella to the tibial tubercle. Long jumpers and high jumpers particularly, sometimes get pain below the knee accompanied by swelling on either side of the lower pole of the patella and the ligament. Pain on patello-femoral compression may mask instability of the patella or an avulsion lesion on the lower pole of the patella similar to tennis elbow. These conditions may appear to resemble an indefinite meniscal lesion at the anterior horn but the centralisation of discomfort and the absence of other confirmatory signs should indicate where the problem lies.

Pain on climbing up stairs is indicative of lesions at the lower pole of the patella or infrapatellar ligament: on descending at the upper pole of the patella. Radiographs frequently show an elongated patella with a long inferior pointed pole, a significant proportion of which is non-articular.
Fig. 4 The knee in extension: hatched area shows position of patella in flexion.

Fig. 5 Schematic diagram of the knee showing long inferior pointed pole of the patella.

Fig. 6. Elongated lower pole of patella.

Fig. 7. Osgood-Schlatter's disease in a young adolescent.

Most cases of Osgood Schlatter's disease recover spontaneously, rarely needing a plaster of Paris cylinder. Some patients may show no evidence of this condition until after skeletal maturity when pain on exertion may become intolerable. Twelve examples of this condition have now been collected. Examination with the image intensifier shows sequestrated ossicles in the infrapatellar tendon at the lower end which will move on flexion/extension of the knee.

Fig. 8 Ossicle shown with knee in extension.

Illustrated is a severe example where a pseudoarthrosis had formed. Such painful ossicles require excision.
LIGAMENT INJURIES

These have been mentioned earlier. The key to the diagnosis of these injuries is the mechanism of injury. Once again the history is of importance.

That there is severe damage to the knee will be self-evident from the history and the demeanour of the injured. Careful examination may well elicit abnormal movement at the knee joint. In spite of a confusing multiplicity of movements ascribed to the knee, there are basic ways in which the knee articulation may show abnormal movement.

A. Angulation

In valgus or varus at the knee. Either of these movements is demonstrated with the knee in slight flexion, crudely indicating a medial or lateral ligament instability respectively.

B. Shift

Abnormal forward or backward shift of the tibia on the femur is indicative of anterior cruciate and posterior cruciate ligament instability respectively.

C. Rotation

This is the most complicated of all but usually indicates a combination injury; the knee may rotate abnormally both externally and internally and may pivot around the centre of either femoral condyle. The severity of rotation and instability demonstrates increasing involvement with collateral cruciate ligaments and also the capsule of the knee.

Until recently the menisci were not thought to be a significant feature in maintaining stability but new work suggests that these are load bearing structures and, there-
fore, must act in constraining abnormal knee movement. The cruciates are always taut in the normal range of knee flexion/extension, due to the alteration in radius of the femoral articulation and also the fan-shaped attachments at both the upper and lower ends of each cruciate ligament.

The relative movements of the injured knee must always be compared with those on the non-target limb.

Incapacitating injuries will require stabilisation, usually operative, but it is remarkable how sportsmen and non-competitors can adapt to minor ligamentous and sometimes major ligamentous strains.

In general the management of the knee remains as with any other clinical lesion, consequent upon the recognition of the lesion. An index of suspicion and persistence will lead to correct diagnosis and correct treatment, and the doctor must not be put off by the knowledge that a particular patient is known to be a "moaner". That should not prejudice thorough investigation as this time the patient may be right!

Fig. 13 (a) Repair of posterior cruciate upper attachment with screw. A. P. view.

Fig. 15 The "moaner" was right! Rugby injury to patella.

Fig. 13 (b) Repair of posterior cruciate upper attachment with screw. Lateral view.
Fig. 14 (a) Repair of posterior cruciate lower attachment.  
(b) Both patients are playing rugby again.

REFERENCES


An appreciation of the injured knee.

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doi: 10.1136/bjsm.14.1.6-a

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