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TRAUMATIC OSTEOCHONDRAL LESIONS OF THE TALUS

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INTRODUCTION

The ankle is a common site of sports injuries. Extreme violent inversion of the ankle associated with sports accidents, subjects it to traumas of varying degrees. Fractures of the medial and lateral malleoli, and tears of the ligaments are easily recognisable. When these are excluded on the X-ray examination, the diagnosis of ankle sprain is usually made and fast spontaneous recovery is expected. However, some of these patients continue to suffer from pain, limitation of movement and long periods of sport incapacity. These cases of un-resolving "ankle sprain" were related to post traumatic osteochondral lesions of the talus (Smith et al, 1977).

The purpose of this paper is to present three cases of osteochondral lesions of the talus. The early diagnosis and treatment of this type of injury is discussed.

ILLUSTRATIVE CASE HISTORIES

Case No. 1:

A 19 year old short distance runner injured her right

ankle after stumbling and falling during a race. The severe inversion and plantar flexion resulted in a painful swollen ankle. On X-ray examination which included antero-posterior lateral and inversion views, no fractures or tears of ligaments were noted. The diagnosis of "ankle sprain" was made and the ankle was treated with rest and elastic bandage for two weeks. In lieu of an expected fast recovery she continued to complain of pain in the ankle and limited running capacity. Five months after that injury re-evaluation was done. On the antero-posterior X-ray view a medial osteochondral talar lesion was seen (Fig. 1A). The lateral X-ray view appeared normal (Fig. 1B), but the lesion was well demonstrated on the lateral tomogram (Fig. 2). Surgical excision of the osteochondral lesion resulted in complete recovery and unlimited sports activity within six months.

Case No. 2:

A 25 year old basketball player injured his left ankle while trying to take a rebound. After clinical and radiographic evaluation the diagnosis of a simple ankle sprain was made. After a short period of conservative treatment by rest and physiotherapy he developed a prolonged spell of limited functional capacity. Re-evaluation two months post injury demonstrated a lateral "wafer" shaped osteochondral lesion of the talar dome (Fig. 3). Excision of that fragment and drilling of its bed resulted in complete recovery. Six months post operatively he resumed full sport activity.

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Fig. 1. X-rays of Case No. 1: Antero-posterior (A) and lateral (B) views of the injured ankle. A cup shaped medial osteochondral talar lesion is demonstrated. The loose body is undisplaced (Type III).

Fig. 2. Lateral ankle tomogram of Case No. 1. The undisplaced loose fragment is demonstrated in the central area of the talar dome.

Case No. 3:

A 17 year old dancer subjected her ankle to severe inversion injury, which was diagnosed and treated as a

Fig. 3. X-rays of Case No. 2. Antero-posterior view demonstrates a "wafer" shaped lateral lesion (Type III).

simple ankle sprain. Due to continued unexpected pain and recurrent swelling of the injured ankle a re-evaluation was done. On the antero-posterior X-ray views a lateral "wafer" shaped lesion was demonstrated (Fig. 4). The extent of the damage to the subchondral area was better seen on the antero-posterior tomogram (Fig. 5). Excision of the damaged area resulted in full clinical, radiological and functional recovery within eight months.

DISCUSSION

Osteochondral lesions of the talar dome are relatively common injuries (Alexander and Lictman, 1980). They have been referred to as osteochondritis dissecans, intra articular fractures of the talus, flake fracture, osteochondral fracture or dome fracture of the talus.

Spontaneous bone necrosis was considered as its major cause, when it was first described by Kappis

Fig. 4. X-rays of Case No. 3. On the antero-posterior view a lateral "wafer" shaped damage with underlying lytic lesion is demonstrated.

(1922). Since that time the importance of trauma as an aetiological factor was stressed and appreciated (Mukherjee and Young, 1973; Rendu, 1932; Roden et al, 1953; Yvars, 1976). It was not before the clinical and experimental observation of Berndt and Harty (1959) that the aetiology, classification and natural history of the lesion were fully understood.

Inversion injury to the ankle is the common traumatic mechanism. Strong inversion with the ankle dorsiflexed produces a lesion of the lateral part of the talar dome, while strong inversion with the ankle plantar flexed and lateral rotation of the tibia produces a lesion of the medial surface of the talus.

The lateral lesions affect the anterior part of the dome, they are shallow "wafer" shaped lesions, giving the appearance of having been produced by a shearing force. Conversely, the medial lesions of the talus which occupy the more posterior part of the dome, are deeper and cup shaped.

While all lateral lesions appear to be associated with trauma, medial ones, although most of them are traumatic, may be atraumatic in origin (Davidson et al, 1967; Marks, 1952; Roden et al, 1953; Yvars, 1976). Berndt and Harty (1959) divided the dome lesions into four different stages.

Fig. 5. Antero-posterior tomogram of Case No. 3. The extent of the lateral lytic damage is demonstrated.

- Stage I — a small area of compression of the subchondral bone.
- Stage II — a partially detached osteochondral fragment.
- Stage III — a completely detached osteochondral fragment remaining in the crater.
- Stage IV — a displaced osteochondral fragment.

The clinical picture of these talar lesions is usually dominated by damage to the lateral ligaments, which is an integral part of the inversion injury. The presentation is often identical to that of moderate or severe ankle sprain, without specific physical findings, which suggest bone damage. A painful swollen ankle is usually noted.

Stage I injuries improve temporarily without any treatment only to deteriorate later. Lesions of a more severe degree present persistent symptoms of pain and instability of the ankle (Alexander and Lictman, 1980; Mukherjee and Young, 1973). When untreated the chondral fracture becomes a loose fragment which destroys the articular cartilage and originates in early degenerative arthritis (Smith et al, 1977). The risk of fragment detachment is greater in the shallow "wafer" shaped lateral lesions, than in the deep, cup shaped, medial ones (Canale and Belding, 1980). The diagnosis of talar dome lesion is usually delayed (Smith et al, 1977). Due to non specific early clinical features and unremarkable radiological findings, the lesion is usually missed. Good X-ray technique and appropriate exposures are mandatory for early diagnosis (Alexander

and Lictman, 1980). In addition to the routine antero-posterior and lateral ankle views a mortise view, with the tibia in internal rotation is necessary in order to uncover the lateral border of the talus. Stress views in inversion are also important, since osteochondral lesions associated with ligamentous laxity have a poor prognosis (Davis, 1970).

Occasionally it is necessary to take mortise views in various degrees of plantar flexion and dorsiflexion for better exposure of the lesion. When plain lateral X-rays are inadequate to demonstrate the antero-posterior orientation of the lesion, a lateral tomogram is required, principally to plan the surgical approach. Lately, arthroscopy of the ankle joint was stated to be of diagnostic value (Mital and Karlin, 1980). The treatment of talar dome lesions is mainly surgical. Conservative treatment has a high failure rate, while excision of the osteochondral fragment, followed by eight to twelve weeks

of non-weight bearing range of motion exercise, has 78.6% rate of success (Canale and Belding, 1980). Conservative treatment trial, by cast immobilisation for twelve weeks, is claimed to have good results in some of the patients, especially those with Stage I and Stage II lesions. Postponing the operation does not affect the ultimate results of surgery adversely, but it does increase the sport incapacity period. This is unacceptable for an active sportsman, especially in view of the uniformly good long term results of surgical treatment (Alexander and Lictman, 1980; Berndt and Harty, 1959; Canale and Belding, 1980). Equally, such an increase in incapacity time is unacceptable for everyone.

The typical radiographic manifestations of talar dome lesions should be recognised and looked for. Early diagnosis and appropriate treatment will improve the prognosis of this type of injury.

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