CASE REPORT

CHRONIC LATERAL LIGAMENT INSTABILITY OF THE ANKLE — BILATERAL REPAIR USING FLEXIBLE CARBON FIBRE IN AN INTERNATIONAL SPORTSMAN

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INTRODUCTION

The ankle is a common site of sport injuries. Inversion strains at the ankle joint are a frequent occurrence producing stress on the lateral ligament. The resulting pathology may vary from a slight tear of the ligament to complete disruption of both the talo-fibular and calcaneo-fibular ligaments. Acute ruptures of the lateral ligament should be treated by primary suture (Anderson, K. J. and Le Cocq, J. F., 1954; Ruth, C. J., 1961). Complete acute disruption of the lateral ligament however is uncommon in clinical practice and the more common situation is one of repeated strains to the lateral ligament resulting in chronic instability.

Flexible carbon fibre induces ligament formation (Jenkins, D. H. R. et al, 1977) and it is the purpose of this case report to illustrate the successful use of carbon fibre in an international sportsman with bilateral chronic lateral ligament instability of the ankle.

CASE REPORT

A 26 year old international rugby union forward sustained several inversion injuries to both ankles over several seasons. This resulted in chronic lateral ligament instability of both ankles. The ankles gave way on minimal activity and he was unable to play rugby. On examination there was clinical instability of both lateral ankle ligaments and this was confirmed by stress radiographs of both ankles (Fig. 1 and Fig. 2). Conservative treatment over six months had been unsuccessful and operative repair was performed using flexible carbon fibre.

The lateral ligaments were approached by a curved incision. There was fibrosis in the region of the damaged lateral ligaments and reinforcement of the ligament was performed using flexible carbon fibre. The fibre was introduced as a single strand running through a drill hole in the lateral malleolus, crossed over distal to the malleolus and then through drill holes in the talus and calcaneum. Fixation of the fibre was achieved by tying a knot in the carbon fibre medially with the foot in forced eversion and the fibre taut. In this way, the two elements of the lateral ligament namely talo-fibular and calcaneo-fibular were re-inforced in both ankles. The skin incisions were closed with nylon sutures, prophylactic antibiotics were administered and below knee plaster of Paris casts were applied.

Fig. 1: Antero-posterior radiographs of both ankles.

Fig. 2: Stress views of both ankles showing tilting of the talus due to lateral ligament instability.

Six weeks post-operatively the plasters were removed and the patient was allowed to mobilise. He began light training four months post-operatively and successfully returned to international rugby union five months post-operatively.

Follow up stress radiographs (Fig. 3) taken seven months after operation show stable ankles and illustrate the drill holes. Further review nine months after operation showed that both ankles were stable, and he was still playing first class rugby without any difficulty.

Fig. 3: Stress views of both ankles showing stable ankles after flexible carbon fibre repair of lateral ligaments.

DISCUSSION

Chronic lateral ligament instability of the ankle should initially be treated conservatively. An intensive pro-

gramme of exercises to strengthen the muscles of the foot and leg is indicated (Freeman et al, 1965). Many sportsmen treated in this way return to normal activities. Surgery is indicated if conservative treatment fails and if stress radiographs show that there is significant tilting of the talus in the ankle mortice. Our patient fulfilled these criteria and operative reconstruction was performed.

The accepted surgical methods of reconstructing the lateral ligaments are the Watson-Jones (1955) and Evans (1953) techniques both of which use the tendon of peroneus brevis which is divided just proximal to the lateral malleolus and then re-routed through drill holes in the lateral malleolus and talus. More recently carbon fibre has been developed as a ligament prosthesis and its use in clinical situations has been reported (Jenkins, D. H. R. and McKibbin, B., 1980).

The flexible carbon fibre acts initially as a simple prosthesis but it induces new ligamentous material to form within and throughout the carbon matrix. Thus after several months the patient relies not so much on the original implant for joint stability but on the newly induced ligament which has formed in response to the carbon implant. No tendons have been divided as when peroneus brevis is used and the peroneal tendon sheath is not opened. The flexible carbon fibre reconstructs the lateral ankle ligament with minimal damage to the normal structures and the reported case indicates the success which can be achieved by this technique in a top class sportsman with bilateral ankle instability.

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