Management of scaphoid fractures in professional Australian Footballers


Objective
Review management techniques and present cases of scaphoid fractures in professional Australian footballers.

Introduction
The AFL is the premier competition of Australia's most popular sport. There are 16 teams in the competition who play 22 weekly matches in the regular season. Each game is played continuously for 4 x 20 minute quarters and involves running, sprinting, jumping, tackling, ball handling and kicking for all players. Fractures of the scaphoid are the most common fractures of carpal bones and mainly result from sudden stress upon the dorsiflexed wrist, such as a fall on the outstretched hand (Cooney, 1986).

The scaphoid is most often fractured at the waist (70%), followed by the proximal third (20%), with distal third fractures least common (10%). Patients present with wrist pain and swelling. Examination reveals tenderness over the dorsal aspect of wrist particularly in the anatomic snuffbox and reduced range of wrist motion compared to the uninjured side (Gaebler, 1996). The fracture may be difficult to diagnose on initial X-ray due to the shape and position of the scaphoid in the corpus. If no fracture is seen, traditional management dictates the wrist be immobilized for 10-14 days until resolution of any fracture occurs and renders it radiologically visible (Tiel-van Buul, 1997). Non-operative management of scaphoid fractures (using immobilization in a thumb spica cast for 6-12 weeks) is widely used and high union rates have been reported. It is difficult to assess healing both clinically and radiologically (Dias, 1990).

In circumstances in which a player needs to return to the field as quickly as possible, or in which there is fracture displacement, acute internal fixation is often performed. This is best achieved with a Herbert screw (Herbert, 1984).

In Australian football, the use of a playing cast is not possible due to the demands of the game.

Methods
The AFL has prospectively surveyed all injuries which occurred to players since 1992 (Orchard, 1998). Case histories were retrospectively collected regarding all scaphoid fractures in the Australian Football League between 1992 and 1998, by request to the medical officer of each club. Nine teams had at least one player with a history of fracture and all responded.

Results
Over the study period, there were 15 new fractures in 13 players on AFL lists. This represents an incidence of new injury of 1 per 314 players seasons. Two players had separately occurring fractures in either wrist (cases 7a,b & 9a,b).

One other fracture occurred in a listed player but outside football playing or training (15°). There was a further fracture (for which records were available) that occurred in a lower grade player in AFL competition but who was not on an AFL team list at the time of injury (16°). One AFL player had a documented fibrous non-union from a fracture sustained before he entered the AFL that he was able to play with for many years with minimal symptoms (14°).

Two players had re-fractures after returning to play. Both were treated by revision fixation and bone grafting. Both then fractured again and were treated with further surgery (one corticochondral graft and one scaphoid reconstruction with vascularized pedicle graft from distal radius). Both finally returned without further complications. Overall, eight of 18 cases required bone graft procedures for non-union or re-fracture, of which 8 were successful.

The AFL is the premier competition of Australia's most popular sport. There are 16 teams in the competition who play 22 weekly matches in the regular season. Only eight of the eighteen injuries were correctly diagnosed within a week of injury. Six players, whose injuries were not diagnosed acutely, elected to continue playing once the diagnosis was made. Of these six players, three required end of season internal fixation and bone grafting due to symptoms of persistent non-union.

The six injuries treated initially with internal fixation returned between 4-12 weeks, while the seven injuries treated initially with plaster returned between 4-22 weeks.

Discussion
Ideally, a professional footballer with a scaphoid fracture should refrain from sport until the fracture has united. Acute internal fixation with a Herbert screw is in most situations the treatment most likely to result in union in the shortest possible time. Irrespective of the method of treatment, return to play before 8-10 weeks is likely to result in a high rate of non-union or re-fractures.

In this study six players were able to keep playing with ununited fractures. Delayed reconstruction at the end of the season was successful and enabled them to continue playing in subsequent seasons. This delay was not planned but in fact occurred fortuitously, as wrist symptoms were mild (not interfering with continued participation) and therefore not fully investigated initially. Scaphoid reconstruction procedures are not always successful, hence scaphoid fracture can become a career-ending injury in professional footballers (Gibbs, 1993). Despite this series covering 16 teams for 7 seasons, there was not a large enough number of cases to give an accurate estimate of the likelihood of this becoming a career-ending injury.

In highly paid players with critical performance demands, it is an option in some cases to delay scaphoid reconstruction until the end of the season. Earlier reconstruction is advised if the fracture is significantly displaced, significantly painful or there is associated carpal instability. Adequate post-operative rest from play (at least 6-8 weeks) is an important aspect of surgical treatment and if this will not be observed then surgical treatment is likely to fail.

References