CASE REPORT

Avascular necrosis of the scaphoid in children treated by splint immobilisation

A REPORT OF TWO CASES

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doi:10.1302/0301-620X.93B6.26670 $2.00

Fracture of the scaphoid is rare in children, accounting for 3% of all hand and wrist fractures, and they usually unite with conservative treatment. Accordingly, cases of nonunion are also rare and Anz et al found only one report of three cases of avascular necrosis (AVN) in the literature. In that report, MRI was used in diagnosis and the three adolescents were treated with vascularised radial bone graft and internal fixation.

We now report two cases of AVN of the scaphoid in children treated with simple splint immobilisation.

Case reports

Case 1. An otherwise healthy 11-year-old boy presented with pain in his right wrist, having fallen on his outstretched hand four months earlier. On examination, there was tenderness in the anatomical snuffbox. Radiographs showed a fracture of the scaphoid and slight sclerosis in the proximal fragment (Fig. 1a). An MRI scan showed AVN (Fig. 1b). The wrist was immobilised in a below-the-elbow splint with the wrist in slight extension for three weeks. He was then lost to follow-up. Six years later, he was asymptomatic with normal wrist movements and the fracture had united (Fig. 1c).

Case 2. A 13-year-old boy presented with pain in his left wrist. He had experienced sudden pain while kickboxing approximately five months earlier. There was tenderness in the anatomical snuffbox and axial compression of the first ray provoked pain over the scaphoid. Radiographs showed nonunion of a fracture of scaphoid with sclerosis of the proximal fragment (Fig. 2a). MRI confirmed the diagnosis of AVN (Fig. 2b). The wrist was immobilised in a below-the-elbow splint with the wrist in slight extension for six weeks, whereupon active use of the wrist was encouraged. At the latest follow-up 18 months after the injury, he was asymptomatic with normal wrist movements and the fracture had united (Fig. 2c).

Discussion

AVN of the scaphoid is very rare in children. Review of the literature reveals only four cases. There is, however, no consensus on the criteria for diagnosing AVN following a scaphoid fracture. Some authors assess the vascularity by MRI, while others use direct observation of punctuate bleeding intra-operatively. However, Gunal et al concluded that the viability of scaphoid fragments should be assessed by combining MRI findings with the intra-operative observation of bleeding and that the diagnosis of AVN could only be made when both parameters indicated avascularity. For this reason, there could be doubt in the diagnosis in all six cases, including ours, because no such correlation was made.

In a previous report, Iqbal et al treated their patient conservatively but they failed to report a final outcome. Waters and Stewart treated their three patients by vascularised bone grafting and internal fixation, obtaining union and good function. In the present study we treated both patients by simple immobilisation and good function and union was achieved. This is probably due to the superior healing potential of children over adults.
In conclusion, our cases demonstrate the possibility of treating nonunion of scaphoid fractures in children conservatively, even when MRI suggests AVN. Therefore, contrary to adults, operative treatment should be used only when conservative treatment fails.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

References