CASE REPORT

A trifocal diaphyseal humerus fracture


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Introduction

Diaphyseal fractures of the humerus are common and occur in a variety of patterns, but complex type C fractures are not as prevalent, and to our knowledge a trifocal diaphyseal humerus fracture had only been reported before as a statistic. We report a high energy trifocal fracture pattern of the humerus with radiographic images and its treatment.

Case report

A 25-year-old man sustained a direct load to the left arm after falling from three stories. At the time of admission to the emergency department, the left arm showed obvious deformity without any apparent neurovascular injury. There was also local pain around the cervical spine. Initial radiographs showed a trifocal left humerus shaft fracture, 12-C2.3 type of the AO/ASIF classification, a posterior apophysis C7 fracture, and a non-displaced fracture of the left scapula (Fig. 1). At first we used a coaptation splint that accomplished acceptable alignment. A radiographic control showed fracture displacement after 3 days and surgery with intramedullary nailing was programmed. Preoperative planning included a CT scan and a contralateral

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Figure 1 Initial anterior–posterior injury radiograph depicting the left humerus AO 12-C2.3 type fracture.
humerus radiograph for measurements. We used an unreamed locked proximal humeral nail (UHN 29 cm/6.7 mm, Synthes) with the standard antegrade technique (Fig. 2). A functional thermoplastic brace was added for support and the patient was discharged from the hospital on the ninth postoperative day with almost all upper arm movement recovered. Two months after surgery radiographic controls showed almost complete fracture healing and at 12 months the patient was working again with full range of motion in his shoulder and elbow joints (Fig. 3).

Discussion

Humerus shaft fractures can be treated with either conservative or surgical management. Essentially all diaphyseal fractures can be treated conservatively achieving good results, but some types, angulated >15°, pathological, “floating elbow”, bilateral, segmentary, or with neurovascular lesion, are best treated surgically.1 This injury, a complex multisegmental shaft fracture, was treated effectively with rigid unreamed intramedullary nailing without any complications. Intramedullary nailing is useful in segmental or comminuted, and multiple loci pathological humeral shaft fractures.5 Recent studies still do not clarify, whether intramedullary nailing or plate fixation is more appropriate, and standard protocols for treatment of humeral shaft fractures are not available.2,3 So considering this individual case, we felt this type of fracture was a clear indication for intramedullary nailing, with less soft tissue exposure and less periosteal stripping, providing early recovery and good radiological and clinical results.

Figure 2 Anterior–posterior and lateral postoperative radiographs demonstrating restoration of length, alignment, and rotation.
References


Figure 3  Anterior–posterior and lateral radiographs 12 months after surgery demonstrating a healed fracture.