CASE REPORT

Use of a strut graft in treatment of a complicated proximal humeral fracture

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Introduction

We report a case of proximal humeral fracture treated with an inlay strut graft and osteosynthesis with a plate following a failed intramedullary nail.

Case history

A 64-year-old man sustained a comminuted proximal humeral fracture following a fall (Fig. 1). His past medical history included alcohol abuse and chronic liver disease.

The fracture was initially treated conservatively. There was further displacement however, causing pressure on overlying skin and an intramedullary nail was inserted under general anaesthetic. This nail cut out proximally and a further operative intervention was required. The nail was removed as it was holding the fracture apart and causing pressure on the overlying skin. As the patient’s bone was osteoporotic and the fracture comminuted, we elected to use a contoured freeze-dried strut allograft as an intramedullary device. The nail was removed and the freeze-dried strut allograft was inserted through the fracture site wedging it in the medullary canal proximally and distally. A plate was used to stabilize this (Fig. 2). Post-operatively the patient was allowed passive and pendular exercises for 6 weeks, then building to full active movements. Follow up at 4 months revealed the fracture had clinically and radiologically united with satisfactory function of 100° abduction, 120° flexion and 40° internal and external rotation.

Discussion

Strut allografts have been used in the treatment of peri-prosthetic fractures[5,2] and also treatment of  

Figure 1  Comminuted proximal humeral fracture.
distal femoral non-union with internal fixation.\textsuperscript{1}

There have been case reports previously describing treatment of ununited fractures of the humerus in osteopenic patients with blade plate osteosynthesis\textsuperscript{3} and humeral non-unions with an inlay bone plate or allograft augmentation.\textsuperscript{4}

To our knowledge the use of inlay strut graft in a comminuted proximal humeral fracture has not been described in the literature. Many proximal humeral fractures heal with conservative treatment but when presented with a complication such as pressure on overlying skin operative treatment would be necessary. The salvage procedure was successful. We achieved stable fixation in osteoporotic bone with a comminuted fracture using an inlay strut graft as an augment to onlay plate osteosynthesis. This resulted in excellent screw purchase through the graft. We feel therefore that this method of fixation should be considered as an option in such difficult problem fractures.

References

1. Chandler HP, Danylchuk K. Treatment of distal femoral fractures proximal to a total knee replacement or distal to the stem of a total hip replacement in osteopenic patients. Read at the Annual Meeting of the American Academy of Orthopaedic Surgeons, February 22–26 1996; Atlanta, GA.