**Background:** Five percent of the proximal humerus fractures will need surgical fixation. The two commonly used methods are open reduction internal fixation and closed intramedullary nailing. The fixation failure seems to remain a problem. The authors have tried to answer how these implants fail and whether the implants have a role in failure regardless of the fracture personality.

**Null hypothesis:** Failure of fracture fixation in proximal humerus is independent of the implant used.

**Methodology:** In vitro testing of proximal humerus fixation devices undertaken in a low density bone model. A fracture-line was created at the surgical neck of humerus in all samples and fixed with five fixation devices; three plating and two nailing devices. The samples were subjected to failure under different biomechanical stresses.

**Results:** Failure was achieved in all models. The failure pattern broadly fell in three different categories. In torque testing the two conventional plates Cloverleaf and T-plate behaved similarly failing by screws pulling out from both the proximal and distal fragment with a twisted plate. The PHILOS plate failed by avulsion of a wedge just distal to the fracture site with screws remaining embedded in the bone. Both the nailing systems, Polaris and European humeral nail, failed by a spiral fracture starting at the distal locking screw.

In compression the Cloverleaf and T-plate failed by plate bending, backing out of the screw in the proximal fragment followed by fracture of the distal fragment. The PHILOS failed by plate bending and fracture of the distal fragment distal to the last locking screws. Both the nails, the proximal fragment screws failed.

**Conclusion:** Implant properties play a role in proximal humerus fracture fixation failure. The fractures with proximal comminution and the ones with extension to shaft fragment are biomechanically suited to be fixed by PHILOS and IM nails, respectively. It is important that the potential point of failure (proximal or distal fragment) should be considered in the pre-operative planning phase to avoid the likelihood of fixation failure.

doi: 10.1016/j.injury.2006.06.031

**Hook plate fixation for Neer’s type II fracture of the lateral end of the clavicle: Does it work?**

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Treatment of Neer’s type II fractures of the lateral end of the clavicle is difficult and controversial. We present the results of 22 patients who underwent clavicular hook plate fixation for these fractures between 1997 and 2004. The average age was 42 years (range 16—78 years). The average follow up was 39 months (range 12—72). One patient developed a non-union and another a stress fracture. The fixation failed in two cases: one plate unhooked from beneath the acromion and the screws of another plate pulled off the clavicle. Twenty-one patients achieved union and nineteen patients were satisfied with their outcome. We recommend the clavicular hook plate fixation for fractures of the lateral end of the clavicle as an alternative management method.

doi: 10.1016/j.injury.2006.06.032

**Hook plate in clavicular pathology in a DGH**

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**Aim:** Aim of this study is to review the results of fixation of lateral end clavicle fractures and acromioclavicular joint dislocations using acromioclavicular (AC) hook plate.

**Patients and methods:** Fourteen patients were treated with acromioclavicular hook plate fixation. Indications for surgery were symptomatic non-union or displaced fractures of the lateral end of the clavicle in five and type 3 or above acromioclavicular joint dislocations in nine. All patients underwent the procedure through a shoulder strap incision along the Langer line. Patients with ACJ dislocations underwent coracoclavicular ligament reconstruction in addition to AC hook plate fixation.

Postoperatively arm was supported in a shoulder sling and overhead shoulder movements were restricted until the hook plate was removed. All patients were followed up clinically and radiologically. Functional assessment was conducted using the DASH scores.

**Results:** There were 12 male and 2 female patients with a mean age of 34 years (range 20—52 years). Mean follow up was 7.2 months (range 5—18 months). Coracoclavicular ligaments reconstructed using Weaver Dun procedure in nine patients. Two patients had impingement on abduction which resolved after removal of hook plate. One patient had fracture of the clavicle medial to the plate during post op rehabilitation which was trea-