KEY PROCEDURES

PERCUTANEOUS SCREW FIXATION OF LATERAL
CONDYLAR HUMERAL FRACTURES

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Abstract

Lateral condylar humeral fractures are the second most common elbow injury in children and commonly occur between the ages of 5 and 10 years. There are several systems for classification of this fracture, including those of Milch (fracture line location) and Jakob et al. (displacement). Although nonoperative management is indicated for nondisplaced or minimally displaced fractures (<2 mm), operative fixation is indicated for greater displacement. Traditionally, open reduction and internal fixation has been the method used to ensure adequate reduction. However, closed reduction and internal fixation techniques for displaced fractures have been receiving increasing attention, with recent studies showing promising results. Several constructs (multiple smooth pins, a single lag screw, and threaded pins) for closed reduction and internal fixation have been described. Smooth-pin fixation has the advantage of a small diameter and easy removal, whereas threaded pins combine a small diameter with compressive properties. Compression of these small, articular fractures is important, and the optimal mode of fixation for maintaining fracture reduction is debated. Fixation with a partially threaded lag screw works by achieving metaphyseal compression, preventing loss of reduction of the distal fragment. In our experience, the compressive abilities of smooth and threaded pins are limited in the soft osteocartilaginous lateral condyle. Partially threaded lag screw fixation is indicated for pediatric patients with a substantially displaced (Jakob type-II or III) lateral condylar fracture. The major steps of the procedure are (1) preoperative planning with anteroposterior, lateral, and oblique radiographs; (2) supine positioning of the patient with the shoulder in abduction; (3) closed reduction with manual pressure; (4) guide-pin insertion through the lateral column of the distal part of the humerus; and (5) exchange of the guide pin with a lag screw. Postoperatively, the elbow is immobilized with a bivalved long-arm fiberglass cast or a posterior splint. The cast or splint is removed after interval healing is demonstrated on radiographs, and the lag screw is removed after complete fracture union is demonstrated. Complications are rare, and patients are expected to have decreased infection and open-reduction rates compared those treated with pin fixation.

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