

A Novel Surgical Technique For Lateral Humeral Condylar Fractures In Children: Tension Band Fixation With An Absorbable Suture

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INTRODUCTION:

Lateral humeral condylar fractures are the second most frequent elbow fractures in children. These displaced fractures require surgical interventions to prevent nonunion.¹ We report on a novel surgical technique for these fractures using tension band fixation with two removable Kirschner wires and an absorbable suture.

METHODS:

From 2008 to 2016, 17 patients (12 boys and 5 girls), with lateral humeral condylar fractures displaced more than 2 mm, treated with open reduction and tension band fixation. Once anatomical reduction was achieved, tension band fixation was performed using two Kirschner wires (1.0-1.6 mm) and an absorbable suture (1 or 2 Vicryl, Ethicon). Kirschner wires left protruding the skin were removed 4 to 8 weeks after surgery under no anesthesia. Carrying angle and range of motion limitations were assessed, and complications were investigated. The Flynn criteria were used to assess the cosmetic and functional outcomes.

RESULTS:

The average limitation angle of elbow joint was (3.5+/-6.3) degrees, and the Carrying angle was (8.2+/-3.2) degrees. According to Flynn criteria, the cosmetic outcomes were excellent in 14 and good in 3, and the functional outcomes were excellent in 14, good in 1 and fair in 2. Nonunion and avascular necrosis were not observed.

DISCUSSIONS:

Open reduction and internal fixation with Kirschner wires is a typical treatment for these displaced fractures. But, to prevent nonunion, tension band wiring with a metal cable is more preferred in Japan. In this study, we used tension band fixation with an absorbable suture. Cadaveric study have shown that tension band fixation with an absorbable suture is superior in maintenance of reduction to fixation with two Kirschner wires only.² Furthermore, subsequent reoperation is avoided by the use of an absorbable suture instead of a metal cable. Good clinical results were achieved and nonunion was not observed using our technique.

CONCLUSION:

Open reduction and tension band fixation with Kirchner wires and absorbable suture could be an effective treatment for displaced lateral humeral condylar fractures in children.

REFERENCES:

1. Tejwani N et. al. J Am Acad Orthop Surg 2011; 19: 350-358.
2. Elliott MJ et. al. J Pediatr Orthop B 2005; 14: 444-447.