

Treatment of Proximal and/or Middle One-Third Diaphyseal Humeral Fractures With a Helical Plate: One-Year Results

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Purpose: Operative treatment is a valuable option in displaced proximal and/or middle one-third diaphyseal humeral fractures. Although plate osteosynthesis is preferred to intramedullary nailing, surgery can be complicated by radial nerve palsy. A helical plate could avoid this high-impact complication. To date there is, however, a lack of published evidence in literature, although recent Asian case reports show promising results. The aim of our study is to evaluate outcomes of patients with proximal and/or middle one-third diaphyseal humeral fractures treated with a helical plate. In particular, healing rates and radial nerve palsies.

Methods: We retrospectively reviewed 16 patients who were treated with open reduction and internal fixation with a helical plate consecutively from October 2016 until August 2018 at AZ Groeninge, Kortrijk. A deltopectoral approach was used in combination with a distal anterolateral incision, whether or not in continuity. A self-molded long PHILOS plate was used in the first 9 patients, while in our last 7 patients the ALPS plate (Zimmer) was used. Standard radiographs were obtained pre- and postoperatively. We retrospectively searched for complications (eg, radial nerve palsy, infection, and/or loosening). In autumn 2019, 12 patients were reassessed. Patients' general health status was evaluated using the EQ-5D-5L (EuroQol 5-dimensions 5-level) score. Constant-Murley scores and DASH (Disabilities of the Arm, Shoulder and Hand) scores were used for evaluating shoulder function and disability measures consecutively.

Results: All humeral fractures consolidated at 3 months. There were no radial nerve palsies due to surgery. One plate was removed after one year due to a late infection. With a minimum follow up of 1 year, the mean DASH score was 22 (range, 0-93) and the mean Constant-Murley score was 68 (range, 33-95). The DASH score was inversely proportional with the Constant-Murley score and patient's general health status.

Conclusion: A helical plate avoids neurological complications with similar healing rates and good to excellent shoulder function at 1-year follow-up in the treatment for proximal and/or middle one-third diaphyseal humeral fractures.