Minimally Invasive Approach Versus Open Reduction in Humeral Diaphyseal Fractures Treated with Conventional Plates

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Purpose: The gold standard of surgical treatment of humeral diaphyseal fractures is open reduction and internal fixation (ORIF) with dynamic compression plate (DCP). However, the minimally invasive approach (MIPO) with DCP could have advantages with lower rates of radial injury, nonunion, and infection.

Methods: Clinical and surgical variables were collected. Postoperative pain was estimated with the visual analog scale (VAS), for function the UCLA (University of California Los Angeles) shoulder score and MEPS (Mayo Performance Elbow Score) scales were used. Bone consolidation was determined by the absence of pain and by bone bridges in 3 of 4 cortices in plain radiographs.

Results: 28 subjects were included, with mean age 44.1 years, pseudarthrosis, and radial injury of 10.7%. Postoperative pain slowed ($P = 0.04$). Comparative measurements of function in MIPO versus ORIF at 3 and 6 months with the UCLA and MEPS scales were ($P = 0.002$, $P = 0.2$, and $P < 0.01$, $P = 0.16$, respectively. Correlation between surgical time and postoperative pain was not significant (Spearman rho $P = 0.5$).

Conclusions: The most frequent humeral fracture pattern was the transverse type. The MIPO technique has a lower prevalence of pseudoarthrosis and radial injury. There were no differences between both techniques when comparing bone consolidation time. The MIPO technique achieved less surgical time, bleeding, and postoperative pain. The UCLA scale at 3 months showed differences in favor of the MIPO group. At 6 months there was no difference in the scales. The short-term MIPO technique is superior to ORIF, but at 6 months it offers similar results.