

Management of Clavicle Fractures in Patients with Thoracic Trauma*Geoffrey S. Marecek, MD¹; David P. Barei, MD²; Julie Agel, MA, ATC²;**Thomas K. Varghese, MD, MA, FACS²; Daphne M. Beingsner, MD²;**¹University of Southern California, Los Angeles, California, USA;**²Harborview Medical Center, Seattle, Washington, USA*

Purpose: Clavicle fractures are associated with significant thoracic trauma. Fracture reduction and stabilization may improve proximal chest wall morphology and comfort and be secondary indicators for surgical intervention. We hypothesized that operative fixation of clavicle fractures may be beneficial for patients with thoracic chest trauma.

Methods: We reviewed a prospectively recorded trauma database for all patients with clavicle fractures (OTA 05, 06, 07) from April 2005 to June 2010. We identified 1074 patients with clavicle fractures. Minors and those with missing data were excluded. We recorded age, chest Abbreviated Injury Score (AIS), length of ICU stay, and other demographic information. ICU admission was made at the discretion of the general trauma team and the orthopaedic trauma staff in consultation with the ICU team made the decision for surgery. The primary indication for clavicular open reduction and internal fixation (ORIF) was the magnitude of fracture displacement, and fellowship-trained orthopaedic trauma surgeons performed all surgeries. The operative tactic and implant selection were made at the discretion of the treating surgeon. Postoperatively patients were placed into a sling and, when possible, patients began range of motion exercises on postoperative day 1.

Results: Mean chest AIS was 3.56 ± 0.71 (mean \pm standard deviation). 763 patients had a chest AIS ≥ 2 . Of these, 75 patients had operative treatment of their clavicle fracture (9.8%). 49 of these patients required an ICU stay (65.3%) with a mean length of stay (LOS) of 4.5 days (range, 1-24). Of the 688 patients who had nonoperative treatment of their clavicle fracture, 493 patients required an ICU stay (72%) with a mean LOS of 7.8 days (range, 1-98). ICU stay was significantly shorter in patients with operatively treated fractures ($P < 0.001$). We further stratified those patients who had minimum ICU stay of 2 days. Of these 359 patients, 340 were treated nonoperatively during the initial hospital course with a mean ICU stay of 10.7 days. 13 patients had operative fixation of the clavicle while in the ICU with a mean LOS of 8.8 days. This difference was significant ($P < 0.001$).

Conclusion: Polytraumatized patients with clavicle fractures commonly have significant thoracic trauma. Operative stabilization of the fractured clavicle is associated with shorter ICU stays. Further research is needed to better identify those patients who may benefit from operative fixation of the clavicle.