

# Periarticular fracture-dislocations of the elbow &ndash; results of a standardized treatment algorithm

Christopher Loftis, Cole Joseph Ohnoutka, Kyle Schweser<sup>1</sup>, Brett D Crist<sup>2</sup>, Gregory J. Della Rocca<sup>3</sup>

<sup>1</sup>University of Missouri, <sup>2</sup>Univ of Missouri School of Med, <sup>3</sup>University of Missouri Orthopaedics

**INTRODUCTION:** Periarticular fracture-dislocations of the elbow can result in substantial disability of upper extremity function. Historically, these injuries have been poorly understood. We implemented a standardized protocol for treatment of five main injury types. We performed a review of our medium-term outcomes.

**METHODS:** We performed a retrospective review of elbow fracture-dislocations treated at our Level I trauma center by one of seven orthopaedic trauma fellowship-trained surgeons between September 1, 2005, and June 30, 2020. We screened all adult patients who received elbow fracture surgery to exclude those with isolated radial head, olecranon, and Monteggia injuries not associated with elbow instability. We performed a medical record and radiographic abstraction to document procedural details, reoperation rates, and final motion outcomes.

**RESULTS:** Of 951 patients initially identified, 203 had periarticular fracture-dislocations based upon initial review of radiographs (82 terrible triad, 28 transolecranon, 65 Monteggia-variant, 22 varus posteromedial, 6 distal humerus fracture-dislocations). Follow-up averaged 11.43 months. At final follow up, average visual analog pain score was 1.90 (median 0). Mean elbow flexion-extension arcs were restored to a mean of between 97 and 112 degrees (see Table 1). Mean forearm pronation/supination arcs were restored to a mean of between 135 and 155 degrees (see Table 1). Seventeen patients (of 203) received surgical treatment of elbow stiffness and 44 patients received other unplanned procedures on the ipsilateral elbow (including 18 for implant removal and six for treatment of infection).

## DISCUSSION AND CONCLUSION:

Implementation of a standardized protocol for treatment of periarticular fracture-dislocations of the elbow successfully restores elbow and forearm motion with few revision interventions required. Our study represents an analysis of the largest single series of elbow fracture-dislocations to date.

Table 1. Range of motion measurements, in degrees, at final follow up (based upon elbow injury type). Extension and flexion are numbers of degrees away from fully straight (zero degrees), pronation and supination are numbers of degrees away from neutral forearm rotation (zero degrees).

Injury type		Extension	Flexion	Pronation	Supination
<b>Terrible Triad</b>	Mean	17	128	77	71
<b>n=82</b>	Median	15	132	80	80
<b>Transolecranon</b>	Mean	22	120	79	76
<b>n=28</b>	Median	18	130	80	80
<b>Monteggia variant</b>	Mean	22	122	67	68
<b>n=65</b>	Median	19	129	80	79
<b>Varus posteromedial</b>	Mean	16	128	79	78
<b>n=22</b>	Median	15	130	80	80
<b>Humeral variants</b>	Mean	15	112	73	67
<b>n=6</b>	Median	16	114	80	80