Does Time to Surgery Affect Final Range of Shoulder Motion following Proximal Humerus Fracture Fixation?

Carolyn Herbosa, Jack Christopher Adams¹, Sanjit R Konda², Abhishek Ganta³, Nirmal C Tejwani⁴, Philipp Leucht, Kenneth A Egol²

¹NYU Langone Orthopedic Hospital, ²NYU Langone Medical Center, ³NYU Hospital For Joint Diseases, ⁴NYU LANGONE HEALTH

INTRODUCTION: The purpose of this study is to compare the quality and clinical outcomes of patients who underwent open reduction internal fixation for a proximal humerus fracture within 5 days of injury to those who did not to see if the timing of surgery had any effect.

METHODS: This IRB-approved study evaluated patients who sustained a proximal humerus fracture treated with plate and screw fixation (ORIF) between January, 2004 and October, 2022 and had time from injury to surgery documented. Patients were grouped based on the time to surgery (TTS) – Less than 5 Days vs. More than 5 Days. TTS was also evaluated as a continuous variable. Univariable and multivariable analysis compared patient demographics, injury/surgical characteristics, postoperative complications, and clinical outcomes to determine effect of TTS. Clinical outcomes included range of motion (ROM) and Disabilities of the Arm, Shoulder, and Hand (DASH) score at least 1 year following the date of injury. Standard statistical tests were used (p<0.05 considered significant).

RESULTS: A total of 175 patients were analyzed: 74 Less than 5 Days (L5) vs. 101 More than 5 Days (M5). The cohorts were similar in age, sex, race, BMI, and CCI. Both cohorts had, based on the Neer classification, similar fracture patterns (p=0.677). A similar number of patients had complications (16% vs. 15%, p=0.805). These post-operative complications included AVN, infection, malunion, nonunion, screw penetration, loss of reduction, neuritis, and painful hardware which were similar for both cohorts (p=0.258). The mobility of patients at the 1 year time point was similar for all patients regardless of TTS. Mobility examined ROM which includes active (139.6 \pm 32.8 vs. 141.9 \pm 29.4, p=0.614) and passive (151.5 \pm 24.1 vs. 151.6 \pm 24.1, p=0.961) forward flexion, internal rotation (70.5 \pm 53.2 vs. 77.71 \pm 54.9, p=0.39), and external rotation (51.5 \pm 19.1 vs. 55.2 \pm 21.2, p=0.241). Finally, the DASH scores for both groups were similar (15.4 \pm 17.7 vs. 20.1 \pm 19.0, p=0.096). Multivariable analysis demonstrated that TTS is not associated with complications or functional outcomes.

DISCUSSION AND CONCLUSION: Time to surgery does not impact post-operative complications and functional outcomes of patients who underwent open reduction internal fixation for proximal humerus fractures.