Surgeon Subspecialty Training Influences the Type of Surgery for Proximal Humerus Fractures in Elderly

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INTRODUCTION: The optimal treatment of proximal humerus fractures in the elderly remains controversial. Not only is it unclear which fractures may benefit from surgical management, there is also considerable clinical equipoise regarding the appropriate type of surgical treatment. The goal of this study was to assess the influence of surgeon fellowship training on surgical treatment decisions for proximal humerus fractures in patients over 50 years old. Specifically, it was hypothesized that shoulder-trained surgeons would be more likely to recommend treatment with arthroplasty compared to trauma and dual-trained surgeons.

METHODS: Two trauma-trained, two shoulder-trained, and two dual-trained (trauma and shoulder) surgeons at a single academic institution completed a survey regarding operative treatment choice (arthroplasty versus open reduction internal fixation (ORIF)) for a series of proximal humerus fractures. Each scenario included selected clinical information (patient age and comorbidity status) and plain radiographs. The survey included 90 proximal humerus fractures, with equal numbers of 2-part, 3-part, and 4-part fractures, fracture-dislocations, and fractures with meta-diaphyseal extension.

RESULTS:

Factors associated with arthroplasty recommendation included increasing age, 3- and 4-part fractures and fracture-dislocations, presence of comorbidities, and surgeon training. Shoulder-trained surgeons recommended arthroplasty 54% of the time, while dual-trained surgeons recommended arthroplasty 44% of the time, and trauma-trained surgeons chose arthroplasty 31% of the time. On multivariate logistic regression analysis including fracture type, patient age, and comorbidities, dual-trained surgeons and trauma-trained surgeons were significantly less likely to recommended arthroplasty compared to shoulder-trained surgeons (OR 0.56, 95% CI 0.34-0.93, p=0.024, and OR 0.25, 95% CI 0.15-0.43, p<0.001). Minimal training bias was seen in the treatment of two- and three- part fractures. A strong training bias was seen in the treatment recommendations for four-part fractures, fracture-dislocations, and proximal humerus fractures with meta-diaphyseal extension. Shoulder-trained surgeons recommended arthroplasty for four-part fractures and fracture dislocations. Trauma-trained surgeons recommended ORIF for fractures with metadiaphyseal extension. Taking into account age and comorbidities, dual-trained surgeons overall recommended arthroplasty half as often as shoulder-trained surgeons, and twice as often as trauma-trained surgeons. While there was significant disagreement among surgeons for patients less than 75 years old, there was particularly high agreement for patients over 75 years old with comorbidities (arthroplasty) and for patients 50-64 years old with no comorbidities (ORIF).

DISCUSSION AND CONCLUSION: Shoulder-trained surgeons are significantly more likely to recommend arthroplasty compared to dual-trained and trauma-trained surgeons. These results have implications for the treatment that patients with proximal humerus fractures can expect to receive. Our results also provide a factor explaining the variation in the surgical treatment of proximal humerus fractures.