SCIENTIFIC ARTICLE

Differences in the Treatment of Distal Radius Fractures by Hand Fellowship Trained Surgeons: A Study of ABOS Candidate Data

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Purpose The management of distal radius fractures differs based on the nature of the fracture and the experience of the surgeon. We hypothesized that patients requiring surgical intervention would undergo different procedures when in the care of a surgeon with subspecialty training in hand surgery as compared with surgeons with no subspecialty training in hand surgery.

Methods We queried the ABOS database for case log information submitted for part II of the ABOS examination. Queries for all codes involved with distal radius fracture management were combined with associated codes for the management of median nerve neuropathy, triangular fibrocartilage complex tears, ulnar shaft, and styloid fractures. Hand fellowship trained orthopedic surgeons were compared with those completing other fellowships and non–fellowship trained orthopedic surgeons during their board collection period.

Results During the study period, 2,317 orthopedic surgeons reported treatment of 15,433 distal radius fractures. Of these surgeons, 411 had hand fellowship training. On a per surgeon basis, fellowship trained hand surgeons operatively treated more multifragment intra-articular distal radius fractures than their non-hand fellowship trained counterparts (5.3 vs 1.2). Additional procedures associated with the management of distal radius fractures were also associated with the fellowship training of the treating surgeon.

Conclusions Among orthopedic surgeons taking part II of the ABOS certifying examination, differences exist in the type, management, and reporting of distal radius fractures among surgeons with different areas of fellowship training.

Clinical relevance This study describes the association of hand surgery fellowship training on the choice of intervention for distal radius fractures and associated conditions. *(J Hand Surg Am. 2016;■(■):■–■. Copyright © 2016 by the American Society for Surgery of the Hand. All rights reserved.)*

Key words Distal radius, specialty training, population outcomes.

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FRACTURES OF THE DISTAL RADIUS are common injuries and account for roughly one-sixth of all fractures.[1] Before about 1995, most distal radius fractures (DRFs), independent of fracture type, were treated without surgery.[2] Since that time there has been considerable change in the treatment of these injuries with a trend toward increased operative management. Today, a wide variety of surgical and nonsurgical options are available for the treatment of DRFs. These include percutaneous pinning, external fixation, volar or dorsal plating, fragment-specific fixation and spanning internal fixation, or some combination of these techniques.[3–6]

The clinical practice guideline, published by the American Academy of Orthopaedic Surgeons,[7] highlights the dearth of high-quality evidence to guide the management of DRFs. Some surgeons believe that recommendations regarding treatment are based primarily on level IV evidence, fostering debate with regard to the optimal management of these fractures as well as their associated conditions. With this in mind, the American Academy of Orthopaedic Surgeons work group was unable to recommend for or against the surgical treatment of associated median nerve neuropathy (MNN) or ulnar styloid fractures. However, on the basis of a single level II study by them, Varitimidis et al did recommend repair of ligamentous injuries such as triangular fibrocartilage complex (TFCC) tears.[8]

The management of conditions associated with DRF can also affect patient outcomes; however, the treatment of these conditions is also not well defined in the current literature.[9]

A previous study by Chung et al[10] demonstrated regional differences in the treatment of DRF among Medicare beneficiaries. Further work by Chung et al[11] revealed that members of the American Society for Surgery of the Hand are more likely than nonmembers to treat DRF with internal fixation. Ward et al[12] found that increasing surgeon experience was correlated with a decrease in early complication rates in patients with DRF treated with volar plating.

The purpose of this study was to assess the management and reporting of DRF and concurrent conditions in relation to the fellowship training of ABOS candidates to determine if any association exists between fellowship training, complexity of fracture, and method of treatment. We hypothesized that surgeons within their board collection period would perform different surgical procedures in the setting of DRF and that these differences would be related to the nature of the surgeons' subspecialty training in hand surgery among other subspecialties.

MATERIALS AND METHODS

In the United States, the ABOS confers board certification on orthopedic surgeons. To be eligible to take the board examination, a surgeon must have graduated from an accredited orthopedic surgery residency program and taken a 2-part examination. Successful completion of part I, a computerized multiple-choice examination, is a prerequisite to take part II. Part II is a practice-based oral examination taken after 20 months of practice. Surgical cases performed during a predetermined 6-month period are submitted for review. The data submitted for each case include International Classification of Diseases codes, Current Procedural Terminology (CPT) codes, patient age and gender, geographical region of the surgeon's practice, surgical complications, fellowship training of the surgeon, and a brief verbal description of the procedure and indications. These cases are entered into a secure database.[13] Cases where the surgeon neither manipulates nor operates can be under-reported in this database, resulting in certain codes being underrepresented. Before submitting their cases to the ABOS, surgeons are informed that the data that they submit may be used for research purposes. The de-identified data are the subject of our study.

This database was queried for cases of DRF treated by orthopedic surgeons using the CPT codes 25600 (closed treatment of DRF or epiphyseal separation, with or without fracture of ulnar styloid, without manipulation), 25605(closed treatment of DRF or epiphyseal separation), 25606 (percutaneous skeletal fixation of DRF or epiphyseal separation), 25607 (open treatment of distal radial extra-articular fracture or epiphyseal separation, with internal fixation), 25608 (open reduction of distal radial intra-articular fracture or epiphyseal separation, with internal fixation of 2 fragments), and 25609 (open reduction of distal radial intra-articular fracture or epiphyseal separation, with internal fixation of 3 fragments) between the years 2007 and 2011. The resulting data set was then examined to ascertain if any associated procedures were performed. The following CPT codes were used: 64721 and 29848 (carpal tunnel release [CTR]), 25107 (TFCC repair), 25651 and 25652 (ulnar styloid fixation), and 25545 (open reduction and internal fixation [ORIF] of an ulnar shaft fracture). The reported complications for each case were also gathered. The cases were then grouped based on whether or not the treating surgeon reported fellowship training.

Statistical analysis

The proportion of DRFs treated with closed reduction, percutaneous fixation, or ORIF was determined.