Commentary & Perspective

Observations on the Epidemiology of Total Elbow Arthroplasties in a Statewide Database: Is It Time for a National U.S. Joint Registry?

Commentary on an article by David M. Gay, MD, et al.: "Indications and Reoperation Rates for Total Elbow Arthroplasty: An Analysis of Trends in New York State"

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The volume of total elbow arthroplasties has increased significantly over the past two decades. With the successful pain-relieving aspect of this procedure in arthritic conditions in particular, there has also been an increase in the indications, and a consequent reported rise in complications and revision surgery. The number of patients with elbow disorders tends to be an order of magnitude less than the number of those with hip and knee disorders, and the U.S. has no national database to monitor factors associated with the success and failure of these elbow surgical procedures.

In their paper, Gay et al. report on the findings of a Statewide Planning and Research Cooperative System (SPARCS) database in New York, operational since 1982. The specific procedural diagnoses were identified with ICD-9-CM (International Classification of Diseases, Ninth Revision, Clinical Modification) codes, as CPT (Current Procedural Terminology) codes were not used for inpatients.

Their findings indicate that during a ten-year period (1997 to 2006), 1155 total elbow arthroplasties were performed. A dramatic change in indications appears to have occurred, with inflammatory conditions accounting for a substantial decrease (from 48% in 1997 to 19% in 2006), and an increase of indications for use in trauma situations (from 43% in 1997 to 69% in 2006). Previously understood higher revision rates were corroborated with an observed revision rate of 6.4%, and 5.6% of patients were readmitted to the hospital within three months after surgery because of an implant-related problem. Revision rates were highest in the osteoarthritic group (14.7%) and lowest in the traumatic group (4.8%). The most startling, and maybe worrying, observation from this study was that 90% of total elbow arthroplasties were performed by surgeons without prior recorded experience with total elbow arthroplasty. This may be explained by incomplete records about surgeon experience, and it does not take into account out-of-state experience and fellowship training.

This study is far from perfect, due to no fault of the authors. The database that was used to investigate the epidemiology of total elbow arthroplasties, and associated factors, was not specifically designed to answer the questions posed. It was a planning and administrative database, which captures far less clinically useful data than required. The actual numbers generated by this study are interesting, but almost certainly inaccurate, because of the nonspecific nature of the database. Hence, when quoting and interpreting the data from this study, great caution should be exercised. The findings, however, correlate with those reported in 2010 by Day et al.[1], who used the Nationwide Inpatient Sample with U.S. Census data. Those authors concluded that the volume of upper extremity arthroplasties was increasing at a higher rate than that of lower limb arthroplasties, and there was an increasing burden of revision arthroplasty in the upper extremity.

The most valuable aspect of the study by Gay et al. is that it highlights a major problem that really ought to have been solved by 2011. The Swedish Hip Registry has been in existence since 1979[2], and has been followed by registries in other Scandinavian countries and in Canada, Hungary, England, New Zealand, and Australia. Several valuable findings have resulted from these databases, altering current practice on an evidence-based understanding. It is time for the U.S. to have a well-designed joint arthroplasty registry, with actual volumes of arthroplasty in all joints, as they are presently underestimated at one million per year. The current study uses a database that is limited for CPT codes, surgeon experience, and associated factors, but still manages to uncover valuable information regarding total elbow arthroplasty epidemiology. This should encourage the development of a national U.S. joint arthroplasty registry.

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