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CORR Insights®: What Are Risk Factors for 30-day Morbidity and Transfusion in Total Shoulder Arthroplasty? A Review of 1922 Cases

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Where Are We Now?

Shoulder arthroplasty still needs a well-defined, accurate complication profile that can be discussed with our patients. The lack of

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such a profile is mainly due to the limited amount of shoulder arthroplasties done per year relative to the numbers of hip and knee arthroplasties and the limited numbers of outcomes studies. The current study by Anthony and colleagues is a great addition to the literature and is perhaps the largest series of patients studied looking at risk factors and complications. The authors found an 8% risk of short-term morbidity, with risk of transfusion and urinary tract infections topping the list of complications. Operative time greater than 2 hours, preoperative hematocrit less than 38, preoperative steroid use, and patients with congestive heart failure increase the risk of complications. Interestingly, morbid obesity did not affect the complication profile in this cohort of patients studied.

With increased attention being focused on costs and outcomes, and with our reimbursement being closely tied to these values, we need more and better information about risk factors.

Where Do We Need To Go?

Shoulder arthroplasty has made great strides in recent years. The advent of anatomic shoulder systems, patient-specific technology, and reverse shoulder arthroplasty have greatly improved patient satisfaction and outcomes. With this improved technology, many more orthopaedists are performing shoulder replacement surgery. Therefore, it is imperative that we focus our energy on defining the actual risks of each type of shoulder replacement surgery to include primary, revision, reverse, and shoulder arthroplasty in the face of bone loss.

Some important questions to definitively answer have been examined in this paper. Who should be performing

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shoulder arthroplasty? The authors define operative time greater than 2 hours as a risk for complication. Which patients will fare best undergoing this procedure? This paper outlines risk factors associated which increases complications. Does BMI, heart disease, diabetes, smoking, steroid use lead to unacceptable morbidity? What is the risk of DVT in upper extremity surgery? Does it warrant anticoagulation and if so, how aggressive should we be? What is the actual risk of bleeding for each type of shoulder arthroplasty? At what point should we recommend measures to mitigate the risk of transfusion such as preoperative blood donation or the use of tranexamic acid? Is shoulder arthroplasty a viable candidate for outpatient surgery as seems to be the current trend in knee arthroplasty? How can we decrease the cost of this procedure while not compromising patient safety and outcomes?

How Do We Get There?

Without the benefit of databases, joint registries, and outcomes measures, those questions will remain unanswered. As more shoulder arthroplasties are performed, there will be a greater opportunity to define the risk and complication profile. In particular, we need to discern between anatomic total shoulder arthroplasty and reverse shoulder arthroplasty when looking at outcomes. In those databases that collect data by CPT code, this is not possible. A database that can scrutinize each type of shoulder replacement (hemiarthroplasty, total shoulder arthroplasty, reverse total shoulder arthroplasty, revision to total, revision to reverse) would help us define the complications associated with each procedure. The participation of all surgeons who perform shoulder arthroplasties in joint registries would provide many more data points. In

these registries, in addition to the procedure performed, it would be beneficial to collect data on the specifics of each procedure to include operative time, implant used, intraoperative blood loss, and intraoperative complications. Patient data to include preoperative comorbidities such as smoking, medical problems, BMI, preoperative hematocrit, age, sex to name a few. Surgeon data such as years in practice, fellowship training, number of shoulder arthroplasties done per year, hospital size, and location should be included. Finally, outcomes measures to evaluate objective and subjective results of the shoulder replacement should be collected. Once consistent measurements have been obtained, developing centers of excellence to address and mitigate potential risks and complications would standardize protocols, increase safety, minimize costs, and ultimately, improve outcomes.