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CORR Insights®: What Factors are Associated With Clinically Important Improvement After Shoulder Hemiarthroplasty for Cuff Tear Arthropathy?

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Where Are We Now?

In the current study, Somerson and colleagues analyze a series of patients with cuff tear arthropathy to determine preoperative and demographic variables that may be associated with better improvement following

This CORR Insights® is a commentary on the article “What Factors are Associated With Clinically Important Improvement After Shoulder Hemiarthroplasty for Cuff Tear Arthropathy?” by Somerson and colleagues available at: DOI: [10.1007/s11999-016-5037-3](https://doi.org/10.1007/s11999-016-5037-3).

The author certifies that he, or a member of his immediate family, has no funding or commercial associations (eg, consultancies, stock ownership, equity interest, patent/licensing arrangements, etc) that might pose a conflict of interest in connection with the submitted article.

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hemiarthroplasty. Patients with less external rotation, and those with isolated tears of the supra and infraspinatus tendons, were most likely to increase their Simple Shoulder Test (SST) scores by a clinically important amount. Surprisingly, a patient’s ability to raise the arm above the shoulder before surgery was not associated with an increase in the SST score in excess of the minimum clinically important difference (MCID) after surgery.

An interesting aspect of this study is not what correlates with the MCID after hemiarthroplasty, but what does not correlate. This speaks to the pervasive issue in medical research that a majority of outcomes are never formally measured or reported, leading to huge gaps in the power of data to provide intelli-

This *CORR Insights*® comment refers to the article available at DOI: [10.1007/s11999-016-5037-3](https://doi.org/10.1007/s11999-016-5037-3).

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gent guidance for surgeons and patients alike. As technology allows for more precise and extensive data collection and measurement, we need to embrace and consider ways in which we can wield the ubiquity of handheld devices and the growth of wearable technology to improve our capacity to efficiently capture and report relevant outcomes information in ways that are functionally meaningful to prospective patients. While tools like the MCID may provide a statistical method for determining clinical relevance and perhaps provide a method for comparative analysis of treatments, it does not facilitate patient-centered outcomes research nor provide a framework for patient-centered care, which is critical for surgical procedures whose outcomes have historically been satisfactory at best.

Where Do We Need To Go?

While the integrity of the subscapularis correlated with the likelihood of achieving an MCID after hemiarthroplasty,

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better preoperative function—in terms of a higher initial SST—did not correlate with this finding. This discrepancy suggests that the status of the subscapularis fails to predict compensated rotator cuff mechanics and cannot be used as a surrogate to help surgeons predict the degree of expected improvement after hemiarthroplasty. In this vein, it seems important to ask whether the MCID truly is a fair measure of a successful outcome across the spectrum of disability. In other words, do patients with inferior preoperative function have an easier time achieving an MCID than those with the best preoperative function? The SST measures elements of comfort, ROM, strength, and general function. In order to achieve 30% of the total margin for improvement, those with the lowest scores may need to only recover elements of improved comfort and range without any improvement in strength or function. Conversely, those with higher preoperative SST scores would ultimately need to recover more function to achieve the MCID. Matsen and colleagues [2] found that patients with lower preoperative SST had more improvement. Without knowing the breakdown of which elements individuals recovered, it may be difficult to provide patients with an accurate picture of what they can expect after surgery,

particularly for patients with less than horizontal elevation prior to surgery.

Additionally, preoperative loss of external rotation may be a surrogate measure for an intact subscapularis or glenohumeral arthritis. In the former setting, deficient external rotators may not overcome the intact subscapularis leading to loss of external rotation, whereas those with a preoperative subscapularis tear might have better external rotation due to the lack of an anterior tether. Because the association between ROM and tear configuration is not independently examined, we cannot make any inferences about how to interpret the finding of external rotation stiffness as an independent predictor.

The fact that so few variables were predictive of outcome highlights the difficulty of performing research on surgical procedures. If anything, the paucity of outcome predictors for this procedure may be indicative of a simple lack of correlation that we often see in other conditions for which we have no scientific explanation. For example, there is no correlation between cuff tear size and pain or weakness as there is no direct correlation between radiographic grade of arthritis and pain for many degenerative joints.

There is likely a more-complex interplay between mechanical, biological, and neuromuscular forces that we

cannot always measure or understand as it applies to our ability predict the outcome of a reconstructive procedure. Therefore, the challenge we face as surgeons is to reconcile what we intuit based on experience and current knowledge with what we can measure and statistically prove.

How Do We Get There?

The focus on patient-centered care puts the onus on providers to measure what is truly important to each patient. This way of treating patients may extend far beyond measures of functional improvement to include the burden of care on patients and stakeholders and the impact on health-related quality of life. Registries will increase the percentage of data captured for treatments for specific diseases like knee replacement for knee arthritis. At a population level, this will help us understand how effectively we manage the burden of a given disease. While initial participation may be optional, mandatory data reporting, though a seeming invasion of practitioner independence, may be the only sound method of truly measuring the effect of what we do and what factors influence this. Only through comprehensive data collection can we achieve Codman's goal of an end-result system [1].

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The achievement of this patient-centered end-result goal, however, needs to reconcile the mandate for meaningful data collection and reporting with the multitude of other reporting requirements that have complicated the provision of medical care without achieving a true quality or value benefit to the patient. The growing power of technology in smaller and smaller devices will hopefully allow us to bridge the gap between outcomes measurement, patient satisfaction, healthcare value, and the sanctity of the doctor-patient

relationship. Handheld devices hold tremendous promise in the field of patient-centered outcomes research for surgical procedures that aim to improve function and diminish pain over long periods of time. As they provide an ever more powerful medical interface, we need to establish standards by which we can effectively use handheld devices not only to track the value of the care we provide, but to make sure that the definition of this value is meaningful to patients on a personal level rather than one relegated to the esoteric domain of health economics.

References

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