Editor's Spotlight/Take 5

Editor's Spotlight/Take 5: Hospital Readmissions After Treatment of Proximal Humerus Fractures: Is Arthroplasty Safer Than Open Reduction Internal Fixation?

Seth S. Leopold MD

Unplanned readmissions to the hospital after surgery are an unfortunate part of our practices as orthopaedic surgeons. We can screen our patients carefully, perform meticulous surgery, and take thought-

ful steps to ensure that the patient has a safe place to go after discharge, but sometimes things fall apart.

Government and private payers increasingly emphasize value, and preventable readmissions detract from it. More importantly, as professionals who provide care — and, more generally, as people who care — we find that unplanned readmissions sting.

Because readmissions are uncommon, even a busy practice will not care for enough patients to allow a robust analysis of the causes of this important problem. Patient factors like infirmity and demography, hospital parameters including surgical volume, and provider choices such as what operations we use to manage particular diagnoses all will contribute to the readmission problem in confounding ways. To tease these apart requires some statistical heavy lifting, and that calls both for expertise and large sample sizes. As we

have seen in this space recently [3, 4], surveys of large databases that ask the right questions can provide a way in.

In this month's *CORR*®, a group from the University of California at San Francisco, led by Drs. Brian Feeley MD and Alan Zhang MD (Fig. 1), uses the State Inpatient Database from seven states [7] to identify factors independently associated with hospital readmission after treatment of proximal humerus fractures. While most of us may not treat patients with shoulder injuries, the take-home message from this study seems likely to be generalizable: Fully three-quarters of readmissions were caused by medical diagnoses. Surgical choices played in, but the effect size there was much smaller. In addition, and not surprisingly, several populations of patients appeared more vulnerable than others: Women, African American, patients in nursing homes, and patients cared for under the Medicaid plan all were more likely to be readmitted.

Dr. Feeley's group did some excellent work here, well worthy of our attention whether or not we treat shoulder fractures. While certainly

Note from the Editor-In-Chief: In "Editor's Spotlight," one of our editors provides brief commentary on a paper we believe is especially important and worthy of general interest. Following the explanation of our choice, we present "Take Five," in which the editor goes behind the discovery with a one-on-one interview with an author of the article featured in "Editor's Spotlight."

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This comment refers to the article available at DOI:10.1007/s11999-014-3613-y.

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other investigators have found that patients who are more ill are more likely to be readmitted to the hospital [8], and still others have identified some of the same vulnerable patient populations [2], with over 27,000 shoulder fractures in the dataset, Dr. Feeley's study certainly seems large enough to be considered definitive.

The question now — which must be on all of our minds, as it applies to all of our practices — is now that we know all this, what can we do about it? Please join me as we explore angles on this key question in the Take Five interview with Dr. Feeley and Dr. Zhang that follows.

Take Five Interview with Brian T. Feeley MD and Alan L. Zhang MD, authors of “Hospital Readmissions After Treatment of Proximal Humerus Fractures: Is Arthroplasty Safer Than Open Reduction Internal Fixation?”

Seth S. Leopold MD: *Congratulations on some excellent work. Let us try to put this in the context of the larger research program in your department, which now includes several related studies on readmission after orthopaedic surgery [5, 6]. First, how have you changed your practices there based on what you have learned?*

Brian T. Feeley MD: We have led many retrospective studies at the University of California at San Francisco

utilizing large national databases to identify some of these problems such as unplanned hospital readmissions after both elective and urgent procedures. With a combination of smaller retrospective studies, as well as these larger population-based studies, we have developed better methods to predict who may be at increased risk for a complication following major

shoulder, hip, and knee surgery. In our current study, we found that the 90-day readmission rate after fracture surgery of any type is relatively high, and there is a higher rate of surgical complications following open reduction and internal fixation (ORIF) compared to joint replacement with a hemiarthroplasty or a reverse total shoulder arthroplasty. In my practice, that

Fig. 1 Brian T. Feeley MD (left) and Alan L. Zhang MD.

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information has helped me guide the conversation with patients in terms of explaining the short-term risks and to review with them the advantages and risks of surgery given their individual situations. The power of these larger database studies, especially for common procedures such as arthroplasty, is that it offers treating surgeons the opportunity to give both broad and specific information to patients regarding their early risk for complications.

Dr. Leopold: *Vulnerable patient populations come up again and again in studies like yours — older patients, patients of limited financial means, and patients who are minorities all seem pretty consistently to be at greater risk of being readmitted. How can we do a better job caring for these vulnerable groups of patients? If you can, describe the steps that surgeons, hospitals, and payers each can take to improve care for those at risk.*

Alan L. Zhang MD: The first step to making quality improvements is identification of the problem. Now that a number of studies, including our present one, have identified older patients, patients with limited financial means, and patients who are minorities to have higher rates of hospital readmissions, we need to pay particular attention to these groups to better care for them. We believe that the main

problem facing these vulnerable groups is their access to healthcare. Improving access to care may improve their overall health profiles, with better management of preexisting medical conditions before surgery, while decreasing the risk of exacerbating a chronic condition after surgery through lack of followup. The surgeon, hospital, and payers can all play important roles in improving this trend by ensuring that these populations have proper followup and access to providers after discharge.

Dr. Leopold: *Few things are more frustrating — and scary — to patients than the need to come back into the hospital after major surgery, so studying this problem is important. However, I was surprised initially at the population of patients you chose to evaluate: Those with an acute injury. It seems like this group might have fewer “modifiable” risk factors than a more “elective” population. What can we learn from studying a group whose surgical indication is more urgent, and the timeframe for modifying risk factors more compressed?*

Dr. Zhang: This study is different from many large-database studies in that it details an acutely injured patient population, rather than patients undergoing elective surgery. As such, it is especially important. Since treating surgeons have less control in terms of

patient selection, and perhaps less time to optimize patients' baseline health conditions, surgeons need to focus on the parameters most likely to make a difference. Studies like this can help guide us towards those parameters. We chose to study this population because surgical treatment for proximal humerus fractures is controversial, with conflicting reports on the benefits of operative versus nonoperative treatment [1]. In this study, we learned that for patients whose surgical indication is more urgent, it is still crucial to optimize their medical condition both pre and postoperatively as the majority of hospital readmissions (75%) were a result of medical complications. Although there may be less time for management of risk factors before surgery, it still is important to treat their chronic conditions after surgery as these are much more likely to cause hospital readmission than a surgical complication.

Dr. Leopold: *Sometimes the things we do not find are as interesting as the things we find; I was a little surprised that you did not see an association between hospital volume and readmission. What surprised you in this dataset, and what do you make of it?*

Dr. Zhang: In our study, there was an association between hospital volume and readmission rates for treatment with ORIF, but not for hemiarthroplasty

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or reverse total shoulder arthroplasty. This finding for ORIF has also been shown for hip and knee arthroplasty, as surgeons with more experience at higher volume centers had lower readmissions. Like you, we were surprised that this trend did not appear for hemiarthroplasty and reverse total shoulder arthroplasty. This may speak to the relative importance of a patient's medical comorbidities after an acute injury on hospital readmissions. Since we saw that approximately 75% of readmissions were the result of medical complications, the potential benefit of higher surgical volume centers on lowering surgical readmissions may be less pronounced given that the large majority of readmissions were caused by medical rather than surgical complications.

Dr. Leopold: *I have left this one for last, since most readers do not treat this specific injury: You found that ORIF was associated with more readmissions than reverse total shoulder replacement and hemiarthroplasty. Given that the indications differ so substantially for each procedure, what, if anything, can be learned from that finding?*

Dr. Feeley: This finding can still offer us insight about each surgical technique. Although the indications are different between each technique, many believe that performing reverse

total shoulder arthroplasty or hemiarthroplasty naturally equates to worse clinical outcomes than ORIF. Here, we see that this is not the case, and arthroplasty may offer initial results and readmission rates on par with ORIF. In fact, in many situations, the results of nonoperative management of these fractures in lower-demand patients are equivalent to operative management, and I think the risks of postoperative complications with these procedures suggest that it may be worthwhile to consider nonoperative management in the setting of an older patient with a displaced fracture. In our practice now, in patients with more risk factors for readmission, we typically will begin with a period of nonoperative management and proceed with a reverse total shoulder arthroplasty should the patient not be able to return to an acceptable level of function following a trial of nonoperative management. This period of time typically allows for the acute medical situations to stabilize, and an equivalent outcome to be achieved.

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