Clin Orthop Relat Res (2013) 471:703–705 / DOI 10.1007/s11999-012-2714-8

Clinical Orthopaedics and Related Research®
A Publication of The Association of Bone and Joint Surgeons®

Published online: 4 December 2012

Editor's Spotlight/Take 5

Editor's Spotlight/Take 5: Prophylactic Stabilization for Bone Metastases, Myeloma, or Lymphoma: Do We Need to Protect the Entire Bone? (DOI 10.1007/s11999-012-2656-1)

Seth S. Leopold MD

It is almost axiomatic, and widely considered the standard of care, that prophylactic stabilization of a long bone include the entire bone in the setting of metastatic bone disease. Many of these patients have life expectancies measured in months, and the thought that a patient could come back after a major procedure like preventative internal fixation with a pathological fracture distal to the fixation device is a risk that many surgeons just do not want to take.

The other side of the conversation is taken up by Drs. Alvi and Damron in "Prophylactic Stabilization for Bone Metastases, Myeloma, or Lymphoma: Do We Need to Protect the Entire Bone?" (DOI 10.1007/s11999-012-2656-1). In it, they consider the cardiopulmonary complications associated with a long intramedullary fixation, and ask whether the risk of these complications outweighs the benefit of protecting a bone from distal lesions that might or might not ever appear.

This is not esoteric. The question, and its ultimate answer, lie squarely within the realm of general orthopaedics. General orthopaedic surgeons, not tumor subspecialists, care for many of these patients, and this is likely to remain the case for the foreseeable future.

In Alvi and Damron's article, only a single patient in the series (96 years of age) developed a new metastatic lesion distal to the original one, while many (12.5%) developed cardiopulmonary complications. It is possible that some of the patients who were lost to followup developed lesions, and it is true that most of the cardiopulmonary problems that arose after surgery were not severe. Even so, the low observed rate of new lesions and the relatively common complications that might have been related to more extensive fixation should be enough to (re)open this question, and, one hopes, spark interest in a multicenter study on the topic.

The answer to this intriguing, important question should be of interest to every call-taking orthopaedic surgeon.

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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Take Five with Timothy A. Damron, MD, author of "Prophylactic Stabilization for Bone Mets/ Myeloma/Lymphoma: Do We Need to Protect the Entire Bone?"

Seth S. Leopold MD: *Your reference list of articles that support protecting the entire bone is long, and you*

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indicate that doing so is standard of care. What made you want to reevaluate this standard?

Timothy A. Damron MD: Although I had been taught the principle of protecting the entire long bone during my residency and orthopaedic oncology fellowship, and had subscribed to this practice for most of my career, I have had trouble over the years finding cases to support this principle. Further, there seemed to be only anecdotal examples used to support the recommendations in the literature. In fact, the most illustrative case example I have of a distal lesion beyond proximal femoral fixation was case borrowed from one of my orthopaedic oncology colleagues. Since my clinical experience did not agree with the dogma, and since I had seen some severe complications of using long-stem intramedullary cemented stems in particular, we decided to look back more objectively at this question in my patients.

Dr. Leopold: *A skeptical reader could say that while the complications you observed might have come from full-bone stabilization, any fractures that occur in bones not fully protected definitely would come from the surgical decision to "go short." In a bone with no visible lesions distally, how do you see the risk-benefit calculation?*

Dr. Damron: Each case must be examined and treated individually, and the risk-benefit ratio would appear to be different for intramedullary rodding compared to long-stem cemented implants. Personally, I have seen very little morbidity to reaming or rodding femurs for impending and pathologic fractures. The real morbidity in my experience has been from embolic phenomena related to the use of long-stem cemented femoral components in this clinical situation, and we have written about that in the past. Hence, in my practice, I see a favorable risk-benefit ratio for routine use of intramedullary rodding; however, the risk-benefit ratio in my opinion is less favorable for the long-stem cemented component, and that is where I think we need to continue to explore the absolute indications. That being said, the low percentage of potentially embolic complications in this series did not clearly outweigh the potential benefits of "going long."

Dr. Leopold: *It is likely that you saw all of the pulmonary and other medical complications from full-length stabilization, as the patients were in your care at that time, but it is possible that some of the patients lost to followup had fractures treated elsewhere. How should the reader process this issue in the context of your study?*

Dr. Damron: This is a good point and a weakness of the study; however, we had only six patients (6.3%) of the 96 patients included in the study whose statuses were unknown. It is certainly possible that some or even all of these patients incurred disease progression, new distal lesions, and/or the need for additional revision surgeries; however, given the nature of my practice as the only orthopaedic oncologist in the referral area, and given the natural history of metastatic disease to bone, which is almost uniformly fatal, there is a higher likelihood that these patients simply died of their diseases without additional problems. Certainly, readers should consider this weakness, along with the other weaknesses inherent to retrospective studies, in interpreting our single-institution results.

Dr. Leopold: *In what settings, if any, do you no longer protect the entire bone?*

Dr. Damron: As I mentioned previously, I see little downside to protecting the entire long bone with an intramedullary rod if internal fixation is a reasonable alternative; however, when arthroplasty is needed, particularly in the femur, I have been less aggressive with putting in long-stem cemented femoral components that protect the entire femur when there are no far distal lesions in patients with cancers other than myeloma and renal carcinoma. That being said, care has to be taken in making this transition in care, and additional imaging, either CT or MRI, may be indicated to look for more subtle lesions. I still aim to

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protect the entire femur in cases of multiple myeloma, as there are frequently more distal lesions, and in the current report we observed a relatively higher incidence of progression. Similarly, renal cell lesions should be expected to progress, because they are relatively radioresistant, so care should be taken in using shorter stems when treating patients with those diagnoses. In addition, the implant must be long enough to be well beyond the most distal aspect of the most distal lesion to account for any local progression in the known lesions, so intermediate length stems certainly play a bigger role in my practice now.

Dr. Leopold: *What further research is needed for you to believe that the standard of care should change?*

Dr. Damron: Level I evidence is always the best, but in the absence of that, additional reviews at larger institutions will hopefully provide more insight to this issue. Our colleagues at M.D. Anderson have reported similar findings at the Musculoskeletal Tumor Society Meeting in Chicago and are in the process of publishing those results.