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CORR Insights®: What Are the Functional Results and Complications With Long Stem Hemiarthroplasty in Patients With Metastases to the Proximal Femur?

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Where Are We Now?

The proximal femur is the most common site for extremity pathologic fracture. Most of these are caused by metastatic disease,

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and these fractures cause pain, morbidity, and in some patients, premature death. In a survey of members of the Musculoskeletal Tumor Society (MSTS) presenting multiple clinical scenarios, a wide range was noted in the preferred treatments, including intramedullary nail fixation, proximal femur resection and reconstruction, cemented hemiarthroplasty, and open reduction internal fixation [2]. Furthermore, there was a nearly equal split regarding the use of polymethyl methacrylate around intramedullary nails.

Classic musculoskeletal oncology dogma supports the “one bone, one operation” approach. However, recent data suggest that intermediate-length or long-stem arthroplasty prostheses

may not always be necessary [5], as evidenced by low revision rates of short-cemented stems in properly selected patients with osseous metastases. Higher risks of complications associated with long-cemented stems may not always justify their routine use. Even the necessity of cement fixation of the prosthesis in metastatic disease has been questioned, despite the potential delay in bony ongrowth to a press-fit stem caused by the use of radiation therapy for these patients [3].

When there are multiple opinions regarding the best treatment for a condition, one may conclude that all procedures have similar limitations. However, in the treatment of proximal femur lesions, the general consensus is that all surgical options provide durable palliation, functional benefit, increased ambulation, and improvement in ease of care during the patient’s remaining lifetime. In an effort to help identify the best surgical approach, we must first evaluate the results of each intervention, as the data continue to lag behind enthusiasm.

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Where Do We Need To Go?

In their well-written and timely article on this highly pertinent clinical topic, Peterson and colleagues provide a quality analysis of the functional outcomes and complications associated with long-stem cemented hemiarthroplasty in the management of completed or impending pathologic fractures of the proximal femur. What may not be immediately apparent is that Eastern Cooperative Oncology Group and Karnofsky Performance Scale measures are commonly used functional scores in oncology and are often key determining factors in the decision to continue systemic therapy for patients. Maintenance or resumption of ambulatory status are vital to the oncologic patient because the inability to ambulate may preclude additional life-extending chemotherapy options. As our understanding of functional outcomes has improved, we may wonder whether we have clarified the optimal measures of patient performance following musculoskeletal oncologic procedures.

Two large retrospective reviews of highly selected cohorts of patients undergoing surgery for proximal femoral metastases suggested that endoprosthetic reconstructions may have better implant durability than operative stabilization [1, 4]. What Peterson and colleagues' evaluation of

short-term and long-term functional scores appears to add is the demonstration of an early and sustained benefit in performance status, along with a low complication rate. This combination of early return to function with limited complications and sustained pain and functional improvement is the crux of orthopaedic surgical palliation. What remains to be determined is how these functional outcomes, complications, and operative costs for long-stem cemented hemiarthroplasty compares to alternative operative strategies for proximal femoral pathologic fractures.

How Do We Get There?

The musculoskeletal oncology literature has traditionally demonstrated the dichotomous interests of improved oncologic outcomes versus functional outcomes. Over recent decades, multiple measures have been introduced or modified to help quantify the preservation of function. While the Toronto Extremity Salvage Score (TESS), Patient Reported Outcomes Measurement Information System (PROMIS), MSTs, SF-36, and EuroQol five dimensions questionnaire (EQ-5D) may look like an alphabet soup in publications and presentations, each of these validated measures provides key information regarding the patients'

functional status. Direct comparison cannot easily clarify which is best, since there remains no gold standard for measurement. A survey and analysis of the goals of our patients following palliative hip surgery may be able to determine which measures most accurately reflect the outcomes of most importance.

Ultimately, to determine the best treatment modality for these patients, we need to study a greater number of patients, in multiple institutions, using more powerful functional measures, with direct comparisons of surgical management options. We eagerly await the results of an ongoing multiinstitution randomized controlled trial that is currently accruing patients to address exactly this question. Steensma and Healey are leading a head-to-head evaluation of long-stem cemented hemiarthroplasty versus intramedullary nail fixation to determine functional status, complications, transfusion requirements, and pain control over both short- and long-term follow-up periods. If that study can be combined with an analysis of differential cost versus clinical benefit, we likely will have a clearer picture of how proximal femoral metastases should be managed in the future.

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