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CORR Insights®: Is It Possible and Safe to Perform Acetabular-preserving Resections for Malignant Neoplasms of the Periacetabular Region?

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Where Are We Now?

Periacetabular resections for malignant pelvic bone tumors are difficult and are associated with frequent complications. With the advent of computerized navigation

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software, it has become possible to consider bone-sparing resections for selected tumors based upon their anatomic location around the acetabulum. In addition to the intraoperative surgical challenges in removing the tumor, the reconstruction methods after removal of the acetabulum themselves are prone to complications and premature failures. If one could show that a less-extensive tumor resection allowed appropriate oncologic margins and control, improved function owing to the surgeon’s ability to leave the hip joint intact likely would follow. This type of surgery now is possible.

In the current study, Lam and colleagues used computerized navigation in selected patients with anatomic

locations of malignant bone tumor appropriate to perform a hip joint sparing resection using this technology. The authors found that a remaining native hip had improved postoperative function compared to a reconstructed hip joint. The study authors obtained adequate surgical margins with a hip joint sparing resection, but it is unknown whether these closer surgical margins will lead to an increased long-term recurrence rate.

Where Do We Need To Go?

In order to move this surgical approach into a mainstream treatment, the following questions must be answered with larger sample size and longer duration of followup: (1) What is the minimal remaining amount of residual bone necessary to retain hip stability? (2) What is the long-term durability of the reconstructions necessary to maintain adequate hip function? (3) Are there specific tumor histologies that

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are more amenable to this technique or are widely applicable to all tumor types? (4) What is an adequate bone margin in a malignant bone tumor to minimize recurrence, but allow ideal function?

How Do We Get There?

In order to address these questions, specific studies will be necessary. First, an anatomic/cadaveric study to determine the minimal remaining hip joint that will allow stability should be performed. Larger prospective studies conducted by one or more of the National Cancer Institute (NCI) cooperative groups will be required to determine the long-term durability of

these reconstructions, study specific tumor histologies, and determine the proper amount of margin. A central issue in achieving successful less-ablative resections is the ability to safely utilize closer surgical margins than those traditionally used. Targeted chemotherapy agents such as tyrosine kinase inhibitors and m-TOR inhibitors may also allow for increasingly smaller margins than what has previously been recommended [1].

In order to determine the widespread applicability of this surgical technique, we need to undertake a multiinstitutional study with defined resection, surgical margin, reconstruction, and long-term followup parameters. The numbers of patients with tumors amenable to this type of

analysis will be low at individual institutions. Therefore, widespread inclusion based on a treatment protocol created through one of the NCI cooperative groups is imperative to evaluate surgical and functional outcomes appropriately. In addition, surgeons need to continue to work with industry partners to improve surgical navigation technology and surgical instrumentation. The future is bright if we utilize technology and collaborative research to improve patient care.

References

1. Harwood JL, Alexander JH, Mayer-son JL, Scharschmidt TJ. Targeted chemotherapy in bone and soft-tissue sarcoma. *Orthop Clin North Am.* 2015;46:587–608.