

Abstract No. 11140

Intercalary Endoprosthetic Reconstruction for Skeletal Defects of the Femur, Tibia, and Humerus

Joseph Benevenia, MD^a, Rainer Kirchner, MD^b, Francis Patterson, MD^a, Kathleen Beebe, MD^a, Dieter C. Wirtz, MD^c, Steven Rivero, MD^a, Mark Palma, MS^a, Max J. Friedrich, MD^c

^a Department of Orthopaedic Surgery, Rutgers New Jersey Medical School, Newark, New Jersey, USA

^b Clinic for Musculoskeletal Surgery, University Medical Center Schleswig-Holstein, Campus Lübeck, Lübeck, Germany

^c Department of Orthopedics and Trauma Surgery, University Clinic of Bonn, Bonn, Germany

Background: Resection of diaphyseal bone tumors that involves surgery for local tumor control and stabilization often results in an intercalary skeletal defect. Options for reconstruction include autografts, allografts, bone transport, intercalary endoprostheses, and custom made implants.

Purpose: This study reports the functional outcomes and complications of patients treated with a modular intercalary endoprosthesis for reconstruction of skeletal defects resulting from tumor surgery.

Patients and Methods: We retrospectively reviewed the records of 47 patients with 50 implants from three musculoskeletal oncology centers treated with an intercalary endoprosthesis from 2008-2014. There were 30 men and 17 women with a mean age of 64 years. Nine patients had primary bone tumors and 38 had metastatic lesions. Forty-one patients were being operated on as an initial treatment and six for revision of a previous reconstruction.

Results: The mean follow-up period was 13 months (range 1-51 months). There were 12 non-oncologic complications. Eleven of these complications were structural failures of the prosthesis, five of which occurred between the stem and bone, and six which occurred at the clamp-rod implant interface. One patient developed a deep infection requiring removal of the implant. Additionally, one patient needed an amputation after local progression of his metastatic disease. All 12 non-oncologic complications occurred in femoral implants, which was significant when compared to the other sites ($p=0.001$). The mean MSTS score was 77%. Patients with cemented implants averaged 82% while those with cementless were 66%, a difference that was statistically significant ($p=0.005$). There was a trend in increased risk of complications in patients with cementless vs. cemented prostheses (36% vs. 19%), although this did not reach statistical significance ($p=0.26$).

Conclusion: The results of this study indicate that this modular intercalary endoprosthesis yields equivalent results to other studies. Femoral location and cementless fixation result in higher complications. Cemented intercalary modular endoprostheses may allow immediate return to weight bearing compared to other biological options.