

**FC-093****Massive intercalary allograft reconstruction after long bone tumor resection****M. Bergovec**¹, M. Smerdelj², V. Radočaj², K. Barbaric², A. Bonevski³¹ *Department of Orthopaedic Surgery, Medical University of Graz, Graz, Austria*² *Department of Orthopaedic Surgery, Clinical Hospital Centre Zagreb, Zagreb, Croatia*³ *Children's Hospital Zagreb, Zagreb, Croatia*

Introduction: Reconstruction of a bone defect after malign tumor resection in diaphysis is demanding, and complication rate of various techniques is relatively high. Aim of this study was to analyze our results of massive bone allografts reconstruction after en bloc resection of the tumours in long bones.

Methods: We reviewed all patients treated with allograft for bone tumor in the Department of Orthopaedic Surgery, Clinical Hospital Centre Zagreb, between 1999 and 2012. In total, we found 23 patients in whom diaphysis (or metadiaphysis) of the femur (n=14), humerus (n=5), and tibia (n=4) were reconstructed with bone allograft. The average age of the patients was 32 years (range: 9-70). The indication for the operation were osteosarcoma (n=7) and periosteal sarcoma (n=3), Ewing sarcoma (n=4), chondrosarcoma (n=3), giant cell tumor (n=2), singular metastasis (n=2), aneurismal bone cyst (n=1), and undifferentiated pleomorphic sarcoma (n=1).

Results: Fixation of the graft was performed with a plate (n=9), nail (n=9), plate and nail (n=3), or in with endoprosthesis-allograft composite (n=2). Overall patient survival rate at five years was 74%; all 6 patients died of primary tumor. Allograft failure, defined as removal of graft for any reason, or amputation, was observed in 6 patients (26%). Mechanical problems with a graft with the need for additional surgeries (while retaining the allograft) was observed in 9 (39%) of our patients. In total, host bone - allograft junction union (union of at least two cortices) was evident at an average 4 months (range 2 to 12 months), whilst the complete union (union of all cortices) occurred after 12 months. No significant correlation between results of treatment and other individual patients' characteristics was found in our cohort.

Conclusion: Intercalary allografts have high mechanical complication rate, but still provides a valid alternative in reconstructing tumor resections in diaphysis of the long bones.