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Reconstruction with STANMORE megaprostheses after limb salvage surgery

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Introduction: In musculoskeletal oncology modular megaprostheses are the most common method of reconstruction segmental or total bone resection in the extremities. The purpose of this study was to investigate the clinical and radiological outcome of limb salvage surgery after reconstruction with the STANMORE megaprostheses.

Methods: We retrospectively studied 47 patients (28 men, 19 women; mean age, 52.7 years; range, 15-80 years) that underwent limb salvage surgery after musculoskeletal tumor excision and reconstruction with STANMORE megaprostheses. Histological diagnoses included primary and metastatic bone tumors, as well as bone invading soft-tissue tumors. Endoprosthetic reconstruction involved distal femoral replacement (16 patients), proximal femoral replacement (13 patients), total femoral replacement (4 patients), megaprosthetic knee reconstruction (3 patients), proximal tibial replacement (3 patients), total scapular replacement and reverse constrained humeral arthroplasty (4 patients) and proximal humeral replacement (4 patients). Mean length of bone resection was 22.3cm (range, 9.5-37cm). The Enneking's system and the Toronto Extremity Salvage Score were used for the evaluation of the clinical outcome. Radiological evaluation was performed using the International Society of Limb Salvage score.

Results: At a mean follow-up of 35 months (range, 6 months-7 years) 29 patients were alive with no evidence of local or distant recurrence, while 3 patients were alive experiencing metastatic disease; 13 patients died of metastatic disease and 2 patients of causes unrelated to the primary tumor. Local recurrence was not observed in any of the patients. The mean Enneking score was 71% (range, 50-100%), while TESS score was 84% (range, 66-100%). The ISOLS score was excellent or good in 43 cases for bone remodelling, 43 cases for the interface, in 43 cases for anchorage, in 44 cases for the implant body, and in 45 cases for the articulation. Extracortical bone bridging greater than 25% was observed in 15 megaprostheses. Mechanical survival of the megaprostheses was 96% (n=45). Complications included seroma and hematoma formation (13%), skin necrosis and dehiscence at the knee wound (15%), aseptic loosening and infection (13%), quadriceps tendon rupture (2%) and peroneal nerve palsy (2%).

Conclusion: The local recurrence-free survival in this series highlights the effectiveness of limb salvage surgery. Furthermore, the 96% survival rate of the megaprostheses suggests that the STANMORE modular megaprostheses are valuable for reconstruction of bone defects after tumor resection.