

Limb Salvage Surgery with Tumor Prosthesis for the Malignant Bone Tumors Involving the Proximal Femur

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Purpose: As well as patient survival, the restoration of postoperative function such as ambulation is important in limb salvage operations for treatment of malignant bone tumors involving the proximal femur. The authors analyzed clinical outcomes of limb salvage operations using tumor prostheses for metastatic or primary malignant bone tumors in the proximal femur.

Materials and Methods: From February 2005 to January 2014, 20 cases (19 patients) with malignant bone tumor involving the proximal femur with pain or complicated pathologic fracture were treated with segmental resection and limb salvage operations with tumor prostheses. Mean age was 63.1 years (range 35-86). Fourteen patients were male and six ones were female. The mean follow-up period was 20 months (1-94 months). There were 15 cases of metastatic bone tumor, 4 cases of osteosarcoma, and 1 case of multiple myeloma. The primary tumors of the metastatic bone tumors included 4 lung cancers, 3 hepatocellular carcinomas, and 3 renal cell carcinomas. Other primary tumors were breast cancer, thyroid cancer, colon cancer, prostate cancer, and malignant spindle cell tumor, each in 1 case. Modular tumor prostheses were used in all cases; (Kotz's® Modular Tumor prosthesis (Howmedica, Rutherford, New Jersey) in 3 cases, MUTARS® proximal femur system (Implantcast, Munster, Germany) in 17 cases). Perioperative pain was assessed with Visual Analogue Scales (VAS). Postoperative functional outcome was assessed with Musculoskeletal Tumor Society (MSTS) grading system.

Results: Out of 20 cases (19 patients), 11 cases (10 patients) survived at the last follow-up. Average postoperative survival of the 9 deceased patients was 10.1 months (1-38 months). VAS score improved from pre-operative average of 8.40 (5-10) to 1.35 (0-3) after operation. Average postoperative MSTS function score was 19.65 (65.50%, 7-28). The associated complications were 2 local recurrences, 3 hematomas, 3 infections, 2 scrotal swellings, and 1 dislocation. There was no case of periprosthetic fracture or loosening.

Conclusion: Limb salvage operation with tumor prosthesis is an appropriate treatment for early pain reduction and functional restoration in malignant bone tumors in the proximal femur with pain an/or complicated pathologic fractures.

Key words: proximal femur, malignant bone tumor, limb salvage surgery, tumor prosthesis