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## Revision Endoprosthetic Megareconstruction After Tumor Prosthesis Replacement

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**Goal:** of this study is to review the Sytenko Institute experience in revisions of prosthetic reconstructions of the lower limb for bone tumors and examine. Special attention was given to the analysis of megaprosthesis-related complications.

**Methods:** incidence of complications and type of revisions were analyzed in a series of 28 Ukrainian tumor prostheses implanted from 2006 to 2014 after resection of proximal femur 2, distal femur 11, total femur 2, distal femur and proximal tibia 9, proximal tibia 4, in 12 males and 16 females.

These prostheses included 24 INMED, Kiev, Ukraine; 1 SIMEKS, Kharkiv, Ukraine and 3 biological reconstructions. All patients were periodically checked in the Institute Clinic. Data for this study was obtained from clinical charts and imaging studies were carefully. Revision surgery was performed overall in 28 cases for prosthesis-related major complications. Functional results were assessed according to the MSTS and TESS system.

**Results:** In 23 INMED prostheses causes of major revisions included infection (82%) and aseptic loosening 1 (3%), breakage of the stem for 1 SIMEKS and bone defects after failed biological reconstructions 3 (10%).

Infection was treated with removal of prosthesis, debridement and customized temporary metal-cement antibiotic loaded spacers until infection healed and new modular megaendoprosthesis were implanted in most of the cases. Non healed infections required amputation. Revisions for infection were successful in 21 pts., while 2 pts. were amputated (7%).

Aseptic loosening of the stem was treated with a new implant, preferably with uncemented stem, related with the quality of bone. Revisions for aseptic loosening achieved good durable results at an average follow-up of 6 years.

In revisions for stem breakage cemented stems were preferred. Revisions for prosthetic breakage achieved positive functional results. Following complications were not necessarily related with the revision procedures.

Statistical analysis showed reduction of the complication rate with the evolution of designs and materials. Functional results were evaluated in 20 MUTARS megaprostheses and were good or excellent in 71% of the patients. 8 patients have had infection complications and were treated by secondary revisions with spacers and following bone grafts arthrodesis.

**Conclusions:** Newer designs and materials of modular prostheses were significantly associated with a decreased incidence of major complications and therefore positively affected the implant survival. Functional results were satisfactory in most of the patients. Treatment of major complications is challenging and appropriate timing of revision surgery is a crucial issue, affecting functional outcome.

**Keywords:** prosthetic revision surgery, limb salvage, modular megaprostheses, complications, bone tumors