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Mid-term results after MUTARS prosthesis in the distal femur and proximal tibia reconstruction: a retrospective study in 97 patients

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Background

The use of the Modular Universal Tumour And Revision System (MUTARS®) is widely accepted for limb salvage and reconstruction in which Leiden University Medical Centre (LUMC) has over 15 years of experience.

Methods

A retrospective study was conducted on all cases concerning reconstruction of the distal femur and proximal tibia, focusing on failure mechanisms and contributing factors thereof in mid- to long-term follow up after primary MUTARS implantation without silver coating. A database was compiled of all 118 patients operated in the LUMC of which 97 cases more than two years after primary MUTARS implantation were included in our current study.

Results

97 cases were included, 55% male subjects with a mean age at surgery of 40 years (14-89) and median follow-up 98 months (2-204). 76 prosthesis were implanted for distal femoral defects, 21 for proximal tibial defects. Indications for implantation included primary malignancies in 72%, mainly Osteosarcoma (47%) and chondrosarcoma (9%). Other indications included failed previous oncologic reconstructions (21%), Giant Cell Tumours (5%), Metastasis (1%) and non-union after fracture treatment (1%).

68 complications in total were recorded in 62 cases leading to one or more reoperations in 52 cases. Mechanical failure was seen in 20% of all cases, 56% (9/16) of non-hydroxyapatite coated stems versus 12% (10/81) of hydroxyapatite coated stems, demonstrating a significant preventative factor in mechanical failure with p-value Infection was seen in 13% of cases, wherein a non-significant trend toward more complications was seen concerning tibial implants, p-value = 0,32 , HR 1,8 (CI 0,6-5,9). Median time to infection for both locations combined was 6,5 months (0-131).

14 reoperations were indicated for either failure of locking mechanisms or liner-wear.

Survival function analysis demonstrated a median survival of prosthesis of 70,8 months.

Conclusion.

After MUTARS endoprosthesis reconstruction of the distal femur and proximal tibia we found a mechanical complication rate of 20% and infection rate of 13%. Hydroxyapatite coating of the stem significantly prevents mechanical failure.

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