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## Functional reconstruction of total femur with megaprotheses

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**Background:** Total femur reconstruction with megaprotheses may be performed after bone tumor resections or in extensive bone loss due to multiple revisions or posttraumatic sequelae. The major concerns are infection, hip instability, due to the loss of all muscular insertions, and long term durability of the articular hinge of the knee and tibial stem, subject to high stresses due to the long lever arm. The objective of this study was a retrospective evaluation of total femur megaprosthesis, with the aim to evaluate morbidity of the procedure, implant survival and functional results.

**Methods:** From 2001, 20 patients underwent total femur resection and reconstruction with MegasystemC® (Waldemar Link®, Hamburg, Germany) modular prosthesis. There were 11 males and 9 females with an average age of 51 years (11-81). The diagnosis was a bone tumor in 15 cases (primary malignant 11, metastatic 3, benign 1), while in 5 the total femur replacement was performed after prosthetic failure (tumoral prosthesis 3, conventional hip and knee prosthesis 1, septic revision 1). In 3 patients an allograft-prosthesis composite was performed (proximal femur allograft 1, autograft 1, proximal tibia allograft 1). In one case with extensor apparatus insufficiency, total femur prosthesis with knee arthrodesis was performed.

**Results:** The average follow up was 40 months (1-126). Two major complications occurred in the same patient: wound dehiscence with superficial infection healed after a surgical debridement and hip dislocation treated with closed reduction. In 1 case a local recurrence occurred requiring a hindquarter amputation. Implant survival with surgical revision or amputation as end point was 88.7% at 5 and 10 years. The functional result of evaluable patients, according to MSTs, showed an average score of 63% (40%-86%).

**Conclusion:** Total femur reconstruction with Megasystem C showed to be an effective limb salvage procedure in extensive bone loss after tumor resection or prosthetic revision. Despite the concerns about infection risk reported in literature after this procedure, in our series the infection rate was 5%. In conclusion, total femur modular prostheses are a successful solution in selected clinical situation but additional long term studies are required to better define implants' durability.

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