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Total Femur Replacement - significant differences in varying indications?

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Background: Extensive bone loss of the femur is most commonly encountered after resection of malignant bone tumors or revision arthroplasty of the hip and knee.

Total femur replacement (TFR) is a possible method of treatment and allows to restore reasonable function, albeit associated with a high risk of significant complications.

The purpose of this study was to assess the functional outcomes and the complications associated with total femur replacement used in patients for both tumor-and revision arthroplasty.

Methods: We retrospectively reviewed 36 consecutive patients with total femur megaprotheses implanted in our clinic between 1995 and 2010. 14 patients were lost for follow-up, the remaining 22 included nine TFR for malignant bone tumors (6 osteosarcomas, 2 chondrosarcomas, 1 metastasis) and 13 TFR after failure of THA or TKA. Before TFR, all patients had previously undergone surgery on the affected limb (range, 1-8).

The mean follow-up was 53m. Scores to assess function and general medical well-being included MSTS- and SF-12 score. Complications were evaluated using Henderson's failure mode classification for tumor endoprotheses.

Results: There was a significant difference in all collected parameters between tumor patients and endoprosthetic patients. The MSTS score for all 22 Patients was $\bar{0}43,5\%$ (13/30), the MSTS score for the sub-group of nine tumor patients was $\bar{0}63,7\%$ (19/30), whereas endoprosthetic patients reached $\bar{0}29,5\%$ (9/30). Evaluation of the SF-12 showed a physical sum score for all 22 Patients of $\bar{0}32,3$ points. Tumor patients reached $\bar{0}38,3$ in this category and endoprosthetic patients $\bar{0}28,1$ points.

Four cases of hip dis-articulations, caused by periprosthetic infection, were not selected for a retrospective analysis and classified as failure. We recorded 20 major complications associated with modular megaprotheses (13 Type I/soft-tissue complications, 2 Type III/mechanical failures and 5 Type IV/infections) which resulted in 37 revision surgeries in 10 patients (3 tumor- and 7 endoprosthetic-patients).

Conclusions: Younger patients have better functional results and fewer severe complications.

Although total femur replacement allows a limb-sparing procedure in patients with extensive bone loss of the femur, this treatment remains a reserve procedure and should only be considered when the alternative is hip disarticulation.

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