Distal femoral replacement with the MML system: a single center experience with an average follow-up of 86 months

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BACKGROUND
The aim of this study was to compare the functional outcomes and complication rates after distal femoral replacement (DFR) performed with the modular Munich-Luebeck (MML) modular prosthesis (ESKA/Orthodynamics, Luebeck, Germany) in patients being treated for malignant disease or failed total knee arthroplasty.

METHODS
A retrospective review of patient charts and a functional investigation (involving Musculoskeletal Tumor Society Score [MSTS], American Knee Society Score [AKSS], Oxford Knee Score [OKS], Western Ontario and McMaster Universities Osteoarthritis Index [WOMAC], Toronto Extremity Salvage Score [TESS], the 12-Item Short-Form [SF-12] Health Survey, and a failure classification system developed by Henderson et al.) of DFR cases from 2002 to 2015 were conducted. The indications for DFR were malignant tumor resection in the femur (n = 20, group A) or failure of revision total knee arthroplasty without a history of malignant disease (n = 16, group B).

RESULTS
One-hundred and twenty-nine patients were treated during the study period. Of these, 82 were analyzed for complications and implant-survival. Further, 36 patients were available for functional assessment after a mean follow-up of 86 months (range: 24-154). There were 75 complications in total. The overall failure rate for DFR was 64.6% (53/82 patients). The most common failure mechanisms were type III (mechanical failure), followed by type I (soft tissue) and type II (aseptic loosening). The mean MSTS score (out of 30) was 17 for group A and 12 for group B. All the clinical outcome scores revealed an age-dependent deterioration of function.

CONCLUSION
DFR is an established procedure to restore distal femoral integrity. However, complication rates are high. Post-procedure functionality depends mainly on

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the patient's age at initial reconstruction.

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