Salvage Total Femur Replacement for Periprosthetic Joint Infection

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Background

One of the first documented total femur replacement (TFR) procedures was published by Dr. Buchman in the *Bulletin of the NYU Hospital for Joint Diseases* in 1965. The indications for TFR have expanded with time, and TFR has become an effective salvage treatment option for conditions leading to considerable femoral bone loss. These conditions include aggressive musculoskeletal tumors and periprosthetic joint infections (PJIs) in patients with a large bony defect.

Purpose

This video provides an overview and reviews a case presentation of a patient with a PJI that resulted in considerable femoral bone loss who underwent TFR.

Methods

The patient history and indications for TFR are presented. The patient is a 74-year-old woman with a history of type 2 diabetes mellitus. The patient had a left hip fracture that was managed via open reduction and internal fixation and was then converted to total hip arthroplasty 3 months later in a foreign country. A subsequent *Corynebacterium striatum* PJI occurred and was managed via two-stage revision and proximal femur replacement. The patient underwent multiple irrigation and débridement procedures because of wound drainage and persistent infection. She then required conversion to a constrained liner because of instability. A fungal PJI (*Candida albicans*) then necessitated resection arthroplasty. After a thorough discussion of the risks, advantages, and prognosis, the patient elected to undergo TFR.

Results

The procedure began with a medial parapatellar incision to expose the knee and prepare the proximal tibial cut. A separate incision was then made over the posterolateral hip, extending distally along the lateral femur to join the knee incision. The extensor mechanism was preserved and protected. The remaining femur was removed, and a trial TFR implant was sized. Components for an appropriately sized femur were assembled and coated with antibiotic-impregnated and antifungal polymethyl methacrylate cement. The hip was reduced and determined to be stable in flexion, internal rotation, and extension/abduction without evidence of impingement. Soft-tissue tension and leg lengths were deemed appropriate. At 8 weeks postoperatively, the patient was ambulating with the use of a walker. Her incision was healing well, and radiographs demonstrated stable implants without evidence of loosening.

Conclusion

TFR is a viable treatment option in patients with a recurrent PJI who have considerable femoral bone loss; however, complications are a considerable postoperative risk, and shared decision making between the patient and surgeon should be undertaken before definitive management. An antibiotic-impregnated and antifungal polymethyl methacrylate cement coating affords local drug delivery for patients with history of a PJI and allows for a functional prosthesis. Lifelong antibiotic suppression often is required.