

POSTER 2

Limb Sparing Reconstruction of Proximal Tibia using Compressive Osseointegration: A Multi-Institution Retrospective Study

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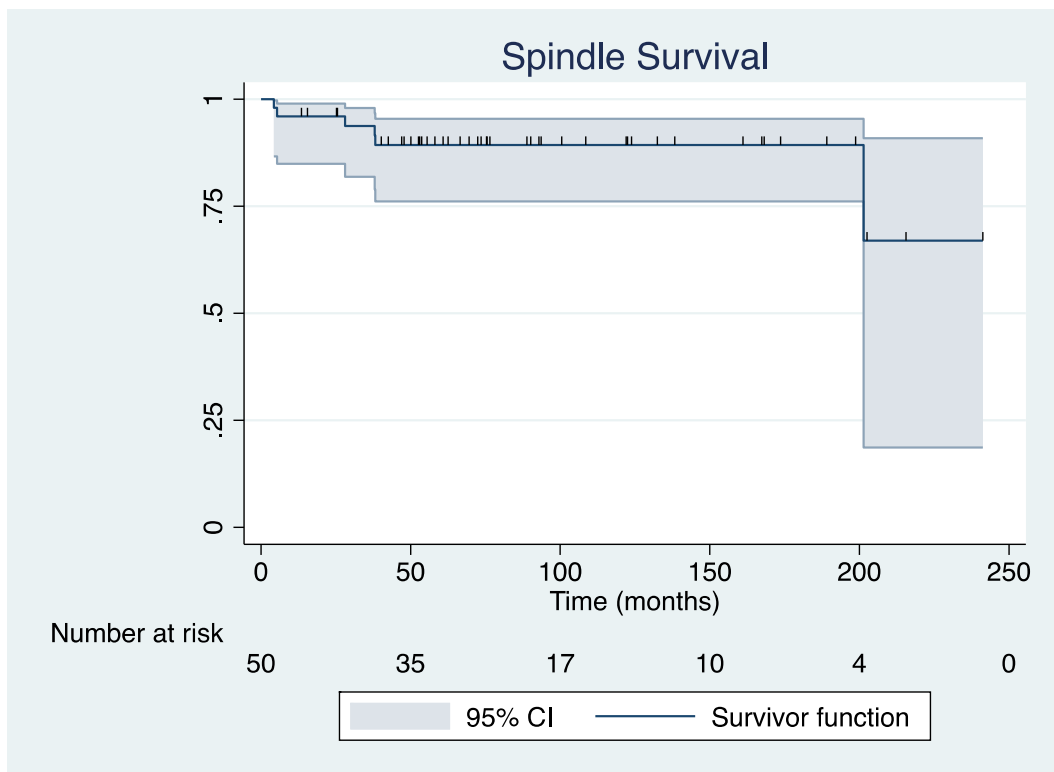
Background Due to advances in chemotherapy and reconstructive techniques, lower extremity bone sarcomas are most often treated with limb salvage surgery instead of amputation. Aseptic loosening is the primary cause of failure in traditional endoprostheses and the primary motivation for using alternative techniques. Compressive osseointegration is an innovative alternative to cemented stems that was developed in response to these concerns. The Compress[®] Compliant Pre-Stress implant involves a hydroxyapatite coated spindle secured to the bone using high compressive force to promote bone ingrowth. This technique induces osseointegration of the bone into the implant, thus sealing off the intramedullary canal and avoiding stress shielding and aseptic loosening, potentially resulting in a more durable reconstructive device than traditional cemented stems. Previous studies evaluating outcomes of proximal tibial reconstruction using the Compress[®] endoprosthesis have been constrained by small patient cohorts and limited follow up. By conducting a multi-center study we aim to mitigate these challenges and provide meaningful results to guide patient and provider decision making when choosing a method to reconstruct a proximal tibial oncologic defects.

Questions/Purposes (1) What is the survival of the Compress proximal tibia endoprosthesis at mid-term follow-up? (2) What is the overall limb-salvage rate? (3) What is the survivorship rate?

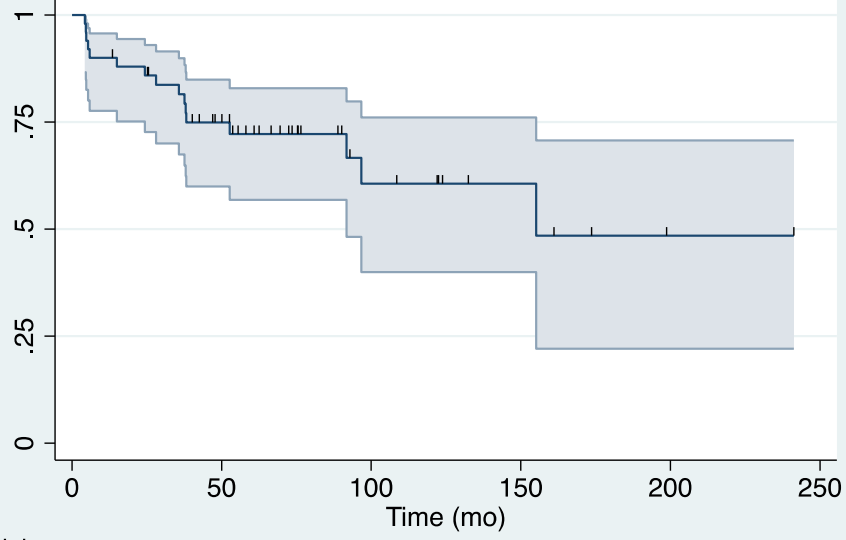
Methods We performed a multi-institutional retrospective analysis evaluating the implant survival and survivorship of patients with primary bone tumors undergoing proximal tibial reconstruction with a CPS spindle coupled with the Zimmer-Biomet Orthopedic Salvage System (OSS) proximal tibia and hinged total knee arthroplasty. Patients were included if they had minimum two-year follow-up or reached an end-point of spindle removal, amputation or death prior to two years. Only patients who underwent resection and reconstruction for a primary proximal tibial bone tumor were included, those who had reconstruction of a prior oncologic construct, trauma or arthroplasty indications were excluded. All patients underwent resection of a benign-aggressive or malignant primary bone tumor of the proximal tibia followed by reconstruction with a proximal tibia endoprosthesis (OSS Zimmer-Biomet) anchored to the bone with the Compress spindle (CPS) and a hinged, rotating platform total knee replacement (OSS, ZB).

Results Fifty patients from four institutions were included. Median follow-up was 82.2 months (4.20-237.67). Twenty-two (44%) were female. Average age was 26.5 (9-75) and 34 patients had a diagnosis of osteosarcoma (68%). Spindle survivorship at 5 and 10 years was 89.3% (95% CI 76.1,95.4%)[Figure 1a]. Sixteen patients underwent an unplanned revision, the revision-free survival rate at 5 and 10 years was 72.2% (95%CI 56.8, 82.9%) and 60.6% (95%CI 39.9, 76.1%) respectively [Figure 1b]. Eight patients (16%) developed an infection. Two patients underwent an amputation, for local recurrence and infection respectively. The limb salvage rate was 95.3% (95%CI 82.4, 98.8%) at 5 and 10 years

Conclusions Our study confirms great limb salvage rates and spindle survival with proximal tibia Compress® osseointegrative endoprostheses at 2, 5 and 10 years. Despite a high unplanned revision rate, the limb salvage rate and preservation of osseointegration of the compress spindle for this cohort of patients is high using the Compress spindle at the proximal tibia.



Revision Free Survival



Number at risk

50 29 10 5 1 0

95% CI Survivor function