

## Proximal Tibia Reconstruction After Bone Tumor Resection: Endoprosthetic Replacement Versus Osteoarticular Allograft.

Jose I. Albergo MD<sup>1</sup>, Czar L. Gaston MD<sup>2</sup>, Luis A. Aponte-Tinao MD<sup>1</sup>, Miguel A. Ayerza MD<sup>1</sup>, D. Luis Muscolo MD<sup>1</sup>, Germán L. Farfalli MD<sup>1</sup>, Lee M. Jeys FRCS<sup>2</sup>, Simon R. Carter FRCS<sup>2</sup>, Roger M. Tillman FRCS<sup>2</sup>, Adesegun T. Abudu FRCS<sup>2</sup>, Robert J. Grimer FRCS<sup>2</sup>.

1 Carlos E. Ottolenghi Institute of Orthopedics, Italian Hospital of Buenos Aires, Buenos Aires, Argentina

2 Royal Orthopaedic Hospital NHS Foundation Trust. Bristol Road South, Birmingham, United Kingdom.

### ABSTRACT

**Background:** The proximal tibia is one of the most challenging anatomic sites for extremity reconstructions after bone tumours resection.

**Questions:** We proposed to compare outcomes between 2 groups of patients treated with endoprosthetic replacement (EPR) or osteoarticular allograft (OAA) for proximal tibia bone tumours in terms of: 1) limb salvage reconstruction survival, 2) cause of failure and 3) function results.

**Methods:** Two different oncology centres were involved in the study. All patients between 15-60 years with a primary bone tumour of the proximal tibia treated with limb salvage surgery and reconstructed with EPR or OAA were included. A minimum follow-up time of 2 years was required, unless reconstruction failure or patient death occurred earlier. The following variables were compared: limb salvage reconstruction survival, failures of limb salvage reconstruction (Henderson classification) and functional results.

**Results:** A total of 88 patients were included in the EPR group and 45 patients in the OAA group. Five and Ten year limb salvage reconstruction survival was 69% & 37% for EPR and 60% & 54% for OAA (p=0.23). Fifty-one patients with EPR (58%) developed a reconstruction failure with mechanical causes being the most prevalent (32 patients - 63%). Nineteen OAA reconstructions failed (42%) and 9 (48%) of them were cause by early infection. No significant difference was found in MSTS score results (26.5 vs 27) (p=0.18). Extension lag was considerable higher in EPR group than OAA group: 13.5° (range 0-80°) vs 2.5° (0-30°) (p=0.024). Full weight bearing was significantly earlier in EPR group (1 weeks vs 23 weeks) (p=0.0001).

**Conclusion:** Proximal tibia EPR and OAA reconstruction demonstrated no significant differences in survival rates. The main cause of failure for OAA was early infection and for EPR mechanical complications. Active knee extension is significantly better when biological reconstruction of the extensor mechanism is done. EPR patients were allowed full weight-bearing significantly earlier.