

**FC-151****Non-invasive growing prostheses in children affected by malignant tumors of the knee: early results from a single institution****A. Daolio Primo**¹, S. Bastoni¹, F.L. Giardina¹, A. Della Valle¹, M.S. Bartoli¹, C. Meazza², M. Massimino²¹ *G. Pini, Milano, Italy*² *Istituto Nazionale dei Tumori, Milano, Italy*

Introduction: The treatment of malignant bone tumors in young patients is often challenging because of the possible involvement of the physis. The use of expandable prostheses allows to perform a limb-salvage surgery without a significant limb length discrepancy at the end of the growth.

Methods: From 2007 to 2014 we used Implantcast MUTARS® Xpand prostheses in seven young patients affected by malignant tumors involving the distal femur (6) or the knee articulation (1). The mechanical, non-invasive growing module of the prosthesis uses a miniaturized, mechatronic actuator inside the prosthesis activated by a high frequency transmission (from control unit via transmitter head and receiver) from outside the skin. Every impulse determines a 0,03 mm elongation allowing a tailored control of the lengthening. The diagnosis was Osteosarcoma in six patients and intra-articular Synovial Sarcoma in one patient. The average age at surgery was 10 years and the mean femoral resection was 18,93 cm. Limb length has been measured on scaled X-rays examination. Functional outcome has been evaluated using the Musculoskeletal Tumor Society score (MSTS).

Results: Mean follow-up was 34 months (3-93). One patient died for disease before starting the lengthening. Mean elongation was 31,03 mm (0-76), with a mean limb length discrepancy of 9,2 mm (0-19) at last follow up. In one case the implant was replaced with a conventional knee megaprosthesis at the end of the growth with a final discrepancy of 5 mm. The mean Musculoskeletal Tumor Society score was 23 (77%). One complication occurred: intraoperative breakage of the connection wire.

Conclusion: The Xpand Mutars Implantcast prosthesis is a good choice in skeletally immature patients affected by malignant bone tumors of the distal femur. Advantages of non invasive lengthening are: no need of open procedure, high degree of emotional acceptance, accurate control of limb length.