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**Long term results of expanding prostheses for limb salvage surgery of children**

**G. Delepine**, F. Delepine, S. Alkallaf, B. Markowska, N. Delepine

**Introduction:** Conservative surgery for young children with bone sarcoma of lower limb remains a challenge. In 1985 we proposed an expandable prosthesis and present here our long-term results.

**Patients:** 44 patients (20 males and 24 females aged 4-28 years) with tumors of the limbs were treated by our team between 1984 and 1999. Histology was mostly osteosarcoma (32) and Ewings sarcoma (9). Locations were distal femur in 30, upper tibia in 5, total femur in 5 and proximal femur in 4. 30 were first hand patients (28 with localized disease and 2 already metastatic) en bloc resection. The 14 other patients were referred to us after induction therapy, with progressive disease, metastase (3) or local recurrence (1).

**Method:** In 14 patients the expanding prosthesis was inserted immediately after the resection, in 8 during the following year and for the 22 other patients later on to treat a length discrepancy. 107 sequences of lengthening have been performed in 40 patients. All patients were followed up by their surgeon and their chemotherapist every 3 months during 2 years, then every 6 months for 2 other years and yearly thereafter.

**Results:** 6 patients died from illness. All other are disease free survivors with a median follow up of 91 months (maximal 192 - minimal 6). Half (22) of the patients are adults. The average lengthening is 4.07 centimeters (minimal 0.5 - maximal 12). Half of the patients had to be reoperated for complications. Deep infection occurred in 10 patients (22%) resulting in amputation for 3 of them. According to EMSOS criteria the functional result is excellent in 14, good in 15, fair in 10 and poor in 5.

**Conclusion:** Long term results of lengthening prostheses confirm that this procedure is an excellent alternative to amputation and permit to keep a functional limb in nearly 90% of patients. The most severe complication is deep infection underlining the interest of last generations of grower with minimally invasive lengthening.

