

11366 - Allografts in Children Aged Under 10 Years Old after Resection of Malignant Long Bone Tumors. Mid to Long-term Follow-up.

Presenter author: Alfonso Vaquero Picado, MD. Department of Orthopedic Surgery. Hospital Universitario La Paz. Paseo de la Castellana 261. CP 28046. Madrid. Spain.

Co-author: Jorge De las Heras Sotos, MD PhD. Department of Orthopedic Surgery. Hospital Universitario La Paz. Paseo de la Castellana 261. CP 28046. Madrid. Spain.

Introduction

Musculoskeletal tumours in children are still a challenge for surgeons. Big bone defects after tumoral resections are difficult to manage, especially when patients are still growing up. In adolescents some defects can be managed with an expandable prosthesis or traditional tumoral prosthesis with contralateral limb growing modulation. Therefore, these options are much more difficult to perform in patients younger than 10 years. Allografts or vascularized bone grafts are usually carried out in these patients. However, there are not many studies showing long-term results.

Purpose

We present a case series patients with primary malignant bone tumors in children aged under 10 years old, treated in our center and reconstructed with allograft. We aim to describe survival and outcomes at long-term follow-up.

Methods

Eighteen cases of malignant bone tumors between 1994 and 2002 were included in the study. Only patients aged under 10 years at diagnosis with primary malignant bone tumors of long bones (femur, tibia or humerus) were included. A retrospective review of clinical histories, radiological and pathological studies was done. Sex, age, type and length of resection, allograft characteristics, complications and survival results were recorded.

Results

Median age at diagnosis was 7.6 years (range 2-10). There were 12 male and 6 female. Osteosarcoma was the first diagnosis (n=10). There were also 8 patients with Ewing sarcoma. There were 7 cases of femoral affection, 6 affecting tibia and 5 humeral tumors. Distal (n=7) and proximal (n=5) metaphysis were the most affected zones in the bone. 11 cases had soft tissue mass and 2 patients presented metastatic disease at diagnosis. Wide resection was performed on all the cases. Metaphyseal (n=6), diaphyseal (n=4) and transepiphyseal (n=4) were the more frequent resections performed. Fourteen intercalary allografts were utilized, as well as 4 osteoarticular allografts. Tibia (n=7), femur (n=6) and humerus (n=5) were the bones used as allograft. Median allograft follow-up was 102.6 months (range 8-156). Average patient follow-up was 106.6 months (range 8-156). 14 patients had some kind of complication with the allograft, including 3 infections, 1 local recurrence, 2 graft fractures, 3 graft resorptions and 2 degenerative osteoarthritis. Six cases presented pseudoarthrosis, needing refresh, osseous graft and new osteosynthesis. Two patients presented problems of coverage needing muscular and skin flaps to resolve it. Sixteen patients (88.9%) needed to be reoperated in the same or in the contralateral side. Four allografts had to be removed, being substituted by 4 vascularized fibula graft. Secondary prosthesis had not been performed at final follow-up in our group. One patient required an amputation. There were 12 alive patients at the end of the follow-up period.

Conclusions

Allograft reconstruction in skeletal immature patients is a procedure with a high rate of complications. In our study, almost 90% of patients had needed other procedure at final follow-up and 22.2% of allografts were removed. Otherwise, just only one patient had died at final follow-up, which shows an excellent result in survival. Furthermore, its use remains an alternative to manage big defects in growing-up patients when prosthesis cannot be performed as well as it provides bone stock for future procedures.

