

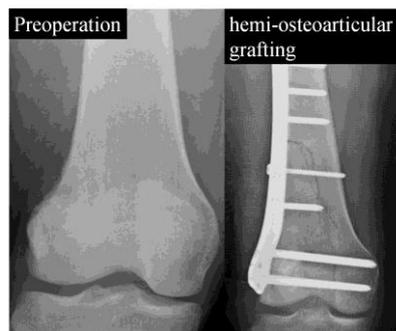
**FC-079****Joint sparing surgery using recycled tumor-bearing autograft for osteosarcoma****M. Miyagi**, H. Katagiri, S. Hosaka, J. Wasa, H. Murata, M. Takahashi*Shizuoka Cancer Center, Shizuoka, Japan*

**Introduction:** To avoid late complications of megaprosthesis, or dysfunctional loss from arthrodesis or amputation, we have performed joint sparing surgery using recycled tumor-bearing autograft for osteosarcoma in children or adolescents when more than half of their articular surface could be spared.

**Methods:** Eight patients with osteosarcoma who underwent joint sparing resection and reconstructed recycled autograft between 2005 and 2013 were included in this study. There were six males and two females with a mean age of 14 years (range, 8-26). Seven patients were diagnosed as conventional types and one was low grade central type. The average follow-up period was 49 months (range, 13-122). The location was around the knee in six patients and the distal tibia in two. We retrospectively analyzed the clinical data for each patient, including details of the recycled bone, bone union, oncological outcome, complications, and functional results.

**Results:** There was no local recurrence during follow-up. The overall 5-year survival rate was 100%. Early or late infection or absorption of recycled bone was not found. The average length of the recycled autograft was 164 mm (range, 70-300). Pasteurisation was performed in three patients and liquid nitrogen treatment in five patients. Intercalary grafting was conducted for six cases and hemi-osteoarticular grafting for two (fig.1). A bone union was achieved in six of eight cases (75%) after a mean interval of 9.3 months. In one case with non-union, we induced pseudarthrosis to allow bone growth. The other non-union case is currently at postoperative 13 months and considered to be delayed union. The average Musculoskeletal Tumor Society (MSTS) score was 87% (range, 76-100) and the average Toronto Extremity Salvage Score (TESS) was 93% (range, 82-99). The range of motion of the affected joint averaged 86% (range, 63-100) compared to that of the contralateral unaffected joint.

**Conclusion:** The functional result of the current series compared favorably with that of megaprosthesis in previous reports. The range of motion was excellent with an average of 86%. Although technically demanding, joint sparing surgery using recycled autograft is a useful and inexpensive reconstruction method which provides excellent function, a low complication rate and long-lasting local stability.



**Figure 1.**