

**PP-098****Custom-made ceramic spacer for children with osteosarcoma of lower extremities: a long follow-up**

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Purpose: Limb salvage surgery for malignant bone tumors may present difficult problems, especially in cases of skeletally immature patients. The aim of this study was to evaluate our surgical method of reconstruction with custom-made ceramic spacer for the highly skeletally immature patient with osteosarcoma, especially focusing on the major complications of surgery, function of salvaged limbs.

Methods: From 1996 to 2006, six children with osteosarcoma in the lower limbs underwent the limb salvage surgery with custom-made ceramic spacer and followed through January 2014. There were three males and three females, ranged in age from 6 to 11 years (median age: 8 years old) at the time of operation. They were followed up for at least 8 years after the first operation (average, 10.9 years). The location of the tumors were distal femur in one patient, proximal tibia in five. Ceramic spacers were designed about one month in advance to the operation according to the images of plain X-ray and CT scanning. All the spacers were manufactured by KYOCERA Medical Corporation, Osaka, Japan.

Results and Discussions: In all patients, tumor resections were successfully performed in radical procedure with negative margins. We have reconstructed proximal tibia with ceramic spacer varied from 120 to 150mm in length. Diameters of the stems were varied from 8 to 10mm. As for the distal femur case, we have used the ceramic spacer of 250mm in length and diameter of the stem was 12mm. Three cases were performed revision operations with expandable endoprosthesis because of the substantial limb length discrepancy and/or loosening of the spacer. One femur case was amputated at the site of the above knee, because of early loosening of the spacer followed by late deep infection of the surgical site. There are two cases under observation with soft or hard external prosthesis, waiting to undergo the revision operation with endoprosthesis. All cases are alive with complete disease free status. With the use of custom-made ceramic spacer, limb salvage surgery was safely performed in the appropriate schedule. However, there are some cases of early loosening of the implant or instability of the suffered joint.