

Semi-knee Tumor Prosthesis for Pediatric osteosarcomas around the Knee

Dasen Li, Jichuan Wang, Wei Guo, Xiaodong Tang, Rongli Yang, Taiqiang Yan, Tao Ji
Musculoskeletal Tumor Center, Peking University People's Hospital, Beijing, China

Background and Purpose Limb salvage for pediatric osteosarcoma around the knee may cause leg-length discrepancy. To resolve this, an expandable prosthesis is popular now. However, in some situations, it is not available and semi-knee tumor prosthesis is a simple and useful alternative.

Methods After resection of an osteosarcoma around the knee, the bone defect is reconstructed by a semi-knee tumor prosthesis. The epiphysis of the opposite side is kept intact to reduce leg-length discrepancy. The leg-length equalization procedure would not be considered until the limb shortening was greater than 4 cm and the relapse potential of the tumor reached a plateau. 40 cases treated with such a procedure between 2001 and 2013 were reviewed.

Results Four of the 40 semi-knee prostheses were later removed owing to infection. Dislocation occurred in 3 patients, whose tumors were located in the distal femur. The average Musculoskeletal Tumor Society functional score was 24.2 (range, 14–30) and limb-length discrepancy at final follow-up was 6.1 cm (range, 2–10 cm). 15(38%) had implantation of an adult-type joint at final follow-up. Further leg-length equalization procedure is needed.

Conclusion A semi-knee tumor prosthesis could spare the opposite epiphysis, provide a functional knee, and facilitate leg-length equalization procedure of the affected limb in the future. The semi-knee tumor prosthesis is cost-effective because it is cheap and the adult-type prosthesis and the lengthening procedures are considered only when necessary.