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Sports activity levels of healthy long term survivors with modular tumor endoprosthesis following osteosarcoma of the knee joint

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BACKGROUND:

Little is known about participation in sports following limb-salvage surgery for osteosarcoma of the knee joint. The purpose of this study was to evaluate sports activity in long-term survivors with modular tumor endoprosthesis of the knee joint following osteosarcoma.

METHODS:

This retrospective single-center study includes 27 patients (13 m, 14 f) with osteosarcoma of the knee joint who were treated between 1995 and 2005 with an implantation of a modular tumor endoprosthesis. The average age at the time of surgery was $25,5 \pm 13,5$ (12,6 - 60,1) years and mean follow up period was $11,2 \pm 3,7$ (5,3 - 15,6) years. The tumor was located at the distal femur in 16 cases and at the proximal tibia in 11 cases. We assessed type frequency and duration of sports prior to osteosarcoma, 1, 3 and 5 years post surgery. Moreover the assessment included sports activity scores. Furthermore, the effect of complications on activity levels was assessed.

RESULTS:

Prior to osteosarcoma 89% (24/27) of the patients were regularly performing sports. At 1-, 3- and 5-years following osteosarcoma, 33%, 74% and 89% respectively were able to perform sports. There was a change from high to low impact sports. The most common types of sports postoperatively were bicycling and swimming. At five years post surgery patients reached their maximum post op levels of UCLA Activity Score (UCLA), Tegner Activity Score (TAS) and modified Weighted Activity Score (WAS). We found significant correlations between pre- and postoperative sports activity levels (UCLA: $r = 0,62$ ($p < 0,0005$); TAS $r = 0,69$ ($p < 0,0001$); WAS $r = 0,49$ ($p < 0,01$)). Fourteen patients (51%) had to undergo revision surgery. However neither oncological nor non-oncological complications had a significant effect on sports activity levels. Moreover no sports activity related complications were found.

CONCLUSION:

Long-term survivors of osteosarcoma of the knee joint who underwent limb-salvage surgery with a modular tumor endoprosthesis can achieve high levels of sports activity. However, the type of sports, duration change and recovery takes up to five years. Patients who were very active prior osteosarcoma tended to be more active postoperatively.

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