

INTRAOPERATIVE EXTRACORPOREAL IRRADIATION AND RE-IMPLANTATION IN TREATMENT OF OSTEOGENIC SARCOMA-- TWO CASES EXPERIENCE

Hui-Ling Yeh¹, Jian-Sheng Jan¹, Tai-Sheng Tan²

¹Department of Radiation Oncology, ²Department of Orthopedic Surgery, Taichung Veteran General Hospital

Limb salvage surgery is currently used in treatment of osteogenic sarcoma in extremities by the advances in chemotherapy. Tumor prosthesis, allograft and autograft had been used for bone defect reconstruction. The use of autograft avoids some disadvantages of tumor prosthesis such as difficulty of soft tissue attachment and implant loosening after a period of time and decreases the probabilities of wound infection and nonunion as what might happen with allograft. So autograft provides the best result in bone reconstruction. However, it is impossible to find exactly the same length of autograft as what we had resected in the operation from our body. By the use of intraoperative extracorporeal irradiation to the tumor bearing bone segment, the soft tissue is preserved and the dead bone can be used to re-implant and substitute the bone defect. There is no limitation in dose escalation for irradiation of bone extracorporeally. The sarcomatous change of the adjacent normal soft tissue induced by radiation need not to be considered. In this paper, we tried to use this new method to provide a tumor free autograft for limb salvage surgery in two cases of locally advanced osteogenic sarcoma in lower limbs. A tumor dose of 30000 cGy was applied to the tumor bearing bone segment resected from both cases. The heavily irradiated specimen was sent back to the operation room immediately for re-implantation. The initial functional result was encouraging after six months of immobilization. Intraoperative extracorporeal irradiation with no dose limitation plays an important role in providing a sterile tumor free autograft with good bone union of the diseased leg. Unfortunately both cases had local tumor recurrence within one year after operation, inadequate neoadjuvant chemotherapy and inadequate (marginal) resection for locally advanced disease may be the main reasons for these early recurrences. We think that limb salvage surgery is a potential method only for some highly selected patients with good neoadjuvant chemotherapeutic response. Moreover, the tumor bearing bone segment should be resected with wide surgical margin to achieve a better long-term local tumor control.

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