Acetabular reconstruction using Trabecular Metal in orthopaedic oncology. A solution for complex cases?

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Introduction Trabecular Metal (TM) has been widely used in joint arthroplasty with good long-term functional results. Metastatic and lymphoproliferative lesions in the acetabulum can usually be considered as IIIA-B defects according to Paprosky’s classification. The surgical management is always challenging and a conventional acetabular cup may not be adequate. The main objective of pelvic reconstructive surgery is to obtain a stable and durable implant, and not affected by a possible local radiotherapy. The aim of the study is to evaluate the reliability of modular TM acetabular implants in orthopaedic oncology and their complication rate

Methods In an Italian reference centre for Bone and soft tissue tumours 7 patients were surgically treated for acetabular reconstruction with modular TM in the period 2013-2014. The diagnosis was breast carcinoma metastases (2), prostate adenocarcinoma metastases (1), multiple myeloma (1), chondrosarcoma (1), soft tissue sarcomas of the groin with hip joint invasion (2). Age range 41-74, mean age 61. Five patients received radiotherapy (4 postoperatively, 1 preoperatively). All the patients except the one with chondrosarcoma had chemotherapy before and/or after surgery. According to Paprosky’s classification the defect was IIIA (3 cases) or IIIB (4). Furthermore in one patient with chondroblastic osteosarcoma (18 ys), the left hemipelvis was reconstructed with a custom-made endoprosthesis with TM onto the bone-contact surfaces. Minimum follow up 12 months (maximum 36 months). Function was evaluated according to MSTS score. Complications (loosening, infection, local progression of disease, dislocation) were evaluated.

Results: One patients died for lung metastases 3 months after surgery. The other 6 cases were evaluated for function and potential complications. The mean MSTS score was 30 at 1 year (range 25-33). We observed 2 complications: 1 local progression of disease and 1 dislocation. The dislocation was managed incruently. The local progression was managed revising the implant (intrinsically stable) with a flanged ring cup. No infection or intrinsic loosening of the modular implants were observed. Full weightbearing with cane or crutches was obtained at a maximum of 3 months. The hemipelvis case walked unaided after 6 months, has an excellent local function but a lung progression of disease.

Conclusions: Modular TM implant is one of the options for the reconstruction of acetabular bone defects in orthopaedic oncology. The main advantages are the adaptability to different clinical situations and the “off-the-shelf” availability. Even if no direct complications of radiotherapy have been observed in the short period a longer follow up is needed to look for potential delayed effects. Biomechanical studies on the stability of the interface Trabecular Metal-cement are ongoing.

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