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Satisfactory mid-term results using tantalum acetabular reconstruction in difficult oncology patients

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Introduction: Reconstruction of periacetabular bone defects is one of the most demanding procedures, both, in revision and oncology orthopaedic surgery. There are several local conditions leading to failure of the procedure such as: multiple revisions, bulk allografted bone and, most of all, irradiated bone. In presence of previous radiotherapy treatment cup loosening is reported ranging from 19 to 52 %.Tantalum cup is considered one of the best options to achieve a ready integration between metal and host bone. The aim of this case review study is to report the performance of tantalum based reconstruction in different challenging reconstructions of the pelvic bone.

Materials and Method: Between January 2005 and January 2014 we treated 30 consecutive patients with un-cemented porous tantalum acetabular component. The implant was performed after periacetabular resection due to pelvic bone tumour in 17 cases: 5 as first reconstruction, while in 12 after a failure of a previous implant (5 hemipelvic allograft). In the other 13 cases the cup was implanted in irradiated bone (7 of them after a previous failed cup). They were 19 females and 11 males, average age 37 yrs (range 9-77). In 19 patients, tantalum cup was associated with other modular elements: 1 augment in 13 patient, 1 buttress in 2, 1 buttress and 1 augment in 2, 2 buttress in 1, 2 buttress and 2 shim in 1. A cemented polyethylene insert was applied in 21 patients, while in other 8 the polyethylene was inserted without cement and in the last case we used a ceramic insert.

Results: To now no patient had undergone acetabular revision for aseptic loosening after a mean follow-up of 39 months (range 12-123, 16 patients over 5 years). Superficial wound infection occurred in 4 patients, while only in one a two-stages procedure was performed to heal the infection. Postoperative hip dislocation was evident in 2 cases and only 1 required further surgical management. No clinical or radiographic evidence of acetabular loosening was registered at the most recent follow-up. Implant is well functioning and stable in all cases.

Conclusion: Although with short follow-up, this series was able to demonstrate the excellent proprieties of tantalum in term of bone grip. This material has confirmed its mechanical and biological potential, to achieve biologic fixation in primary and revision musculoskeletal oncologic surgery even after radiation therapy. A longer follow-up is necessary to identify later potential failures.