

## 10730- Massive pelvic allograft reconstruction of the acetabular area: management of hip mechanical failure

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### Introduction:

Reconstruction of the hip after the resection of a pelvic tumor is a challenging procedure in orthopaedic oncology. The use of massive allograft reconstruction may restore the pelvic architecture and provide a suitable bone stock for acetabular prosthetic implant. The major complication is deep infection whatever the method of reconstruction applied; however, high mechanical complication rates are reported in the long survivors.

### Purpose:

The aim of the paper is to assess the better method of acetabular revision in a loosed cup previously inserted in a bulk allograft.

### Material and methods:

In the last 25 years 75 cases of allograft prosthetic composite (APC) have been performed in the pelvis. Between October 1992 and February 2015, 21 patients (14 female/7 male) underwent 29 major revisions for cup loosening implanted on a massive allograft as reconstruction after tumor resection. The majority of the cases performed were reconstructed with allograft and prosthesis 24, while only 5 revisions followed a failed reconstruction with allograft without the femoral stem (femoral head necrosis in young patients).

Failure was considered when the patient was operated for acetabular cup substitution. Radiographic evaluation was performed considering the stability of the new cup as well as the reaction of the adjacent allograft bone. Functional evaluation was recorded according to the MSTs system. Revision surgery was performed ones in 15 patients, while in other 5 were performed two times. Only one patient was revised 4 times. Among 29 revisions a Burch Schneider cage was used in 11 cases (Group A), other cage reconstructions in 9 (Group B), trabecular metal in 6 (Group C) and stem-cup in 3 (Group D). The mean FU of the series was 56 months (6-205).

### Results:

After a mean FU of 42 months (13-85) 8 revision implants of the whole 29 cases (28%) had a second mechanical failure. The worst results were observed in group B (6 out of 9; 67%). Other 2 failures occurred in Group A (18%), while no failure were observed in Group C and D.

The radiographic evaluation showed at the final FU 7 reconstructions with one or more sign of cup loosening (implant halo 6, screw breakage 4, bone resorption around the cup 4). In Group D, 2 out of 3 cases showed halo around the acetabular stem. The mean functional evaluation score was 22 in the whole series. The better results are reported in Group C (shorter follow-up time).

### Conclusions:

Revisions surgery in mechanical failed cup applied on allograft for tumor resection should be considered the most difficult setting in THA revisions. During time, allografted bone tend to loose its mechanical integrity leaving a weak material to support the implant.

In this series the Burch Schneider cage resulted as a versatile modality of reconstruction, while, less invasive devices are not enough performing in this very difficult clinical setting. In recent time the incoming use of tantalum based cups seems to be a more reliable choice for bone replacement in cup substitution.