

Jumbo Cups: Do We Really Need a More Complex Hip Revision Strategy? A Registry-Based Cohort Study

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INTRODUCTION:

The increased prevalence of total hip arthroplasty (THA) worldwide has led to a corresponding increase in revision surgeries. Aseptic loosening and periprosthetic infection are the main causes of revision of the acetabular component. These conditions usually determine osteolysis which is associated to different grades of bone loss, as classified by Paprosky I-III. Several techniques were developed to fill this bone loss, ranging from grafting to the use of metal augments, anti-protrusion cage, or custom-made implants. The use of a large cup's expanded porous surface area maximizes contact with the host bone and increases the possibility of biological attachment, usually eliminating or reducing the need for bone grafting. In consideration of this, and following the proper indications, acetabular revision arthroplasty with the use of a large diameter cups is increasing overtime.

The main purpose of this study was to determine the average outcomes of acetabular revision arthroplasty using press-fitted extremely large cups, so called jumbo cups: survival, mechanical failures, complications, and further revision surgery in the long-term follow up were evaluated based on a large regional Italian arthroplasty registry (RIPO).

METHODS:

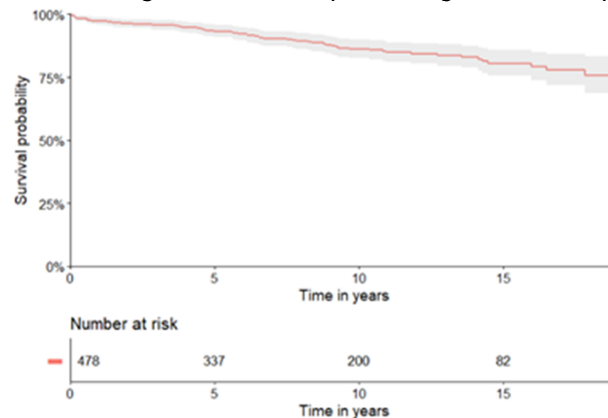
This registry-based cohort study has been conducted by reporting a total of 478 revision THA surgeries using jumbo cup by the regional Emilia-Romagna Registry of Orthopaedic Prosthetic Implants (RIPO) from 2000 to 2019. Inclusion criteria were: jumbo cups identified with a minimum diameter of 62 mm in women or 66 mm in men, used in acetabular revision surgery. All iliac fixation jumbo cups were excluded. The authors gathered and compared the following data: demographics, diagnoses that resulted in revision surgery, articular couplings, head diameters, type of fixation, intraoperative complications, causes of failure that lead to the second revision surgery, implant used for the second surgery, and the median follow-up time.

RESULTS: A total of 478 jumbo cups implanted between 1 January 2000 and 31 December 2019 were evaluated. The most common diagnoses leading to primary revision THA was cup aseptic loosening (53.1%). Total aseptic loosening represented 31.6% of the cause of first revision surgery. Jumbo cup survival rate was 93.2% (90.9-95.7) at 5 years with 337 prostheses at risk, 86.1% (82.5-89.9) at 10 years with 200 prostheses at risk, and 80.5% (75.6,85.7) at 15 years with 82 prostheses at risk (Figure 1). Of the 478 jumbo cups described in this study, 62 failed during the follow-up period. The main causes of failure were cup aseptic loosening (41.9%), total aseptic loosening (19.4%), and septic loosening (9.7%) (Table 1). Of these 62 failures, 7 were treated with THA explant, 5 with revision of the insert, and 43 with revision of the acetabular component (only in 1 patient a pedestal was used for revision and 1 was treated by a custom-made component). Finally, 7 patients were treated outside the Region, thereby no data on revision and failure were available.

DISCUSSION AND CONCLUSION:

This registry study reported excellent survival in the first 15 years of jumbo cup implants used for revision surgery. An acceptable number of failures was recorded. This study demonstrates that the use of jumbo cups in THA revision surgery is a viable alternative to other frequently used implants, including antiprotrusion cages, and metal augments; this result is of importance because jumbo cups have the advantage of a simpler surgical technique for implant.

Causes of failure	N	IR (%)	%
Cup aseptic loosening	26	5.4	41.9
Total aseptic loosening	12	2.5	19.4
Septic loosening	6	1.3	9.7
Prosthesis dislocation	5	1.0	8.1
Poly wear	2	0.4	3.2
Stem aseptic loosening	1	0.2	1.6
Two steps prosthesis removal	1	0.2	1.6
Bone fracture	1	0.2	1.6
Other	1	0.2	1.6
Unknown	7	1.5	11.3
Total	62	13.0	100.0



tab 2. Causes of failure of Jumbo cup implants