A Five-Year Experience with Dualis Cups

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Purpose: The concept of dual mobility (DM), introduced by Gilles Bousquet in 1974, is currently approved as a valid option for reducing the risk of dislocation, with an incidence ranging from 0.5% to 10%. The principle is to achieve a high joint stability through a large diameter polyethylene (PE) liner, and to reduce cutting forces due to a «low-friction» head-liner coupling mechanism. The purpose of this paper is to prove that DM is the most effective system in reducing the postoperative risk of dislocation and revision surgery, followed, in order, by the use of large femoral heads, constrained liners, and conventional single mobility prostheses.

Methods: From March 2015 to March 2020, 138 patients were treated with uncemented Dualis cups for a total of 141 Dualis cups implanted (3 cases were bilateral). The average age at the time of the surgery was 77 years (range, 46-94). Patients' clinical and radiographic follow-up was at 1, 3, 6, 12 months, and then once a year.

Results: All cases were retrospectively reviewed to assess complications. Eight patients were lost due to death. Nine patients had less than 6-month follow-up, so they were excluded from the mid-term evaluation of cup survival, which was carried out on the remaining 124 hips. Seven patients (5%) had complications that required a second surgery, but only 1 (0.7%) was directly ascribable to the DM cup—a case of intraprosthetic dislocation that required cup revision. No other Dualis cup showed radiographic evidence of loosening, obtaining a cup survival rate of 99.2% (95% confidence interval 94.8%-99.9%) at 5 years; the Kaplan-Meier method was used to run the analysis. Other complications found are common to all total hip arthroplasties, regardless of the implant used. One patient suffered from a periprosthetic fracture following a new trauma and was treated with plate fixation. One patient needed a periprosthetic ossification removal 1 year after the first surgery. Four patients underwent debridement and liner-head replacement due to early infection.

Conclusion: Improvements in design and materials of the third generation DM cups allowed both to reduce the rate of dislocations in high-risk patients (ie, patients with neuromuscular deficits and cognitive disorders, patients needing revisions, osteosynthesis failures, femoral neck fractures) and to achieve a survival rate similar to standard cups, ensuring a range of motion very close to the physiological one. However, placing DM cups on the market again reopened the debate on increasing metal ion blood levels. In our brief experience, Dualis cups showed results comparable to those reported in the literature for DM. If these data are confirmed by long-term studies, the use of DM cups could be extended even for young patients with high functional demands.

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