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Outcomes Of A Screwless Hemispherical Dual-Mobility Cup In Total Hip Arthroplasty: A Multicenter Unselected Cohort Study

Orthopaedics / Pelvis, Hip & Femur / Joint Replacement - Primary

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Background
Dual mobility (DM) cups have gained popularity as they provide a sufficient range of motion while reducing the risk of instability thanks to the “big-head effect”. Initially designed with an anatomical shape, the features of DM were later and progressively improved with hemispheric-cylindrical or modular designs to addition screw to increase primary stability even if it remains controversial as it may lead to increased risk of wear and osteolysis. The SYMBOL CUP DM HA devices are cementless cups with a strict hemispherical and flattened pole chromium-cobalt metal-back design without the possibility to add screws.

Objectives
The aim of this study was first to evaluate the efficiency of a hemispherical DM cup concept regarding the risk of dislocation and second the good osteointegration of this screwless & cementless DM cup in an unselected and consecutive cohort of patients.

Study Design & Methods
Between November 2014 and July 2017, a continuous and unselected cohort of patients underwent primary THA performed by six experienced surgeons. All patients of this cohort received a SYMBOL CUP DM HA cup. This multi-centre ambispective study assessed 1174 THAs with a minimum of 5-year follow-up. The mean age at the surgery was 73,4+/-9,5y (43.3 – 96.1) Outcomes included revision rates (for any cause), intra- and postoperative complications, radiographic evaluation, and patient-reported outcomes: modified Harris Hip Score (mHHS), Oxford Hip Score (OHS), satisfaction (numeric scale), and return to sport.

Results
At a mean of 8.0 ± 1.2years, 56 patients underwent a revision. 42 patients (3.6%) had isolated femoral components revisions (16 loosening, 2 infections, 16 fractures, 4 fractures and loosening, (1 dislocation post-traumatic, 2 LLD, 1 poor positioning), 4 patients required femoral head and liner exchange (3 infections, 1 pain), 9 patients (0.8%) had a bipolar revision (2 femoral fracture, 4 septic loosening, 1 aseptic loosening (after a fall at 4 month), 1 pain and 1 for unknown reason) and 1 patient underwent isolated acetabular component revision (ilio-psoas impingement), resulting in an overall crude cup survival rate of

99.1%. A total of 8.7% patients had died, and 18% were lost to follow-up. There was no revision of the acetabular components for dislocation. Radiographic evaluation was performed for 373 patients at mean of 7.3 ± 1.4years. Cup positioning was normal in 97.1% of patients, with slight verticalization in 1.9% and slight horizontalization in 1.1%. Light to moderate radiolucent lines were observed in only 11 patients (2.9%), none of which led to an acetabular cup loosening. Questionnaires measuring patient's activities and satisfaction were administrated to 746 patients with their original implants in situ at last follow-up. OHS was 44.7 ± 1.02 (range 16-48; n=746), mHHS was 83.3±10.65 (range 33-91; n=743) and patient satisfaction was 9.2±1.02 (range 0-10; n=744). On 740 patients' respondents, 561 (75.4%) practices physical activity after surgery and 99.1% were able to return to their previous level.

Conclusions

This study confirms the absolute efficiency of the DM concept regarding the risk of dislocation even with a hemispherical DM cup (no revision of the acetabular components for dislocation), and that the SYMBOL CUP DM HA cementless and screwless design provides an excellent benefit/risk profile and strong clinical performances in a large consecutive and unselected cohort of patients with very low complication rates. Nevertheless, longer clinical follow-up is necessary to assess clinical performance and safety throughout the lifetime of the devices

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