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Comparing large diameter metal-on-metal and ceramic-on-ceramic total hip replacement

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INTRODUCTION: The indications for total hip replacement (THR) have been widened to young active patients with degenerative disease of the hip, fractures or avascular necrosis of the femoral head.

The choice of the implant and specially the bearing of the THR is very important, particularly when the revision surgery is under considering.

Regarding the failure of conventional metal-on-polyethylene total hip replacement (THR) in younger active patients other bearings have been increasingly used, namely ceramic-on-ceramic with lower wear bearing, and a large-diameter metal-on-metal THR with some advantages, including a low rate of dislocation and wear, a greater range of movements and the potential for increased longevity.

OBJECTIVES: The aim of the study is compare the large-diameter metal-on-metal with ceramic-on-ceramic total hip replacement.

METHODS: The authors reviewed 27 large diameter metal-on-metal total hip replacement performed in 25 patients at our institution during the period of January 2007 to 31 December 2009, and 49 ceramic-on-ceramic THR performed since 1 July 2002 to 30 June 2007.

The review was conducted in 2011, based on evaluation of the clinical process and consultation of follow-up. The evaluation of the patients was based on the Harris Hip Score, the degree of satisfaction, radiographs and determination of serum chromium and cobalt levels in metal-on-metal bearings.

RESULTS: Of the 27 large diameter metal-on-metal total hip replacement performed, 22 were studied (2 deaths of unrelated causes and 3 were lost to follow-up), corresponding to 20 patients, 14 males and 8 females, mean age at the time of surgery of 58 years with a mean follow-up of 44,4 months.

We reviewed 32 of 37 patients with ceramic-on-ceramic THR, corresponding to 42 hips. 23 of the patients were male and 47,3% were in the 5th decade of life at the time of surgery.

In both groups, the most frequent surgical indication was arthrosis and avascular necrosis of the femoral head.

The average Harris Hip Score in large diameter metal-on-metal THR was lower (87,89) compared with ceramic-on-ceramic THR (91).

95.2% of patients with ceramic-on-ceramic bearing were satisfied or very satisfied and all return to be operated, whereas in metal-on-metal THR only 82% were satisfied or very satisfied.

Regarding the complications, were more frequent in large diameter metal-on-metal THR, with five failures: 3 infections, 1 pseudotumor and 1 acetabular osteolysis, corresponding to a survival rate of 77%. In the group of ceramic-on-ceramic THR, one patient was revised because a femoral head fracture, two patients reported audible squeaking and were not detected osteolysis.

CONCLUSION: Our clinical results of the group of ceramic-on-ceramic THR is similar to those reported in the literature, although our average score is slightly lower. The absence of osteolysis appears to be a good predictor of longer survival expected on this bearing.

Considering the large diameter metal-on-metal bearing, the high number of failures is resembling to other series described in the literature with these implants. The high risk and severity of complications associated with this type of implant does not appear to justify their use despite their potential advantages.

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