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ORIGINAL ARTICLE

# Polyethylene replacement by cementing a new component over the osseointegrated metal-back☆

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**KEYWORDS**
Revision total hip arthroplasty;
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**Abstract**
*Objective:* In uncemented revision total hip replacement due to polyethylene wear, the metal cup needs to be maintained when its stability is checked during surgery, only replacing the polyethylene that is cemented if anchoring is not possible. The aim of the present study was to evaluate the medium-term clinical and radiological results of a polyethylene liner cemented into an osseointegrated acetabular shell component.
*Materials and methods:* A retrospective analysis was performed on 15 patients in whom the surgical indication was polyethylene wear, with a mean follow-up of 6.1 years (range 3.5–9.7 years). The Harris Hip Score was used to assess the clinical results before surgery and at the end of follow-up. Anteroposterior and axial X-rays of the hip were taken to rule out complications.
*Results:* The mean Harris Hip Score improved, increasing from 64.7 points before the surgery to 80.3 at the end of follow-up. The osteolytic lesions disappeared, or at least the size did not increase, in the follow-up X-rays. One patient (6.7%) suffered 2 dislocation episodes that were treated without the need for surgery. Another patient presented with aseptic loosening of the femoral stem that required a replacement.
*Conclusions:* Cementing the polyethylene liner, when anchoring is not possible, in an uncemented osseointegrated metal shell is a technique that offers good results in the medium term, and which may minimize the complications that may occur with the replacement of the shell component, without compromising its stability.


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**PALABRAS CLAVE**
Revisión de artroplastia total de cadera;
Desgaste de polietileno;
Cementación de polietileno

**Recambio de polietileno mediante la cementación de un nuevo componente sobre el metal-back osteointegrado**

**Resumen**
*Objetivo:* Ante una cirugía de revisión de artroplastia total de cadera no cementada por desgaste de polietileno está indicado mantener el cotilo metálico cuando se compruebe intraoperatoriamente su estabilidad, sustituyendo únicamente el polietileno que se cementa si el anclaje no es posible. El objetivo del presente estudio fue evaluar los resultados clínicos y radiográficos a medio plazo de la cementación de polietileno dentro de un componente acetabular metálico osteointegrado.
*Material y método:* Se analizaron retrospectivamente 15 pacientes cuya indicación para la cirugía fue el desgaste de polietileno, con un periodo de seguimiento medio de 6,1 años (rango 3,5-9,7 años). El Harris Hip Score se utilizó para valorar los resultados clínicos antes de la intervención y al final del seguimiento. Se realizaron radiografías anteroposteriores y axiales de cadera para descartar complicaciones.
*Resultados:* La puntuación media en el Harris Hip Score mejoró, pasando de los 64,7 puntos en el preoperatorio a los 80,3 al final del seguimiento. Las lesiones osteolíticas desaparecieron, o al menos no aumentaron de tamaño, en los controles radiográficos. Una paciente (6,7%) sufrió 2 episodios de luxación, que se trataron sin necesidad de cirugía. Otro paciente presentó aflojamiento aséptico del vástago femoral, que requirió el recambio.
*Conclusiones:* La cementación del polietileno, cuando no sea posible su anclaje, en un cotilo metálico no cementado osteointegrado es una técnica que ofrece buenos resultados a medio plazo, y que minimiza las complicaciones que conlleva el recambio del componente acetabular, sin comprometer su estabilidad.


## Introduction

Osteolysis attributable to polyethylene wear is one of the main indications for revision of uncemented total hip arthroplasty.[1] Faced with worn out polyethylene liners, surgeons will only replace them when this is possible, otherwise they will also replace the acetabular cup. The replacement of an osseointegrated uncemented metal cup entails a longer surgical time, increased risk of bleeding and a considerable loss of periacetabular bone mass.[2] Therefore, extraction of the acetabular cup is only recommended when the anchoring mechanism of the polyethylene implant is damaged, if the femoral head has eroded the metal cup or if the component is in the wrong position and may compromise stability.[3]

However, sometimes isolated replacement of the polyethylene may not be possible because a replacement is not available or is no longer produced. In such cases, cementing the polyethylene on an osseointegrated metal-back provides a valid alternative which maintains the bone reserve and decreases morbidity.[4]

The objective of the present study is to conduct a retrospective analysis of the clinical and radiographic medium-term results of revisions of total hip arthroplasty caused by polyethylene wear, in which the new insert was cemented because it was a non-modular prosthesis that was no longer manufactured.

## Materials and methods

We retrospectively analyzed 15 patients who underwent revision surgery of an uncemented total hip arthroplasty between December 2003 and June 2008.

The sample was comprised by 7 males and 8 females, with a mean age at the time of the primary hip replacement of 55.7 years. The diagnoses were coxarthrosis in 10 cases, avascular necrosis of the femoral head in 3 cases, and hip dysplasia in 2 cases. The mean survival of the primary implant was 14.8 years (range: 10 to 19.4 years).

The prosthesis used for the primary surgery was a Poropalcar® (IQL, grupo Biomet, Spain), composed by a femoral stem made of titanium–aluminum 4 vanadium and a ''poropros'' coating, with a semispherical acetabular implant of the same material and 3 flanges which favored its immediate stabilization. The polyethylene was an Arcom® model with ultrahigh molecular weight sterilized with gamma radiation in vacuum. The diameter of the femoral head was of 32 mm.

The mean age at the time of the revision was of 69.9 years. The indication for surgery was due to polyethylene wear in all cases. Isolated replacement of the insert was not possible because it was no longer manufactured, so it was decided to cement a new one over the osseointegrated uncemented acetabular cup.

The revision procedure was performed following the same approach route as in the primary intervention; the