

Excellent short-term results of hip resurfacing in a selected population of young patients.

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Orthop Traumatol Surg Res. 2015 Oct; 101(6):661-5

Introduction

Hip resurfacing (HR) with second generation metal on metal bearings was developed 15 years ago to provide an alternative option to total hip arthroplasties (THA) in a population of young and/or active patients. However in 2015, although the general notion of HR is accepted, there are still numerous controversies; about the type of bearings (large diameter metal on metal bearings) with a risk of adverse reactions to metal debris (ARMD), about the indications and the technical difficulties of implantation. The goal of this study was to analyse the short-term clinical, radiological and biological results of HR in a prospective series of patients.

Materials and Method

A prospective series of 502 hip resurfacing in 481 patients was analysed. These surgeries were performed using a single surgical approach (postero-lateral) and by one experienced surgeon responding to Haute Autorité santé (HAS) criteria (more than 50 HR/year).

The contraindications to HR were: a preoperative leg length discrepancy of more than 1 cm, renal insufficiency, age over 70 years old for men and 60 for women, the presence of a bone cyst of the femoral head of more than 1 cm in diameter and a native femoral head diameter of less than 48 mm.

Patient cohort consisted of 335 men (70%), mean age 48.7 years and main indication primary osteoarthritis (more than 70%).

All patients were implanted with a Conserve® Plus cemented resurfacing implant (Figure 1) with a mean follow up of 4.1 years (1.9-4.9).



Figure 1

At final follow up, 474 patients (1 lost and 6 leaving overseas could not be followed up) underwent clinical, radiological and biological (blood metal ions analysis) exams.

Student t test and the Chi-square test were used. Kaplan-Meier type survival curves were obtained based on component replacement for whatever reason, including septic revision, as criteria for failure (CI 95%).



Figure 2: Postoperative 4 year AP X-ray of the pelvis. Frontal plane cup inclination is 43°, the cervico-diaphyseal angle is 130° and the SSA angle is 132°. There are no radiolucencies.

Table 1:

National Registry	5 years survivorship for THA
Swedish	95.7%
	5 year revision rate for THA
Anglo-Welsh	5.6%
Australian	4.9%

Table 2:

Progression of clinical scores from the preoperative assessment to the final follow up (mean, range)

	Pre-Op	Follow-Up	P
PMA	10.5 (5-16)	17.5 (11-18)	< 0.0001
Range of motion	3.5 (1-6)	6 (3-6)	< 0.0001
Function	3 (1-6)	5.5 (3-6)	< 0.0001
Pain	4 (0-5)	6 (3-6)	< 0.0001
Harris Hip Score	31.5 (22-78)	97 (50-100)	< 0.0001
Oxford	37 (27-55)	14.5 (12-28)	< 0.001
Devane	2.5 (1-5)	4 (1-5)	< 0.001
UCLA	5 (2-10)	7 (2-10)	< 0.001

Table 3:

Metal Ion	Pre-op (µm/L)	Final follow-up (µm/L)
Cobalt	0.24 (0.01-3.6)	0.86 (0.01-5.7)
Chrome	0.68 (0.01-4.4)	1.28 (0.1-5.5)
Titanium	2.36 (0.39-7)	4.49 (1.29-8.21)

Results

There were no dislocations. A postoperative hematoma had to be evacuated with no other clinical consequences. Three cases of Brooker class III heterotopic ossifications (0.6%) were noted.

Survivorship was 99% at 4 years for any reasons for revision and 99.4% at 4 years with component removal as reason for revision.

There were 5 revisions with 2 one-stage revisions for infection, 2 femoral loosening and 1 tilt of acetabular cup.

A comparison with National Registries THA survivorships at 5 years of follow up suggested excellent results of the Conserve® Plus (Table 1).

All the clinical scores improved significantly at final follow up (Table 2). Mean frontal plane cup inclination was 42.7°. Inclination was greater than 55° in four cups (0.8%). The CCD angle was 132.5° (111°-160°). The femoral component was implanted with slight valgus, with an SSA of 134.3° (112°-171°). Anterior offset of the femoral component was 6.9 mm (-8-20) (Figure 2).

Ion levels results: no abnormal increase in metal ion concentration was observed in this study (Table 3).

Conclusions

The Conserve® Plus is one of the two systems (with the BHR® Smith&Nephew) which is still approved for use in the French market. These short term results in selected populations report the viability of resurfacing as clinical solution for young and active patients. However, the study author suggests certain conditions must be fulfilled: accurate frontal plane inclination of acetabular component (40°-45°), femoral head diameter of at least 48mm and good femoral bone quality.