

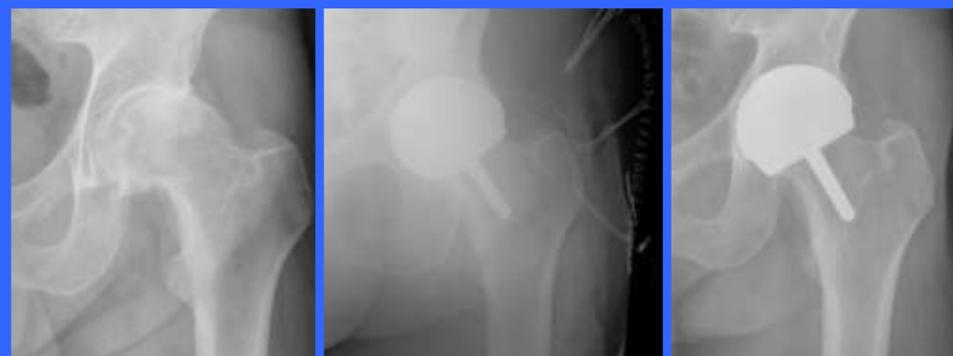


Metal ions dosage as a routinely follow-up in ≤ 48 mm metal-on-metal hip resurfacing in female patients? Results at a minimum follow-up of 5 years

A. Moroni, G. Micera, R. Orsini, M.T. Miscione, F. Acri, S. Mosca, F. Sinapi, D. Fabbri
University Vita-Salute San Raffaele

Introduction

Literature has recently shown a revision rate in females operated by hip resurfacing (HR), especially by little diameter implants (≤ 48 mm), higher than in males, but results are still acceptable. This has led to be more safe about these implants and limitations in the use have been proposed by the producers too. The aim of this study was to analyze the results of HR with diameter ≤ 48 mm in females at a minimum follow-up of 5 years.



F 55 years

post-op

5 years FU

Methods

We analyzed 198 operations performed by that same surgeon. All patients were asked to complete an Oxford Hip Score (OHS), radiographs of the hip, clinical check and metal ions dosage. All data were analyzed to find relation between results and implant, diameter, sex, follow-up, primary diagnosis, metal ions dosage.

Results

The mean follow-up was 7.5 years (5-13.2). 15 patients were lost at follow-up. 14 devices were revised (7%): the Kaplan-Meier rate with revision for any reason as the end point was 92.7% at 13 years. The major causes of revision were femoral component loosening and inexplicable pain; the revised patients had little defects in implant position. Mean OHS was 44 points (4-48, sd 7). Radiologically they were collected: 3 asymptomatic femoral notchings, 3 asymptomatic medial head/neck junction resorptions, 2 heterotopic bone formations (Brooker II), 1 periacetabular rarefaction. Main Cr dosage was $1.50 \mu\text{g/L}$ (0.09-7.00, sd 1.70) and main Co dosage was $1.30 \mu\text{g/L}$ (0.09-9.00, sd 1.60) in 64 cases of the survived implants (35%). No statistical relation was found between results and all evaluated subjects.



F 55 years

Failure

6 years FU

Analyzed subject		Number	sd, min and max or %
Patient		14	7%
Follow-up		8,2	sd 1,3 (6,3-10,2)
Diagnosis	OA	8	5,6% of total
	CDH	6	14,6% of total
Age		48,8	sd 7,2 (36-63)
Acetabular component	ADEPT	2	14%
	ADEPT CDH	1	7%
	BHR	10	72%
	BHR -CDH	1	7%
Acetabular component diameter		50	46-54
Femoral component diameter		44	38-46
Acetabular component inclination angle		46,4	sd 12,9 (25-70)
Femoral stem shaft angle		8,4	sd 5,5 (4-25)
Revision causes	Femoral component loosening	5	37%
	Pain	4	28%
	Metallosis	1	7%
	Pseudotumor	1	7%
	Traumatic dislocation	1	7%
	Traumatic femoral fracture	1	7%
	Acetabular component loosening	1	7%

Discussion

The overall survivor of HR is reported in literature from 94.6% to 100% in men, and from 73.9 to 92.5% in women with < 48 mm HR devices from 10 to 15 years. In our study, the overall survivor in women was 92.7% at 13 years.

The major part of failures occurred on the femoral component; accurate preparation of the femoral head, correct positioning and good cementing have important implications; in fact, a large time of the surgery is now dedicated to femoral preparation.

Best results are reported in patients operated after December 2007 and all failures occurred in patients operated from 6 to 10 years ago: this because of the learning curve of the senior surgeon; by studying and practice, indications and techniques were improved and a little modified.

The major part of revised devices were collected in patients affected by CDH; as increased anteversion of the femoral neck is common in CDH patients, the risk of implant malposition is higher: over time the positioning of the components has been improved. The good orientation is now fixed in $40^\circ (\pm 10)$; the average in this series was found to be 44° , and it was explained because the orientation during the learning curve period was higher.

Moreover, the indications were progressively restricted: major age of 55 years is now a contraindication, and DXA analyses are now taken preoperatively in all our female patients of over 45 years of age.

Failures are associated with metal ions increase. In this study, we report the result at a average follow-up of 5.7 years: the result of the analysis are good, except in few cases; one patient (68 years old, BHR 54-46mm, acetabular component inclination angle= 43° , FSSA= 7°) presents a Cr dosage of $7.0 \mu\text{g/L}$, with a little painful hip but function conserved: the patient has no indication of revision, but she is strictly observed. Thus, a metal ions increase can be used as a monitor of the HR outcomes. In asymptomatic patients with a follow-up of 2 years it is aspected to have acceptable metal ions dosage, with no increase if the clinical outcomes does not modify, and so we didn't find any necessity of habitual metal ions analyses: after the 2 first years, it is indicated at a large follow-up of 3 years, even if clinical and radiographic follow-up are indicated every years after the first.



F 30 years

Intra-op

4 years FU

Conclusions

HR provides good quality of life in females too, even with little diameter implants (≤ 48 mm). As surgery appeared to be one of the most important aspects affecting the results, we concluded that accuracy and experience in surgery are fundamental for the good exit of the implant.