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Original article

Return to work after hip resurfacing

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Abstract

Introduction

Hip arthroplasty is being performed in ever-younger patients, for whom return to work is a major issue. Type of job, type of implant and comorbidities all affect outcome. Heavy manual work is harder to resume after hip replacement, and reclassification or cessation of activity may ensue. This, however, is little dealt with in the literature, although its consequences are both psychologically and financially critical. The aim of the present study was to perform a retrospective analysis of return to work after hip resurfacing (HR).

Material

A retrospective study included patients undergoing Birmingham Hip Resurfacing with at least 6 months' follow-up. Occupational status was assessed, preoperatively and at follow up, as not working, in work or retired, type of work as sedentary, manual, or strenuous, and time to return to work was noted. Clinical assessment, preoperatively

and at follow-up, used Postel Merle d'Aubigné, Harris, Devane, UCLA and Oxford scores.

Results

117 patients were included (114 male, 3 female) for 121 HRs. Mean age was 52.9 years (range, 29-66 years). Mean follow-up was 14.3 months (range, 6-20 months), with no loss to follow-up. Crutches were abandoned in week 3 on average (range, 1-7 weeks). Four patients had no occupation; analysis focused on the other 113. At follow-up, only 1 patient had not resumed work, and was reclassified. The other 112 (99.1% of those in work) returned to their previous job at a mean 9.4 weeks (range, 1-22 weeks). Nine patients required therapeutic part-time work for a mean 5.3 weeks (range, 3-8 weeks). Time to return to work was significantly shorter for "sedentary" workers than "physical" (manual/strenuous) workers: 6.4 weeks (range, 1-9 weeks) versus 13.5 weeks (range, 2-22 weeks).

Discussion Conclusion

Return to work was feasible for almost all these young patients after HR. Sedentary work was resumed very quickly (<7 weeks), while strenuous work required 3 months' sick-leave.

Level of evidence: IV

Key-words: return to work, hip resurfacing, sport.

INTRODUCTION

In France, the number of hip arthroplasties is more than 150,000 a year (1). Efficacy no longer needs proving and the vast majority of patients experience improvement in function and quality of life. Under-65 year-olds account for 15-45% of this population (2-4), and the proportion of young patients is increasing strongly year on year (4). This is due to patient-related factors such as obesity, more intensive sport and overall population growth, but also to innovative surgical techniques. Notably, hip resurfacing (HR) targets a young, active, athletic and working population. The socioeconomic stakes of return to work after hip arthroplasty are high for both patient and society (4), yet studies on the subject are few. A meta-analysis by Tilbury et al. (2) reported return to work at a mean 10 weeks postoperatively. However, level of preoperative work, need for job adaptation and rate of return to work at the previous level are difficult to determine. According to Kievit et al. (5), only 68% of patients were in the same job 1 year after arthroplasty; according to Leichtenberg et al. (6), 80% had returned to work at 1 year, but 7% were invalids and 13% were in specially adapted work.

It is also obvious that return to work differs according to the type of work. Resuming sedentary work is usual and generally unproblematic (7). On the other hand, more strenuous work (heavy manual work, farming, firefighters, etc.) entails far more problems and often requires occupational reclassification or even ceasing work. This is little dealt with in the literature, despite its critical psychological and financial consequences.

Comparison across the literature is also hindered by differences between countries in the financial impact of time off work. Being unable to be sure of returning to work, many patients delay surgery, leading to secondary costs with repeated sick-leave, analgesic consumption and heavy psychological burden (8).

Due to this lack of data and the need to provide patients with clear information, we conducted a retrospective study of return to work after HR. We focused on sick-leave duration and conditions of return to work according to type of work. Functional status was also analyzed.

MATERIAL and METHODS

Patients

A retrospective study included patients receiving Birmingham Hip Resurfacing (BHR) (Smith & Nephew©) between January 1 and June 31, 2018, with a minimum 6 months' follow-up. BHR was indicated for osteoarthritis, with >48 mm femoral head. Exclusion criteria comprised necrosis or >30% bone defect in the femoral head, >2 cm limb-length discrepancy, age >65 years, and osteoporosis. All procedures used the same technique, with a specific posterolateral approach (9). Femoral cups were cemented. Weight-bearing was authorized as of postoperative day 1. Rehabilitation was prescribed for 3 weeks. No instructions were given on dislocation prevention or crutch use. Return to work was at the patient's discretion.

Clinical assessment

Occupational status was assessed preoperatively, as out of work, working or retired, and type of work was classified as sedentary, manual or strenuous. Clinical assessment at follow-up collected specific occupational data. Return to work was assessed in weeks, and any therapeutic part-time adaptation or reclassification were noted, at 6, 12 and 18 months postoperatively, by standardized questionnaire.

Preoperatively and at 12 months, Postel Merle d'Aubigné (PMA) (10), Harris (HHS) (11) and Oxford (OHS) (12) scores were assessed by an independent observer. Activity level was assessed on Devane (13) and UCLA (14) scores. Sociodemographic data (gender, age, weight, height) were collected. Any complications (dislocation, infection, etc.) were recorded at last follow-up.

Statistics

Data analysis used IBM SPSS Statistics software. Qualitative variables were reported as number and percentage, and quantitative variables as mean, range and 25th, 50th and 75th percentiles, with distribution normality assessed graphically and on Shapiro-Wilk test.

Pre- to post-operative differences were assessed on Student test for matched data. When numbers allowed, qualitative variables were compared on chi-square test. Correlations were assessed on Pearson or Spearman coefficient, depending on distribution. The significance threshold was set at 5%.

RESULTS

Analysis concerned 117 patients (114 male, 3 female) for 121 HRs. Mean age was 52.9 years (range, 29-66 years). Mean follow-up was 14.3 months (range, 6-20 months), with no loss to follow-up.

Diagnosis in 87.2% of cases (n=102) was primary osteoarthritis, in 6% (n=7) hip dysplasia, in 3.4% (n=4) traumatic osteoarthritis, and in 3.4% (n=4) aseptic osteonecrosis of the femoral head. Mean height, weight and body-mass index (BMI) were respectively 180.2 cm (range, 162-201 cm), 86.8 kg (range, 54-139 kg) and 26.6 kg/m² (range, 18.9-39).

Table 1 shows preoperative and follow-up PMA, HHS, OHS, UCLA and Devane scores.

Preoperative occupational status comprised 113 patients in work, 3 not working and 1 retired. Analysis focused on the 113 in work. Forty-one had office or teaching jobs, 37 were manual workers, laborers, farm workers or craftsmen, and 39 were sport teachers or coaches, soldiers or high-level athletes. There were thus 76 patients in “physical” work (67.3%) and 41 in “sedentary” work (327%).

Postoperatively, crutches were abandoned at a mean 3 weeks (range, 1-7 weeks; 25th percentile, 2; 50th percentile, 3; 75th percentile, 4). At last follow-up, only 1 patient had not returned to his previous work but had been reclassified. The other 112 returned to their previous job at a mean 9.4 weeks (range, 1-22 weeks; 25th percentile, 6; 50th percentile, 10; 75th percentile, 12). Nine patients required therapeutic part-time work, for a mean 5.3 weeks (range, 3-8 weeks; 25th percentile, 4; 50th percentile, 5; 75th percentile, 7).

Time to return to work correlated significantly with time to abandonment of crutches ($p<0.001$) and with type of work ($p<0.0001$), being shorter for sedentary than physical workers (6.4 weeks (range, 1-9) vs 13.5 (2-22)). Patients with higher preoperative PMA and Harris pain component scores had significantly shorter time to return to work ($p<0.001$), as did those with higher global PMA and Harris scores at follow-up ($p<0.001$). There was, however, no correlation between time to return to work and preoperative etiology ($p=0.2$), UCLA, OHS or Devane scores at follow-up ($p=0.3$), or BMI ($p=0.1$).

There were no cases of implant revision or dislocation at last follow-up. A hip joint lavage and antibiotic therapy was performed at 6 weeks for a case of infection, without recurrence at last follow-up. One hematoma was surgically evacuated at week 3, with an uncomplicated postoperative course. One postoperative lateral popliteal nerve injury resolved completely after 30 days.

DISCUSSION

In the present study, almost all working patients (99.1%) returned to work after HR. This was true for manual and strenuous work as well as sedentary work, although after a longer interval. Only one patient had to be reclassified, all others returning to their preoperative jobs. Overall, time to return to work was less than 10 weeks, and only 9 patients required a period of therapeutic part-time work. Patients with better preoperative clinical scores and those with better scores at follow-up returned to work more quickly.

Study limitations include small sample size; the series comprised young, predominantly male patients with high activity level: i.e., a population with high functional level. All received the same HR implant, with a single surgeon and constant technique and postoperative protocol, reducing assessment bias. Weekly work-load was not taken into account, but would be very hard to analyze, with varying responses leading to multiple biases. However, the large proportion of manual workers was a major factor in interpretation, considering the difficulty of returning to the previous job after arthroplasty. The proportion of manual workers corresponded to the series' male predominance, as indications for HR (femoral head >48mm and absence of osteoporosis) limited the numbers of female patients.

The study was relatively original, with few previous analyses of return to work after hip arthroplasty. Rates of return to work range between 20% and 90% (2, 4, 15, 16), and sick-leave ranged between 2 and 20 weeks on average. The present results confirm these reports, although in these studies (2-4, 14-17) it was not always clear what type of work, what type of arthroplasty and what perioperative protocol were involved.

A recent meta-analysis of 23 studies (3,536 patients; mean age, 52.7 years) (15) found a mean 69% rate of return to work in the 3,097 preoperatively employed patients. Return to the same job varied considerably before and after the year 2000,

at 44% and 86%, respectively; this is likely thanks to less invasive surgical techniques, better adapted to HR (9), and improved postoperative analgesia allowing faster rehabilitation and avoiding muscular deconditioning. Time to return to work, on the other hand, was unchanged, at 8.9 weeks. The present return-to-work rate of more than 99% shows that HR enables almost all patients to go back to their previous job, and is one of the best reported rates. The present time off work was identical to that found in the meta-analysis, although the latter did not analyze this according to the physical demands of the job. Unsurprisingly, time to return to work in the present series was twice as long for “physical” compared to “sedentary” workers, and the series comprised more than 67% “physical” workers, whence the longer time off work. In the meta-analysis, in contrast, sedentary workers predominated and “strenuous” work concerned less than 30% of patients, making the present results all the more relevant. This was confirmed in a study of return to work after HR in 90 patients with a mean age of 51 years, which reported a rate of 90% (8); the authors stressed that HR patients are mainly young male manual workers, with less comorbidity than found in total hip replacement. This exactly matches the present series, with male predominance and a majority of manual workers. In a study of return to work after total hip or knee replacement, Kleim et al. (18) identified certain negative factors: preoperative sick-leave, unskilled work, and demanding work; demanding manual work doubled the time to return to work compared to office work. The authors stressed the need for prior information on likely time off work according to job specificities.

In coordination with the French Society of Orthopedic Surgery and Traumatology (SoFCOT), the French health authority published guidelines on sick-leave following hip arthroplasty (19). The reference duration is 42 days for sedentary work and up to 120 days for heavy physical work, adjusted according to age, comorbidity, approach, type of arthroplasty and possibilities for work-station adaptation. The present study confirmed that, with an innovative HR implant, adapted technique and well-controlled analgesia, time to return to work in young manual workers can be significantly shorter than recommended in the guidelines.

One of the advantages of HR, apart from excellent restoration of biomechanics, is the absence of instability (20-21). This allows return to sport, and also restores unrestricted physiological range of motion, which has great psychological impact and is probably one of the keys to the success of HR in working patients who no longer

fear what their work involves. Thus, Peak et al. (22), comparing a group of patients without restrictions versus a classic protocol restricting potentially dislocating movements, return to work was both quicker in the former group (6 versus 9 weeks) and more frequent (82% versus 69%).

The financial impact of being able to return to the same job is considerable for both patient and society. Avoiding repetitive sick-leave, career change and/or job loss all represent a major financial gain. Koenig et al. (23) used a Markov model to compare costs between non-operative treatment of hip osteoarthritis and total hip replacement; the costs incurred by surgery (material, overall hospital costs, revision risk, etc.) were much lower than those associated with non-operative management (drugs, sick-leave, productivity loss, etc.), with more than \$3,200 cost-saving per patient, or \$10 bn for the 300,000 total hip replacements per year in the USA. This reinforces the clinical benefit of surgery for hip osteoarthritis in working patients (24).

CONCLUSION

Return to work after HR was feasible for almost all these young patients. Sedentary work was resumed very quickly, within 7 weeks, whereas more physically demanding work involved 3 months' sick-leave. The advantages of HR seemed to contribute to these excellent rates of return to work.

However, longer follow-up of more than 15 years will be needed to analyze the long-term impact of return to demanding work on implant fixation and bearings.

Disclosure of interest:

S Putman is a consultant for Corin and Zimmer

J Girard is a consultant for Corin, Smith & Nephew and Mathys.

The other authors have no interests to disclose

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Author contributions:

J Girard: article writing

P Martinot: patient follow-up

J Dartus: patient follow-up

S Putman: article writing and statistics

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Table 1: Clinical data, preoperatively and at follow-up

	Preoperative	Follow-up	p
PMA: global	10.7 (8-13)	17.4 (13-18)	0.001
Pain	2.2 (2-3)	5.8 (4-6)	0.001
Motion	4.8 (3-5)	5.9 (5-6)	0.01
Function	3.7 (2-5)	5.7 (4-6)	0.01
Harris Hip Score: global	40.7 (31-56)	93.3 (59-100)	0.001
Pain	2 (0-10)	100	0.0001
Motion	7.7 (6-12)	40.5 (24-44)	0.01
Function	20.5 (17-25)	12.4 (6-14)	0.01
Activity	8.5 (7-11)	31.7 (20-33)	0.01
		12.6 (8-14)	
Oxford Hip Score	42.1 (36-58)	15.5 (12-27)	0.001
Devane	2.1 (1-3)	4.6 (3-5)	0.001
UCLA	4.3 (3-6)	9 (6-10)	0.001