Socio-economic impact of Birmingham hip resurfacing on patient employment after ten years

Ibrahim A. Malek · Munawar Hashmi ·
James P. Holland

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Abstract Birmingham hip resurfacing is an attractive option for treatment of arthritis in young and active patients. The aim of this study was to assess the socio-economic impact of Birmingham hip resurfacing on their employment and work intensity at ten years. A cohort of 90 consecutive patients with 100 Birmingham hip resurfacing, performed by single surgeon, were reviewed prospectively. The mean age was 51 years at surgery. Prospective review was undertaken from surgery until the tenth post-operative year. Overall, 90% of patients were in the same employment following surgery. Two patients who were employed before surgery were unemployed. Three patients had to decrease their work intensity but were still employed. Three out of five disabled patients regained employment following surgery. Seventy-eight patients were able to continue their employment with no or minimal restriction. Birmingham hip resurfacing allows the majority of patients to continue their same employment at similar intensity ten years following surgery.

Introduction

The financial implications of osteoarthritis are very significant and very well documented [1, 2]. One study confirmed the indirect costs attributable to arthritis in excess of 11,000 CAN \$ per year. These costs are mainly

due to unemployment, reduced performance and occupational changes at work [3]. Apart from physical and financial implications, it is also known that arthritis causes significant psychological trauma, especially in patients who are in employment [4]. The ultimate aim of lower limb joint arthroplasty is to improve patient quality of life; as such, the ability to continue desired employment has immense influence on this quality, having a direct effect on patient social, financial and psychological well being.

There are various outcome measures available and widely used in literature to assess the final outcome following hip arthroplasty. The majority of these assess body function and structures (i.e., pain, stiffness, function, etc.) but provide limited information about activity and the impact on quality of life. This issue has also been identified by the World Health Organisation in publication of the International Classification for Functioning, Disability and Health [5]. More comprehensive outcome measures such as WOMAC and SF-36 do provide good, valuable and detailed information about the effect of activity and quality of life but work or employment is not included in these measures. In summary, available outcome measures do not appropriately represent the effect of an intervention on employment or work intensity.

After nearly five decades since Sir John Charnley performed the first total hip replacement, there are very few studies available exploring the impact of THR on patient employment [6–9]. Available literature concludes that patients are able to return to their employment, but we still do not know for how long they can continue working. It is assumed that patients can extend their employment by five years [6]. We have failed to identify a single prospective study exploring this issue at minimum ten years, which is considered as a benchmark for evaluation of any implant. The patient demographics requiring THR has

I. A. Malek · M. Hashmi · J. P. Holland
Department of Orthopaedics, Freeman Hospital,
Newcastle Upon Tyne, UK

I. A. Malek (✉)
35 Campbell Drive, Windsor Quay,
Cardiff CF11 7QE, UK
e-mail: ibmalek@aol.com

changed significantly in the recent past. This was also observed in the American population by Liu et al., who confirmed a significant decrease in patient age towards the <65-year-old category [10]. With the recent advances in technology and implant development, which include use of larger femoral heads [11] and alternative bearings, very few young and active patients receive conventional hip replacement [12]. Unfortunately, there are no existing studies available to compare the long-term effect on employment and work intensity.

Birmingham hip resurfacing is emerging as a popular alternative to conventional hip replacement in young and active patients. Medium-term results of Birmingham hip resurfacing have shown that these patients are able to enjoy a significantly higher level of activity than patients with conventional total hip replacement [13–20]. The aim of this study was to explore the impact of Birmingham hip resurfacing on patient employment and work intensity at a minimum of ten-years follow-up.

Method

One hundred Birmingham hip resurfacings were performed in 90 patients between 1998 and 2001 by the senior author (JH). Once patients finished their rehabilitation, they were advised that they could resume their respective employment without any restriction. Patients were reviewed after six weeks, three months, six months, one year, two years, five years and ten years prospectively. The final independent follow-up included a detailed audit questionnaire, which was completed by the patient containing details about their employment status, restriction of activity and work intensity both before and after the surgery and a patient satisfaction score.

Results

There were 66 males and 24 females. Median age at the time of surgery was 51 years (range, 27–64 years). Minimum follow-up was ten years (range, 10–13 years). Eighty-one patients (91 hips) were available for final review. Six patients

were revised to conventional total hip replacement following complications and were excluded from final review. There was one post-operative mortality. Two patients moved from their permanent address and could not be contacted.

Overall employment

At the time of surgery 55 patients were employed full-time, nine patients were part-time employed, ten were retired, five patients were disabled, one patient was a homemaker and one patient was unemployed. At final follow-up 42 patients were employed full-time, ten were part-time employed, 21 were retired, three were disabled, three were housewives and two patients were unemployed (Fig. 1).

Nine patients had retired from a full-time job and two patients had retired from part-time employment. Two patients who were in full-time employment before their operation were unemployed at final follow-up. One of them was disabled due to multi-joint arthritis and one patient had stopped work due to deterioration of general health. Three patients from initial full-time jobs had to downgrade their job to part-time employment. These patients had well functioning hip resurfacings. Three patients who were disabled before the surgery returned to employment, two in full-time and one in part-time capacity.

Excluding the natural age-related retirement of 21 patients, 54 out of 60 patients (90%) were in the same employment as before their surgery. Six patients were not in the same employment, but continued a different career. Three disabled patients entered employment in a better capacity.

Ability to continue work and level of restriction

Sixty-seven patients reported to have no difficulty in performing their employment duties. Eleven patients had partial restriction and three patients were unable to work (Fig. 2).

Details of employment and work intensity

Twenty-one patients described their employment as office-based "desk work" and 19 patients had office-based work

Fig. 1 Employment status before and ten years after the surgery

Fig. 2 Ability to continue work and level of restriction

“on feet all or part of the day”. Five patients had outdoor supervision type employment. Ten patients described their employment as manual (light to moderate) and ten patients were in heavy manual employment. As previously described ten patients were retired, one patient was unemployed and five patients were disabled (Fig. 3).

Three patients from each group who described their work intensity as office-based desk work, office-based on feet and outdoor supervision retired at final follow-up. Two retired patients had been involved in manual work. All these patients had well functioning hips and retirement was age-related. One patient from manual work had to step down to manual light work and one patient became unemployed. Again, in the first patient, change was due to circumstances unrelated to a well functioning hip. The patient who became unemployed had deterioration in his general health and was completely satisfied with hip surgery. One patient went on to have a manual light job from office-based employment.

Of the three disabled patients, two obtained work in a light manual capacity and one gained employment in an office-based capacity.

Impact on quality of life and subjective satisfaction

All but one patient were satisfied with their surgery and all but one patient would recommend same surgery in future.

Fig. 3 Description of employment/work intensity

Two patients responded that surgery did not improve their overall quality of life due to other non-hip issues.

Discussion

There were more than 5,000 hip resurfacings performed in 2008, which account for about 7% of all hip arthroplasty performed in the United Kingdom [22]. Birmingham hip resurfacing is becoming a popular option for young and active patients with end-stage hip arthritis. Perceived advantages include preservation of femoral bone stock, potential improved wear characteristics of metal bearings and a large femoral head which may lower dislocation rate, increase range of movement and improve activity level following surgery.

Short- and mid-term results of hip resurfacing and comparison with total hip replacement confirm that patients with hip resurfacing do enjoy better level of activity [13–19]. Two studies by Lavigne et al. and Narvani et al. confirm that patients with hip resurfacing are able to continue sport and are likely to start a new sport following a successful operation [20, 21]. It remains to be seen if these patients with high level of activity can continue their respective employment, especially those involved in manual work as this group is most likely to be affected by conventional total hip replacement to avoid potential dislocation and reduce polyethylene wear. Our results suggest that the majority of patients in the manual-work group continued their employment at the same intensity following a Birmingham hip resurfacing. The clinical, radiological and metal ion studies also confirmed no untoward implications in this group of patients who continued their respective manual employment. One patient with heavy manual employment had to step down to light manual work and one patient became unemployed due to other un-related hip issues at ten years follow-up. Invariably, patients get older and 12 patients in our series were retired at final follow-up. These patients had continued their respective employment until they had retired as planned due to age.

Our results suggest that more than 90% of patients with hip resurfacing were able to continue their same employment or in better capacity at ten years. Similar studies for total hip replacement conclude that between 25% and 92%

of patients return to employment [5–7]. Mobasheri et al. concluded that total hip replacement is effective in keeping patients under 60 years of age employed. Their results showed that 20% of patients changed their occupation and 10% had reduced capacity, although detailed descriptions of work intensity (i.e., manual or office-based) was not discussed in the study. It is very important to know the outcome of total hip replacement on patients who are in moderate to heavy manual employment, as this group is most likely to be affected by the hip replacement or its failure. Mobasheri et al. also acknowledged the limitation of their study with variable follow-up interval and mean follow-up of three years indicating the importance of a longitudinal study implemented over longer duration.

It also has to be understood that the patients who underwent hip resurfacing were more likely to be male, younger, employed and have less co-morbidity compared to those patients who have conventional total hip replacement [23]. It is also clear that impact of arthritis and any subsequent treatment on quality of life is much greater at 50 years than at 70. In this era of the Internet, worldwide web-based knowledge provides a useful source of information. A significant portion of patients do perform thorough web-based research before deciding about future operative intervention. Saithna et al. analysed the quality of patient information provided on the Internet regarding hip resurfacing. They concluded that the quality of health information on the Internet relating to hip resurfacing is of frequently poor and variable quality [24]. We think that this may be also due to a lack of available clinical data about a relatively new prosthesis. The results of our series add a very important aspect of socio-economic impact on patient employment to the existing knowledge of Birmingham hip resurfacing. We conclude from our experience that more than 90% of patients were able to continue their employment in their tenth year following Birmingham hip resurfacing with no or little restriction. These results also show that the majority of patients in high physical demand employment are able to continue that same employment with no untoward clinical or radiological effect on their Birmingham hip resurfacing.

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