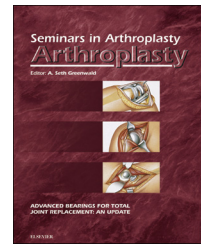




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Hip resurfacing: What does the Australian National Joint Registry say?



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ABSTRACT

Total hip resurfacing is a good alternative to conventional total hip arthroplasty. According to the 2016 Australian Joint Registry report, only 0.8% of all total hip arthroplasties were resurfacings. It is mostly done on patients under the age of 65 years but recently there has been an increase in the >65 year group. According to the registry, results improve significantly in men with primary osteoarthritis, large (>50 mm) femoral heads and with the use of either BHR or Adept implants. Interestingly, the registry also reveals a lower mortality rate with resurfacing than total hip arthroplasty after adjusting for age and gender. Although total hip resurfacing has decreased in popularity over the years, the outcome is still very good with a low complication rate.

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1. Background

Total hip arthroplasty (THA) is one of the most successful surgeries performed today. It drastically improves quality of life by decreasing pain and increasing function. The most common indication for total hip arthroplasty is primary osteoarthritis (OA) but other causes include avascular necrosis (AVN), congenital hip dysplasia, rheumatoid arthritis (RA) and posttraumatic OA. Conventional total hip replacements generally have a good outcome but come with potential risks. These risks include postoperative dislocation, stress shielding of proximal femoral bone, bearing surface wear, osteolysis, and implant loosening. Hip resurfacing is an alternative, where only the articulating surfaces are replaced (resurfaced). This procedure conserves proximal femoral bone, has a low risk of dislocation and accurately restores

mediolateral offset, femoral anteversion and anterior offset [1–6]. As with conventional total hip replacements resurfacing also comes with inherent risks. These include femoral neck fractures (early) and impingement (late). Femoral neck fractures occur mostly in the first 6 months but the incidence has declined significantly over the years with improved surgical technique. Impingement is a result of soft tissue or bony impingement, but the link between impingement and pain has not yet been established.

2. Demographics

The 2016 Australian Orthopaedic Association National Joint Replacement Registry (AOANJRR) report indicates that 16,521 hip resurfacings have been done over the years in Australia with only 367 done in the last year. There has been an 80% decline

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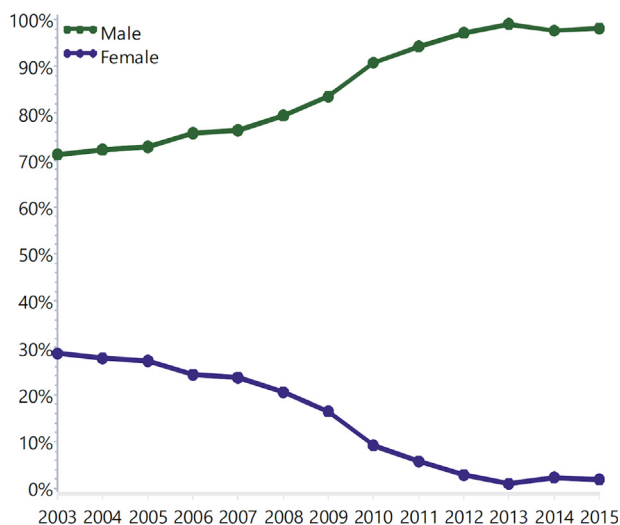


Figure 1 – Primary total resurfacing hip replacement by gender.

since 2005 in resurfacing surgery, with 1817 having been done in that year [7]. This could be attributed to the recall of some metal-on-metal (MoM) total hip arthroplasty implants.

Figure 1 clearly demonstrates how the demographics of resurfacing have changed. Today 98% of surgeries performed are on men, whereas in 2005 more than 25% were women.

Implants used has also changed over the years in resurfacing. The Birmingham hip resurfacing (BHR, Smith and Nephew Inc, Memphis, TN, USA) was used in nearly 90% of patients in 2003, whereas in 2015 there was a nearly equal split between the ADEPT Hip Resurfacing System (MatOrtho, Surrey, UK) and the BHR. Osteoarthritis is the primary diagnosis in 95% of resurfacings compared to 88% in conventional THA with developmental dysplasia of the hip (DDH) and avascular necrosis (AVN) each being the primary diagnosis in around 2% of cases, respectively.

3. Outcome and revision rate

Diagnosis plays an important part in the outcome of surgery. As already mentioned, osteoarthritis is the most common

indication for hip replacement surgery and is associated with the best results. Compared to OA the revision rate is higher in AVN and more than doubled in DDH. This is illustrated in Figure 2.

Men have been shown to have significantly better results in resurfacing and therefore the amount of females undergoing the procedure has declined rapidly. There is major difference in revision rate, with women having a nearly three times higher revision rate compared to men (Fig. 3). Although women have mostly smaller femoral heads than men, the revision rate remains higher in women independent of this.

This being said, femoral head size does influence outcome. As can be seen in Table 1, head sizes <44 mm have nearly a four times higher revision rate and head sizes 45–49 mm have more than double the revision rate of those >50 mm at 10 years.

Once the head size is larger than 50 mm the revision rate is similar with no significant difference between head sizes (Fig. 4). The indication for revision also changes with head size. The main reasons for revision in head sizes <50 mm are loosening, lysis and metal-related pathology. In >50 mm heads, indications for revision are more evenly spread between loosening, metal-related pathology, fracture, infection or pain. This is demonstrated in Figure 5.

Younger men (<65 y) historically have better outcomes with a lower revision rate at 3 years. Increased early revision in the >65 y group is mostly attributed to femoral neck fractures. However the results show the revision rate evens out over years and at 10 years there is no significant difference in revision rate between age groups (Fig. 6). For this reason there has been an increase in resurfacings in the >65 year age group in the last few years (Fig. 7).

Prostheses choice for total hip resurfacing has changed over the years with varying revision rates for different implants. Implants like ASR (DePuy, Warsaw, IN, USA) Bionik (ESKA implants, Lubeck, Germany), Cormet (Corin, Cirencester, UK), Durom (Zimmer, Warsaw, IN, USA) and Icon (IO International Orthopaedics, Holding, Geisingen, Germany) had high revision rates and were subsequently withdrawn from the market. Although the Mitch Resurfacing (Stryker, Kalamazoo, MI, USA) had a very low revision rate it was still withdrawn. The ADEPT and BHR have a very low revision rate

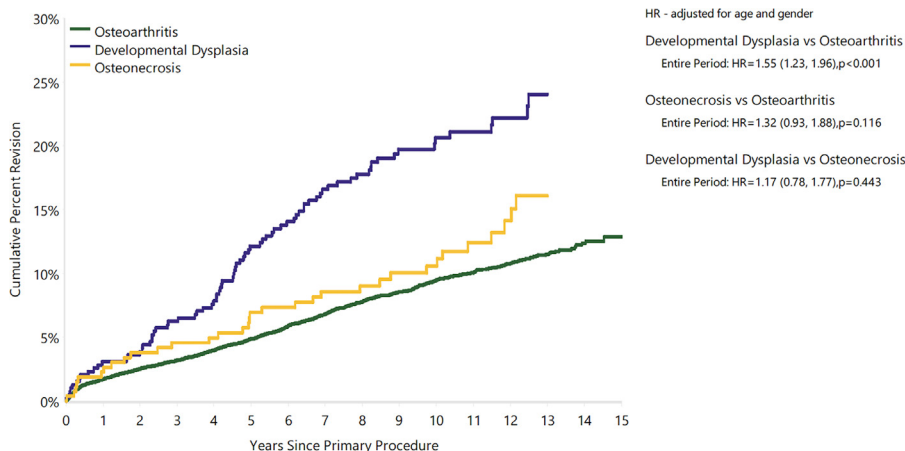


Figure 2 – Cumulative percent revision of primary total resurfacing hip replacement by primary diagnosis.

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