

IN BRIEF

Breaking Barriers: Addressing Gender Disparities in Hip Resurfacing Surgery Access in the United States

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Abstract

Second-generation large-diameter head hip resurfacing (HR) arthroplasty has gained popularity in terms of its potential for minimal wear and the preservation of proximal femoral bone stock. HR faces challenges, such as increased hip fracture rates and adverse reactions to metal detritus, despite the fact that over one million metal-on-metal (MoM) arthroplasties have been performed globally. FDA issued warnings in 2011 and 2016 regarding higher failure rates in women and categorized MoM implants as high-risk, influencing U.S. surgeons to limit HR in women. Conversely, European and Australian registries report 6.4% to 54.4% of HR procedures are performed on women. Addressing concerns via targeted follow-ups and age-specific recommendations can help provide equitable access to advanced medical treatments.

Level of evidence: V

Keywords: Gender, Hip, Resurfacing

Introduction

Second-generation large-diameter head hip resurfacing (HR) arthroplasty has increasingly become popular over the last ten years because of its potential for minimal wear, which provides a theoretical advantage in lowering periprosthetic osteolysis.¹ Utilizing larger head sizes mitigates the risk of dislocation and facilitates the reintroduction of hip resurfacing arthroplasty, thereby preserving the proximal femoral bone stock.^{2,3} To date, over one million patients worldwide have received MoM arthroplasty.⁴ At its peak, hip resurfacing arthroplasties utilizing MoM prostheses represented one third of all primary total hip arthroplasties (THAs) in younger patients.³

Main body

Since the failure of a resurfacing implant on the femoral side typically leads to a revision to a conventional primary femoral component, hip resurfacing (HR) is designed to preserve the bone on the femoral side. HR's downsides include a higher risk of hip fractures and unfavorable

reactions to metal debris.³ In a case series of 17 patients (20 hips) undergoing surface replacement arthroplasty, Pandit et al. observed pseudotumor formation (3 out of 17) which is an immunologic response to the accumulation of metal debris around implant.⁵ A recent study on Birmingham Hip Resurfacing (BHR) showed an estimated survival rate of 97.2% and 93.8% after five and ten years, respectively. The survival rate was 98.1% and 96.8% at 5 and 10 years, respectively, when this group restricted BHR to their current inclusion criteria of active males <60 years with femoral head components of 48 mm diameter.⁶ In men, implant survivorship of hip resurfacing (HR) was reported to be higher than 90% even in over 20 years follow-up.⁴

Various studies reported that the outcomes of hip resurfacing in women are inferior to those in men, citing several reasons. Among these factors include reduced femoral head size, increased occurrence of femoral head osteonecrosis, a higher frequency of delayed-type hypersensitivity responses, and a larger probability of hyperostoidosis development at the bone-cement contact

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in women. These factors may suggest a gender-based difference in immune response to this type of implant.^{7,8}

Additionally, a major concern is the impact of elevated chromium and cobalt ion levels on female fertility and fetal health. In 2011, the U.S. Food and Drug Administration (FDA) issued a statement expressing concerns about hip resurfacing in women, targeting orthopedic surgeons.⁹ This statement highlighted the surgery's higher failure rates in women. Again, in 2016, FDA emphasized that all MoM implants fall into the high-risk category (Class III devices) and must have premarket approval before being marketed.¹⁰ These overarching health policy warnings have led many prominent centers and surgeons in United States to avoid offering this surgery to women, whereas analysis of registry reports from European countries and Australia reveal that between 6.4% and 35% of hip resurfacing

procedures are performed on female patients [Table-1].¹¹⁻¹⁶ The recent report from the Finnish registry indicated that the revision rate for females with hip replacements is double that of males,¹⁵ with some studies even reporting a threefold increase in revision rates for females.¹⁷⁻¹⁹

There are several potential solutions to consider in this regard. First, performing this surgery on women over the age of 55 or post-menopause significantly reduces concerns related to fertility and fetal impact. Secondly, a smaller femoral head size, which is also noted by the FDA, is a revision risk factor in men as well. Based on recent reports from centers that design hip resurfacing arthroplasty, female sex is not associated with worse outcomes for this procedure; rather, it is the smaller size of the femoral component.⁸

Table 1. Summary of female patients on hip resurfacing registries

Title	Journal	Female (%)	Registry	Year
How long do revised and multiply revised hip replacements last? A retrospective observational study of the National Joint Registry	The Lancet	First revision:49.1 2nd revision:49.7 3rd revision:54.4	UK	2022
French hip resurfacing registry: A study of 1650 case	Orthopedics & Traumatology Surgery & Research	6.4	French	2022
Outcome of revised metal-on-metal hip arthroplasties: a Dutch arthroplasty register study	Archives of Orthopaedic and Trauma Surgery	35	Dutch	2022
Australian Orthopaedic Association National Joint Replacement Registry	Annual reports	18.7	Australian	2023
Poor 10-year survivorship of hip resurfacing arthroplasty: 5,098 replacements from the Finnish Arthroplasty Register	Acta Orthopaedica	33	Finnish	2016

Conclusion

By closer follow-up for women and recommending the procedure outside of women's reproductive ages, it seems possible to achieve the goal of providing advanced medical services to all genders.

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