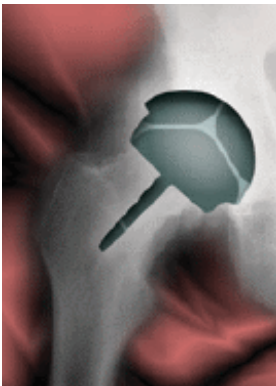


AAOS releases technology overview on hip resurfacing

By Brian J. McGrory, MD

During its December 2009 meeting, the AAOS Board of Directors approved a new technology overview (TO) on hip resurfacing (HR). **Kristy L. Weber, MD**, chair of the Council on Research, Quality Assessment and Technology, presented the document, which was developed by a physician workgroup under the direction of the Guidelines & Technology Oversight Committee.



In keeping with the definition of a TO, the document does not make recommendations for or against the use of HR for patients considering total hip arthroplasty (THA). TOs are considered educational tools that encourage readers to consider the information presented and reach their own conclusions. The complete TO can be found on the AAOS Web site at www.aaos.org/technologyoverviews

A focus on four questions

The TO on hip resurfacing addresses the following four questions:

1. Are revision rates different after metal-on-metal hip resurfacing than after total hip arthroplasty?
2. In all patients who undergo hip resurfacing, as compared to contemporary total hip replacement, what patient characteristics best predict successful/unsuccessful outcomes?
3. What is the more effective treatment: hip resurfacing or total hip replacement?
4. Is there any evidence that improvement in technique or patient selection for hip resurfacing will result in improved outcomes?

The introduction to the TO notes that "resurfacing arthroplasty is now offered worldwide as a

treatment option in some cases of end-stage hip arthritis.” Modern total hip resurfacing implants have attempted to address many of the shortcomings of early resurfacing devices by incorporating cementless fixation principles on the acetabulum with material and manufacturing improvements to produce a durable, low-wear bearing surface.

The workgroup identified 786 hip resurfacing citations, 3,056 total hip prognostic citations, and data from seven joint registries that were potentially relevant to this TO. Only 18 articles and the data from three joint registry reports, however, actually met the inclusion criteria.

Revision rates

To answer the first question on revision rates after HR and after THA, the workgroup examined data from three joint registries. Based on that data, overall, patients who receive HR are at greater risk for revision than patients who receive THA. The Australian registry, however, suggests that younger males with osteoarthritis might have a lower revision rate after HR than THA.

As noted in the TO, however, HR and THA are frequently offered to very different kinds of patients. Based on registry data, men tend to receive HR and women tend to receive THA. HR patients tend to be younger than THA patients. In the absence of a randomized, controlled trial that would compare similar patients, any comparison between the two procedures must statistically adjust for these differences. In other words, “the best possible information to address whether there are differences in revision rates between HR and THA is not available.”

Subgroup analyses of interest that require further investigation include the following:

- *HR and THA patients with a diagnosis of osteoarthritis*—Subgroup analyses suggest that these patients are at the lowest risk for revision.
- *Gender-related differences*—The most recent registry reports differ on whether women are at greater risk for revision than men after HR or after THA. Two registries find no gender-related difference; the third registry finds that women who received HR and men who received THA were at greater risk for revision.
- *Age-related differences*—The most recent registry reports also differ on whether a patient’s age influences revision rates after HR or after THA. The TO, therefore, cannot conclusively comment on whether a patient’s age influences revision rates after HR or after THA.
- *Component size*—Smaller components are at greater risk of revision than larger ones. Similarly, different implants may produce different clinical results, meaning that implant type must be considered in all analyses. The results of studies that do not consider this variable are difficult to interpret.

Patient characteristics and outcomes

To address the question on prognostic indicators, the workgroup reviewed data from three Level II HR studies and 10 Level II studies on THA.

The workgroup concluded that the literature does not conclusively demonstrate predictors of better or worse patient-oriented outcomes (such as pain relief, patient satisfaction, or walking ability) for either resurfacing arthroplasty or THA.

Hip resurfacing versus total hip replacement

Data directly comparing the effectiveness of HR and THA (question 3) are limited. The workgroup concluded that the disparate preoperative hip function scores and demographic characteristics between the groups enrolled in the relevant comparative studies “prohibit meaningful comparisons and confound the interpretation of the data.”

Improving outcomes

To address the final question on improving outcomes, the workgroup included only formal studies, not anecdotal reports. According to the workgroup, low-quality studies suggest that outcomes after hip resurfacing can be improved by changes in technique and increased surgeon experience.

The complete TO, including detailed evidence tables extracted during its development, is available at www.aaos.org/technologyoverviews

Brian J. McGrory, MD, chaired the physician workgroup on the technology overview on modern metal-on-metal hip resurfacing. Dr. McGrory reports no conflicts.

Developing a technology overview

The physician workgroup on “Modern metal-on-metal hip resurfacing: A technology overview” was chaired by **Brian J. McGrory, MD**, and included **Robert Barrack, MD; Paul F. Lachiewicz, MD; Thomas Schmalzried, MD; Adolf J. Yates Jr., MD;** and **William C. Watters III, MD**, chair of the Guidelines & Technology Oversight Committee. The TO is a collaborative effort between the AAOS and the American Association of Hip and Knee Surgeons (AAHKS).

The TO on hip resurfacing is not intended to convey any official position by either the AAOS or AAHKS. Instead, the information is provided as a service to help members identify and evaluate the available published literature on this topic so that they can provide the best possible care to their patients.

The AAOS developed its first TO, on the gender-specific knee, in December 2007. AAOS is involved in the development of technology overviews because technology plays a central role in the practice of orthopaedic surgery. In addition, AAOS seeks to be a resource for those seeking unbiased information on newly developed surgical procedures, drugs, biologics, and orthopaedic devices. The TO was funded solely by the AAOS.

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