



## Hip resurfacing debate: Success depends on surgeon experience, patient selection

**Some cautiously advocate the surgery; others cite its good track record, ability to restore function.**

*By Susan M. Rapp*

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Orthopedists who perform total hip replacement procedures continue to disagree on whether or not to resurface the femoral head using a metal-on-metal articulation.

The polarization among hip surgeons on that issue was particularly evident when Michael E. Berend, MD, recently debated Robert L. Barrack, MD, at the 23rd Annual Current Concepts in Joint Replacement Winter 2006 Meeting in Orlando, Fla. Berend opposes metal-on-metal hip resurfacing, saying it is “a bridge too far” for most surgeons and patients, whereas Barrack supports the technique.

Metal-on-metal hip resurfacing solves the hip replacement needs of a variety of patients, including younger ones, Barrack explained. And for those who have an anatomic abnormality that could render a conventional total hip replacement (THR) nearly impossible to perform, such as prior fractures on retained hardware. Much more common are anatomic variants that are suboptimal for cementless stems, such as patients with small canals (<10 mm) or large canals (>16 mm), he said.

But Barrack conceded a little, however, adding, “Resurfacing is not for every patient [and] not for every surgeon. It does, however, offer substantial advantages in properly selected patients.”

Berend’s argument in opposition of the procedure centered on the lack of clear scientific evidence of the short- and long-term benefits of metal-on-metal hip resurfacing.

“Does resurfacing truly offer benefits to our patients? Can they return to an active lifestyle that conventional THR patients can’t? There’s no data to support or deny this hypothesis,” Berend said. “As for me, I’ll stick with what works and solves real problems for us and our patients: conventional THR.”

Metal-metal hip resurfacing may also help avoid such problems as thigh pain, bone loss and stem and periprosthetic fractures, to which long-term stress shielding from standard THR may contribute, according to Barrack.

“The most compelling argument, however, is activity level. ... Does total hip limit activities and lifestyle? Absolutely,” he said.



**Michael E. Berend**



**By 6 months postop the 40-year-old hockey player** was back skating and avoided the hazards that might result from having a large metal stem.



**Proximal femoral deformity, though an uncommon indication,** is one for which metal-on-metal hip resurfacing can be particularly useful.

Images: Barrack RL

### Limited activity postop

Barrack discussed results of a survey of leading U.S. hip surgeons that showed 80% to 90% of respondents limited the postoperative activities of their patients who underwent conventional THR. And that was the case even if the patient had received a THR prosthesis featuring one of the new bearing surfaces or an oversized femoral head designed to help avoid dislocation.

After metal-on-metal hip resurfacing, orthopedic surgeons do not limit a patient's activities nearly that much, if at all, he said. A 2006 study Barrack cited found 92% of patients who underwent hip resurfacing participated in sports postoperatively and none of them gave up the sport they preferred, Barrack said.

Furthermore, among more than 446 total hip procedures studied through the 2- to 8-year follow-up, such postoperative activity was not shown to affect the patients' clinical results, Barrack said.

In that study, men younger than 55 years old were given no activity restrictions, 90% of them returned to sport and only one needed a revision procedure, he noted.

### Gold standard treatment

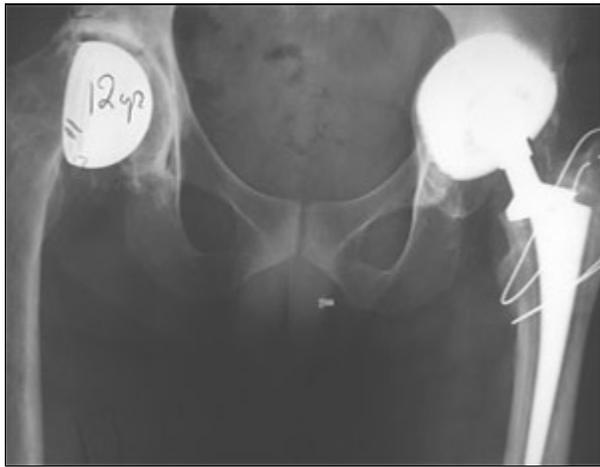
Berend's argument centered on the fact that, "Total hip replacement continues to be the gold standard for the treatment of hip arthritis. It's the only procedure with truly long-term follow-up [and] proven fixation. It's more reliable for all of us. Large heads and metal-on-metal implants are now available. Most importantly, [conventional THR has] not failed our patients and it's not failed us."

Additionally, hip resurfacing does not directly address any of the known problems with THR. "Please don't lose your head in this argument" because there are a few lingering unresolved issues with hip resurfacing, Berend said. Those issues that still remain unclear include the following:

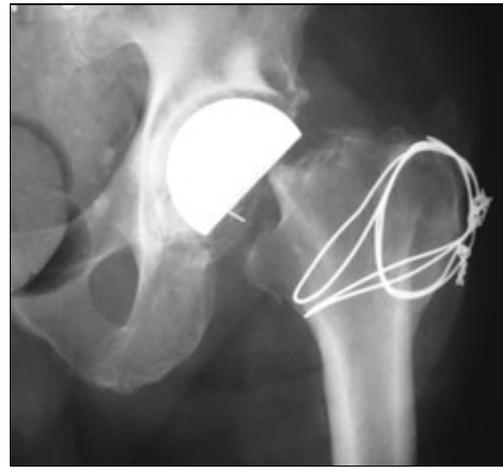
- proper patient selection;
- which fixation modality is best to use on the femoral side;
- the long-term influence of the biology of the bone on the femoral side, such as avascular necrosis; and
- whether survivorship of 5 to 7 years with a 2% to 14% failure rate truly can be considered long-term.

Barrack countered Berend's argument about THR surgery being a gold standard by describing some potential problems that exist in many THR patients undergoing revision. For one, the risks of greater problems developing can be significant with traditional THR revisions, he said. "Resurfacing does offer advantages in all these areas. Recent

studies have shown that revisions of modern resurfacing on the rare occasion that they become necessary, are equivalent to a primary in terms of operative time, blood loss and clinical result which is substantially better than the documented results of revision of a standard total hip," he said.



**Reduced blood flow to the femoral head** during metal-metal resurfacing might lead to avascular necrosis and femoral head collapse, which occurred in this patient's right hip 12 years after undergoing first-generation resurfacing.



**Delayed femoral neck fractures** like this one can occur after first-generation hip resurfacing, which may be related to surgeon performance.

Images: Berend ME

## Issues with resurfacing

Berend expressed some concern over whether metal-on-metal hip resurfacing was more difficult for the surgeon to perform and perfect. "I think it definitely is," he said.

In his presentation, Berend said he was uncertain whether most experienced total joint surgeons could properly address some of the key THR issues when performing a hip resurfacing procedure, including proper offset, limb length reconstruction and minimizing acetabular bone removal. "We have to challenge ourselves to ask: Are we all fit for this operation as well?" he said.

For example, vascular preservation is a critical component of the surgical approach, Berend said. Every surgeon performing a hip resurfacing needs to be keenly aware of that aspect of the surgery. And the entire procedure requires additional and more specific training for the physician, which implies that a resurfacing procedure is more difficult overall to execute than traditional THR.

The blood flow during resurfacing can also be dramatically reduced by up to 60% during the approach, 70% during reaming and 20% during implantation, none of which improves substantially after reduction and closure, Berend said. He wondered how proponents of the technique justify those reductions in blood flow. "The question is whether this is sustained in the long term," Berend noted.

"The surgery takes 18% longer, dislocation rates equal those of THR, and patients also experience slightly higher pain levels following a resurfacing hip replacement as reported by Schmalzried at the most recent hip meeting," Berend added.

Both presenters mentioned the increase in metal ions from the resurfacing as a source of concern. Berend noted that since the ions could be measured in parts per billion, the technique is contraindicated for patients with renal disease and women of childbearing age.

Barrack cited registry results from England and Austria that showed implant survival for the best metal-metal resurfacing designs that equaled or exceeded that of comparable modern cementless THA designs and exceeded the results reported in the Swedish registry for patients under 55 years old.

Both surgeons agree that increases in metal ions have not yet been shown to be positively associated with carcinogenicity for hip resurfacing or large head metal-on-metal THR.

**For more information:**

- Berend ME. Metal-Metal hip resurfacing: Solution to a non-existent problem — Affirms. #4  
Barrack RL. Metal-Metal hip resurfacing: Solution to a non-existent problem — Opposes. #5.  
Both presented at the 23rd Annual Current Concepts in Joint Replacement Winter 2006 Meeting. Dec. 13-16, 2006. Orlando, Fla.
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