***CORR* Insights®: Hip Resurfacing Does Not Improve Proprioception Compared With THA**

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Where Are We Now?

Metal-on-metal hip resurfacing arthroplasty may offer potential advantages compared with THA for certain patients with advanced osteoarthritis of the hip. However, concerns about revision rates and adverse metal hypersensitivity reactions have been raised as potential shortcomings of this approach [2, 8]. Holland and colleagues [3] used a resurfacing design that showed encouraging mid-term clinical results in large male patients, while the survival of hip resurfacing arthroplasty in patients with small joints was less satisfactory. Jack et al. [5] studied the data from the Australian Orthopaedic Association National Joint Replacement Registry

and recommended caution when choosing a Birmingham Hip Resurfacing with a diameter < 50 mm.

Another theoretical advantage of hip resurfacing is improved proprioception. The hypothetical advantage of better postoperative proprioception in patients with degenerative joint disease undergoing a hip resurfacing arthroplasty is believed to be related to the preservation of the proximal femur with its soft-tissues and the maintenance of a head diameter similar to the native joint. Nevertheless, quantification of hip joint proprioception is a complex task. Although several attempts have been made to assess hip joint proprioception after arthroplasty, the methodology used in those studies (gait analysis and measurement of center of mass displacement during quiet standing) seemed rather basic [4, 6]. More recently, Szymanski et al. [9] performed balance analysis with a mobile platform commonly used in stabilometry to assess functional outcome in 40 patients after hip resurfacing arthroplasty or THA. The authors found that single leg weight-bearing balance results were significantly better in the resurfacing group [9].

This CORR Insights® is a commentary on the article “Hip Resurfacing Does Not Improve Proprioception Compared With THA” by Larkin and colleagues available at: DOI: 10.1007/s11999-013-3082-8.

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Where Do We Need to Go?

The clinical investigation of Larkin et al. represents a relevant step toward a better understanding of hip joint proprioception. Quantification of dynamic postural stability was obtained using a multidirectional powered platform that measures deviations of the center of mass in 6° of freedom. I expect that their findings will add a relevant piece of information into the controversial debate of choosing hip resurfacing arthroplasty versus THA in the young adult male with a large joint. Obviously, this will only be significant for a rather small subgroup of patients considering arthroplasty.

On the other hand, the fortuitous finding of reduced proprioception of the nonoperative hip joint is intriguing. If supplementary clinical research confirms the observation of Larkin et al., proprioception assessment with tools like PROPRIO® 5000 (Perry Dynamics Inc., Decatur, IL, USA) may become a useful method to quantify functional impairment in preclinical degenerative joint disease. Early diagnosis is important in these settings, and new technology to help the clinician in detection and decision-making is precious. It might be difficult to validate dynamic postural stability as a diagnostic tool for early arthritis. Nevertheless, the effort will be worth the time and the resources required for such a complex investigation.

How Do We Get There?

The use of total hip resurfacing arthroplasty has declined markedly in the last few years. In New Zealand, the number of total hip resurfacing arthroplasties decreased from peak utilization in 2009. Currently, these resurfacing procedures represent less than 2% of the 7,218 primary hip arthroplasties carried out in 2011 [7]. In Australia, the use of total hip resurfacing arthroplasties continues to decline, down 39.7% in 2011 compared to 2010. The approach accounted for only 1.6% of all primary hip arthroplasty procedures performed in 2011. In Australia, a higher proportion of resurfacing procedures are carried out in younger male patients [1]. Based on this, it seems that further research in the field of proprioception after total hip resurfacing arthroplasty will benefit a small number of patients. I suspect that even with refined methodologies and clinical trials with larger sample sizes, only a few surgeons will resolve to change their practice.

The current limitation of hip resurfacing arthroplasty is mainly related to material and design, rather than functional results.

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