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CORR Insights®: Frequent Femoral Neck Osteolysis With Birmingham Mid-head Resection Resurfacing Arthroplasty in Young Patients

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Where Are We Now?

Mid-head resection resurfacing arthroplasty is considered a viable hip-preserving procedure that allows bone

This CORR Insights® is a commentary on the article “Frequent Femoral Neck Osteolysis With Birmingham Mid-head Resection Resurfacing Arthroplasty in Young Patients” by Assad and colleagues available at: DOI: [10.1007/s11999-015-4348-0](https://doi.org/10.1007/s11999-015-4348-0).

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preservation to patients with an abnormal femoral head morphology and/or poor bone quality. These bone issues are generally found in younger patients (typically younger than 55 years of age) with hip osteonecrosis. The mid-head resection resurfacing may offer an alternative to conventional hip arthroplasty implants. However, there are only a few small studies with short-term followup (mean, 2 years to 3.5 years) using this particular implant that have shown high survivorship rates of 97% or greater [1–3]. To the best of my knowledge, the study by Assad and colleagues presents the longest mean followup for these prostheses. The authors found an increased risk of osteolysis of the remaining femoral neck in these patients despite 100%

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survivorship at a mean 6-year followup (range, 3 years to 8 years). It appears that many of these hips (at least 16%) will ultimately fail due to osteolysis based on the findings of the present study. Patients who have not been followed closely should receive careful scrutiny.

Where Do We Need to Go?

Such a finding raises specific concerns about the safety of this hip-preserving operation. We must ensure that we maximize the survivorship of these prostheses, by following the correct indications. Assuming that these prostheses will continue being used, we must also identify risk factors that could potentially lead to failure. The authors did an exhaustive search for osteolysis or failure. Unfortunately, they were unable to identify any factors that would portend a poor result (having evaluated gender, age, height, preoperative Oxford Hip Scores, preoperative UCLA activity scores; size

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of implant head, cup, or stem; and radiographic parameters such as cup inclination, stem-shaft angle, or spot welding). Since this problem appears sporadic, but common, they no longer recommend using this device. Even though this is a small study ($n = 47$ patients), one cannot assume that a larger study would have been more useful to identify this prosthesis as a problem and more patients at risk might pose an undue risk for this larger population. However, larger retrospective series of patients may help identify risk factor that contribute to failure.

Until more risk factors for increased osteolysis of these prostheses can be established, this alarming risk of osteolysis without symptoms necessitates a carefully constructed followup plan for all patients who have received these devices. Failure to do so may put these patients at risk. In fact, by the time their hips become symptomatic,

these patients may have more severe osteolysis, making subsequent reconstructions more difficult and jeopardizing the functional results following reconstructions.

How Do We Get There?

Finding the specific risk factors of osteolysis will require several types of studies. If there are other centers with large patient cohorts, it would behoove them to analyze their data to determine who might be a “safe” population and who is at high risk and needs to be evaluated more frequently. Any retrospective study must be large in order to (1) appropriately analyze those patients with osteolysis and (2) determine if there are any patient- or surgery-related factors that may be associated with increased risk. This may require the collaboration of multiple high-volume institutions with surgeons who still

perform these procedures, or analysis of a national registry where these procedures are being performed. All patients should be followed on a frequent basis with: (1) Histories and physicals, (2) metal ion analyses, and (3) multiple imaging modalities including MRI or ultrasound.

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