Note: The authors of this study deserve tremendous credit for performing a well-designed, prospective study of the clinical outcomes of hip resurfacing. This study analyzes the outcomes of one of the three common hip resurfacing designs. The reoperation rates for the other two designs are likely to be at least as high. One of the other popular designs has a greater diametral clearance (which leads to a higher wear rate) and oral presentations of the third commonly used design (not yet available in the US) shows the highest cup loosening rates and highest femoral neck bone resorption rates of the three. SM

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Modern Generation Metal-on-Metal Total Hip Resurfacings: Results of a prospective FDA-IDE Study

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Abstract: Due to concerns of component loosening and biological incompatibility of the alloy constituents, the first generation of metal-on-metal bearings were phased out shortly after being introduced in the 1960's. Recently, improved metal-on-metal prostheses technology has led to the reemergence of resurfacing as a viable option for total hip arthroplasty. There are a limited number of studies evaluating the results of current metal-on-metal designs. As part of a comprehensive FDA IDE evaluation, this study provides the clinical and radiographic outcomes of a metal-on-metal resurfacing at mid-tem follow-up. Between August 2000 and August 2003, 1016 metal-on-metal hip

resurfacings were performed by ten orthopaedic surgeons in an FDA-IDE study. The most common indications for surgery were primary osteoarthritis (77%), osteonecrosis (11%), hip dysplasia (7%), and trauma (4%). The mean patient age was 50 years (range, 15-81 years) with a mean follow-up of 51 months (range, 33 to 69 months). The mean body mass index was 27.5 (range, 16.3 to 48.2). All patients were evaluated using Harris Hip Scores and SF-12 Health surveys. Patients were radiographically assigned for alignment, loosening and lucencies. After an investigator meeting in October 2002, the prosthesis was slightly altered (thin acetabular shell), the indications modified (excluded BMI >35, osteopenia), and the technique changed (cementing, no notching allowed). At final follow-up, 867 hips (85%) were considered to have successful clinical outcome based on a Harris Hip Scores greater than or equal to 80 points. The mean Harris Hip score improved from 47 points (range, 3 to 92 points) preoperatively to 87 points (range, 3 to 96 points) posoperatively, $p<0.001$. The mean final follow-up SF-12 mental and physical component scores were 55 points (range, 19-67 points) and 50 points (range, 17 to 64 points), respectively. **There were 45 hips (4%)that required revision surgery with the most common indications being fractures (19 hips)** and component loosening (12 hips). One patient experienced protrusion acetabuli which required surgical revision. **Postoperative dislocations occurred in 18 hips (1.8%).** Radiolucencies were documented in 157 hips (15%), although non were progressive. **After changes were made in the prosthetic design, indications, and technique, the overall complication rate was reduced**. The revision rate was 4.7% before and 2.8% after the changes. This can be exemplified specifically in the femoral neck fracture rate which was reduced from 2.8% to 0.7%. The results of this prospective study illustrate the mid-term durability and effectiveness of metal-on-metal resurfacing across patient populations and multiple surgeons. In addition, the results indicate that patients should be carefully selected in order to reduce the incidence of femoral neck fracture. After modification for indications, prosthesis, and technique, the femoral neck fracture rate was reduced from 2.8% to 0.7% which further reflects the significant learning curve for this procedure. The authors await long-tem follow-up to see if these promising results will be maintained.