

Reply to Letter to the Editor

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We thank Doctors Marcel E. Roy and Leo A. Whiteside for their comments regarding our article entitled “Clinical Comparison of Polyethylene Wear with Zirconia or Cobalt-Chromium Femoral Heads” [5], and for contributing their expert knowledge regarding zirconia femoral heads.

Our article exclusively addresses the wear rates of yttria-stabilized zirconia manufactured by Saint Gobain Demarquest (Evreux, France), as stated in the Materials and Methods section. As a consequence, the Discussion and conclusions in our article deal with yttria-stabilized zirconia although this is not spelled out throughout the text. Other studies have similarly focused on yttria-stabilized zirconia [2, 3, 6].

Importantly, Roy and Whiteside bring attention to magnesia-stabilized zirconia, which indeed still is available for orthopaedic applications. Based on the published retrieval study by Roy et al. [4] and interesting new experimental results briefly presented in their commentary, magnesia-stabilized zirconia femoral heads seems to offer a safe, low-wear alternative to the traditional metal-on-polyethylene articulate bearing. However, their observations are based on surface analysis of a limited number of retrieved zirconia ceramic femoral heads (five yttria-

stabilized zirconia femoral heads and seven magnesia-stabilized femoral heads), aged a minimum of 5 years and an average of 8 years in vivo [4]. The average roughness of yttria-stabilized zirconia was increased with age while magnesia-stabilized zirconia heads stayed unaffected with age in vivo, and yet most of the zirconia femoral heads in both groups were retrieved owing to wear and osteolysis. They provided no estimate of the polyethylene wear or examination of the counter bearing noncross-linked polyethylene surfaces but concluded magnesia-stabilized zirconia femoral heads to be phase stable and degradation free [4]. Some comments on factors attributing polyethylene wear, osteolysis, and a shorter than expected time of survival in all of the examined retrieved components would have been valuable for clinical recommendations.

Although the experimental results with magnesia-stabilized zirconia seem most favorable, as did the experimental wear-simulator results with yttria-stabilized zirconia femoral heads [1], clinical publications regarding medical-grade magnesia-stabilized zirconia including reports regarding clinical polyethylene wear are sparse, and, to our knowledge, long-term large-scale clinical results (more than 10 years), including data regarding polyethylene wear, are yet to be published. We look forward to seeing these results and encourage continued sharing of knowledge regarding zirconia-on-polyethylene bearing couples.

(Re: Stilling M, Nielsen KA, Søballe K, Rahbek O. Clinical comparison of polyethylene wear with zirconia or cobalt-chromium femoral heads. *Clin Orthop Relat Res.*2009;467:2644–2650.)

Each author certifies that he or she has no commercial associations (eg, consultancies, stock ownership, equity interest, patent/licensing arrangements, etc) that might pose a conflict of interest in connection with the submitted article.

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