



Letter to the editor

Response to letter to the editor on “Titanium neck–titanium stem taper corrosion in a modular neck stem”

We thank both Dr. Hirakawa for his commentary on our article and the Editor-in-Chief for the opportunity to respond to the letter. We agree that increased modularity in total hip arthroplasty (THA) implants has introduced a new clinical dilemma. While modular neck stems may promote intraoperative efficiency and accuracy of anatomic restoration, there is increased risk of taper corrosion causing adverse local tissue reaction (ALTR) and/or neck fracture, potentially devastating events [1,2].

Our article's stated aim was to “report a case of ALTR due to head-neck and neck-stem taper corrosion in a modular neck stem with titanium (Ti)-alloy neck.” There was no intent to suggest that neck-stem taper corrosion was the sole or primary cause of ALTR in this patient. We too believe that head-neck taper corrosion contributed significantly to the ALTR observed in this case.

As noted in the letter to the editor, we may be the first to have observed Ti neck–Ti stem taper corrosion in this particular modular neck stem. While confirmatory reports in the literature are reassuring, we are hopeful that the novelty of our finding brings added value to the readership. Our evidence for taper corrosion at the Ti neck–Ti stem junction was black corrosion product, not discoloration, on the male taper of the modular neck, as demonstrated in an intraoperative image from our original article. Serum Ti levels were indeed undetectable. It is possible that far fewer ions are released during taper corrosion within an all Ti taper than cobalt and chromium ions during head-neck taper corrosion in a metal-on-polyethylene THA. Certainly, electron microscopy of the neck-stem taper would have added to the strength of our report.

We direct our readers to the first paragraph of the discussion section, in which we cite the 2 prior cases of ALTR reported with the stem that is the subject of our report [3,4]. Three reported cases of ALTR, as well as evidence of taper corrosion at both head-neck and neck-stem tapers, should give us pause before selecting this stem for routine use. Even more cause for concern is the fact that these 3 cases are not outlier events, but a hallmark of modular neck stems as established in the literature [5–7]. It seems difficult to justify using modular neck stems during routine THA if even one patient is placed at risk for developing ALTR, which we have reported often has irreversible consequences [8].

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To remedy ALTR, revision of only the modular neck with conversion to a ceramic head is suggested as an alternative to stem revision. We favor stem revision, as described in our original article, for several reasons. First, ceramic heads do not eliminate the risk of taper corrosion with an at-risk taper [9,10]. Second, with a damaged female stem taper, there is risk of recurrent taper corrosion at the neck-stem junction. Third, there is no evidence that there is decreased risk of ALTR with lower-demand patients. In addition, the potential morbidity and mortality of reoperation for recurrent ALTR is even higher in patients of advanced age. Finally, explant of the well-fixed single-wedge stem discussed herein typically proceeds uneventfully without significant bone loss or need for extended trochanteric osteotomy.

We maintain that it is prudent to avoid routine use of the modular neck stem that was the subject of our paper. Close clinical monitoring of those in whom this stem has been implanted is essential to mitigating the sequelae of ALTR.

We again thank Dr. Hirakawa for his inquiry concerning this report and are hopeful that our responses provide sufficient clarification and useful insight regarding the case.

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Sumon Nandi, MD, MBA*, Ronit Shah, BA
Department of Orthopaedic Surgery
The University of Toledo College of Medicine and Life Sciences
Toledo, OH, USA

Carl Talmo, MD
Department of Orthopaedic Surgery
New England Baptist Hospital
Boston, MA, USA

* Corresponding author. Associate Professor, Chief of Adult Reconstruction, Department of Orthopaedics, University of Maryland School of Medicine, 110 South Paca Street, Suite 300, Baltimore, MD, 21201, USA. Tel.: +1 410 683 4107. E-mail address: sumon.nandi@gmail.com (S. Nandi).

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