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CORR Insights®: What Risks are Associated with Primary THA in Recipients of Hematopoietic Stem Cell Transplantation?

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Where Are We Now?

In their study, Chalmers and colleagues evaluated the overall mortality, complications, and revision and reoperation frequency among patients with hematopoietic stem cell transplantation who under-

went THA. With appropriate medical management, including comanagement with transplant specialists, the current study shows that carefully selected patients with hematopoietic stem cell transplantations can undergo elective THA without an undue risk of severe complications. Complications occurred in 10% of the patients, but the authors did not observe a higher risk of infection as a cause for revision. Additionally, implant survivorship free of component revision for any reason or implant removal was modestly higher than what one might expect with an all-comers THA population, at 93% at 5 years.

Similar to the findings in the current study, the same authors reviewed the outcomes of THA in solid-organ transplant patients and found similar survivorship free of any revision, with

95% and 94% survivorship at 2 years and 5 years, respectively [1]. A previously published study [7] showed survivorship of 74.8% at 10 years for loosening of any component as an end point among patients receiving hematopoietic stem cell transplantation. They also reported a 4.2% risk of deep infection. Even though the reported longevity is slightly lower than that reported for primary osteoarthritis, we can still expect considerable benefit after THA for many of these patients.

Patients with leukemia, multiple myeloma, or many other hematological conditions increasingly undergo autologous and allogeneic hematopoietic stem cell transplantations. The success of the procedure, coupled with improved patient survivorship, likely means that more of these patients will be candidates for THA in the future [4]. As patient survivorship increases, so too does the incidence of long-term complications of the procedure. One such complication, femoral head avascular necrosis (AVN), has a reported frequency of 4% to 19% [2, 3, 5]. The leading cause for the

This CORR Insights® is a commentary on the article "What Risks are Associated with Primary THA in Recipients of Hematopoietic Stem Cell Transplantation?" by Chalmers and colleagues available at: DOI: [10.1007/s11999-016-5029-3](https://doi.org/10.1007/s11999-016-5029-3).

The author certifies that he, or a member of his immediate family, has no funding or 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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This *CORR Insights®* comment refers to the article available at DOI: [10.1007/s11999-016-5029-3](https://doi.org/10.1007/s11999-016-5029-3).

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development of AVN in this population is graft versus-host disease, which can be treated with high dose steroid therapy [2, 3, 5, 6]. Along with AVN, these patients are also at risk for developing primary hip osteoarthritis.

Where Do We Need To Go?

With the current drive toward value-based care and bundled payment initiatives, hospitals and surgeons are forced to reevaluate patient selection prior to total joint replacement surgery. Patients who undergo hematopoietic stem cell transplantation have been shown to have a high incidence of medical comorbidities, prolonged immunosuppressive treatment, and have a potentially higher rate of complications following THA [7]. Further work on patient education and optimization in these complicated patient groups is needed in order for us to improve patient outcomes, as well meet patient expectations after total joint replacement. Furthermore, in order to keep the viability of treating higher risk patients within the value-based healthcare structure, a multi-specialty team approach comprised of the patient's hematologist, internist, and orthopaedic surgeon, is needed to promote low-complication and readmission rates.

How Do We Get There?

With proper patient engagement and a shared decision process, patients who are at a higher risk for complications, such as patients who have undergone hematopoietic stem cell transplantation, can achieve not only good clinical outcomes with low rates of perioperative complications, but adequate informed consent and understanding of the procedure and its expected long-term survival and revision rate. We need to further investigate the benefit of THA on the long-term survival and function in immunocompromised patients, this can be achieved with the use of large national registry data that can enable us to look at larger cohorts for this unique patient group and compare their perioperative and long-term complication risk to other patients who underwent THA. Furthermore, we need to elucidate how best to prepare them for surgery. Different postsurgical followup schedules may be needed for patients that are on long-term immunosuppression and steroid therapy, as they can develop late complications many years from the index procedure. Future work needs to investigate the appropriate timing of elective total joint surgery in these fragile patient groups. Additionally, we need to establish guidelines for the ideal time to undergo surgery

within the cycle of treatment of chronic conditions.

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