

**Author Reply to
“Regarding ‘Return to
Work Following High
Tibial Osteotomy With
Concomitant
Osteochondral Allograft
Transplantation’”**



We would like to thank Dr. Zhong¹ for expressing interest and concern regarding our recently published article, “Return to Work Following High Tibial Osteotomy With Concomitant Osteochondral Allograft Transplantation.”² His letter identifies several discussion points, and we thank the journal for the opportunity to address these concerns.

First, Dr. Zhong points out that our study had no comparison arm, either isolated osteochondral allograft (OCA) or isolated high tibial osteotomy (HTO). We argue that those specific comparison groups are inappropriate for performing a case-control study because they represent fundamentally different patient populations considering our surgical indications. The natural history of OCA in malaligned knees is already well established, with residual or unaddressed malalignment being the most common cause of failure in cartilage restoration procedures.³⁻⁵ Cavendish et al.⁶ argued that normal knee joint alignment is necessary for successful OCA transplantation. Varus malalignment increases joint loading in the medial compartment, which may accelerate cartilage wear after OCA transplantation.⁴ Thus, the presence of varus malalignment is a relative contraindication for proceeding with isolated OCA without concomitant corrective osteotomy. On the other hand, HTO with concomitant cartilage repair surgery has shown significantly greater mid-term survival than isolated HTO.⁷ Thus, in our experience, isolated HTO is reserved for patients who have more advanced medial-compartment arthritis, who would otherwise not be candidates for OCA given the amount of global medial-compartment disease.

Dr. Zhong astutely states that there are many other validated patient-reported outcome measures (PROMs) that could have been collected to evaluate the clinical status at final follow-up, such as the Western Ontario and McMaster Universities Osteoarthritis Index. Although the Western Ontario and McMaster Universities Osteoarthritis Index is indeed a robust score used in many knee arthritis studies, it is not the most commonly reported PROM in the literature with respect to HTO performed with cartilage restoration techniques⁸ or even isolated OCA.^{4,6} Given the extensive return-to-work survey administered in our study,

which was administered in conjunction with a return-to-sport questionnaire,⁹ there was concern for survey fatigue if additional PROMs were included. Thus, the Single Assessment Numeric Evaluation was chosen as a compromise, as an adjunct to the visual analog pain score, given its ease of administration and moderate to strong association with the level of function assessed by other PROMs in patients with acute knee injuries or procedures.¹⁰⁻¹²

In the spirit of transparency, we reported all of our patients' complaints instead of only reporting surgical complications. Most complaints were associated with occasional or chronic pain; this is consistent with our mean visual analog scale pain score of 3.1 ± 2.5 at final follow-up, which is equivalent to the mean pain level reported in the literature.⁸ In a series of patients undergoing isolated HTO performed by the senior author (B.J.C.), the rate of complaints (89.2% vs 88.5%) and mean pain level (2.8 ± 2.5 vs 3.1 ± 2.5) were similar to those in patients undergoing HTO plus OCA.¹³ This finding shows that postoperative complaints may not be a function of HTO or OCA but rather may be a result of the disease process itself. Additionally, it reveals a shortcoming of the questionnaire because the survey did not specify the period during which patients experienced these complaints. Therefore, patients may have felt this symptomatology early in the postoperative period versus at final follow-up.

Although HTO and OCA address malalignment and cartilage defects, respectively, they are not a panacea against the inevitable wear and tear that come with Father Time, particularly in our younger and more active patient population. We surmise that younger age and greater activity may have resulted in additional joint degeneration, leading to a higher rate of additional procedures. Nevertheless, the rate of conversion to arthroplasty (7.7%) was low at an average of 6.7 years' follow-up and in line with the rate reported in the literature.⁸ Finally, we did not perform uni-compartmental knee arthroplasty (UKA) or total knee arthroplasty (TKA) at the time of revision; therefore, the absolute indications for surgery are not completely known. The patient who underwent UKA was younger at the time of HTO plus OCA (30 years vs 35 years), had a lower body mass index (25 vs 33), underwent surgery on the dominant extremity, and had a higher occupational intensity (carpenter vs sales manager). Furthermore, the patient who underwent UKA (aged 33 years at the time of UKA) initially chose HTO plus OCA to allow him to return to sport and remain active, whereas the patient who eventually underwent TKA initially sought treatment specifically to relieve pain. For the latter patient, aged 46 years at the time of his arthroplasty procedure, TKA may have been an acceptable treatment modality given his circumstances.

We suspect the difference in arthroplasty implant choice was a result of several factors, including age, body mass index, occupational intensity, goals of care, and degree of arthritis observed in the remaining compartments.

Once again, we thank Dr. Zhong for his interest and concern regarding our article. Initiating discussion regarding ongoing research is imperative to facilitate further research and improve patient care.

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