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Letter Regarding: Talar Osteonecrosis After Subchondroplasty for Acute Lateral Ligament Injuries: Case Series

Dear Editor:

We have read with much interest the comments regarding our manuscript written in the discussion section of "Talar Osteonecrosis After Subchondroplasty for Acute Lateral Ligament Injuries: Case Series" and we find that some clarification will be effective at elucidating some concerns.[1,2] The authors state that we reported no complications; however, we did have a complication, which was described in the Results section. This was a 46-year-old obese woman that approximately 5 weeks after her procedure was discovered to have a stress fracture of the talar neck at the calcium-bone interface. This patient had been injected with 2.5 cm^3 of calcium phosphate for a 1.8×1.2-cm bone marrow lesion. This goes to highlight the important point made by the Editor in the "Editor's Note," which denotes that knowing the amount of calcium paste injected would be valuable information. As patients underwent surgery at institutions outside, we understand the authors were likely not privy to this information, and thus we are left to our imagination. Our cohort had an injection volume mean of 1.7 mL. Nine of the 10 patients had excellent results, and only with the largest volume injected was there a complication. This posits the notion that a larger volume may disrupt the delicate intraosseous blood supply and result in a failure of revascularization as suggested by the authors. Our group now does not recommend injecting more than 1.5 mL of calcium phosphate in the talus, and on average will use approximately 1 mL. This avoids potential overpressurization of the calcium phosphate in the lesion and also limits the volume, an excess of which could potentially cause osteonecrosis.

As the authors noted, the cannula for injection may be a culprit of osteonecrosis, and we do agree that this may be a factor. In our own technique, the cannula is inserted in the anterior to posterior direction. As the authors suggested, the direction of cannula insertion from the medial to lateral direction may increase the risk of disrupting the extraosseous blood supply. In general, it appears that the extraosseous blood supply may be of greater importance. We also suspect that if the intraosseous network was irreversibly disrupted with the cannula, we would have seen some complications in those patients that had less volume of calcium phosphate injected. This may not have been seen in our small cohort as it lacked the power to see such effects; however, subsequent cases done outside the study have not shown that to be true.

We thank the authors for this contribution to the literature as there are some important questions that still need to answered. How much calcium phosphate is safe? What is the safest insertion point of the cannula? And which conditions will benefit from such a procedure? We certainly agree with the authors that the indications for surgery in the patients they revised were questionable. Overall, despite the poor outcomes seen in the authors' study, we do believe that calcium phosphate injection is an extra therapeutic tool in a foot and ankle surgeon's armamentarium when reasonable indications are considered and thoughtful surgery is performed using the available data.

Again, thank you for reporting your observations and results, as we believe it adds to the paucity of literature available.

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