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Letter to the Editor

Intramedullary nailing of tibial shaft fractures in the semi-extended position using a suprapatellar approach: A retrospective case series

Dear Editor,

We read with great interest the article by G. Cazzato et al. entitled 'Intramedullary nailing of tibial shaft fractures in the semi-extended position using a suprapatellar approach: A retrospective case series' [1]. We greatly appreciate the efforts of the authors in conducting this study but wish to clarify certain points wherein we feel that the article could be significantly improved.

1. In this report the authors evaluated the healing process based on the Radiographic Union Scale of Tibial Fractures (RUST) criteria, revealing complete healing for all cases based upon X-ray examination (RUST = 4). The RUST criteria are a relatively novel tool for assessing tibial fractures designed with the goal of standardizing the evaluation of such fractures [2]. In the RUST criteria, visible a score of 1 is given when the fracture is visible in the cortex without any evidence of callus, while a score of 2 is given when both the cortical fracture line and callus are present, and a score of 3 is given when there is a bridging callus without evidence of a fracture line in the callus bridge region. Scores for all cortices are summed to yield a final score between a 4 (clearly not healed) and 12 (fully healed) [3]. Given these criteria, it is apparent that the results in this study (RUST = 4) are not accurate. We therefore wish for the authors to provide original data so as to better support the final conclusions of the article.

2. In this report, the authors cited Avilucea's article and stated that "after comparing aligment obtained with intramedullary nailing using the suprapatellar approach versus the infrapatellar one, confirmed that the malaligment was significantly lower in patients operated by using the suprapatellar approach." The inclusion criteria for the original study incorporated both extraarticular fractures (OTA 43-A) as well as OTA 43-C1 and-C2 fractures that exhibited nondisplaced intraarticular fracture lines and that underwent percutaneous lag screws treatment [4]. Based on their findings, the authors concluded that "in the treatment of distal tibia fractures, suprapatellar IMN technique results in a significantly lower rate of malalignment compared with the infrapatellar IMN technique." In one previous prospective randomized control pilot study, randomization of patients with OTA 42 tibial shaft fractures into IP or SP nail insertion groups yielded no significant differences in rates of malalignment between these cohorts [5]. In another report assessing the relative advantages of the suprapatellar and infrapatellar IMN techniques, patients in both groups exhibited a sustained reduction of tibial shaft fractures within 5° in all planes for the duration of follow-up [6]. This thus suggests that the argument put forth by G. Cazzato is inaccurate and represents an overgeneralization.

3. Figure 3 showed that the postoperative lateral radiographs exhibited excellent alignment and reduction. However, there appeared to be evidence that the nail tip exhibited prominence relative to the anterior tibial border. Bhattacharyya et al. [7] found that a distance of >1.25 cm between the nail tip and both the tibial anterior border and plateau was associated with reduced pain. Darabos et al. also assessed distance between the nail tip and the tibial plateau as well as tibial tuberosity based on 220 lateral knee X-rays in patients that had undergone intramedullary nail treatments, with their results highlighting the possibility that the nail tip position was able to adversely impact the innervation of the area dorsal to the patellar tendon, thereby having a profound impact on knee pain [8]. In another report, Zhang et al. [9] found that among patients suffering from knee pain following tibial fracture repair using interlocking intramedullary nails, removing these nails was associated with significant pain releif particularly in those patients where the nail tip was proximal to the tibial plateau (<10 mm) and anterior tibial border (<6 mm). Based on these previous reports, it would not be appropriate to present this X-ray as a typical postoperative case if the authors of this study did not intentionally present a nail-prominent case.

4. The authors of this study failed to report consideration of appropriate clinical or radiographic indicators consistent with chondral damage, and yet still concluded that a particular cannula system was linked to a smaller likelihood of causing iatrogenic damage to local cartilage, thereby facilitating safer insertion of the nail. We believe that X-ray and clinical manifestations are less sensitive examinations and cannot reflect chondral damage at early stages. Intraoperative arthroscopy or preoperative and postoperative MRI were used to assess patellofemoral injuries [5,10–13]. MRI offer great promise as a means of evaluating the articular cartilage, but its exact benefit in this context currently remains incompletely defined, and in the future it may prove to be a reliable means of detecting early stage chondral abnormalities [14]. In one of our previous studies, we found that the original suprapatellar approach sleeve was designed for persons from Western nations, and as such they may be too large for some Chinese patients with a narrow patellofemoral space. Intraoperative arthroscopy revealed iatrogenic injuries [13]. Therefore, selection of patients, surgical technique, and specific cannula system must be done with care.

Though the authors presented impressive clinical outcomes upon 2-year follow-up for these 25 patients following suprapatellar nailing, we feel that clarifying these issues would significantly improve the article.

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Declaration of Competing Interest

None.

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