

Peer Review File

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Reviewer A

Comment 1: Ok case report. Nothing groundbreaking but shows that bone heals better than soft tissue. In line with other studies that show if mortise is reduced than non-op treatment is ok.

I would bring up the Canadian studies involving conservative treatment of ankle fractures as long as mortise reduced.

Also, what is the protocol of getting an MRI seems costly overall

Reply 1: We are not sure which Canadian studies you are referring to. However, we did rely on two reference meta-analyses. The first is a Cochrane review (Donken et al., Cochrane review, 2012), and the second is also a systematic review by Javed et al. in Foot and Ankle Surgery, 2020. Their messages are as follows: ‘Surgical and conservative management of displaced or unstable ankle fractures in adults produce similar functional outcomes in the short-term and are both acceptable treatment modalities.’

Changes in the text: We added a paragraph about that. (Page 5, lines 78-82)

Reviewer B

Comment 2: Intro:

Line 67: I am not sure this is an entirely accurate statement. The ankle has commonly been described as 3 columns, with a medial column (deltoid and medial malleolus), lateral column (fibula) and central column (syndesmosis complex/PM). If 2 of the 3 columns are not intact, this is considered to be an unstable ankle injury which is the rationale behind operative stabilization of these injuries.

Reply 2: We based ourselves on the two-column theory, mentioned in several recent studies by Dr. Nikolaos Gougoulis, who is a renowned foot and ankle specialist. In his theory the syndesmotic complex is part of the lateral column. We do not question, of course, that other theories may exist.

We consider that the treatment of the posterior malleolus follows other rules. In this case, we rely on the following study: White T.O. In defence of the posterior malleolus, 2018.

Comment 3: Line 107: the gold standard for assessing for medial instability is a manual or gravity stress X-ray. Why was an MRI selected so early following the injury?

Reply 3: It is true that stress radiographs are an extremely reliable means of assessing medial instability. However, in our center and in most centers in our country, these are replaced by weight-bearing radiographs, which also reliably show medial stability. In fact, according to *Lampridis V. et al. Stability in ankle fractures: Diagnosis and treatment. 2018*, stability of the loaded ankle is primarily due to the deltoid ligament. In addition, we wanted to avoid having the patient undergo general anesthesia in order to perform these tests.

MRI was performed as quickly as possible to be sure that the medial elements were intact so that conservative treatment could be instituted.

Changes in the text: We have clarified this point. (See page 7, lines 117-119)

Comment 4: Line 111: I would argue that the axial image is figure 3b demonstrates that the fibula is translated posteriorly and externally rotated within the incisura, and not anatomically reduced. When deciding to manage these injuries, in which operative management is usually recommended, some form of dynamic testing would be recommended to ensure there is no syndesmotic instability. Since the MRI is a static, non weight-bearing study, dynamic studies like a weight bearing CT scan or stress radiographs may reveal subtle instability at the syndesmosis, which could change management.

Reply 4: We see what you are pointing out. However, using a second method than the Bartonicek method mentioned in our paper, the fibula was positioned anatomically. Indeed, the method described by Futamura evaluates the displacement of the fibula at 1 cm proximal to the tibial ceiling. The tibio-fibular clear space, the anterior tibio-fibular interval and the rotation of the fibula. The difference is made with the unaffected side and is evaluated if it is in the normal range, which was described by Dikos. A malreduction is decided if at least one of these parameters has a value outside the range. This was not the case in this patient.

Changes in the text: We added a reference. (See page 11, line 198)

Comment 5: Previous studies suggesting non-operative management for these injuries have been published previously in the literature. So the report of non-operative management of these injuries is not a novel finding. Additionally, Charopoulos et al. have published a similar case report with conservative management of a Maisonneuve type injury with intact medial structures.

Comment 5: Thank you for this very interesting article. We have discussed it in our text.

Changes in the text: We added this reference and amended our text accordingly. (See page 5, lines 93-95 and page 12, line 210-213)

Comment 6: Line 114: The authors provide their non-operative management and weight bearing protocol for this injury. The patients were allowed protective partial weight bearing very early in the management course. Since these cases are not novel to the literature, perhaps the authors could further emphasize the safety of an early weight bearing protocol with good results for these injuries.

Reply 6: Thank you for your comment, we have modified our text to follow your advice.

Changes in the text: We have modified our text as advised. (See page 6, line 101 and page 10, lines 171-175)

Comment 7: Conclusion:

Line 165: The authors should elaborate on the MRI findings further and discuss which components of the remaining syndesmosis integrity allowed them to feel comfortable with managing these patients without surgery. If the AITFL and PITFL (or PM) are disrupted as in the 2 presented cases, most surgeons would consider the syndesmosis to be unstable and therefore warrant operative stabilization. Particularly in the 2nd case, where there is an obvious disruption of the posterior hinge with translation of the fibula in the incisura. The authors state that the IOM is intact. Perhaps they can discuss the importance of this finding as a potential stabilizer of the distal tib-fib joint despite both anterior and posterior disruption of the syndesmosis.

Reply 7: Thank you for highlighting this point. Indeed, it is especially the fact that the medial column is intact in association with an intact IOM that has reinforced our choice of treatment.

Changes in the text: We have added precisions about this point. (See Page 10, lines 171-185)

The conclusion is thorough and the authors overall provide support for their decision to manage these patients without surgery.

Impression:

The authors present two cases of an atypical Maisonneuve fracture managed non-

operatively. Similar cases have been reported in the literature that were also managed without operative stabilization, so the information presented is not novel, but rather adds to the paucity of these reports in the literature.

- The authors may consider focusing on their early protected weight bearing protocol for these injuries, since the injury pattern itself has been described previously.
- Images are high quality
- references are thorough