

Reviewer#1

Specific comments to authors:

The manuscript is a cadaver study aimed to investigate the role of the posterior deep deltoid ligament in ankle fracture stability. Four matched pairs of cadaveric limbs were tested for stability both when axially loaded and under external rotation stress. Four matched pairs of cadaveric limbs (8 specimens) were tested for stability when axially loaded to 750N with a custom rig. Specimens were tested through increasing stages of SER injury in a stepwise fashion before restoring the lateral side with ORIF. Clinical photographs and radiographs were recorded at each step. I read the article with interest, the title is well thought out and faithfully reflects the content of the study, although it would be appropriate to refer that the Supination External Rotation (SER) injuries. The abstract is adequately developed, and it is useful to frame the purpose of the study. In the introduction, the characteristics of ankle fractures have been described. The materials and methods and the figures have been adequately development. The discussion is sufficiently described. Nevertheless, some major changes are needed to be considered suitable for publication.

Comment 1: In the abstract: it would be appropriate to refer to the characteristics of the study.

Reply: I have now addressed this in the sentence 'Our study demonstrates a cadaveric re-creation of SER type ankle fractures, investigating the anatomical basis for such instability.'

Comment 2: In the introduction: Some information about etiology, diagnosis and treatment of Fragility ankle fractures should be deepened please adding appropriate bibliographical references. (Roux S, et al (2018) "Risk of Subsequent Fragility Fractures Observed After Low-Trauma Ankle Fractures").



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Reply: Thank you for this suggestion. We read the suggested paper with interest. Following discussion with the authors we felt that our paper should relate to the biomechanics of the injuries as opposed to risk of further fracture. This is an important topic but we felt it was beyond the core message and scope of our work.

Comment 3: In the introduction: "The Lauge-Hansen Classification was introduced 70 years ago. The structures that are injured progress in an orderly fashion, depending upon the position of the foot at the time of injury and the type of force applied." Please adding appropriate bibliographical references.

Reply: Lauge-Hansen N. Fractures of the ankle. II. Combined experimental-surgical and experimental-roentgenologic investigations. Arch Surg 1950;60(5):957-85. This has been referenced in this section now.

Comment 4: In the introduction: It seems that the aim of your study is conflicting in the abstract and the introduction, please clarify this important aspect.

Reply: Thank you. We've broadened things to state our overall aim and not simply our main finding.

Comment 5: In the materials and method: please clearly indicate the inclusion and exclusion criteria in this study.

Reply: Thank you, this is a very good observation. We have now addressed the specific injuries we are investigating in the following statement. 'In this study we re-created a fracture of the lateral malleolus with a subsequent injury to the deltoid ligament, we did not specifically investigate bony medial malleolus fractures.'

Comment 6: In the materials and method: Please improve figures and tables from a graphic point of view.

Reply: Thank you, we have included the files and uploaded as requested as a powerpoint presentation so they can be scaled up or down according to the preferences

of the journal. The content of the tables should be maintained but the authors are happy for the design of the tables to be changed as deemed appropriate by the editorial team.

Comment 7: In the discussion: It would be appropriate to refer to previous studies carried out on the same topic, for example: (Testa G, et al (2019) "Negative prognostic factors in surgical treatment for trimalleolar fractures").

Reply: Thank you for this suggestion. We read the suggested paper with interest. As authors we discussed this, however we are keen to keep the papers focus towards the biomechanics of the injuries. The focus of this paper is on fracture stability and the determinants of this. We hope this paper will stimulate debate and further research in relation to patient reported outcome measures but feel our paper has an important and novel message prior to this work being undertaken.

Comment 8: It seems that the conclusions of your study differ from those described in the abstract, please clarify this important aspect.

Reply: Thank you, as per comment 4 we have now stated our overall aim as opposed to simply our main finding. We feel this is now more clear for its readership.

Comment 9: Finally, additional English editing is needed. The Non-Native Speakers of English Editing Certificate was not signed.

Reply: All authors are native English speakers residing in England. We have re-read the paper to ensure it reads clearly.

Reviewer#2:

Specific comments to authors:

I had the opportunity of reading the paper entitled "Role of the posterior deep deltoid ligament in ankle fracture stability: a biomechanical cadaver study."

The aim of study is not clear. methods section is little mixed up.



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Reply: We have changed the aim in the abstract to reflect the nature of the investigation and not simply its main finding. Some minor alterations have been made to methods and materials.

you've submitted the paper with comments and highlights. Writing is not appropriate. please define the abbreviations in abstract. I do not recommend publication.

Reply: SER abbreviation defined in abstract – many thanks.

Revision reviewer:

Specific comments to authors:

Thank you for making the requested revisions, now the article is suitable for publication

Reply: Thanks for your comments.