Reviewer's report

Title: Morphological characteristics of the posterior malleolar fragment according to ankle fracture patterns: a computed tomography-based study

Version: 0 Date: 01 Nov 2017

Reviewer: Nicolo Martinelli

Reviewer's report:

Dear Editor,

here are the comments and reviews for the paper entitled "Morphological characteristics of the posterior malleolar fragment according to ankle fracture patterns: a computed tomography-based study".

The Authors assessed the morphological characteristics of posterior malleolar fragment (PMF) in trimalleolar ankle fractures. The study is well conducted and well written.

The paper adds some new informations about trimalleolar ankle fractures. However, the biggest bias relies on the purpose of the study itself. Morphological characteristics can be assessed pre-operatively by surgeons with CT examination and they cannot predict the clinical outcomes. The quality of the reduction of the PMF is one of the most important factors for the outcome. Therefore, knowing parameters such as cross angle, fragment length ratio, fragment area ratio, sagittal angle and fragment height cannot help surgeons to predict potential complications and prognosis. It would be useful to assess the quality of the reduction of PMF related to morphological characteristics.

Specific comments:

1- The number of patients included in the SER group (76) is more than double of the PER group (31). Please clarify this limitation.

2- The Lauge-Hansen classification system is a comprehensive yet cumbersome system. A previous study reported low inter- and intraobserver kappa values (Yin MC, Yuan XF, Ma JM, et al Evaluating the Reliability and Reproducibility of the AO and Lauge-Hansen Classification Systems for Ankle Injuries. Orthopedics. 2015 Jul 1;38(7):e626-30). Why
the authors choose this classification instead of a more reliable one (e.g. AO classification system)?

3- Please provide some informations about the orthopedic surgeons involved in the reliability assessment (years of experience, field of expertise, etc.)

4- In the introduction section, please try to better justify the need of this study. In the discussion section, please try to describe the benefits obtained with the results of this study.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**
If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.

Unable to assess

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable
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