

## Reviewer #1

### Osteochondral ankle defects review for authors

The authors have written a very interesting review paper on the diagnosis, pre and post-operative imaging of osteochondral ankle defects with images included from the different modalities to demonstrate the important features. The paper is generally well-written and most of my comments are just minor grammatical changes. Therefore, I think this paper should be published after some minor revisions.

Thank you for your kind and valuable comments. We have addressed your points as outlined below.

1. I wonder if 'radiographic' imaging modalities in the title should be changed since other types of imaging are discussed in the paper which do not involve x-rays e.g. ultrasound.

We have removed the word 'radiographic' from the title

### Abstract

2. Line 1: The word 'different' should be inserted to read '...the role of different imaging modalities...'
3. Lines 9-10: This would be better worded as 'Cartilage and subchondral bone damage can be visualised using MRI, but the defect size tends to be overestimated due to bone oedema.'

Both done

### Introduction

4. Paragraph 3, Line 2: Please delete the word 'the' to read 'For preoperative planning...'  
Done
5. Paragraph 3, Lines 4-5: I am not sure what this sentence means 'CT scanning of the ankle joint...'

Sentence removed

### Diagnosis

6. Radiography: Could the authors please slightly reword this sentence? Is the patient's leg rotated 15 degrees internal rotation?

Sentence reworded for clarity

7. Radiography: There is a 'g' which should be removed before 'radiographs' in Paragraph 2.

Removed

### **Computed Tomography**

8. Can the authors please clarify if they mean this scanning protocol is for osteochondral ankle defects?

The protocol is for all ankle CTs. We have clarified this in the text

9. Can the authors please write the acronym 'ICRS' in full?

Done

### **Magnetic resonance imaging**

10. Do the authors mean both magnetic fields and radiowaves are used?

Yes , Magnetic resonance imaging (MRI) uses magnetic fields and radio waves to produce an image that is dependent on the distribution of hydrogen in the body.

### **Arthrography**

11. Line 4: Please reword slightly to make clearer: 'CT arthrography is more reliable than MRI for the detection of...'

12. Line 8: Please reword slightly to read 'and does not influence the treatment decision.'

Both done

### **SPECT-CT**

13. Lines 8-9: Please re-word the sentence starting with Leumann as it is unclear.

Done

### **Preoperative planning**

14. Lines 8: Please remove the word 'of' to read '... planning surgical treatment of OEDs...'

Done

### **Postoperative imaging**

15. What is the purpose of the scales? Can the author please state this in the text?

The purpose of the scales is to allow objective assessment of OA changes. This has been added to the text

16. Could the authors please briefly explain how the Kellgren-Lawrence system and the Takakura scales differ to the modified versions of these scales (since the modified versions are shown in Table 2)? It might be better to hyphenate Kellgren-Lawrence in the text (bottom of page) to show it is one system, and not two systems.

We have indicated the differences between the original and the modified versions

17. Please re-word slightly to read: 'The Dijk AO classification is used to evaluate the complete...'

Done

## **Conclusions**

18. Line 1: Please insert a comma after 'ankle pain.'

Done

## **Future Directions**

19. Line 2: The author Tol should have a capital 'T.'

20. Line 3: Please insert the word 'only' before '45%.'

Both done

## **Figures**

21. Figure 1c: Is this a 4cm heel-rise as mentioned in the text? Can the authors please state that also in the caption?

Yes it is, as added

22. Figures 3 and 7: Could the authors please put arrows or circles around the defect?

Done

## **Table 2**

23. There is an 'e' missing in the word 'space' under the Van Dijk Scale.

Thank you

## **Reviewer #2**

Dear Editor (Comments to the Author),

I congratulate the authors on their resubmission of the manuscript titled "Diagnosing, planning and evaluating osteochondral ankle defects with radiographic imaging modalities", which is certainly a contribution to our understanding of radiographic imaging modalities for osteochondral lesion of talus. This is a well written manuscript that I believe should be considered for publication following further revisions.

## ***Title, Abstract, Introduction***

Well written.

Thank you

## *Diagnosis*

### **Computed Tomography**

*“However, focus on the condition of subchondral bone plate on the condition of the subchondral bone plate seems more important in diagnosing and treating OCDs [15, 16].....31 ankles [17]”*

Why do you think focus on the condition of subchondral bone plate on the condition of the subchondral bone plate seems more important in diagnosing and treating OCDs? For the diagnosis, Nakasa et al. may be helpful because their paper showed CT was a useful tool for evaluating cartilage damage in OLT. However, regarding treatment, there is no mention about your treatment strategies in your manuscript. Add your treatment strategies for OCDs in your manuscript, and revise this paragraph according to your strategies.

The condition of the subchondral is important because the pain of an OCD originates in the subchondral bone, and the integrity of the subchondral bone plate is crucial for the vitality of articular cartilage. This information is now stressed in the text, including refs.

According to your suggestions, we have added the treatment strategy in the Introduction (third paragraph), including refs that further outline the treatment for the interested reader. We agree with the reviewer that treatment of talar OCDs could be subject of a complete review article. We therefore provide only concise information on treatment in this paper.

### *Preoperative planning*

Could you please indicate which radiographic imaging modalities are the important to plan surgical procedures? Only CT? A combination of CT and MRI? X-ray, CT, and MRI?

Thank you for the interesting suggestion. We have added this information to the Preoperative Planning section.

Also, how does the information yielded from your imagine modalities ultimately direct your treatment strategy? What cases do you perform reparative procedure? What cases do you want to perform replacement procedure? This information can be a review article in and of itself, but it is important to provide a short contextual description of this information so that readers understand the importance of pre-operative imagine and the ultimate link to pre-operative planning.

We now address these items in the Introduction (3<sup>rd</sup> paragraph)

### **Postoperative imaging**

Tell the readers which radiographic imaging modalities are the important to evaluate the outcome following cartilage repair. Why do you think so?

The advantages and disadvantages of each modality is described in the specific subheadings as well as under Conclusions

Postoperative imaging is important to evaluate the outcome following surgical procedures. However, a recent systematic review by Hannon et al. (AJSM 2013) showed only 50 % papers performed follow-up MRI following microfracture for OCL of talus. This outcome implicates that at least half of surgeons don't use postoperative imaging to evaluate the outcome following cartilage repair.

Thank you for the comment. We have elaborate on these findings under Postoperative imaging.

### **Future directions**

"We believe... the talus."

Why do you think so? The readers may not have the knowledge of subchondral bone to understand this paragraph fully. Please add a brief description.

The importance of the subchondral is described in the section Computed tomography (see above), and, according to your suggestion, added to the Conclusions.

### **References**

### **Appropriate**

Overall,

A thoughtful paper but requires further revision before publication.