Peer Review File

Article information: http://dx.doi.org/10.21037/fomm-20-63

Reviewer A

Comment 1

This paper reviews a lot of previously published literature about morphometry of the TMJ. That literature usually is presented in one of the following formats: 1) Descriptive information about the anatomy of various TMJ structural components; or 2) Attempts to correlate such information with various TM disorders. The title used by these authors is somewhat ambiguous in this regard: "Morphometric aspects of the TMJ: A review of the literature", so we do not know which of the above approaches will be emphasized.

Reply: We were asked to write a review article on "the morphometric measurements of the temporomandibular joint". We added the literature review remark to the title as it is usually pointed out in other manuscripts, but we will change the title as suggested by the reviewer.

The two approaches were used to introduce the reader to the anatomical structures and then to the measurements done in the literature and what they were associated with.

Comment 2

As it turns out, the main body of the paper is entitled "Literature Review", which presents a summary of studies related to each bony component of the TMJ: condyle, fossa, and eminence. Because this is quantitative data in general, the authors have summarized them in a series of hard to read Tables.

This is followed by a Discussion section, in which a wide variety of conclusions from those papers are described as supporting some type of correlation with various TM disorders – especially regarding articular disk displacements.

Reply: The tables have been reviewed to make them easier to read. The body of the text is a literature review because we were asked to provide a literature review on the subject.

Comment 3

In reading this paper, I found a familiar pattern of conflicting opinions about whether any particular type of anatomic finding was or was not associated with some type of TM disorder. In my view, the morphometric literature on the TMJ has always been confusing because of this diversity of findings and conclusions – not to mention assumptions about the significance of those outcomes. I also find it disturbing when the authors imply that such information is clinically useful, e.g., certain findings on imaging may be predictive of developing certain problems or suggesting that there may be some preventative application of this information. Instead, I believe that most of these associations are merely descriptive, and there are some chicken-and-egg questions about whether the anatomy leads to the pathologic condition or vice-versa.

The literature shows controversial findings as described by the reviewer and in the text. The assumptions reflect what is found in the literature and the application of this information is used by Oral and Maxillofacial Surgeons on remodeling and reconstruction procedure on the TMJ. Its is a chicken and egg question, as mentioned by the reviewer that will only be elucidated by longitudinal clinical studies with appropriate sample sizes and low rate of subject loss within the years of study.

Reviewer B

For those who study TMJ, "What modality do you use to examine TMJ?" Which anatomical reference points are you evaluating?" I think it is very useful information for readers to know. A few comments on the manuscript follow.

Comment 1

As shown in each table, the endpoints seem to be discussed without mentioning the differences in modalities such as MDCT, CBCT, MRI (or physical measurement) to treat equally. MDCT and CBCT have the different spatial resolution. MRI also has a different spatial resolution. The measurement results will also vary slightly with voxel size and pixel size differences. In MRI TMJ scans, the performance of the MRI as well as its imaging sequence varies from facility to facility. There seems to be little mention of these differences. What do you think? For example, aren't the problems and limitations of measuring angles and distances on MRI described in each reference?

Reply: We believe there is a difference in spatial resolution by the image modalities; however, there is no mention of problems and limitations by the studies.

The following paragraph has been added to the discussion:

Discrepancies between image modalities measurement techniques are associated with each image modality's unique limitations. CBCT has low contrast depicting soft tissue structures, while MRIs are limited by resolution (Coombs et al., 2019). According to Coombs et al., 2019, physical measurements were generally larger than both CBCT-based measurements and MRI-based measurements, with little difference between CBCT-based and MRI-based model measurements. Link at al., (2003) found that MRI and CT images are significantly correlated with the corresponding specimen sections and high-resolution MRI performs better in the prediction of trabecular bone structure than CT. Independent on the differences in spatial resolution between the different image modalities, there is no significant difference between them when measuring morphometric features of the TMJ.

Comment 2

You mention in P6L125 "different study groups125 (gender, age and ethnicity)" and at the end of the sentence, the need for an assessment of differences by ethnicity. I do not think there is an examination of ethnic differences in the text. What is your opinion?

Reply: There are few studies considering ethnicity probably due to small sample sizes. A study published in 1996 by Wish-Baratz et al., found no difference between Euro-American fully dentate males us. African-American filly dentate males; however, when assessing

radiographic features associated with temporomandibular joint disorders among African, white, Chinese, Hispanic, and Indian racial groups, Obamiyi et al. (2018), found that Chinese patients presented with more radiographic features suggestive of TMD, whereas the Indians showed the least, compared with subjects from the white, black, and Hispanic racial groups. Therefore, I believe that studies conducted with a diverse study samples could better assess morphometric differences between different ethic groups and correlate it with morphological aspects of TMJ structures.

Comment 3

What is your knowledge of the lateral pterygoid muscle and retrodiscal tissue?

Reply: It is important to have a good knowledge of the lateral pterygoid muscle and its variable heads attachments in the TMJ region to decrease complication risk and help the patient return to his/her active life in a short time and lead a life of good quality. According to a previous study (Antonopoulou et al., 2012), the main insertion of the LPM is to the condyle at the pterygoid fovea, and only a few superomedial fibers of the superior head are inserted into the medial aspect of the capsule and the disc. The retrodiscal tissue is not resistive to pathologic disc displacement and in some case reports, have taken the function of the disc in pathological TMJs, especially in anterior disc displacements.

Antonopoulou M, Iatrou I, Paraschos A, Anagnostopoulou S. Variations of the attachment of the superior head of human lateral pterygoid muscle. J Craniomaxillofac Surg. 2013 Sep;41(6):e91-7. doi: 10.1016/j.jcms.2012.11.021. Epub 2012 Dec 20.