Reviewer's report

Title: A rare complication of maxillary sinus puncture - orbital adipose tissue herniation into the sinus: Case report

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Reviewer: Emeka Nkenke

Reviewer's report:

General
The authors present a case report of a patient, where fatty tissue was found in the maxillary sinus. They conclude that the fatty tissue has penetrated into the maxillary sinus through the orbital floor and, therefore, originated from the orbit. At the time of removal of the fatty tissue the orbital floor had an intact mucosal lining when examined from the maxillary sinus. In their case presentation the authors do not specify the volume of fatty tissue they found in the maxillary sinus. They only indicate that they found fatty tissue of 25 mm in diameter. However, the volume would be the more interesting aspect to know. It has been stated in the current literature that the loss of 1 cm³ of orbital fat leads to an enophthalmos of 1 mm. Depending on the amount of fatty tissue in the maxillary sinus, the authors should have found a more or less pronounced enophthalmos on the ipsilateral side. Unfortunately, it is not clear from the paper, if the authors have measured enophthalmos and, if they did, which technique they used. As data on enophthalmos are missing, it is difficult to follow the conclusion of the authors that the fatty tissue within the maxillary sinus has originated from the orbit. The data given in the case report do not support this conclusion.

From the CT scan in Figure 1 one can get the impression that there may be a small discontinuity of the lateral antral wall of the right maxillary sinus. Maybe, one of the punctures has been carried out through the lateral antral wall. On the other hand, the dehiscence is in the region where the infraorbital nerve penetrates the maxillary sinus wall. It is important that the authors comment on this. If fatty tissue really can penetrate through holes as small as 1 mm, then it cannot be excluded that tissue from the buccal fat pad has penetrated into the maxillary sinus through a hole caused by a puncture of the lateral antral wall.

Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
The authors should included an assessment of enophthalmos of the patient in the paper. They should quantify the volume of the fatty tissue found in the maxillary sinus. Moreover, the authors should state, if there was a correlation between the volume of fatty tissue and the amount of enophthalmos in their patient.

At the moment, there is no proof that the fatty tissue in the maxillary sinus has originated from the orbit. A lipoma of the maxillary sinus could be a relevant differential diagnosis. As a consequence, the authors should change the title of their paper. A possible title could be: „Fatty tissue within the maxillary sinus: A rare finding“.

The „Background“ section should be improved. The discussion of CT and MRI for the diagnostic purposes concerning the maxillary sinus is interesting. However, the authors should make clear, how these techniques can be used for the identification of fatty tissue within the maxillary sinus and the origin of this tissue. The assumption that a case of orbital adipose tissue herniation into the maxillary sinus as a consequence of diagnostic puncture is described, is not supported by the case presentation the authors give.

The „Case presentation“ section includes the discussion. After the sentence „The patient has been asymptomatic“ the discussion starts. This fact should be indicated by an appropriate heading („Discussion“). At the beginning of the discussion the authors state that fatty tissue can be found in
the maxillary sinus exclusively when penetration from surrounding locations. However, in the next sentence the authors state that fatty tissue tumors in the maxillary sinus have been described in the current literature. They should remove this contradiction from the text. In a new version of the discussion, the authors should focus on the discussion of the several origins of fatty tissue within the maxillary sinus. They should make clear that herniation of fat through the orbital floor is only one possible explanation for fat within the maxillary sinus. However, this is maybe not the most likely explanation, when no dehiscence of the orbital floor can be found. Based on the aforementioned aspects the „Conclusions“ section has to be rewritten.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

The authors should include the thickness of the slices of the CT scan. They should make clear that the resolution was high enough to detect even small dehiscences.

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Discretionary Revisions (which the author can choose to ignore)

Maybe the authors like to include a short paragraph summarizing complications related to puncture of the maxillary sinus.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Needs some language corrections before being published