

READER'S FORUM

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Comparison of postoperative changes in the distal and proximal segments between conventional and sliding mini-plate fixation following mandibular setback.

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I appreciate the article by the authors to evaluate three-dimensional movements of the bony segments after mandibular setback orthognathic surgery with mini-plate and semi-rigid sliding plate fixation. As a reader, I would like to ask several questions to better understand the results.

Q1. Is there any reason why the authors chose the interval of 6 months after the surgery? Do the authors think whether there is a possibility of bony remodeling at B-point by the post-surgical orthodontic treatment?

Q2. It would be much better for the authors to give the conditions of cone-beam computed tomography (CBCT) taking including the size of voxels. Then, would there be any possibility of change in the interpretation of the values in Table 2 according to the voxel size?

Q3. What do the authors think about the influence of surgical methods (one-jaw or two-jaw surgeries, osteotomy design, and so on), the amount of bony change by the surgery, and post surgical orthodontic treatment on the results of the study?

Q4. The authors mentioned that the patients underwent plate removal operation at 6 months after the surgery, and they also discussed about the possibility of plate bending. Is it possible for the authors or the surgeons who performed the surgeries to recognize the plate bending after the removal?

Questioned by

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We appreciate this valuable opportunity to discuss our study and hope this following explanation would be helpful to our readers.

A1. Bone remodeling process generally takes 6 months. Therefore after 6 months, the reference points of the bone could be considered as stable. Also there are many other previous researches which used 6 months of period for stability. In addition, plate removal is done 6 months after surgery which means after this period, we cannot measure the location of screws.

Of course, as lower incisors move, there is a chance of remodeling of B-point.¹ However all patients underwent orthodontic treatment before surgery, and there was not much change to lower incisors in anteroposterior locations after surgery. Therefore B-point could be used as stable reference point. Also this point is considered most reasonable reference point for mandibular distal segment.

A2. Usually the voxel size of CBCT is 0.1–0.3 mm. If voxel size gets smaller, more accurate measurement will be possible.

A3. There are researches with conclusions that two-jaw surgery is more stable than one-jaw surgery.² However, these studies measured mandibular positional changes relative to skull base. Our study focuses on proximal/ distal segment stability and it's too much to think that surgical method influences the stability between the segments. Rather, fixation method can affect the stability between proximal and distal segment, and there are several studies upon this. Therefore, we didn't compare the stability according to surgical method (one jaw or two jaw), rather we measured stability according to fixation method.

There might be difference in stability depending on whether presurgical orthodontic treatment is done,³ but this also is a measurement relative to anterior skull base. In our study presurgical and postsurgical orthodontic treatment was done conventionally so we didn't take into account. There are studies which state osteotomy design does not affect the stability and in our study all osteotomy designs were identical.⁴

There might be B-point change according to postsurgical orthodontic treatment; however, there is no big change in the position of lower incisor, so postsurgical orthodontic treatment is not the consideration.

A4. Unfortunately, we did not observe the plate after plate removal, so we could not measure the bending of plate. The force applied during fixation and plate removal,

can cause bending of the plate. To measure the bending of the plate, taking CBCT is necessary immediately after plate fixation and before removal of plate. Observing the plate can be used as additional evidence, but the analysis is considered to be unrealistic.

Replied by

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