

## READER'S FORUM

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**Alveolar ridge expansion-assisted orthodontic space closure in the mandibular posterior region.**

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First, I congratulate and appreciate the authors of this case report for bringing up an inspiring solution for a critical clinical issue. Based on the present case, I have two major concerns.

**Q1. Miniscrew implants have become a popular method for providing skeletal orthodontic anchorage. However, reported success rates of these devices vary from less than 50% to more than 95%, while the overall failure rate of miniscrew implants was 13.5%.<sup>1</sup> Failures of miniscrew implants are hard to predict and they have been related to various host factors, miniscrew factors, and treatment protocol factors.<sup>2</sup> In the present case, protection of enhanced anterior anchorage was of great importance. The compromised lower incisor position, which resulted from the loss of anterior anchorage, would also affect the long term stability and the periodontal health besides the lip posture. Miniscrew implant failures and possible consequences as well as the treatment alternatives should be considered during treatment planning, and the patient was supposed to be informed of this information.**

**Q2. The 15- and 14-mm spaces in the mandibular dentition were quite large distances for orthodontic tooth movement, even assisted with alveolar ridge**

**expansion. Long distance tooth movement increases the demand of strong anchorage, treatment time and risks of root resorption as well as impaired periodontal conditions. Although the technique of piezoelectric decortication and alveolar ridge expansion facilitates the tooth movement for closure of edentulous spaces, cautions should be born in mind when selecting cases. Therefore, what are the indications and contraindications, as well as the limitations of this technique?**

*Questioned by*

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Thank you for your kind interest on the subject.

**A1.** A lingual arch was planned and placed pre-surgically in order to withstand such complications. But when the premolar and molar teeth positions and the distance they were moved forward were considered, loss of anchorage was almost unavoidable even with such a device. There is not much choice of devices other than mini-screws when "absolute anchorage" is needed for mandibular teeth. As you may confirm, a single lingual arch was not the best choice in such a case but the space was mostly closed when the mini-screws were lost. Loss of the screws could be attributed to many factors including bone physiology itself. The tissue formation rate was estimated to be two to ten times faster than normal regeneration process around the field of corticotomy area.<sup>3</sup> This change in bone turn-over rate can also affect the interaction between the mini-screw implants and the bone, however detailed studies

are needed before blaming the bone physiology and at this time there is no study to support such an interaction. Although the exact reason for the loss of mini-screws in our case is difficult to define, it is advisable to take any necessary precautions to hold the mini-screws in place until the space is fully closed. Waiting for healing after mini-screw placement could be a better option than immediate loading even though there are studies in conflict about the effect of healing time in mini-screw stability.<sup>4,5</sup>

**A2.** There is always a risk of anchorage loss during closure of long spaces even with the best anchorage devices currently available. Mesially-inclined molar teeth can be problematic in critical situations for both biomechanical and periodontal issues and should be fully uprighted before the corticotomy operation.<sup>6</sup> The surgical operation in our study was inspired by previously used corticotomy-assisted orthodontic treatment protocols. Therefore, indications, contraindications and complications are similar in both techniques.<sup>7</sup> Another aim was to cross the “sand clock shaped” cortical bone barrier with minimum damage to the tooth structure. Even though the mentioned surgical procedure was anticipated to decrease the risks associated with tooth movement into a relatively longer space, only controlled clinical studies can provide usable data about the remaining risks.

*Replied by*

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