

## READER'S FORUM

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**Risk factors for orthodontic fixed retention failure: A retrospective controlled study.**

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I appreciate the authors for their intriguing article on risk factors of fixed retainer failure. The article is informative, offering perspectives for the establishment of effective retention strategies. I have some questions, particularly about the retention protocol employed in the study, and would be grateful to gain additional insights from the authors.

**Q1. The authors mentioned in the retention protocol that all patients received a removable retainer, a fixed retainer, or a combination of both after completing active treatment. What criteria were used to decide the type of retainer? Given the study results indicating a strong association between abnormal tongue function and retention failure, what are the authors' opinions on the use of additional components such as a tongue crib or tongue elevator for removable retainer in patients with known parafunctional habits?**

**Q2. The use of a silicone transfer tray is a sophisticated method for intraoral placement of a fixed retainer. I am curious about the details regarding where and how the retainer was embedded in the silicone tray. Considering the suggested retention protocol, which involves etching and preparation for bonding before tray placement, I would like to inquire about the au-**

**thor's opinions on bond quality due to contamination of the retainer wire and tooth surface from contact with silicone. Were there any observed associations between bond failure and contact with silicone?**

**Q3. The retention protocol in the article includes placing dental floss in each interproximal space from canine to canine, in addition to the silicone transfer tray. Since using floss to secure the wire may exert active force, potentially resulting in a non-passive retainer position, do the authors have any advice on preventing unintentional activation of the retainer wire when using dental floss?**

*Questioned by*

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**A1. Removable retainers were placed in the upper jaw in cases of:**

- Transversal maxillary expansion, since fixed retainers cannot maintain maxillary width.
- Deep bite, since contact between the lower incisors and the acrylic of the upper plate helps maintain the flattened Spee curve of the lower jaw. Fixed retainers were always placed in cases of anterior open bite, to avoid the disclusion provoked by the upper removable retainers to foster continuous eruption of the posterior teeth, and also to control the eversion of the incisors produced by tongue pressure.

In patients with parafunctional habits, efforts were put into eradicating or at least controlling these habits. First by informing the patient of the consequences of oral habits such as nail biting, lip or tongue interposition.

Secondly, by making a series of appointment with a speech therapist or logopedist who can help following up the patient. Thirdly, by reinforcing the strategies proposed by the logopedist during the orthodontic treatment. Lastly, we do not add tongue cribs or elevators to our removable retainers, since patients are less likely to wear them. However, we do follow the patients up after treatment by periodically seeing the patients at retention controls, especially during the first year.

**A2.** The process is as follows: the lab designs the retention wire on the patient's model, either from an impression or three-dimensional printed from an intraoral scan. The wire must rest passively on the lingual surfaces of the lower front teeth. Once the wire is done, they pour silicone (putty) on top of the buccal surfaces of the lower incisors and on the lingual surfaces of the central incisors. This is merely to be able to transfer the wire to the mouth on the same position as originally intended. When the practitioner receives the wire, the whole construction of the wire with the silicone is removed from the model and it is first placed on the mouth to double check the adaptation. If it's adequate, it is removed from the mouth and dried. Then the lingual surfaces of the 6 lower front teeth are prepared (polished with zirconium silicate, washed, dried, etched, isolated with a lip retractor and cotton rolls,

air dried again and lastly dental adhesive is placed on the lingual surfaces of the teeth). Then dental floss is placed on the contact points between 33-32, 32-31, 31-41, 41-42, and 42-43. Afterwards, the wire and the silicone are placed again in the mouth and the floss is bended over the wire and through the contact points, to secure the wire in place. Then, while holding the floss, the silicone tray is removed and the surfaces are air dried again. Lastly, the wire is secured to the teeth with composite. After the composite is hardened, the floss is removed. With this technique, there is no contact between composite and silicone. If desired, bonding can be brought to the surfaces of the teeth again after removing the tray, but we do not do this often.

**A3.** This is a very good question. It is important that the dental floss is not pulled hard from the buccal side of the teeth. If the adaptation of the wire is optimal, the dental floss is purely there to prevent the wire from falling, but traction is not necessary, since it would indeed exert an extra force on the wire and induce bending.

*Replied by*

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