PerioImplant Concepts
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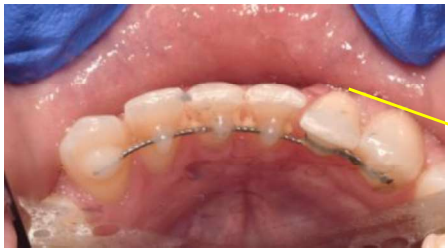
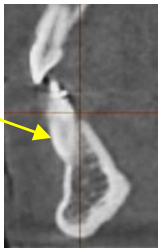
Periodontal Problems with Lingual Wire Retention

Retention is the key to long term orthodontic success. One of the most effective ways for retention in the mandibular anterior segment is the lingual wire. This has been proven to be mostly safe and effective. However, this type of retention is not without complications.

Over the years, we have noticed significant periodontal issues in some cases. This has also been documented in the orthodontic literature. *

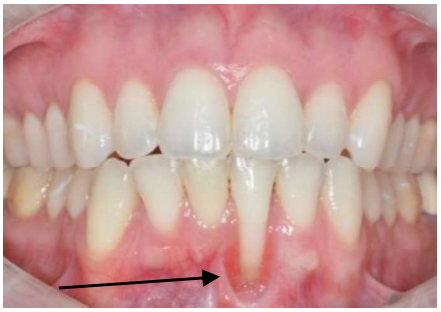
Residual tension in the wire can create slow, active movement over time. Although inadvertent movement can occur with different types of wires, soft braided wires seem to be the most commonly involved. If the wire is not passive when placed, the wire can unravel and torque the root out of the alveolar bone, leading to loss of attachment. Trauma can also distort the wire, essentially creating active forces.





As the wire unravels, the root is torqued out of the alveolar housing.

3-D imaging is typically recommended to determine root position and bone thickness.



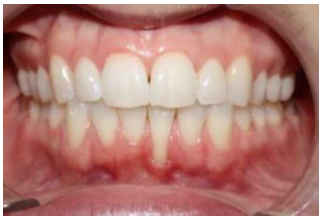
Typical presentation

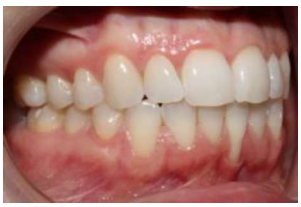
The problems often become apparent many years after the completion of active orthodontic treatment. In our experience, the typical presentation is a patient in their mid twenties with isolated root exposure.

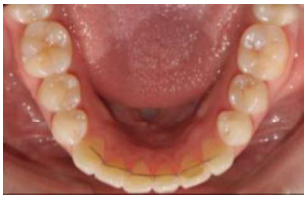
In this case, three of the incisors appear to be within the bone with adequate attached tissue. #24 alone is outside of the alveolar process.

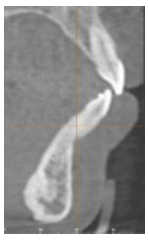
Case Report

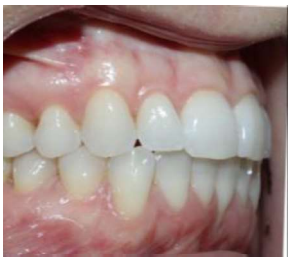
Twenty-seven year old female presents with a chief complaint of soreness in the mandibular incisor area. She became concerned when she saw the apical migration of the tissue.











Clinical Management

In the first stage of treatment, the root is repositioned into the alveolar bone and any orthodontic relapse is corrected. This will enhance the surgical result and assure long term stability.

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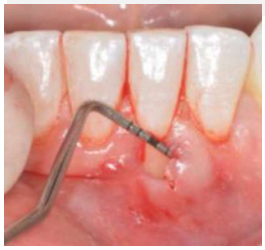
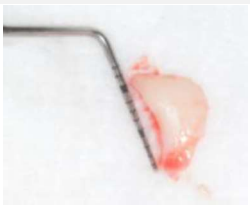
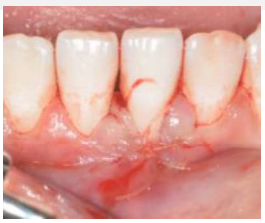
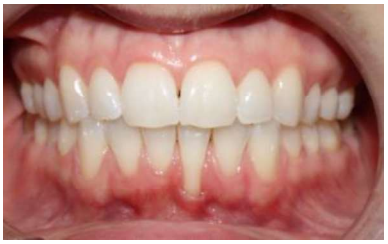
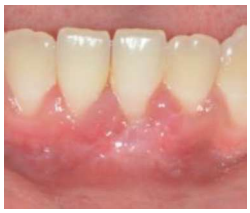
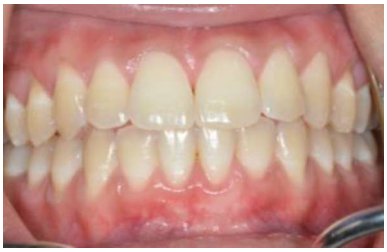



A minimally invasive pouch procedure is created to receive the graft. Tuberosity tissue is harvested and modified to the appropriate size. The graft is then sutured in place.

Initial presentation | One week post-surgery | 18 month follow-up

Conclusions and Recommendations

- Clinicians should be aware of these problems and be ready for immediate intervention. It is important to note that tooth movement from an unstable lingual wire is different from relapse. In the latter case, the tooth reverts back to its original position. In the former, the roots are actively moved outside of the bone.
- All wires should be closely evaluated at every hygiene visit.
- Soft tissue augmentation is typically required. However, positioning the roots back into the bone first will lead to a more predictable outcome and longevity of the teeth.
- 3-D imaging is one of the key diagnostics to determine root position. It is important to educate the patient on the importance of comprehensive treatment.

Clinical variables to be checked at each visit

- Mobility of the entire segment. This is an indication of trauma or bone loss.
- Bonding of individual teeth to the wire. Unbonded teeth will drift out of the bone.
- Root angulation. Evaluated visually, with palpation and/or with a 3-D scan.

*References:
Shaughnessy, Proffit, Samara. Inadvertent tooth movement with Fixed Lingual Retainers. *Am J. Orthod. Dentofacial Orthop. 2016;149:277 86*
Pazere, Fudalej, Christos. Severe Complication of a Bonded Mandibular Lingual Retainer. *Am J. Orthod. Dentofacial Orthop. 2012;142:406-9*

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