Reviewer’s report

Title: Influence of interradicular and palatal placement of orthodontic mini-implants upon the success (survival) rate

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Reviewer: A M Reichow, A M

Reviewer's report:

"All buccal OMIs were loaded on the day of insertion. Palatal OMIs were loaded within 3 days after placement since a laboratory appliance construction was required. All OMIs were used for direct anchorage. Several biomechanics were applied to the OMIs, all of which produced a force of >2N."

Q1: The primary stability of the MIs is dependent of specific and structural properties of the bones (Cha et al., 2010; Çehreli & Özçirpici, 2012).

Does not have too much initial force at buccal MIs?

Q2: Were the forces applied for buccal and palatal MIs different?

Is it possible to put both together?

"The success rate was 98.9%. All palatal OMIs in this study were used as anchorage support for maxillary molar distalization [46] (Figure 2a), or for rapid palatal expansion using a hybrid RPE ("hybrid hyrax", Wilmes et al. [45]) (Figure 2b). Both of these appliances were directly connected to the OMIs and applied equally heavy forces (>2N) per implant. Exact force values produced by these appliances have been reported previously [46, 51]. Only 2 out of 190 palatal OMIs were lost. Those were inserted in the same patient, providing anchorage for molar distalization, and had to be removed because they were loose."

Q3: Is it possible to know how many MIs were used for distalization at the palatal area?

"Interradicular OMIs were successful in 71.1% of the cases. The typical use was molar protraction with a force >2N, using standardized Nickel-Titanium (NiTi) coil springs (Figures 1a and 1b, Figure 2c). There was no statistically significant difference in success rates between maxillary inter-radicular and mandibular inter-radicular OMIs (p=0.628)."
Q4: It is known that the mandible (Cheng et al., 2004, Park et al., 2006, Cheng et al. 2007) have shown significant influence in success rates.

How many MIs were put in the mandible?

"OMIs inserted in patients older than 30 years were found to have a 29.5% failure rate compared to those used in younger patients that showed lower failure rates of 14.8% (20-30 years) and 13.3% (6-20 years). However, this difference was statistically significant only for the youngest group (6-20 years)."

Q5: Some authors found slightly lower success rate in patients younger than 20 years old (Miyawaki et al., 2003, Chen et al., 2007). It was also found that the maxillary and mandibular cortical bones at commonly used MIs placement sites are thicker in adults than in adolescents (Farnsworth et al., 2011).

Was the difference of the number of patients older than 30 a few?

"Only in one patient in our cohort both palatal OMIs were lost; these were providing skeletal anchorage for a distalization appliance. Orthodontic mini-implants inserted in the buccal alveolus were successful in 71.1% of all cases and similar values have also been reported by other investigators [10, 11, 17, 24, 38, 39]."

Q6: Some studies, found a high success rate of 85.5% (Park et al., 2006, Miyawaki et al., 2003, Kuroda et al., 2007a, Kim et al., 2010, Reichow et al. 2015), but in your study, the success rate, in the buccal area, was 71.1%. Was it caused only of the high force?

"of those had been inserted between roots to support space closure mechanics. It appears that the combination of inter-radicular insertion and type of use resulted in a poorer survival rate."

Q7: The operators learning curve (Kim et al., 2010, Oh et al., 2011), high mandibular plane (Miyawaki et al., 2003, Moon et al., 2010), systemic alterations in the bone metabolism, medication, heavy smoking (Melsen, 2005), have shown significant influence on success rates.

Were those items checked?

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