

Background and Purpose

Presurgical orthodontic decompensation is often necessary when a maxillary deficiency is present. In many Class III cases, the transverse discrepancy between maxilla and mandible aggravates the achievement of arch congruency. This poster demonstrates a presurgical correction of buccally tipped molars with a reverse RME-appliance. A 3D cast analysis has been performed to visualize the dental and palatal changes.

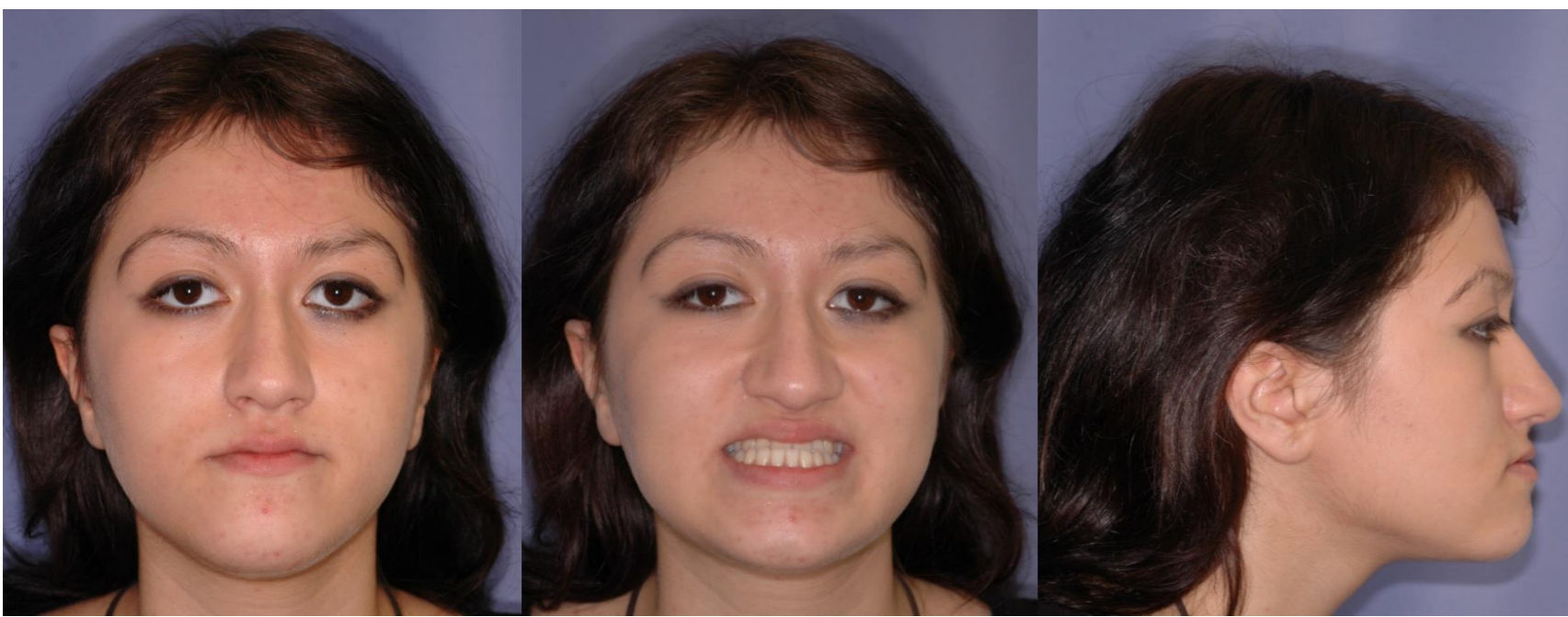


Fig.1 extraoral photographs before treatment begin

Case Presentation

The female patient (17) showed a severe maxillary deficiency combined with a slight mandibular prognathia. The cast analysis revealed protrusion of the upper incisors and significant buccal tipping of the upper first and second molars, resulting from previously inefficient orthodontic treatment. The overjet was negative (-2mm) with a class III molar relationship of over 1 premolar width and a mandible shift of 4mm to the left.

As the treatment plan included Le Fort I Osteotomy for maxillary advancement, an initial teeth alignment was necessary. The greatest problem was the buccal tipping of the upper molars, resulting from previous overexpansion of the upper arch. To achieve palatal movement of the molars, a reverse palatal expander with an open jack screw (Forestadent, Pforzheim, Deutschland; maximal expansion: 8 mm) was inserted, fixed to the first and second upper molars. The screw was adjusted twice a day (0.5mm daily), resulting in 0.25mm gap closure with every turn. After 16 days, the horizontal molar position was corrected and the now closed jack screw was immobilized with dental cement. A total palatal movement of the first molars of 6 mm and second molars of 7mm was achieved.

The casts were scanned with a 3D Dental Scanner Activity 102, smart optics, Bochum, Germany. The 3-dimensional cast analysis was performed with the programs 3D Viewer and Comparison, 3D Shape, Erlangen, Germany.



Fig.2 intraoral photographs before insertion of reverse-RPE

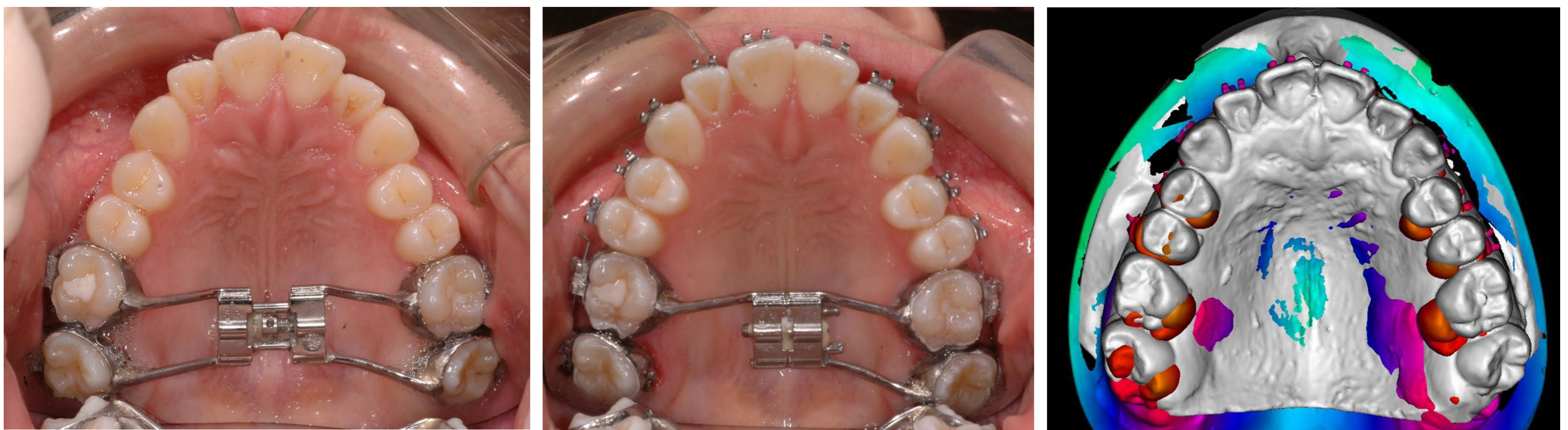


Fig.3a-c

a - the reverse palatal expander with an open jack screw immediately after insertion;

b - after correction of the molar position, the screw is cemented to prevent re-opening. After the band on 17 broke, a new band with .016*.022 NiTi wire between 16 and 17 has been inserted;

c - 3D analysis with visible changes in posterior palatal area (red color). Tooth 27 showed no changes since thorough intercuspation with 37 prevented palatal movement

Conclusions

The reverse RME-appliance seems to be effective for the alignment of buccally tipped upper molars.