

OP14 EVALUATION OF CORTICOTOMY-ASSISTED POSTERIOR MAXILLARY INTRUSION WITH ZYGOMATIC ANCHORAGE: A FINITE ELEMENT STRESS ANALYSIS

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AIM: To evaluate the effects of different corticotomy techniques in posterior maxillary intrusion supported by zygomatic anchorage, by means of finite element stress analysis.

MATERIALS AND METHOD: Three different scenarios were established on the hypothesis that, subapical corticotomies could benefit tooth movement. The first scenario comprised no corticotomy, the second included buccal corticotomy, and the third involved both buccal and palatal corticotomies. An acrylic appliance covering all maxillary posterior teeth and two rigid transpalatal bars were built up, then an intrusive force of 200 g was applied from the appliance towards the miniplate located at the zygomatic buttress, and the stress levels were evaluated.

RESULTS: Posterior teeth and the inferior curvature of the zygomatic buttress had the highest stress values in all scenarios. Increased stress values were observed on the spongy bone mostly on the buccal surface, beneath the corticotomy regions. Dental structures showed increased stress values mainly at the apical region of the first molar mesiobuccal root, indicating no significant difference between scenarios.

CONCLUSIONS: Conclusively, corticotomies may enable clinicians to achieve accelerated bone-turnover, revealed by the increased stress values in the spongy bone. In this respect, performing a buccal corticotomy might be sufficient instead of buccal and palatal corticotomy due to less surgical procedures. Despite corticotomy assistance, appliance designs and force application should be considered during posterior maxillary intrusion.