

OP17 IMPACT OF A PIEZOSURGICAL CORTICOCISION ON THE SPEED OF ORTHODONTIC TOOTH MOVEMENT AND BONE ACTIVITY

Nikos Papadopoulos¹, Nicola Beindorff², Winfried Brenner², Paul-Georg Jost-Brinkmann¹, **Thomas Präger¹**,
¹Department of Orthodontics and ²Clinic of Nuclear Medicine, Dentofacial Orthopedics and Pedodontics, Charité
- Universitätsmedizin Berlin, Germany

AIM: Corticocision has been described as an effective and safe method to accelerate orthodontic tooth movement. However, little is known about bone activity during the remodelling process. The aim of this study was to investigate the effect of a corticocision performed by means of a piezotome on bone activity and its relationship to orthodontic tooth movement.

MATERIALS AND METHOD: Male Wistar-rats (n = 12, age: 10 weeks) underwent a vertical corticocision of the maxillary alveolar process, 2 mm mesial of the first molar on one randomly determined side. Subsequently, the maxillary molars on both sides were ligated and moved together mesially by means of a closed coil spring which was fixed to both maxillary incisors. Immediately before placement of the orthodontic appliance and again after its removal, 4 weeks later, all animals underwent a single photon emission computed tomography (SPECT) in combination with a microcomputed tomography (μ CT). As there were two drop-outs, only 10 animals successfully completed the trial. Subsequently, the speed of orthodontic tooth movement was measured on the μ CT and the bone activity determined by SPECT.

RESULTS: A significantly higher bone activity was measured on the side treated with corticocision compared to the control side with conventional tooth movement only. The speed of orthodontic tooth movement also increased significantly as a consequence of the surgical procedure. In addition bone activity correlated well with the speed of orthodontic tooth movement.

CONCLUSIONS: A corticocision of the alveolar process in the upper jaw of the rat by means of a piezotome results in an acceleration of orthodontic tooth movement which could be explained by an increase of the remodelling speed.