

OP48 LONGITUDINAL EFFECTS OF RETRAINING DETRAINED ADULT JAW MUSCLES ON THE MORPHOLOGY OF THE MANDIBLE

Anna Ödman¹, Anestis Mavropoulos², Stavros Kiliaridis², ¹Departments of Orthodontics, University of Gothenburg and Mun-H-Center, Västra Götalandsregionen, Gothenburg, Sweden and ²Department of Orthodontics, University of Geneva, Switzerland

AIMS: To experimentally investigate the longitudinal effects of increased masticatory function on the morphology of the mandible of adult rats with an earlier reduced masticatory muscle function.

MATERIALS AND METHOD: Fifty-five young male rats were used. The experimental group received soft diet for a prolonged period, so that the animals developed weak masticatory muscles. A control group (normal group) received ordinary food during the whole experimental period (27 weeks). After 21 weeks when the animals had nearly ceased body growth the rats in the experimental group were divided into two groups. One group continued with a soft diet until the end of the experiment (hypofunctional group). The other group received ordinary food in an endeavour to retrain their masticatory muscles (rehabilitation group). At week 21 and at the end of the experimental period (week 27) lateral cephalograms were taken. Eight landmarks were defined to measure six distances and angles of the mandible of the rat. To investigate the longitudinal morphological differences between the three groups between week 21 and week 27 and to study the cross-sectional effect at week 21, the ANOVA statistical procedure was used.

RESULTS: The angle between the mandibular occlusal planes was less acute in the soft diet groups at week 21 compared to the normal group. The inclination of the angular process was more acute in the soft diet groups compared to the normal group. Concerning the difference between weeks 21 and 27 there was a significantly larger increase of the length of the angular process in the normal group compared to the hypofunctional group, the largest increase was in the normal group. In the rehabilitation group the length of the mandible had significantly increased compared to the hypofunctional group. There was also a catch-up tendency towards the normal group concerning the inclination of the angular process.

CONCLUSION: Masticatory muscle function influences the morphology of the mandible during growth. Six weeks of retraining the masticatory muscles of the adult animals resulted in a certain catch-up effect in the rehabilitation group due to residual growth.