J Orofac Orthop. 2002 Jan;63(1):5-13.

Influence of masticatory muscle function on transverse skull dimensions in the growing rat.

[Article in English, German]

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AIM: The aim of this study was to elucidate the influence of reduced masticatory muscle function on the transversal dimensions of the premaxilla, maxilla (including the dental arch) and the calvaria in the growing rat. MATERIAL AND METHODS: 38 growing male albino rats were used. 14 animals were killed at the beginning of the experiment to provide baseline values (Young Group). The remaining animals were randomly divided into two equal groups; one received the ordinary diet in hard pellet form (Hard Diet Group), and the other a soft diet (Soft Diet Group). The experimental period started when the rats were 28 days old and had a duration of 28 days. 3D measurements of the dentofacial skeleton were performed on dry skulls with a Reflex microscope. RESULTS: No inter-group differences were found in mean body weight and overall length of the cranium. The dental arch was found to be narrower in the third molar region in the Soft Diet Group, possibly due to less growth in the midpalatal suture and/or to reduced occlusal loading. This may be due to the first and second molars having been in occlusion at the beginning of the experimental period, while the third molars were not. Furthermore, the premaxilla and the frontal bones at the most lateral part of the temporal crest were narrower in the Soft Diet Group, these regions being areas of masticatory muscle attachment.

PMID: 11974452 [PubMed - indexed for MEDLINE]