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The use of tensor analysis to investigate facial changes in treated Class II division 1 malocclusions

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ABSTRACT

This retrospective cephalometric study examined the facial changes brought about by treatment in 62 Class II division 1 children, using tensor analysis. Thirty-two children were treated with Frankel appliances, whilst the remanining thirty received premolar extractions, headgear, and conventional Edgewise mechanics. Each child was matched for age and sex with an untreated individual in whom the occlusion was deemed satisfactory and the treatment changes were compared with those expected during normal developement. Results indicated that vertical facial development predominated in both treated groups: this exceeded the increase expected in an untreated population . The Frankel group exhibited the greater gain in lower face height, with changes confined almost entirely to the mandible. Effective mandibular position improved but there was no increase in body length. The incisors were more favourably positioned within the face with similar improvements in the soft tissues. Thus, although facial balance was better following a non-extraction Frankel apprach, control of the vertical dimension was inadequate. The fixed appliance group exhibited a smaller increase in lower facial height and no favourable mandibular development: maxillary retraction was the most striking skeletal alteration. By removing the traditional, fixed, superimpositional framework of the cranial base, tensor analysis highlights vertical and mandibular changes not easily detected by conventional cephalometry.

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