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The association between the frontal sinus morphological variations and the cervical vertebral maturation for the assessment of skeletal maturity

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Introduction: The assessment of skeletal maturity is important for planning dento-facial orthopedics or orthognathic surgery for the treatment of different skeletal malocclusions. Cervical vertebral maturation is widely used method to evaluate skeletal maturity of patients undergoing orthodontic treatment. In the past decade, another method is being proposed which is based on frontal sinus morphology. So, the aim of this study is to evaluate the association between frontal sinus morphological variations and cervical vertebral maturation for the assessment of skeletal maturity.

Method: Lateral cephalograms of 252 subjects aged 8-21 years were collected from the dental clinics of AKUH. The sample was divided into six groups based on cervical vertebral maturation stages. The frontal sinus index was calculated by dividing frontal sinus height and width and the cervical vertebral maturation stages were evaluated on the same radiograph. Data were analyzed using SPSS (version 19). Kruskal-Wallis test was applied to compare frontal sinus index at different cervical stages and Post hoc Dunnett t3 test was applied to compare frontal sinus index between adjacent cervical stage intervals in males and females. A p -value of ≤ 0.05 was considered as statistically significant.

Results: The frontal sinus height and width were significantly associated with the individual cervical vertebral maturation stages in males and females. However, frontal sinus index wasn't significantly associated with the individual cervical vertebral maturation stages in males and females.

Conclusion: Frontal sinus index cannot differentiate between pre-pubertal, pubertal and post-pubertal adolescent growth stages therefore; it cannot be used as a reliable maturity indicator.

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Extractions in orthodontics

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Over the years there has been much debate on extraction versus non extraction in orthodontics. In 1907, Angle believed everyone have the capacity to have all teeth (32) in functional occlusion and that the complete set of teeth will provide the best aesthetic. He advocated Wolf's Law which states "the bone would form in response to stress". Therefore, he attempted to treat with expansion of the dental arches. Case (1964) has criticized Angle's non-extraction approach. He explained the effect of excessive dental arch expansion on the facial aesthetic, as dental protrusion will be the result of that approach. Later in 1960's, the debate start to reopen again. It is thought that opinions tend to oscillate with desired aesthetics and litigation. Proffit (1994) have reviewed the frequency of extractions for 40 years and have found the following: 30% had extractions in 1953; 76% had extractions in 1968 and 28% had extractions in 1993. He have suggested that the reason for decline in the frequency of extractions since 1968 might be due to concern about facial aesthetics, TMD and that extractions are not a guarantee for stability.

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