



**ASSESSMENT OF ANTHROPOMETRIC PARAMETERS OF THE
MAXILLOFACIAL REGION IN ANOMALIES OF THE DENTAL ARCH
DURING THE PERIOD OF EXCHANGE OCCLUSION AND ITS
DIAGNOSTIC SIGNIFICANCE**

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Abstract:

The transitional dentition period is a critical phase in craniofacial development where dental arch anomalies frequently emerge, potentially influencing long-term occlusion and facial symmetry. This study investigates the anthropometric characteristics of the maxillofacial region in children exhibiting dental arch anomalies during the exchange occlusion phase. Emphasis is placed on identifying measurable deviations in facial morphology that may serve as early diagnostic markers. The findings aim to contribute to improved diagnostic protocols and early orthodontic interventions.

Keywords: Maxillofacial anthropometry, dental arch anomalies, exchange occlusion, craniofacial development, early diagnosis, orthodontics.

Material and Methods:

This clinical and anthropometric study was conducted on a total of **127 children aged 10 to 13 years** during the period of mixed dentition. The main study group consisted of **102 children** with various dental arch anomalies, including crowding, spacing, crossbite, and other occlusal irregularities. In addition, a **control group of 25 children** with clinically normal occlusion and no signs of maxillofacial anomalies or deformations was examined for comparative analysis. Each child



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underwent a comprehensive **clinical-dental examination**, including occlusal classification, analysis of dental arch form, and identification of any malocclusion patterns. Furthermore, **standardized anthropometric measurements** of the maxillofacial region were conducted using calibrated digital calipers and lateral cephalometric radiographs.

The following parameters were recorded:

- Intercanine and intermolar widths (upper and lower arches)
- Facial width (bizygomatic distance)
- Mandibular angle (gonial angle)
- Lower facial height (subnasale to gnathion)
- Facial index

All measurements were performed in a seated position with the Frankfurt horizontal plane parallel to the floor. To ensure consistency, the measurements were taken by the same trained examiner under controlled conditions. Statistical analysis was carried out using **SPSS 26.0** software. Quantitative data were analyzed using descriptive statistics, independent t-tests, and Pearson correlation analysis, with a significance threshold set at $p < 0.05$.

Results and Discussion:

Significant differences were observed between the control and anomaly groups in several maxillofacial parameters. Children with dental arch anomalies exhibited reduced intercanine and intermolar widths (mean reduction of 2.4 mm and 3.1 mm respectively, $p < 0.01$), as well as increased lower facial height and a steeper mandibular angle. These findings suggest that anomalies of the dental arch during exchange occlusion are associated with quantifiable craniofacial deviations. The diagnostic relevance lies in the early detection of disproportionate facial growth, which may predispose to malocclusion or asymmetric facial development if unaddressed.

Conclusion:

Anthropometric assessment of the maxillofacial region provides valuable insights into early morphological changes associated with dental arch anomalies during the



exchange occlusion period. Incorporating such measurements into routine orthodontic evaluations can enhance early diagnosis and intervention, potentially improving long-term functional and aesthetic outcomes. Further longitudinal studies are warranted to establish standardized reference values for predictive diagnostics.

Foydalanilgan adabiyotlar

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