

# “ Statistical Processing Of Morphometric Measurements Of Craniofacial Area Of Children With Congenital Cleft Labia And Palate I And II Of The Childhood Period”

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**Resume:** Statistically processed morphometric data of craniofacial region in children of I and II period of childhood and its compliance to the principle of gold section. It will compare the indicators of the child's facial skeleton, which may provide a methodological basis for the development of anthropometric methods of diagnosis and reconstruction in medicine. Measures of proportions of craniofacial area of surgical interventions are important in surgical, orthodontic and orthopaedic dentistry.

**Keywords:** measurement, cleft, children, lip, palate.

## **Introduction:**

One of the characteristics of the state of health of the population is the frequency of congenital malformations of a person. Among the risk factors for the birth of children with defects, viral infections, toxicosis and stressful situations of the mother during pregnancy were noted. A significant risk factor for the birth of children with anomalies is the nature of his activity, since the environment during early pregnancy is of tangible importance. In the first place, children with anomalies are most often born among agricultural workers, drivers and workers in the chemical industry, which confirms the fact that the environment influences the intrauterine development of the child. [1,2,3,4].

Congenital cleft palate has a great influence on the formation of the child's dental system. The steady increase in the incidence of congenital malformations of the maxillofacial region, the increasing requirements for the results of orthodontic treatment, the frequent unsatisfactory results of correcting congenital anomalies in the development of the upper jaw and secondary postoperative deformities leave the problem of optimizing the diagnosis and orthodontic treatment of children with congenital nonunion particularly relevant.

Congenital cleft lip and palate (CCLP) is one of the most severe types of congenital maxillofacial pathology (CHLP). According to the WHO, the frequency of CCLP ranges from 1 case per 500-2000 newborns, which makes this defect the third most common among congenital anomalies, after congenital malformations of the cardiovascular system and clubfoot [M.A. Pogrel, K.E. Kahnberg, L. Andersson 2014]. Around the world, there is a tendency to increase the frequency of occurrence of this pathology [A.S. Artyushkevich et al. 2013].

In patients with congenital cleft palate, speech, hearing, swallowing and breathing disorders are observed, associated with pathological attachment of the muscles of the soft palate and the development of palatopharyngeal insufficiency (PHI).

According to the WHO, the frequency of congenital cleft lip and palate (CCLP) ranges from 1 case per 500-2000 newborns, which makes this defect the third most common among congenital anomalies, after congenital malformations of the cardiovascular system and clubfoot [M.A. Pogrel, K.E. Kahnberg, L. Andersson 2014]. The study and evaluation of these changes, their systematization leads to a decrease in the proportion of maxillofacial pathologies, contributes to the non-hormonal development of the child, the most significant increase in the frequency of health and development disorders, including the dentoalveolar system and occlusion among the younger generation occurs in the I and II period of childhood. Uzbekistan has achieved certain success in protecting the health of the population, reducing diseases, including the dentoalveolar system and with congenital cleft lip and palate among children. However, there were some problems in the health care system. Among them, important was the study of the morphometric characteristics of the craniofacial region in children with congenital cleft lip and palate.

It is believed that the mechanism of splitting is associated with a violation of the fusion of the embryological processes that make up the upper lip, at the sixth week of intrauterine life. The hard and soft

palate is formed by a different mechanism. The described process is a "flipping" of the palatal tissue from a vertical to a horizontal position, followed by fusion, with the formation of a secondary palate at about the eighth week of intrauterine development. Lack of growth, disruption of the inversion process, or disruption of the overlying epithelium allowing mesenchymal flow to create a strong structure can lead to cleft palate.

**Purpose of the study:**

To process statistical data of morphometric measurements of the craniofacial region in children with cleft lip and palate after a series of operations.

**Material and research methods:**

Children of the I and II period of childhood with CCLP were involved, who underwent cheilorhinoplasty, veloplasty and uranoplasty, depending on the defect. At the Department of Surgical Dentistry, BGMI, we conducted a morphometric examination of 200 children of the I and II childhood period with CCLP at the age of 3 to 12 years.

Among them, 130 (65%) boys, 60 (35%) girls who underwent surgical manipulation depending on the severity of the anomaly of the lip and palate in the Department of Maxillofacial Surgery at the Bukhara Children's Multidisciplinary Medical Center in Bukhara in the period from 2009 to 2018.

The control group consisted of 96 children with congenital cleft of the hard and soft palate (CCHSP) of the I and II periods of childhood of identical age.

Of these, 112 children of the I period of childhood (born 2014-2018) with CCLP at the age of 3 to 7 years. Among them, 79 (70%) boys, 33 (30%) girls.

General information about patients, taking into account age, gender and prevalence of CCLP, is presented in Table 1.

Table number 1.

**Distribution of children by age and gender, taking into account the prevalence of CCLP in the first period of childhood (n=112)**

According to the type of congenital cleft lip and palate	Children 3 years old (2018 y.)		Children 4 years old (2017 y.)		Children 5 years old (2016 y.)		Children 6 years old (2015 y.)		Children 7 years old (2014 y.)		Total		
	b	g	b	g	b	g	b	g	b	g		%	
Congenital unilateral cleft lip (CUCL)	13	7	9	4	5	3	11	2	2		56	50%	
Congenital unilateral cleft lip and palate (CULP)			1	1	2	2	1				7	6%	
Congenital bilateral cleft lip (CBCL)								1	1		2	2%	
Congenital bilateral cleft lip and palate (CBLP)	5		1						2		8	7%	
Congenital cleft hard and soft palate (CCHST)	3	3	3	1	9	2	6	3	5	4	39	35%	
Total	abs.	21	10	14	6	16	7	18	6	10	4	112	100%
		31		20		23		24		14		112	
	%	28%		18%		20%		21%		12%		100	

Children with congenital unilateral cleft lip (CUCL) - 56 (50%) and children with congenital cleft hard and soft palate (CCHSP) -39 (35%) make up the majority, children with congenital bilateral cleft lip (CBCL), congenital unilateral cleft lip and palate (CUCLP), congenital bilateral cleft lip and palate (CBCLP)

The remaining 88 children with CCLP are children of the II period of childhood and 50 (57%) of them are boys, 38 (43%) are girls.

General information about patients, taking into account age, gender and prevalence of CCLP, is presented in Table 2.

Table number 2.

**Distribution of children by age and sex, taking into account the prevalence of CCLP in the second period of childhood (n=88)**

According to the type of congenital cleft lip and palate	Children 8 years old (2013 y.)		Children 9 years old (2012 y.)		Children 10 years old (2011 y.)		Children 11 years old (2010 y.)		Children 12 years old (2009 y.)		Total		
	b	g	b	g	b	g	b	g	b	g	g	%	
Congenital unilateral cleft lip (CUCL)	3	2		2	1	2	2		4		16	18%	
Congenital unilateral cleft lip and palate (CUCLP)											0		
Congenital bilateral cleft lip (CBCL)			3							2	5	6%	
Congenital bilateral cleft lip and palate (CBCLP)	1		1	2		1	1	1	2	1	10	11%	
Congenital cleft hard and soft palate (CCHST)	16	9	1	3	6	5	6	7	3	1	57	65%	
Total	abs.	20	11	5	7	7	8	9	8	9	4	88	
		31		12		15		17		13		88	
	%	35%		14%		17%		19%		15%			100%

There are 55 (63%) more children with CCHSP than other types of congenital cleft.

To achieve this goal, a morphometric study was carried out and morphometric parameters of the craniofacial region of children of the I and II period of childhood with CCLP were obtained, clinical and anthropometric methods were used, followed by statistical processing of the data.

When performing this work, the method of anthropometric studies of children was used according to the methodological recommendations of N. Kh. Shomirzaeva, S. A. Ten and Sh. I. Tukhtanazorova (1998).

The task was formulated and the structure of the study was determined and these plans were documented in the protocol (program). In this regard, a "Research Map" has been developed that allows you to examine the child in detail, determine the morphometric characteristics of the craniofacial region of children in the I and II period of childhood with CCLP after uranium and cheilorhinoplasty, taking into account gender (boys and girls) and assess the compliance of these parameters according to principle of the "Golden section".

Depending on the measurement performed, all children were grouped according to the following criteria: group I - control (n= 96) children with CCHSP, group II - children with CUCLP (n= 75) and group III consisted of children with CBCLP (n= 25) I and II period of childhood.

### Results and its discussion:

In group II children, the height of the face is higher compared to group I, the angle of the lower jaw is on average  $120.3 \pm 1.30$  (right side),  $123.8 \pm 1.350$  (left side), palate and nose are perpendicular to the point A. In children of group II, the height of the face is located below and these statistical changes are relevant only for the maxillae. Length of the mandible (condylion - gnathion) ( $P = 0.044$ ), height of the condyle process of the maxillae (point-A) ( $P = 0.026$ ), upper 1 point A ( $P = 0.001$ ), lower 1 point A (pogonion) ( $P = 0.038$ ) and upper lip thickness ( $P = 0.001$ ). In children of group III, the angle of the mandible is on average  $130.0 \pm 1.32$  (right side),  $130.1 \pm 1.33$  (left side).

On panoramic radiography, there is a delay in the eruption of small molars, canines on the upper and lower jaws in children with CCLP. There is also a lag in the morphometric parameters of the teeth and dental arch.

The nasolabial angle was analyzed in relation to the participants in CCHSP. In the group of children with CUCLP, low nasolabial angles were observed, and the lack of muscle development caused deformation of the lips and palate as a result of their flattening and curvature towards the cleft. These deformations are usually accompanied by a downward displacement of the collumella point near the lips. In children with CUCLP, this angle is more acute, but does not correspond to  $90 - 120^\circ$ . The lack of a clear difference between patients with CUCLP and CBCLP may lead to deformity and retraction of the upper lip due to reconstructive surgery or retraction of the upper incisor and flattening of the subbasal region.

Comparison of the three groups revealed a statistically significant difference in the length of the mandibles (condylion - gnathia). In other words, the condition and length of the lower jaw were significantly affected by the surgical procedures performed. These results are similar to the previous ones. Evidence suggests that the mandibles are relatively retarded, although the mandible is of normal length. Repositioning of the jaw in this position may be a functional response to changes in the mandibular complex as a result of rotation of the mandible, in which the muscle in it is remodeled and attached to the gonial region (the mandible is indicated by the angle and flexion of the region).

### Conclusion:

Thus, the study showed that the morphological and physiognomic height of the face in children with CCLP is less than in children of group I. The corners of the lower jaw are obtuse, depending on the more affected side in group II children. This indicates a delay in the formation of the mandible. This parameter indicates a more physical development on the right side of the mandible compared to the left.

The development of parts of the face is not the same in groups. In children with congenital cleft lip and palate, there is a delay in the eruption of permanent teeth, the formation of morphometric parameters of the jaws and facial skeleton. With age, children undergo various changes in the craniofacial region, which is associated with the nature of nutrition and the change of milk teeth. The use of the proposed morphometric examination method makes it possible to achieve optimal functional and aesthetic results in children with CCLP after surgery.

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