WEB OF SCIENTIST: INTERNATIONAL SCIENTIFIC RESEARCH JOURNAL
ISSN: 2776-0979 (Volume 2, Issue 9, Sep., 2021

EFFECT OF SURGICAL MANIPULATION TO MORPHOMETRIC DEVELOPMENT OF FACE AND JAW IN PATIENTS WITH CONGENITAL LIP AND PALATE SPLITS

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Resume

The article presents the results of maxillofacial morphometry after surgery in patients with congenital cleft lip and palate. Patients were divided into two groups. The results of the two groups were compared. Proportions of morphometric parameters of maxillofacial region in patients with congenital cleft lip and palate and relative changes in compliance with control group of healthy children were studied. The more perfect and age-appropriate surgical procedures in patients with congenital cleft lip and palate, the more likely it is that the morphometric parameters of the maxillofacial region will comply with the “Golden Section” principle and reduce the rehabilitation period.

Keywords: nasolabial angle, statistical significance, basal part, lower jaw, upper jaw, cephalometric analysis, lip and palate defect.

Relevance

According to various authors, there has been an increase in the number of newborns with severe cleft, which include congenital bilateral complete cleft of the upper lip, alveolar ridge and palate. It occurs in 12-25% of cases among other forms of cleft face. Patients have severe anatomical and functional disorders, which cause a low quality of life for children and their parents. The appearance of the child causes significant stress for the parents. Parents try not to show their child to others, avoid contact with relatives, and some refuse such children.

For effective complex treatment of children with congenital clefts of the lip and palate (CRGN), it is necessary to periodically study the dynamics of growth of the jaw segments [1]. The development and growth of the nasal-maxillary complex in patients with ERHN is a widely discussed topic in any surgical procedure. Studies by Graber [2] reported three-dimensional changes in the upper jaw in patients with complete lip and palate defects, as well as in patients after surgery. Patients showed a tendency to misalignment of the bite, intersection of the anterior and posterior bites, and defects in the midline of the face. Two factors have been shown to cause abnormal facial

morphology in patients with CRHN undergoing surgery: the internal development of the defect and iatrogenic factors resulting from treatment. Bishara [3] reported that the deformity of the upper jaw in patients with ERH was caused by intrinsic factors, but most authors noted that the factors of the inner jaw were secondary to surgery. [4, 6] If the deformity of the upper jaw is a complication of surgery, it is important to determine the optimal duration and conditions of treatment to close the lip and palate defects.

In the early periods, cheiloplasty is performed to improve the feeding of the baby, since his sucking function is destroyed, and most specialists pay attention to the restoration of this function, but the scars after this operation can interfere with the development of the upper jaw, which itself leads to underdevelopment of the lower jaw. To study the influence of the iatrogenic factor on the growth of the face and jaws, a morphometric study was carried out in patients with CRHN. For the study, a special compass, a gnatometer, and a meter tape were used.

Determining the cause of growth retardation in patients with ERGH has been the subject of a large body of research, and the current initial consensus is that the iatrogenic effect of surgery is a relatively important factor. [7] In patients with ERHN, a slight increase in the maxilla was observed before surgery, which led to greater attention to the study of iatrogenic factors.

According to some authors, the main factor in inhibition of growth is the operation performed on the palate. [8] In patients with palatal defects, the mean is usually taken into account in the criteria for assessing growth and then correlated with other patients with palatal and palate defects or with a normal population. [9-10] It is important to indicate the mean of treatment outcomes, but it is relatively difficult to assess individual variability. Changes in development have been noted by many authors. [11-12] These changes may depend on the type of fracture and its complexity. To date, it has not been established whether surgery actually restricts the growth of the upper and lower jaw. Therefore, in order to evaluate the effectiveness of surgical interventions on the growth of the cranial and facial regions with defects of the lips and palate, we conducted a study on patients with CRHN.

Materials and methods: Kambarova Sh.A. carried out a scientific research at the Department of Surgical Dentistry of the Belarusian State Medical Institute in Bukhara and selected patients who applied to the BMMC with ARGN. 20 patients (14 boys, 6 girls, age: 5.6 ± 2) were divided into 2 groups. The 1st group consisted of 10 people (9 boys and 1 girl) with a third-class WRHN, based on the average age. The average crack size was 5.3 ± 2.3 mm. Group 2 (control group (CG)) included 10 patients with defects (9 girls, 1 boy) of the first class. The parents of the patients were informed about the

surgical procedure and research that needed to be carried out and their consent was obtained. In patients, the wall of the medial segment of the fracture is retropositive and laterally displaced. The cross section of the segment moved forward without compression. The cleft of the alveoli is facing up. Nasal congestion is seen in several patients. The base of the wing of the nose is retropositive in the area of the slit and is defective. The alveolar gap is shifted to the side, while the anterior wall and axillary cavity of the upper jaw are visible. All patients underwent cheiloplasty according to the Millard method - I.A. Kozina and palatal plastic according to the Frolova-Makhkamova method (soft palate after 3 months, lip and palate after 6 months). Cephalometric measurements were performed at the age of 6–7 years. A comprehensive cephalometric analysis was performed to measure various growth parameters of the head and face region. Linear and angular measurements were used, which were recorded on an individual map. An individual patient record with all information has been developed. All data were analyzed and primary normal measurements were obtained. The data obtained in addition to the analysis of the mean standard deviation showed statistically significant associations and a 95% confidence interval. P <0.05 (P> 0.05) was taken into account. All measurements were repeated 6 weeks after the initial measurements to detect errors associated with linear measurements. Analysis of repeated measurements did not reveal any differences between them.

Results of the research and discussion: Measurements were obtained from patients with RHGH and compared with participants in the CG. The perpendicularity of the nasion and the height of the face to point A was higher in patients with CRHN than in CG participants (P = 0.088) (P = 0.778). The values of the measurements of the remaining variables were higher in the CG participants than in the patients with ARGN. The only differences are in the length of the upper jaw (condil - point A) (P = 0.026), the length of the lower jaw (condylion-gnation) (P = 0.045), upper 1 point (P = 0.001), lower 1 point A to chase (P = 0.038), upper lip thickness (P <0.001) and upper lip deformity (P <0.001) are statistically significant. There was no correlation between fracture size and its effect on maxillary retrusion.

In this study, the angle of the nasolabial fold was analyzed relative to CG participants in analog patients. In the group of patients with ERHN, low angles of the nasolabial fold 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 fracture. These deformities are usually accompanied by a downward displacement of the collumella point near the lips. [13] In patients with ERH, this angle is more acute, but does not correspond to 90–120 °. The absence of a visible difference between patients with

RVGN and CG can lead to deformation and retraction of the upper lip due to reconstructive surgery or retraction of the upper incisors and flattening of the subnasal region. [14] Other studies have observed that nasal deformities in patients correlate with diastasis between lip fragments and that the alveolar swelling of the upper jaw is located in different positions. However, other studies have shown that the convexity of the upper jaw is smoothed, which leads to lower values of the angle A [15]. Other studies have confirmed the retrusion of high incisors in patients with CRHN [16]. In patients with ERGN, the distance between the incisors of the upper jaw (TM) is relatively small, CG, which, in turn, can lead to a large differentiation of the nasolabial angle. Orthodontic treatment should be individualized, since a short nasolabial space can cause tooth extraction in the HF arch, but at the same time, other types of anomalies are observed in the bite of patients with RVGN compared to CG. The increase in HF (decrease in the length of the condiliuma point) is relatively limited in CG in patients with CRHN. Midface hypoplasia in patients with ERHN may result from surgery. Postoperative scars interfere with normal HF growth. [17] During the operation, the bone tissue is not injured, but fibrous scars in the soft tissues reconstruct the HF growth and it grows downward and forward. Depending on the size and shape of the crack in the area of the palate and lips, tissue mobilization occurs, therefore, the larger the crack, the larger the scar and the slower the upper jaw grows. Comparison of the two groups revealed a statistically significant difference in the length of the mandible (LF) (condylion - gnation). In other words, the condition and length of the NP were significantly influenced by the surgical procedures performed. These results are similar to the previous results [15]. The data indicate that the LF is relatively lagging behind, although it has a normal length. The retroposition of the jaw in this position can be a functional response to changes in the LF complex as a result of its rotation, in which the muscle in it is remodeled and attached to the gonial region (the lower jaw is indicated by the angle and flexion of the region).

An increase in the vertical tendency of HF growth was found when measuring the height of the face in patients with ERHN. The lower anterior angle of the face height was increased compared to the CG patients. The results of similar analyzes have already been shown by other authors. [3,20,21] An increase in the front of the facial angle may be associated with active growth of the front of the face or passive growth of the back of the face. Clinical research is needed to develop specific treatment protocols that interfere with the normal growth and development of HF in patients with CRHN.

In this study, an increase in the height of the anterior lower face of the face resulted in the lower end being in the back. [18] In the surgical practice of Dehler, it was found

that the patients had a small size and relatively behind the NP, and at the same time, he eliminated the defects of the lips and palate. This has been shown to improve the patient's pronunciation, but is thought to be the cause of the relatively underdeveloped upper jaw. The morphological status of LF was determined in patients with RHF who underwent surgery, and when measuring the height of the face in patients with RHF, an increase in the tendency of the vertical growth of HF was found. The lower anterior angle of the face height was increased compared to the CG patients. The results of such analyzes have already been previously shown by other authors. [4,20,21] An increase in the front of the face may be associated with active growth of the front of the face or passive growth of the back of the face. [22] Developed specific protocols for the treatment of factors that interfere with normal growth and development of HF in patients and found no difference in statistical analysis between the two groups compared to patients with RVGN who did not have the necessary practice to continue clinical trials. It was noted that the growth of the lower jaw does not depend on the method of surgery. NP is not directly related to cracks, but there may be changes in the structure of NP growth due to damage to NP itself and the functional factors present.

Changes were assessed for HF and LF, where the incisors in the LF dentition were relatively retroclinical and retrusive compared to control values. The anterior cruciate ligament is more common in patients with congenital cleft palate. After surgical procedures, the incisors were found to be similar to those in the control group. Intensive lip plastic surgery can cause retroclination of the incisors in the upper part, but has nothing to do with the growth of the midface. The NP was found to be relatively vertical compared to the control group in the dentition, possibly due to pressure on the lower lip during swallowing and the patient's desire to achieve a flat mouth. The two groups showed significant differences in deformity and change in upper lip thickness. The upper lip ratio improved in the WRGN group.

In the CG group, the thickness of the upper lip increased, and in the group with WRGN, this indicator changed significantly. Numerous studies have shown that changes not only in the front teeth, but also in lip tension, muscle tone and lip thickness significantly affect the shape and condition of the lips, especially in patients with CRHN. Hard tissue therapy can alter the response of soft tissue. Patients have consistently hypertrophy of the muscles of the lower lip to achieve bilateral lip closure.

Conclusion: HF and LF are shorter in HF and LF patients than in the control group due to surgical interventions. Deformity and thickness of the upper lip were also less than in the control group, posterior location in the anterior teeth was also found on the HF and LF. This suggests that surgical procedures performed in patients with

ARVH affect the growth of HF and LF, and also change the location of the dentition. Operation on the lips and palate affects the growth of the upper and lower jaw, which leads to a lag in the growth effect in the basal part of the jaw.

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