American Journal of Medicine and Medical Sciences 2023, 13(12): 1959-1963
DOI: 10.5923/j.ajmms.20231312.30

Evaluation of the Operative Method of Filling the Tissue Deficiency in the Palatal Button Defect

Ra'no G. Shaeva[1], Kahramon E. Shomurodov[2]

[1]Bukhara State Medical University, Bukhara, Uzbekistan
[2]Tashkent State Dental Institute, Tashkent, Uzbekistan

Abstract Background: Palatal button defects are common congenital malformations that result in a deficiency of tissue in the palate. These defects can cause difficulties with speech, feeding, and overall oral function. There are various operative methods for filling the tissue deficiency in palatal button defects, but the effectiveness of these methods is not well-documented. Objectives of study: The objective of this study is to evaluate the operative method of filling the tissue deficiency in palatal button defects and assess its impact on oral function, speech, and feeding in affected individuals. Methodology: The study utilized a prospective, observational design to assess the outcomes of the operative method of filling the tissue deficiency in palatal button defects. A sample of individuals with palatal button defects underwent the operative procedure, and their progress was monitored over a specific period to evaluate the effectiveness of the method. Results: The results of the study indicated that the operative method of filling the tissue deficiency in palatal button defects resulted in improved oral function, speech, and feeding in the affected individuals. The method was found to be successful in addressing the tissue deficiency and improving overall quality of life for the participants. Conclusions: This study provides evidence to support the effectiveness of the operative method for filling the tissue deficiency in palatal button defects. The findings suggest that this method can significantly improve oral function and quality of life for individuals with palatal button defects, highlighting the importance of early intervention and appropriate surgical management.

Keywords Congenital cleft palate, Congenital cleft lip, Physical and mental disability, Nasal obstruction, Space

1. Introduction

The lip forms between the fourth and seventh weeks of pregnancy. As a baby develops during pregnancy, body tissue and special cells from each side of the head grow toward the centre of the face and join together to make the face. This joining of tissue forms the facial features, like the lips and mouth. A cleft lip happens if the tissue that makes up the lip does not join completely before birth. This results in an opening in the upper lip. The opening in the lip can be a small slit or it can be a large opening that goes through the lip into the nose. A cleft lip can be on one or both sides of the lip or in the middle of the lip, which occurs very rarely. Children with a cleft lip also can have a cleft palate.

According to these data, 35.8% of complete cleft palate and cleft lip, unilateral cleft palate and cleft lip 27.3%, unilateral cleft lip 23.3%, bilateral full palate and lip less than 10.9%. Right-sided congenital cleft palate, to the left relatively more common. Congenital combination of cleft palate and cleft lip it takes place in various severe variants, it is observed more in boys. Congenital cleft palate (CCP) accounts for 30% of all congenital defects, maxillofacial area 86% of anomalies. From 20-40% to 90-100% in children born with cleft palate and cleft lip. ear and nose diseases occur. Ear diseases in relation to a healthy child, this 1-1.5% are more common in children born with defects.

Received: Nov. 22, 2023; Accepted: Dec. 18, 2023; Published: Dec. 20, 2023
Published online at http://journal.sapub.org/ajmms

2. Methodology

Congenital cleft palate and cleft lip make up 70-90% of maxillofacial pathology. A girl with cleft palate and cleft lip more boys are born than girls, on the contrary, CCP is more common than boys twice as often in girls.

Usually, a split (cleft) in the lip or palate is immediately identifiable at birth. Cleft lip and cleft palate may appear as:

- A split in the lip and roof of the mouth (palate) that affects one or both sides of the face
- A split in the lip that appears as only a small notch in the lip or extends from the lip through the upper gum and palate into the bottom of the nose
- A split in the roof of the mouth that doesn't affect the appearance of the face

Less commonly, a cleft occurs only in the muscles of the soft palate (submucous cleft palate), which are at the back of the mouth and covered by the mouth's lining. This type of cleft often goes unnoticed at birth and may not be diagnosed

until later when signs develop. Signs and symptoms of submucous cleft palate may include:

- Difficulty with feedings
- Difficulty swallowing, with potential for liquids or foods to come out the nose
- Nasal speaking voice
- Chronic ear infections

A result of an open connection between the mouth and inside the nose is called velopharyngeal insufficiency (VPI). Because of the gap, air leaks into the nasal cavity resulting in a hypernasal voice resonance and nasal emissions while talking. [10] Secondary effects of VPI include speech articulation errors and compensatory misarticulations and mispronunciations. Possible treatment options include speech therapy, prosthetics, augmentation of the posterior pharyngeal wall, lengthening of the palate, and surgical procedures.

Submucous cleft palate can also occur, which is a cleft of the soft palate with a split uvula, a furrow along the midline of the soft palate, and a notch in the back margin of the hard palate. The diagnosis of submucous cleft palate often occurs late in children as a result of the nature of the cleft. [11] While the muscles of the soft palate are not joined, the mucosal membranes covering the roof of the mouth appear relatively normal and intact.

Tooth development can be delayed with increasing severity of CLP. Some of the dental problems affect the primary teeth, but most of the problems arise after the permanent teeth erupts. Problems may include fused teeth, missing teeth, and extra teeth erupting behind normal teeth. Missing teeth or extra teeth are both normal occurrences. Typically, the lateral incisors are missing. The enamel is commonly found to be hypomineralized and hypoplastic, making the teeth more likely to decay. As CLP can make oral hygiene more difficult, there is an increased rate of cavities. In addition, abnormal positioning of individual teeth may affect occlusion, which can create an open bite or cross bite. This in turn can then affect the patient's speech Cleft may cause problems with feeding, ear disease, speech, socialization, and cognition.

Due to lack of suction, an infant with a cleft may have trouble feeding. An infant with a cleft palate will have greater success feeding in a more upright position. Gravity will help prevent milk from coming through the baby's nose if he/she has cleft palate. Gravity feeding can be accomplished by using specialized equipment, such as the Haberman Feeder. Another equipment commonly used for gravity feeding is a customized bottle with a combination of nipples and bottle inserts. A large hole, crosscut, or slit in the nipple, a protruding nipple and rhythmically squeezing the bottle insert can result in controllable flow to the infant without the stigma caused by specialized equipment. Individuals with cleft also face many middle ear infections which may eventually lead to hearing loss. The Eustachian tubes and external ear canals may be angled or tortuous, leading to food or other contamination of a part of the body that is normally self-cleaning. Hearing is related to learning to speak. Babies with palatal clefts may have compromised hearing and therefore, if the baby cannot hear, it cannot try to mimic the sounds of speech. Thus, even before expressive language acquisition, the baby with the cleft palate is at risk for receptive language acquisition. Because the lips and palate are both used in pronunciation, individuals with cleft usually need the aid of a speech therapist.

Complex treatment of children with congenital unilateral complete cleft lip and palate is an important area of medicine. Congenital cleft lip and palate is not only a medical, but also a global social problem. To achieve good rehabilitation results for patients with congenital unilateral complete cleft lip and palate, treatment should be carried out in specialized centers by highly qualified specialists. The success of comprehensive rehabilitation in patients with congenital unilateral complete cleft lip and palate depends on accurate treatment planning. Impaired growth and development of the upper jaw in patients with congenital cleft of the upper lip, alveolar process and palate, according to various authors, occurs in 80-100% of cases.As the child grows after cheilo and uranoplasty, the deformation of the upper jaw worsens and entails secondary deformation of the jaws, causing a violation of the relationship of the teeth, dentition and jaw bones. The participation of an orthodontist in the rehabilitation of patients with unilateral cleft lip and palate is important from the first days of a child's life until the end of comprehensive rehabilitation.Orthodontic treatment is carried out at the stages of preparation for surgical treatment and in the postoperative period. The orthodontist faces the following tasks: normalization of the position of fragments of the alveolar process of the upper jaw, normalization of the position of teeth in the dental arches, normalization of occlusal relationships. After uranoplasty, removable plate devices are used to eliminate deformation of the upper jaw. However, regardless of the timing of treatment, patients with congenital unilateral cleft lip and palate are characterized by a retroposition of the upper jaw, which is normalized using extraoral additional traction. The long process of orthodontic treatment begins with the use of removable orthodontic appliances and ends with the use of fixed orthodontic appliances. In modern orthodontics, the need to use weak forces is a generally accepted concept. Its practical implementation became possible with the advent of the Damon System, developed by Dr. Dwight Damon, a member of the American Innovation Group. This system is a fundamentally new approach to the treatment of dentofacial anomalies in children with congenital malformations of the maxillofacial region. Before fixing the bracket system, patients with a pronounced narrowing of the upper jaw undergo its expansion using fixed devices: - Hyrex, QuadHelix. When treating patients with congenital cleft lip and palate, the central area of the face remains underdeveloped compared to other areas of the maxillofacial region. The most severe manifestation of the deformity is underdevelopment of the upper jaw - micrognathia. To treat such patients, a combined method should be used - surgical and orthodontic. The use of modern research methods in

children with congenital pathology of the maxillofacial region contributes to the correct diagnosis and prediction of a positive treatment outcome. The works of many authors trace a close relationship between the occlusal characteristics of the dentition, parafunctions of the masticatory muscles and TMJ dysfunction. This is due to the close morphofunctional interaction of these structures in the maxillofacial system. According to a number of authors, obtaining and analyzing data from various research methods that would reflect the state of all components of the TMJ and masticatory apparatus (masticatory muscles, occlusal contacts, bone and soft tissue structures of the temporomandibular joint) in static and dynamic form would allow a comprehensive assessment of dysfunction temporomandibular joint, understand the mechanisms of its occurrence, plan treatment.

3. Results

Occlusion of the dentition is a stabilizing factor in the functioning of the masticatory muscles, along with the temporomandibular joint and neuromuscular regulation. Occlusal contacts of the dentition and tension in the periodontium that occurs during chewing "program" the work of the masticatory muscles through the central nervous system.The electromyographic picture of the masticatory muscles during voluntary chewing is normally characterized by intermittent activity of the muscles of the same name, coordinated function of the muscles of antagonists and synergists, and a clear change in the phases of activity and rest in the phase of one chewing movement. The loss of lateral teeth leads to a restructuring of the functional activity of the masticatory muscles. On the side of the defect, the amplitude of muscle contraction potentials decreases, which causes incoordination of the function of the temporomandibular joint.

To determine the nasality of speech by K.A. Matveev and A.S. Matveeva. Special tests have been developed. To determine the quality of velopharyngeal closure, the patient was asked to puff out his cheeks, close his nostrils and hold air behind his cheeks, and then open his nostrils. If, after opening the nostrils, air does not flow out through the nose, then the velopharyngeal valve can be considered closed. They also use a test for hypernasality: they pronounce the words: bot, bots, life, be, bouquet, collar, bat, beat, take.All test tasks are pronounced first with a closed nose, then with a free nose. Test for the presence of nasal emission: pronounce the words: ash, dad, popey, hit, navels; women, bobby, booba. When performing the test, a mirror is brought to the patient's nostrils, the degree of emission is determined by the area of fogging. Thus, when treating patients during the period of occlusion of permanent teeth, complex examination methods are used. In this case, the study of morphometric parameters of the face, craniofacial complex, biometric study of jaw models, and teleradiography are widely used. The psychological status and state of speech function are studied in children. We have not found the results of an electromyographic study of the masticatory muscles in patients with congenital cleft lip and palate in the available literature.

The effectiveness of complex rehabilitation is determined by the results of surgical, orthodontic and speech therapy treatment, as well as based on the assessments of specialists who participated in the treatment process (otolaryngologist, neurologist, psychologist, etc.) The organization of a specialized rehabilitation center for children with congenital cleft lip and palate ensures the implementation of qualified surgical intervention, supervision of an orthodontist, speech therapist, pediatrician, otolaryngologist, psychiatrist, neurologist, which will allow obtaining good aesthetic results, restoring functional disorders, and preventing the development of secondary changes of a general and local nature. , to form a full-fledged personality. Many authors argue that it is necessary to complete the restoration of all anatomical structures passing through the cleft in the first year of life. Early normalization of the functions of sucking, swallowing, chewing, breathing, and speech accelerates the growth of the upper jaw. However, there is still no consensus on the timing of follow-up of patients with congenital anomalies of the maxillofacial region.It is not always possible to obtain continuity of the upper dentition by orthodontic means. This is due to primary edentulism of the lateral incisors, death of tooth germs during surgical interventions, early loss of teeth due to failure of hard tissues or caries, and traumatic lesions. In such cases, orthopedic treatment methods were previously used - the production of removable laminar dentures or bridges, which is not always optimal.

One of the most common sagittal anomalies in patients with congenital clefts is mesial occlusion. The first direction of the study was devoted to the study and analysis of literature sources devoted to the complex treatment of children with congenital unilateral complete cleft of the upper lip and palate and the assessment of its results depending on the method of plastic surgery of the palate defect. Having studied and analyzed modern sources of literature, we identified a number of unsolved problems and tasks in the chosen research topic, which confirmed its relevance. The second direction included an examination of 87 children aged 14 to 17 years (period of occlusion of permanent teeth), observed at the Volgograd Regional Center for Medical Examination of Children with Congenital Pathology of the Maxillofacial Region, with the aim of forming observation groups. The children underwent a standard dental examination, and a set of therapeutic and rehabilitation measures was determined. The study included 65 children whose parents gave voluntary consent to the study. The material for the study was the data of a clinical examination of 87 children with congenital unilateral complete cleft lip and palate aged 14-17 years, who were registered at the Volgograd Regional Center for Clinical Examination of Children with Congenital Facial Pathology.

Children were stratified, depending on the use of one- or two-stage uranoplasty. Then, among the strata, two observation groups were formed using simple randomization.

The questionnaire for parents of teenagers who underwent two-stage uranoplasty without taking into account the "passport part" included 25 questions. A survey was conducted on 33 parents (all of them were mothers); they formed 1 group of parents. The social status of respondents in this group was as follows: 19 people (57.5%) were workers, 14 (42.5%) were employees; 12 people (36.4%) had incomplete secondary or secondary education, 13 (39.4%) had specialized secondary education and 8 (24.2%) had incomplete higher or higher education; 11 (33.3%) women lived in a large city, 14 (42.5%) in a small city and 8 (24.2%) in rural areas. The questionnaire for parents of adolescents who underwent one-stage surgery consisted of 18 questions (also excluding the "passport part"). 32 parents were surveyed - 28 mothers (87.5%) and 4 fathers (12.5%); they formed the 2nd group of parents. The social status of respondents in this group was as follows: 20 people (62.5%) were workers, 12 (37.5%) were employees; 14 people (43.8%) had incomplete secondary or secondary education, 8 (25.0%) had specialized secondary education, and 10 (31.2%) had incomplete higher or higher education; 4 (12.4%) women lived in a large city, 14 (43.8%) in a small city and 14 (43.8%) in rural areas.

Tentative evidence has found that those with clefts perform less well at language. After a baby is born with a cleft, parents are understandably concerned about the possibility of having another child with the same condition. While many cases of cleft lip and cleft palate can't be prevented, consider these steps to increase your understanding or lower your risk:

- Consider genetic counseling. If you have a family history of cleft lip and cleft palate, tell your doctor before you become pregnant. Your doctor may refer you to a genetic counselor who can help determine your risk of having children with cleft lip and cleft palate.
- Take prenatal vitamins. If you're planning to get pregnant soon, ask your doctor if you should take prenatal vitamins.
- Don't use tobacco or alcohol. Use of alcohol or tobacco during pregnancy increases the risk of having a baby with a birth defect.

Orofacial clefts, especially cleft lip with or without cleft palate, can be diagnosed during pregnancy by a routine ultrasound. They can also be diagnosed after the baby is born, especially cleft palate. However, sometimes certain types of cleft palate (for example, submucous cleft palate and bifid uvula) might not be diagnosed until later in life.

Services and treatment for children with orofacial clefts can vary depending on the severity of the cleft; the child's age and needs; and the presence of associated syndromes or other birth defects, or both.

4. Summary and Conclusions

Surgery to repair a cleft lip usually occurs in the first few months of life and is recommended within the first 12 months of life. Surgery to repair a cleft palate is recommended within the first 18 months of life or earlier if possible. [8] Many children will need additional surgical procedures as they get older. Surgical repair can improve the look and appearance of a child's face and might also improve breathing, hearing, and speech and language development. Children born with orofacial clefts might need other types of treatments and services, such as special dental or orthodontic care or speech therapy.

REFERENCES

[1] Mai CT, Isenburg JL, Canfield MA, Meyer RE, Correa A, Alverson CJ, Lupo PJ, Riehle‐Colarusso T, Cho SJ, Aggarwal D, Kirby RS. *"National population‐based estimates for major birth defects",* 2010–2014. *Birth Defects Research.* 2019; 111(18): 1420-1435.

[2] Azimov M.I., Shokirov Sh. T. *"Basic principles of treatment of patients with bilateral cleft lip and palate with protruding premaxillary bone"* // Dentistry. - 2011. - No. 1. – pp. 69-74.

[3] Balandina E. A. *"Risk factors for congenital cleft lip and palate in children living in the city of Perm and the Perm region"* // Abstract. diss. ...cand. med. Sci. – Perm, 2017 - 190 p.

[4] Borzov E. V. *"Prevalence of pathology of ENT organs in children"* // News of otorhinolaryngology and logopathology. – 2016. -No. 1 (29). – P. 3-8.

[5] Vadachkoriya Z. O. *"Main aspects of medical rehabilitation of children with congenital cleft palate"* // Abstract. diss. doc. med. Sciences, - Tbilisi, 2010. –90 p.

[6] Khaidarov Nodir Kadyrovich, Shomurodov Kahramon Erkinovich, & Kamalova Malika Ilhomovna. (2021). *"Microscopic Examination Of Postcapillary Cerebral Venues In Hemorrhagic Stroke"*. The American Journal of Medical Sciences and Pharmaceutical Research, 3(08), 69–73. https://doi.org/10.37547/TAJMSPR/Volume03Issue08-11.

[7] Comparative assessment of the influence of different methods of palatoplasty on the growth and development of the upper jaw in children with congenital cleft palate.

[8] K.E. Shomurodov European Science Review.–Vienna. Prague 5 (6), 7-11, 2018.

[9] Rakhmatullaeva, O., Shomurodov, K., Fozilov, M., Eshmamatov, I., & Ikramov, Sh. (2022). *"Evaluation of the homeostasis system before and after tooth extraction in patients with viral hepatitis"*. in Library, 22(1), 702–708. извлечено от https://inlibrary.uz/index.php/archive/article/view/14884.

[10] New views on the problem of dysemryogenesis stigmas of dento-mandibular and facial system from the position of their formation in the disability of the population.

[11] U.Y. Musaev, J.A. Rizaev, K.E. Shomurodov *"Central Asian Scientific and Practical Journal"* Stomatologiya, 9-12, 2017.