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MODERN APPROACHES TO SURGICAL TREATMENT OF BILATERAL CLEFT LIP AND PALATE IN CHILDREN

Woralbaev Maxmud Nietbaevich
Bimbetov Ernazar Salievich
Bimbetov Sipatdin Sali uli
Republic of Karakalpakstan, Nukus

Annotation. Congenital cleft lip and palate (CCLP) represent complex craniofacial anomalies associated with significant anatomical and functional impairments of the oral and maxillofacial region. This review examines contemporary surgical approaches to the management of bilateral cleft lip in children, based on an analysis of current domestic and international literature. Clinical observations and published data reveal that patients who have undergone surgery for bilateral cleft lip commonly present with various degrees of midfacial deformities. These include discontinuity of the orbicularis oris muscle, reduced mobility of the central lip segment, nasal alar and tip flattening, reduced upper lip projection, a shallow oral vestibule in the region of the upper incisors, distortion of Cupid's bow, diminished vermilion height, and columellar shortening. Particularly severe secondary deformities are frequently associated with non-standard cheiloplasty techniques, vomer osteotomies, and premaxillary bone resections. These findings underscore the importance of selecting appropriate surgical methods that preserve soft tissue and skeletal integrity to ensure optimal aesthetic and functional outcomes.

Key words: bilateral congenital cleft lip and palate, columella, secondary deformities of the maxillofacial area.

СОВРЕМЕННЫЕ ПОДХОДЫ К ХИРУРГИЧЕСКОМУ ЛЕЧЕНИЮ ДВУСТОРОННЕЙ РАСЩЕЛИНЫ ВЕРХНЕЙ ГУБЫ И НЁБА У ДЕТЕЙ

Оралбаев Махмуд Ниетбаевич
Республика Каракалпакстан, г. Нукус

Аннотация. Врожденные расщелины верхней губы и нёба (ВРВГ) представляют собой сложные краниофациальные аномалии, связанные с выраженными

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анатомическими и функциональными нарушениями в области рта и челюстно-лицевой зоны. В данном обзоре рассматриваются современные хирургические подходы к лечению двусторонней расщелины верхней губы у детей, основанные на анализе отечественной и международной литературы. Клинические наблюдения и опубликованные данные показывают, что у пациентов, перенёсших операцию по поводу двусторонней расщелины верхней губы, часто наблюдаются различные степени деформаций средней части лица. К ним относятся: нарушение целостности мышцы, обвивающей рот, снижение подвижности центрального сегмента губы, плоские крылья и кончик носа, уменьшенная проекция верхней губы, мелкий ротовой vestibule в области верхних резцов, нарушение формы лука Купидона, уменьшение высоты красной границы губ и укорочение колумеллы. Особенно тяжёлые вторичные деформации часто возникают при использовании нестандартных техник хейлопластики, остеотомий восковой кости и резекции предмаксиллярной кости. Эти результаты подчёркивают важность правильного выбора хирургических методов, которые сохраняют целостность мягких тканей и скелета, чтобы обеспечить оптимальные эстетические и функциональные результаты.

Ключевые слова: двусторонняя врожденная расщелина верхней губы и нёба, колумелла, вторичные деформации челюстно-лицевой области.

BOLALARDA YUQORI LAB VA TANGLAYNING IKKI TOMONLAMA TUG‘MA YORIQLARINI JARROHLIK YO‘LI BILAN DAVOLASHDA ZAMONAVIY YONDASHUVLAR.

Woralbaev Maxmud Nietbaevich
Qoraqalpog’iston Respublikasi, Nukus shahri

Izoh. Tug‘ma yuqori lab va tanglayning ikki tomonlama yoriqlari (TYYIT) og‘ir kra-niyofa-tsial anomaliyalar bo‘lib, ular og‘zaki va jag‘-yuz hududlarida aniq anatomi-k va funksional buzilishlar bilan bog‘liqdir. Ushbu sharhda bolalarda ikki tomonlama yuqori lab yoriqlari bilan bog‘liq zamonaviy jarrohlik yondashuvlari, mahalliy va xalqaro adabiyotlarni tahlil qilish asosida ko‘rib chiqiladi. Klinikalik kuzatishlar va e'lon qilingan ma'lumotlar shuni ko‘rsatadiki, ikki tomonlama yuqori lab yoriqlari bo‘yicha jarrohlik operatsiyasini o‘tkazgan bemorlarda ko‘pincha yuzning o‘rtasidagi turli darajadagi deformatsiyalar kuzatiladi. Bular orasida quyidagilar mavjud: og‘izni o‘rab turgan mushakning uzilishi, labning markaziy

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segmentining harakatchanligining pasayishi, burun qanotlari va uchining tekislanishi, yuqori labning qisqarishi, yuqori tishlar sohasidagi og‘iz vestibulining sathi, Kupidon kamonining buzilishi, labning qizil chegarasining kamayishi va kolumellaning qisqarishi. Ayniqsa, og‘ir ikkilamchi deformatsiyalar noan'anaviy xeyloplastika texnikalari, vomer osteotomiya va premaxillary suyakni rezektsiya qilish natijasida yuzaga keladi. Ushbu natijalar, yumshoq to‘qimalar va skeletning yaxlitligini saqlab qolgan holda, optimal estetik va funksional natijalarni ta'minlash uchun jarrohlik usullarini to‘g‘ri tanlashning muhimligini ta'kidlaydi.

Kalit so'zlar: ikki tomonlama tug'ma lab va tanglay yorig'i, kolumella, jag-fasial sohaning ikkilamchi deformatsiyalari.

Introduction. It has been proven that congenital cleft lip and palate (CLP) is a severe malformation of the maxillofacial system, characterized by pronounced structural and functional impairments. There may be no other congenital deformity that alters the shape of the face to such an extent and leads to such significant anatomical and functional disturbances \[1,2,5,6,7,8,9,10]. Surgical treatment of congenital bilateral clefts occupies a special place due to its relevance, the diversity of surgical techniques, and the many unresolved issues. Among the wide variety of methods for primary repair of congenital cleft lip and palate, no single technique is currently preferred. The use of new surgical methods is not always rational and often fails to provide comprehensive rehabilitation for children with this pathology \[3,4].

A review of recent literature shows that to date, more than a hundred types of cheiloplasty have been developed and applied. Each of these methods has its advantages and disadvantages, allowing surgeons to individualize the surgical approach in each specific case. Both domestic and international literature have paid insufficient attention to the issue of primary cheiloplasty with the selection of the most optimal techniques that take into account the degree of underdevelopment of the soft tissues of the median segment [10,11,12,13]. Despite several studies aimed at improving primary cheiloplasty techniques, the issue of comparative analysis of methods for correcting congenital bilateral clefts of the upper lip and palate has not received adequate attention. The relevance of the problem and its limited coverage in the scientific literature were the main motivations for conducting this study.

Objective of the Study: To investigate the issue of surgical treatment in children with bilateral cleft lip through the analysis of domestic and international literature sources.

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Materials and Methods: Based on the literature by domestic and foreign researchers, an assessment was made of the outcomes of primary cheiloplasty in children with bilateral cleft lip, identifying the advantages and disadvantages of each surgical approach in treating congenital bilateral clefts.

Results and Discussion: It was found that patients who had undergone surgery for congenital bilateral cleft lip most commonly exhibited the following midface deformities, varying in severity: discontinuity of the orbicularis oris muscle, as indicated by limited mobility of the central lip segment; flattening of the nasal alae and tip; thinning of the upper lip; shallow oral vestibule in the region of the upper incisors; distortion of the Cupid's bow shape; reduced height of the vermilion border; and varying degrees of columella shortening. Particularly severe secondary maxillofacial deformities were observed following atypical forms of cheiloplasty or procedures involving vomer osteotomy and resection of the premaxilla \[1,2,3,5,7,10,11].

The treatment of patients with congenital bilateral cleft lip and palate begins in the first days of life and continues for many years. Managing such cases requires the active involvement of various specialists: maxillofacial surgeons, orthodontists, therapists, speech therapists, and otolaryngologists (Kislykh F.I., 2007; Lavrikov V.G., 2007; Subkhanov S.S., 2010; Dai L., 2010; Ness A.R. et al., 2015). According to G.V. Gonchakov (2002), the treatment of children with congenital cleft lip and palate is one of the most complex tasks in pediatric reconstructive surgery, the solution of which goes beyond correcting the cosmetic defect and restoring near-normal facial proportions. The priority in surgical treatment of cleft lip and palate is to reestablish correct anatomical relationships, which contributes to improved speech and hearing outcomes (Davy-dov B.N., 1999; Medvedeva M.A., 2007; Mamedov Ad.A., 1995–2012).

According to Ad.A. Mamedov (1995–2012), recent years have seen increased attention to not only restoring anatomical structures but also preserving function, while minimizing the traumatic impact of surgery on the future growth of the facial skeleton. According to most specialists, during primary cheiloplasty, the surgeon must:

* Ensure symmetry of the Cupid's bow;
* Restore the continuity of the orbicularis oris muscle;
* Create equal height of the skin portion and vermilion of the lip;
* Reconstruct the philtral columns;
* Achieve symmetry in nostril size;
* Form an adequately deep oral vestibule.

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It is also essential for the upper lip to appear natural both at rest and in motion. Therefore, during primary cheiloplasty, it is crucial to ensure, as far as possible, the physiological positioning of the orbicularis oris muscle fibers (V.G. Lavrikov, 1975; L.E. Frolova, 1986; I.A. Kozin, 1996; K.W. Butow, 1998; D.R. Millard, 1990; T.A. Cook, R.E. Davis, 1993).

Surgical treatment of congenital bilateral clefts holds a special place due to its relevance, the variety of surgical methods, and the numerous unresolved issues. Among the many available techniques for primary repair of congenital cleft lip and palate, no single method is currently preferred. The use of new surgical approaches is not always rational and often does not allow for full rehabilitation of the child with this pathology (Kozin I.A., 1996; Mamedov Ad.A., 2012).

Currently, there is a clear trend toward early cleft lip repair. This approach shortens the period of the child's social maladaptation, reduces or eliminates the burden of disability, and creates equal opportunities for the child in all areas of life, which is highly important. Any form of cleft lip repair is among the most complex reconstructive surgeries, requiring special surgical training, appropriate anesthetic support, and post-operative care. These operations should be performed exclusively in specialized pediatric maxillofacial surgical centers.

Some experts advocate for early, gentle interventions, including primary cheilorhinoplasty (B.N. Davydov, 2000) and periosteoplasty (L.V. Ageeva, 1999). According to these authors, such approaches significantly reduce the number of children requiring secondary rhinocheiloplasty later. Therefore, the current trend can be defined as expanding the scope of surgical intervention, performing it in a gentle manner and at an early age.

Any reconstructive surgery of the upper lip, regardless of the cleft type, can be performed from birth, but the indication must be justified by social factors. From 3 to 6 months and up to the end of the first year of life, full cheiloplasty should be completed. Many authors consider the optimal age for surgery to be 5–6 months. All types of lip repairs are performed in a single stage. According to L.K. Gubina (2000), lip adhesion should precede cheiloplasty, as it positively influences the alignment of the cleft alveolar segments of the maxilla and creates better feeding conditions for the child. Lip adhesion is typically performed during the first month of life, with the main surgery carried out after 3–6 months.

In congenital bilateral clefts, anatomical abnormalities are characterized by more severe deformities due to the presence of three lip segments, a three-part division of the alveolar process, and an unstable forward and downward displacement of the median segment (premaxilla). The choice of cheiloplasty technique and whether it is performed in one or two

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stages depends on the extent of these anatomical changes. While single-stage repair (including primary rhinocheiloplasty) is possible (Shcheglova A.P., 1997; Davydov B.N., 2006), two-stage surgery is generally indicated when there are wide clefts on both sides, underdevelopment of the central lip segment (philtrum), and significant displacement of the premaxilla.

Full social adaptation is only possible if appropriate surgical treatment is carried out early. In bilateral cleft lip and palate, pronounced premaxillary protrusion and medial displacement of the lateral alveolar segments are often observed, which creates unfavorable conditions for wound healing after single-stage cheiloplasty. Healing under significant tissue tension is accompanied by local hypoxia, which can lead to wound dehiscence and subsequent pathological scarring, especially of the muscle tissue. These problems can only be resolved through timely and early orthopedic treatment, aimed at correcting premaxillary protrusion and expanding the lateral segments of the maxillary alveolar ridge.

Correction of maxillary alveolar ridge deformity in bilateral clefts remains one of the most challenging tasks for orthodontists today (Dolgopolova G.V., 2001; Murtazaev S.M., 2010; Graber X., 2008). Bilateral complete and incomplete clefts of the upper lip anatomically divide the lip into three segments and are accompanied by septal shortening, flattening, and lateral displacement of the nasal alae. Lip reconstruction is performed with consideration of the height of the central lip segment, degree of premaxillary displacement, and deformation of the nasal cartilaginous framework.

In cases where the central lip segment has adequate height and premaxillary displacement is minimal, a single-stage repair is performed. When the central segment is underdeveloped and attached almost at the nasal tip, with significant anterior premaxillary displacement and wide lateral clefts, a two-stage procedure is preferred (Kozin I.A., 1996; Mamedov Ad.A., 1995–2012).

There are numerous cheiloplasty techniques for both unilateral and bilateral clefts (S. Tennison, S. Hagedorn, A. Le Mesurier, A.A. Limberg, L.M. Obukhova, D. Millard, K. Kobus, L.V. Kharkova–L.N. Yakovenko, and others), though most now hold only historical interest. These methods are generally classified based on incision patterns—Z-plasty, linear, or rectangular. However, they all pursue a common goal: to restore the anatomical integrity of the lip components (vermilion, philtral columns, nasal passage, muscles, and oral vestibule) and to ensure their functional viability.

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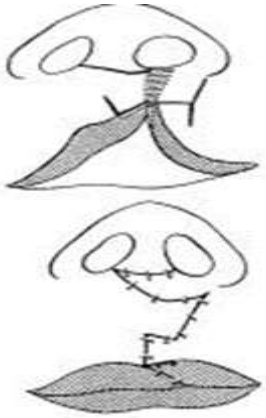

Fig. 1. Primary Cheiloplasty Method by Millard and Le Mesurier

In cases of bilateral clefts of the upper lip with a sufficiently tall central segment and minimal displacement of the premaxilla, the primary cheiloplasty method proposed by A. A. Limberg (1926) is considered appropriate. Limberg performed simultaneous cheiloplasty for bilateral lip clefts, adhering to all the details of unilateral cheiloplasty on each side. He utilized the "prolabium" to create the central part of the lip. On the lateral segments, he designed flaps (Miro and Limberg) similar to those used in unilateral clefts and connected them to the central segment using the same calculations. To form the central tubercle of the lip, he used tissue from the Miro flap on both sides.

In cases of bilateral symmetrical clefts of the upper lip, to simultaneously lengthen the shortened central segment, several authors use triangular flaps according to Obukhova or quadrangular flaps from the lateral parts of the lip, following the Le Mesurier technique. However, these methods often result in excessive lip height and do not address the shortening of the nasal septum or the flattening of the alar cartilage.

In Limberg's cheiloplasty method, modified by Shinbirev (1964), the central lip segment is designed according to Limberg. On the upper parts of the lateral lip segments, Limberg flaps are designed, and a portion of the lip is excised. Quadrangular Miro-type flaps are formed through the full thickness of the lip at the bottom. These flaps, sutured along the midline, better restore lip length.

Davydov B. N. and Novoselov R. D. (1977) developed a method of primary bilateral rhino-cheiloplasty for bilateral symmetrical incomplete and complete clefts of the upper lip without significant displacement of the premaxilla and with minor defects of the alveolar process.

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Bilateral cheiloplasty using Millard's method (1976) is performed in three stages. In the first two stages, with a one-month interval, the lip defect is corrected using the Veau method. In the third stage, a forked flap from the lip, according to Millard, is used to lengthen the nasal septum.

Frolova L. E. (1962) noted that scars from the transposed opposing triangles located in the upper part of the philtrum are less noticeable, but this area may experience tissue deficiency and suture tension.

Jeanty M. (1964) believed that Millard's method should be used for partial, incomplete clefts of the upper lip and palate. In cases of wide unilateral clefts, he recommended using the Tennison method.

Conclusion. Thus, linear methods of Millard and Limberg, as well as the Obukhova-Tennison technique, when appropriately indicated, allow for successful restoration of the anatomical and functional integrity of the defect area. The determining factor in choosing a method for bilateral primary cheiloplasty is the degree of underdevelopment of the soft tissues of the central segment. If the soft tissues of the central segment are underdeveloped by two-thirds of its height, the Obukhova-Tennison triangular flap method is most suitable, yielding better results in restoring the Cupid's bow and the anatomical integrity of the upper lip, with normalization of the orbicularis oris muscle mobility.

In children with congenital bilateral cleft lip and palate, where the soft tissues of the central segment are underdeveloped by one-third or half of its height, linear methods of Millard and Limberg are advisable. These methods result in less noticeable scars and better preservation of upper lip tissues, which is crucial for successful final reconstructive surgery in adults.

In recent years, various orthodontic appliances have been used in Uzbekistan during early childhood to correct dentoalveolar anomalies and deformities associated with congenital pathologies.

Therefore, the surgeon's task during the primary lip surgery is to choose the appropriate cheiloplasty method, which significantly influences the growth and development of the midface, the formation of the person's appearance, and the effectiveness of final cheilorhinoplasty in adults and adolescents. Important factors to consider include the condition of the central upper lip fragment (prolabium), the degree of premaxillary protrusion, and the distance between the lateral upper lip fragments and the premaxilla.

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Findings. Anthropometric studies of upper jaw models in patients with bilateral cleft lip and palate showed that with one-stage cheiloplasty by Kozluk, patients exhibited retrusive positioning of the premaxilla, widening of the jaw at distal areas, and normalization at mesial tooth groups. In patients operated using the two-stage Limberg method, both short-term and long-term observations revealed protrusive positioning of the premaxilla, lagging growth in other sagittal parameters, widening of the jaw at distal areas, and narrowing at mesial tooth groups. After two-stage Millard cheiloplasty, early postoperative observations showed normalization of the premaxilla's sagittal position and widening of the jaw in distal tooth areas.

For bilateral complete clefts of the upper lip and palate with hypoplastic prolabium, the two-stage Millard cheiloplasty method is most justified and anatomically sound due to more effective restoration of the orbicularis oris muscle integrity and prolabium growth, positively affecting the positioning of the premaxilla and lateral segments.

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