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Research Article

CLINICAL AND ANATOMICAL FEATURES OF NASAL DEFORMITY IN PATIENTS WITH UNILATERAL CLEFT LIP AND PALATE AFTER CHEILOPLASTY

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ABSTRACT

Over the past 50 years, significant progress has been made in the treatment of cleft lip and palate. Cleft lip and nasal deformity can permanently transform at an early age to a minimal or residual variation of the norm. To date, it is possible to achieve predictable results of surgical treatment of patients with unilateral cleft lip and nasal deformity, in which a normal aesthetic appearance and preservation of function are an important goal of treatment. However, patients may require multiple surgical procedures, from infancy to adulthood, to achieve the desired function and aesthetic quality.

KEYWORDS

Unilateral cleft lip and nasal deformity, surgical procedures, from infancy to adulthood, to achieve the desired function and aesthetic quality.

INTRODUCTION

Despite careful planning and the surgeon's constant efforts to achieve the best possible result in primary cleft surgery, secondary cleft deformities occur in 70-80% of patients. In this case, the deformation of the cleft nose is more common. Some authors suggest that secondary nasal deformity is unavoidable in 100% of cases, and this complication is referred to as "rather a lawfulness than an exception".

Comparison of surgical techniques depending on the child's further growth. It is difficult to compare different lip graft designs due to differences in the severity of the cleft and the surgeon's experience.

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Although the results of traditional triangular plastic surgery and rotary-advance plastic surgery were similar, rotary-forward plastic surgery tends to shorten the lips with wide crevices. For this reason, Meyer uses the Tennyson-Randall restoration for wide crevices and the Millard restoration for narrow crevices.

In general terms, lip reconstruction is performed at the age of 3 months, and palate restoration is performed at the age of 12 months (Millard's method). Some surgeons perform operations earlier (soft palate restoration at 3 months of age and lip and hard palate restoration at 6 months of age) according to the Malek protocol. Cleft surgery has the primary goal of dissecting and bringing the muscles of the lip and wing base closer together in their correct anatomical position. There is ongoing debate about the appropriate dissection procedure (sub-periosteal dissection or supra-periosteal dissection). Surgical correction at neonatal age is still a subject of study. Some surgeons suggest that early surgery improves the appearance of the face and has a positive effect on the psychological state of parents. Moreover, earlier operations will help in the development of normal articulation. On the other hand, there are many advocates against earlier surgical intervention, as this will limit future growth, leading to maxillary collapse and occlusal crossbites. In addition, delayed surgery means that surgeons will have more tissue to process, which makes it possible to achieve a better plastic surgery result.

Materials of the study. The study sample included 40 men and 66 women aged 15 to 35 years, the median age of a was 20.3 years, and the median age was 19.7±1.8 years in female patients and 18.2±4.8 years in men.

Patientsincluded in this retrospective science surgical excision were divided into 2 groups: Group 1 consisted of 56 patients who underwent rhinoplasty using a cartilage suspension and a composite V-Y-cartilage flap, and septoplasty using a septal cartilage graft to correct a cleft nasal deformity. Group 2 included 50 patients who underwent only rhinoplasty using a cartilage suspension and a composite V-Y-cartilage flap.

There were no statistically significant differences or perioperative complications between the groups.

Analysis of the frequency of types of residual deformities after primary surgical correction of unilateral cleft lip and palate

According to the data obtained, the most frequent forms of deformity were V-shaped cutout of the red lip and deviation of the lip contour, which accounted for 54 cases (50.9%). Among the lip deformities, there were also: unilateral thickening in 5 cases (4.7%) and unilateral thinning of the lip in 6 patients (5.6%), while none of the patients had keloid deformity or tubercle deformity.

Types of secondary deformity of the upper lip (n=106)

Parameters	Number of patients (n=106)	As a percentage (%)
Keloid	0	0

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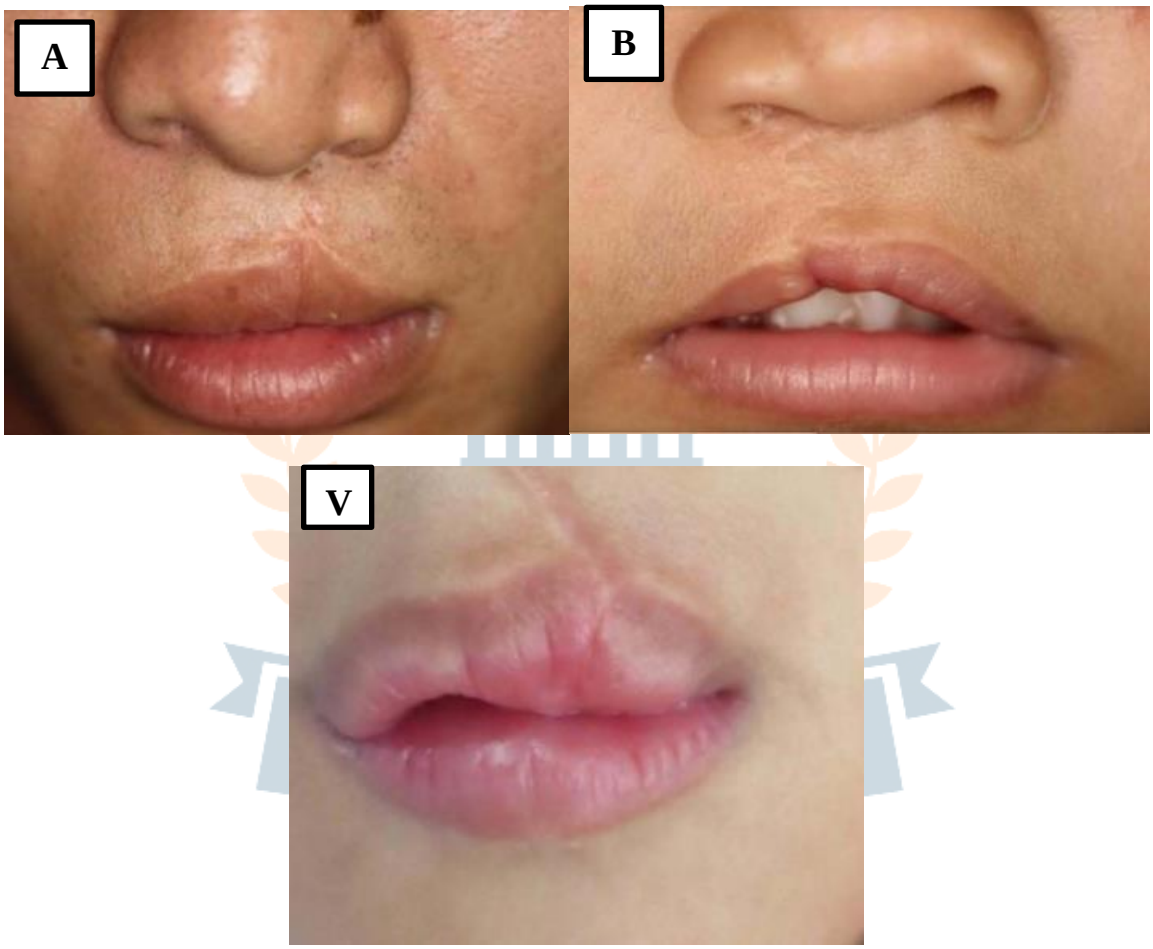
V-neck	54	50.9
Unilateral Lip thickening	5	4.7
Unilateral Lip thinning	6	5.6
Deviation Lip contour	54	50.9



Deformities of the upper lip. (A) Protuberance and deviation of the lip contour; (B) Curvature (deviation) of the lip contour; (C) Unilateral lip thickening

Among 106 patients who underwent primary lip/nose grafting, lip skin was deficient in 20 patients(18.8%). No cases of deficiency of M. orbicularis oris and narrow or wide Cupid's arch have been established.

Types of lip skin deformities (n=106)

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Parameters	Number of patients (n=106)	As a percentage (%)
White roller skin is deficient	20	18.8
White roller skin is excessive	0	0
M. orbicularis oris deficiency	0	0
Cupid's arc is narrow	0	0
Cupid's arc is too wide	0	0

Deformities in the form of short lip skin.

The majority of patients (52.8%, 56/106 patients) had satisfactory scars, 28.3% had contractural scars (30/106 patients) and 18.9% had keloids (20/106 patients) (see Table 4.3).

Types of lip skin deformities (n=106)

Parameters	Number of patients (n=106)	As a percentage (%)
Satisfactory	56	52.8

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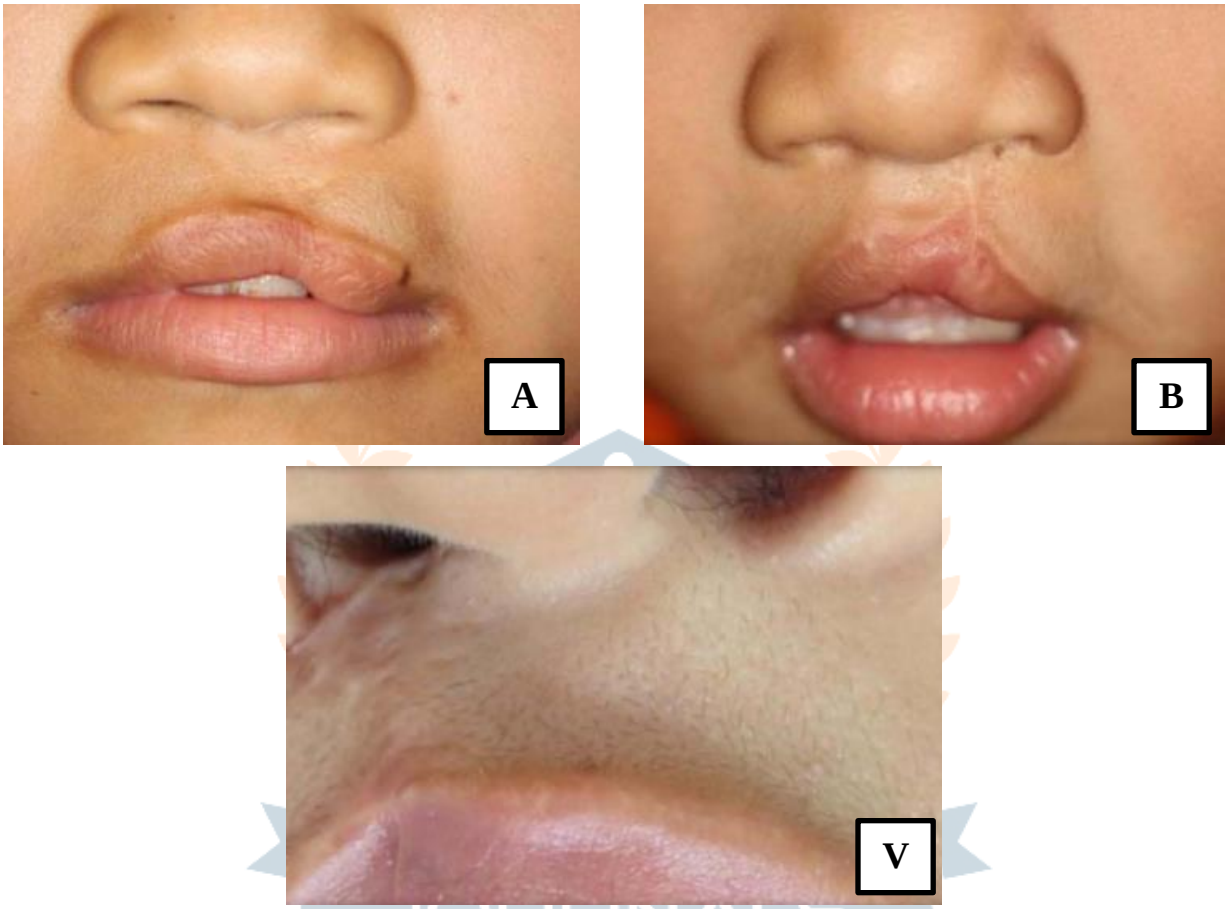
Contracture	30	28.3
Kelloid	20	18.9



Types of lip scarring. (A) Contracture; (B) A good scar; (C) Keloid

The most frequent deformities were deviation of the nasal septum and defects of the nostril margin in 65 patients out of 106 (61.3%). The nostrils were narrow in 48 out of 106 patients (45.2%), the nasal wings were less curved in 25 out of 106 patients (23.6%), and the low-lying nasal wings were in 32 out of 106 patients (30.2%). In addition, 12 (11.3%) of 106 patients had a short columella, 4 (3.8%) of 106 patients had a high nasal wing, and 5 (4.7%) of 106 patients had a hypertrophic and flat nasal wing.

Deformities such as narrow nostrils, abnormal width of the subnasal region, and excessively curved nasal wings were not observed in any patient.

Secondary nasal deformities (n=106)

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Parameters	Number of patients (n=106)	As a percentage (%)
Short columella	12	11.3
Deviation of the nasal septum	65	61.3
Wide nasal threshold	0	0
Narrow nasal threshold	48	45.2
Subnasal part too wide	0	0
Subnasal part too narrow	0	0
Slight загнутостьcurl of the nasal wings	25	23.6
Pronounced загнутостьcurl of the nasal wings	0	0
Defect in the contours of the upper nostril	65	61.3
High nasal wing	4	3.8
Low position of the nasal wings	32	30.2
Flat and hypoplastic type of nasal wings	5	4.7

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Types of nose deformities. (A) Defect in the upper contour of the nostril; (B) Hypotrophic and flat wing of the nose; (C) Narrow nostril, short columella; (D) Curvature of the nasal septum, slight curving of the nasal wings, narrow nostril.

Results of the analysis of the effect of the type of primary surgery on deformities of the lips and nose. The results of deformity of the lips and nose differed depending on the primary surgical method performed. Millard's method was most frequently used in 58 patients (54.7%), Tennyson's method in 34 patients (32.1%), and Vo's method in 14 patients (13.2%). Of the 58 patients operated on by the Millard method, 17 children received good results (29.3%), 33 - satisfactory results (56.9%), while 8 children (13.8%) - acceptable results. Satisfactory results were observed in all 34 patients operated on by the Tennyson method. All 14 patients who underwent Vo surgery received good results.

According to the results of our observation, the advantage of the Tennyson method is that it compensates for a good lip height, while the Millard method compensates for a lack of lip width, which is similar to the data of Zalekas et al. The Vo method is only applicable to patients with a narrow cleft. Studies show that there is no specific method of surgical correction of unilateral cleft lip and palate that provides optimized results, which is confirmed by the results of other authors. Therefore, in clinical practice, given the complexity of cleft lip, as well as the advantages and disadvantages of each method, the results of the study help clinicians choose a combination of methods to obtain optimal results for each patient.

Moreover, to limit these malformations, early reforming intervention before and after surgery is necessary, as well as the choice of an appropriate surgical method for each case.

Results of primary surgical correction of unilateral cleft lip and palate (n=106)

Type of primary operation	Result of primary operation			
	Good	Satisfactory	Acceptable	Total n (%)
Veau OperationVeau)	14	0	0	14 (13,2)

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Tennyson Operation	0	34	0	34 (32,1)
Operation Millard Operation	17	33	8	58 (54.7)
Total	31	67	8	106 (100)
P	**<0.05**			

According to the data obtained, the most frequent forms of deformity were V-shaped cutout of the red lip and deviation of the lip contour, which accounted for 54 cases (50.9%), which echoes the data of other authors, who established this residual change after the primary operation in 55% -66% of cases. Among the lip skin deformities, there were also: unilateral thickening in 5 cases (4.7%) and unilateral thinning of the lip in 6 patients (5.6%), while none of the patients had keloid deformity or tubercle deformity. Among 106 patients who underwent primary lip/nose plastic surgery, lip skin was deficient in 20 patients (18.8%), when other authors presented more cases (35% or 63%) of the occurrence of this parameter. In our opinion, these discrepancies are based on a direct proportional relationship between the width of the cleft palate and the lack of lip skin. No cases of deficiency of M. orbicularis oris and narrow or wide Cupid's arch have been established. The majority of patients (52.8%, 56/106 patients) had satisfactory scars, 28.3% had contractural scars (30/106 patients) and 18.9% had keloids (20/106 patients). It is known that the formation of satisfactory scars depends on the lesser development of complications after the primary operation. The most frequent nasal deformities were deviation of the nasal septum and defects of the nostril margin in 65 patients out of 106 (61.3%). This deformity occurs due to the fact that the transverse muscles of the nose do not fully adhere to the anterior nasal cartilage, which leads to an incorrect location of the medial cartilage. However, the deformity can also occur due to improper surgical intervention in the area of the soft triangle that is not supported by cartilage, which often causes the formation of a nasal obstruction. The nostrils were narrow in 48 out of 106 patients (45.2%), the nasal wings were less curved in 25 out of 106 patients (23.6%), and the low-lying nasal wings were in 32 out of 106 patients (30.2%). In addition, 12 (11.3%) out of 106 patients had a short columella, 4 (3.8%) out of 106 patients had a high nasal wing, and 5 (4.7%) out of 106 patients had a hypertrophied and flat nasal wing. Deformities such as narrow nostrils, abnormal width of the subnasal region, and excessively curved nasal wings were not observed in any patient. The results of deformity of the lips and nose differed depending on the primary surgical method performed. Millard's method was most frequently used in 58 patients (54.7%), Tennyson's method in 34 patients (32.1%), and Vo's method in 14 patients (13.2%). Of the 58 patients operated on by the Millard method, 17 children received good results (29.3%), 33 - satisfactory results (56.9%), while 8 children (13.8%) - acceptable results. Satisfactory results were observed in all 34 patients operated on by the Tennyson method. All 14 patients who underwent Vo surgery received good results.

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There were differences in satisfaction with the appearance of the lips and nose separately among two groups of experienced and less experienced specialists. Notably, there were no statistically significant differences in lip and nose scores between the two groups. However, in relation to the nasolabial region, the satisfaction score of experienced specialists was significantly higher than that of less experienced specialists ($p=0.005$).

Thus, it becomes obvious that the assessment of aesthetic results in patients with RGN is not a difficult task. Future classification systems should be developed in accordance with the principles of clinical applicability, allowing various health professionals, even those without experience with this pathology, to conduct aesthetic assessments with high reproducibility, even if in many areas these specialists are currently responsible only for the clinical care of these patients. Some authors also report higher satisfaction with the appearance of the nasolabial region of experienced practitioners than less experienced ones. However, there are studies that report the opposite results, stating that specialists with limited experience give higher ratings of satisfaction with the aesthetic appearance of the nasolabial area than experienced doctors. Moreover, some studies did not show any difference in ratings between specialists with high and limited experience. Inconsistencies in these findings may result from methodological differences, such as different approaches to evaluating the nasolabial region (whether the nasolabial region is evaluated as a whole or the structures of the nose and lips separately), and the number of specialists evaluating the nasolabial region.

CONCLUSIONS

1. According to a retrospective analysis, deviation of the nasal septum and defect of the nostril margin as the most frequent forms of nasal deformity were found in 61.3% of cases, while narrow nostrils in 45.2%, low-lying nasal wings in 30.2%, curved nasal wings in

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23.6%, short columella in 11.3%, hypertrophied and flat nasal wing in 4.7%, high nose wing in 3.8% of cases.

2. As a primary operation for unilateral RGN, the Vo operation providing lip width showed a good result in 100% of cases, while the Tennyson operation providing lip height showed a 100% satisfactory result, and the Billion operation in 56.9% of cases gave a satisfactory result for a narrow cleft lip.

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