

Septorhinoplasty in Patients with Cleft Lip and Palate Deformity in Adulthood

Hakan Şirinoğlu, Nebil Yeşiloğlu, Kaan Gideroğlu,
Celal Alioğlu, Arda Akgün, Gaye Taylan Filinte

Department of Plastic
Reconstructive and Aesthetic
Surgery, Kartal Dr. Lütfi Kırdar
Training and Research Hospital,
Istanbul, Turkey

Submitted: 05.09.2016
Accepted: 20.09.2016

Correspondence: Hakan Şirinoğlu,
Kartal Dr. Lütfi Kırdar Eğitim ve
Araştırma Hastanesi, Plastik
Rekonstrüktif ve Estetik Cerrahi
Kliniği, İstanbul, Turkey

E-mail: drhakansirinoglu@gmail.com



Keywords: Cleft lip and
palate; complete cleft lip
deformity; nasal deformity;
septorhinoplasty.

ABSTRACT

Objective: Complete cleft lip causes significant nasal deformity and most of these patients require definitive nasal surgery in early adulthood. This article is description of long-term results of 6 patients operated on due to nasal deformity secondary to cleft lip.

Methods: Six patients with severe nasal deformity due to unilateral or bilateral complete cleft lip were included in the study. Four patients were female and 2 patients were male; mean age was 22.5 years. Patients were operated on using open approach septorhinoplasty method. Standardized facial photographs and surgery satisfaction questionnaires of all patients were evaluated retrospectively.

Results: Two minor complications not requiring revision surgery were detected in mean follow-up period of 22.5 months (minimal hanging columella deformity and unilateral soft triangle retraction). Significant improvement in nasal and facial appearance was seen in post-operative photographs, and results of questionnaire clearly demonstrated dramatic increase in patient satisfaction.

Conclusion: Successful septorhinoplasty procedure can provide significantly positive results in nasal appearance, breathing, social life, and self-esteem of patients with nasal deformity secondary to complete cleft lip.

INTRODUCTION

Cleft lip and palate deformity is one of the most frequently seen congenital anomalies treated by reconstructive surgeons. Deformity may manifest within a large spectrum.^[1] The patient may have only simple unilateral cleft lip, or may be born with very severe deformity, such as bilateral complete cleft lip and palate.^[2]

In great majority of the patients, nasal deformity in association with cleft lip can be observed.^[3] Based on severity of nasal deformity, intervention will likely be required both to repair the cleft lip and/or alveolar cleft, as well as subsequently, once nasal development comes to a halt.^[4] In patients born with severe nasal deformities, nasal interventions performed during infancy have generally become insufficient, and corrective septorhinoplasty operation is required in adulthood.^[5]

In this article, psychological as well as physiological effects experienced by 6 patients who underwent surgical correction of nasal deformity secondary to complete lip deformity during adulthood were evaluated.

MATERIAL AND METHODS

After obtaining the appropriate permission from the local ethical committee files of the six patients (female, n=4; male, n=2) who had severe nasal deformities secondary to cleft lip and palate were analyzed retrospectively. Three patients had unilateral complete cleft lip associated with palate deformity, 2 had isolated unilateral complete cleft lip, and 1 had unilateral complete and isolated bilateral complete cleft lip deformity. Median age of the patients was 22.5 years (range: 19–28 years) (Table 1).

As a routine application of our department, in all cleft patients, standardized digital facial photographs were taken

before surgery and at postoperative 6-month intervals.^[6] In addition, patients were asked to complete a questionnaire containing questions related to rhinoplasty operation derived from the Derriford Appearance Scale-59 (DAS-59) used to measure patient satisfaction/dissatisfaction with plastic and reconstructive surgeries before correction and 1 year after operation.^[7] For statistical evaluation of the questionnaire, IBM SPSS Statistics for Windows, Version 22.0 software (IBM Corp., Armonk, NY, USA) was used. Responses were evaluated using Wilcoxon test. Level of statistical significance was set at $p < 0.05$.

All patients were operated on under general anesthesia using open rhinoplasty technique. Following subperichondrial dissection of lower and upper cartilage and subperiosteal dissection of the dorsum of the nasal bone, caudal septum was exposed and mucoperichondrial flaps were elevated bilaterally to expose the nasal septum. After reduction of nasal bony dorsum and cartilaginous vault, in all patients but one, nasal dorsum was repaired using bilateral submucoperichondrial flaps. After repair of the nasal vault, septoplasty was performed, followed by nasal tip surgery. Cephalic resection was created, and with 2 septocolumel-

Table 1. Sociodemographic data of the patients, surgical interventions performed, and complications observed

Patient no.	Gender	Age	Deformity	Special interventions performed	Complications	Follow-up period (months)
1	Female	28	Isolated bilateral complete cleft lip	Detachment, sliding, and shortening of lateral crura bilaterally and setback; bilateral placement of lateral crural strut graft	Minimal hanging columellar deformity	25
2	Female	23	Unilateral complete cleft lip+incomplete cleft palate	Unilateral placement of lateral crural strut graft; unilateral detachment of intermediate crus, and setback		22
3	Male	21	Isolated unilateral complete cleft lip	Unilateral alar rim graft application; placement of columellar strut graft; placement of onlay tip graft	Unilateral retraction of soft triangle region, which resolved within 6 months	13
4	Female	25	Isolated unilateral complete cleft lip	Full-thickness excision of septum, and septal reconstruction using bilateral spreader graft; placement of onlay tip graft; unilateral detachment of intermediate crus, and setback		33
5	Male	19	Unilateral complete cleft lip+complete cleft palate	Only nasal tip surgery before application of lateral osteotomy; unilateral detachment and shortening of the lateral crus; unilateral placement of lateral crural strut graft		14
6	Female	19	Unilateral complete cleft lip+incomplete cleft palate	Placement of onlay nasal tip flap; excision of caudal part of septum, and shortening of nose at craniocaudal axis		28

lar sutures, nasal tip was rotated to its physiological position. Dome-shaping and interdomal sutures were added. Finally, any additional interventions were performed as required before completing the procedure (Table 1).

RESULTS

Median follow-up period of 6 patients was 22.5 months



Figure 1. Photos taken before and 30 months after operation on 25-year-old female patient diagnosed as isolated left complete cleft lip. As seen in the 3 photos, significantly favorable changes were achieved in appearance of the nose and facial profile.



Figure 2. Photos taken before and 24 months after operation on a 28-year-old female patient diagnosed as bilateral isolated complete cleft lip. Among 3 postoperative photos (bottom) those taken from anterior and oblique projections demonstrate marked improvement in prominent asymmetry of the nasal tip and passage between nasal tip and dorsum of the nose. Photo of the nasal profile (bottom left) demonstrates minimal hanging columellar deformity. The patient was satisfied with the result and declined revision surgery offered to correct this.

(range: 13–33 months). During acute phase, no important complication was detected. During first 6 months, unilateral soft triangle retraction ($n=1$), and minimal, hanging columellar deformity ($n=1$) were detected. The patient with hanging columellar deformity elected not to undergo corrective surgery and it resolved spontaneously.

Outcome of the operation was evaluated by examining standardized photos taken before and after the procedure. Most recent photo was accepted as final outcome. When photos taken before and after the operation were evaluated, distinct aesthetic improvement in nasal contours and related facial expressions was observed (Figures 1, and 2).

Analysis of questionnaire to determine impact of surgery on physical, social, and mental health of the patients revealed statistically significant increase in patient satisfaction in postoperative period compared with preoperative period (Table 2).

DISCUSSION

Cleft lip and palate deformity is one of the most frequently seen congenital anomalies managed by reconstructive surgeons. Follow-up and treatment of infants born with this deformity generally continues into adulthood.^[8] Final corrective surgery is required when these patients enter adulthood.^[9] Nasal deformities, in particular, can seriously affect social life.^[10]

In the present study, outcome in 6 patients over age of 18 years who had cleft lip and palate deformity was evaluated. The patients declined intervention on the lips, and so only final septorhinoplasty was performed.

Since nasal deformity related to cleft lip most prominently affects the cartilage of the nasal tip and causes serious deformity, particularly in unilateral cases, great asymmetry is present. This cartilaginous deformity impairs aesthetic appearance, and in most cases, together with existing septal deviation, narrows nasal passage and worsens respiratory function.^[11] With exception of patient with very severe septal deviation who underwent total septal reconstruction, procedures performed on 1/3 cranial, and 1/3 midline parts of the nose generally resembled routine septorhinoplasty. Primary problem is related to congenitally inadequate and deformed lower lateral cartilage that constitutes 1/3 caudal part of the nose. Base of lower lateral cartilage is retracted in posterolateral direction, which increases distance between both nasal domes (lateralization of the dome). At the same time, affected lower lateral cartilage is flattened, and nasal tip is enlarged and flattened. In addition, because of inadequate development of medial crus, columella is also underdeveloped.^[12] In cases with nasal deformity secondary to cleft lip, the surgeon should primarily focus on nasal tip and reinforcement and shaping of weakened and deformed lower lateral cartilage.

Table 2. Results of the statistical evaluation of responses given by the patients to questionnaire regarding their personal satisfaction

Derriford Appearance Scale-59 questions	A	B	C	D	p
Q-10 Do you avoid having your photo taken?	5.00	0.17	-4.83	-0.97	0.020
Q-16 Do you feel you are withdrawing into your shell?	4.50	0.83	-3.67	-0.82	0.026
Q-27 Do you feel you are unattractive?	4.17	1.33	-2.84	-0.68	0.026
Q-29 Do you feel isolated?	3.83	1.83	-2.00	-0.52	0.038
Q-30 Do you feel ashamed of your feature?	4.00	0.83	-3.17	-0.79	0.026
Q-36 Do you feel distress when others ask about your feature?	4.50	1.33	-3.17	-0.70	0.026
Q-48 Do you become anxious when someone knocks at the door?	3.50	1.83	-1.67	-0.48	0.024
Q-49 Do you avoid looking in mirrors?	5.00	1.00	-4.00	-0.80	0.026
Q-57 How masculine/feminine do you feel?	4.17	0.83	-3.34	-0.80	0.026

A: Median preoperative questionnaire results; B: Median postoperative questionnaire results; C: Difference between median values; D Percent change.

For this reason, as seen in Table 1, multiple septorhinoplasty techniques not very frequently required were applied in order to achieve proper rotation and projection of the nasal tip, as well as symmetry of dome and nasal alar area. In 3 cases, lower lateral cartilage was dissected away from intermediate crus, and setback technique was applied (Figure 3). In 2 cases, deformed lateral crus that was comparatively longer than intact contralateral portion was separated from middle section and lateral crus was shortened to match size of the intact side with appositional suturing. In 2 cases, onlay tip graft was used to adjust height of the dome on deformed side. In 3 cases, weak lateral crura of deformed side were reinforced with lateral crural strut grafts sutured to base. In 1 case, alar rim graft was implanted to correct alar retraction on deformed side, and columellar strut graft was used to reinforce weak medial crura. In addition to significant aesthetic improvement in facial appearance of the patients, due to both septoplasty procedure and increase in internal nasal valve angle as result of spreader flaps, restoration of nasal tip, and positive effect of increase in rotation on external nasal valve, marked improvement in breathing function was also achieved.

DAS-59 questionnaire was prepared to evaluate outcome of plastic and reconstructive, and especially aesthetic surgery, from the perspective of the patients. The questionnaire contained questions specific to general aesthetic perception of the patients as well as the operation. Responses were scored between 0 (highest level of satisfaction related to aesthetic appearance) and 5 (lowest level of satisfaction related to esthetic appearance). Statistical comparison of patient satisfaction before and after surgery was performed. Results provided in Table 2 demonstrate that patients expressed higher level of self-confidence after the operation compared with baseline. As seen in question 10, patients who were extremely timid about having photograph taken before the operation stated that

they no longer had reservation. Furthermore, as indicated in questions 29 and 57, patients who previously expressed feeling not fully masculine/feminine or who indicated that they were lonely responded that they had experienced significant increase in self-confidence. When results were evaluated, all postoperative responses demonstrated statistically significantly favorable changes relative to preoperative responses.

During mean postoperative follow-up period of 22.5



Figure 3. A patient with marked asymmetry of the nasal tip and extremely long columella, secondary to bilateral cleft lip deformity (upper row) as seen in photo taken 24 hours after operation (bottom). Photograph taken 2 years after operation demonstrates achievement of distinct symmetry of the nasal tip and ideal length of the columella.

months, only 2 complications were encountered in the 6 patients. One of these was unilateral soft triangle retraction, which resolved within 6 months without any intervention. The other was minimally hanging columella deformity. At first postoperative year, revision operation was recommended, but the patient declined and expressed satisfaction with appearance of nose. Other than these, no surgical complication was observed during either acute or follow-up stage.

Conclusion

Patients born with cleft lip/palate deformity are candidates for multiple operations. Generally, last operation is corrective septorhinoplasty, performed during adulthood. Though technically this operation resembles routine septorhinoplasty, mainly correction of asymmetry of nasal tip cartilage is targeted. As outcomes of our study clearly indicate, successful septorhinoplasty leads to extremely favorable outcomes in facial appearance, improved respiratory function, and betterment of social life and self-confidence.

Authorship contributions

Concept: H.Ş.; Design: H.Ş.; Data collection &/or processing: A.A., C.A.; Analysis and/or interpretation: N.Y.; Writing: H.Ş.; Critical review: K.G., G.T.F.

Conflict of interest

None declared.

REFERENCES

1. Gülşen A, Atalay Z, Özel AŞ. Aesthetic and functional treatment approaches in adult cleft lip and palate patients. *Gazi Tıp Dergisi* 2008;19:33–7.
2. Kaufman Y, Buchanan EP, Wolfswinkel EM, Weathers WM, Stal S. Cleft nasal deformity and rhinoplasty. *Semin Plast Surg* 2012;26:184–90.
3. Wolfe SA, Nathan NR, MacArthur IR. The Cleft Lip Nose: Primary and Secondary Treatment. *Clin Plast Surg* 2016;43:213–21. [CrossRef]
4. Loyo M, Wang TD. Definitive Cleft Rhinoplasty for Unilateral Cleft Nasal Deformity. *JAMA Facial Plast Surg* 2015;30:1–2.
5. Fisher MD, Fisher DM, Marcus JR. Correction of the cleft nasal deformity: from infancy to maturity. *Clin Plast Surg* 2014;41:283–99.
6. Temiz G, Sirinoğlu H, Sarici M, Yesiloglu N. How can we avoid distortion in facial photographs using compact cameras? *J Craniofac Surg* 2015;26:1422,3.
7. Klassen A, Newton J, Goodacre T. The Derriford Appearance Scale (DAS-59). *Br J Plast Surg* 2001;54:647–8. [CrossRef]
8. Gudis DA, Patel KG. Update on primary cleft lip rhinoplasty. *Curr Opin Otolaryngol Head Neck Surg* 2014;22:260–6. [CrossRef]
9. Pawar SS, Wang TD. Secondary cleft rhinoplasty. *JAMA Facial Plast Surg* 2014;16:58–63. [CrossRef]
10. Albers AE, Reichelt AC, Nolst-Trenite GJ, Menger DJ. Feeling Normal? Long-Term Follow-up of Patients with a Cleft-Lip Palate after Rhinoplasty with the Derriford Appearance Scale (DAS-59). *Facial Plast Surg* 2016;32:219–24. [CrossRef]
11. Farouk A. Rhinoplasty in Clefts: An 18-Year Retrospective Review. *Facial Plast Surg* 2015;31:539–52. [CrossRef]
12. Çelebiler Ö, Şirinoğlu H. The Primary Treatment of Bilateral Cleft Lip and Palate Deformity. *Türkiye Klinikleri J Plast Surg-Special Topics* 2011;3:76–81.

Dudak–Damak Yarığı Deformiteli Hastalarda Erişkin Dönemde Septorinoplasti

Amaç: Komplet dudak yarığı, hastaların burun görünümünde ciddi deformiteye sebep olan bir hastalıktır ve hastaların büyük çoğunluğunda erişkin dönemin başlarında düzeltici burun ameliyatı gerekmektedir. Bu makalede, komplet dudak yarığına sekonder burun deformitesi nedeniyle ameliyat edilen altı hastanın uzun dönem sonuçları sunuldu.

Gereç ve Yöntem: Tek veya çift taraflı komplet dudak yarığına bağlı belirgin burun deformitesi olan altı hasta çalışmaya dahil edildi. Hastaların dördü kadın, ikisi erkekti ve ortalama yaşları 22.5 idi. Hastalara açık septorinoplasti ameliyatı uygulandı. Tüm dudak damak yarığı hastalarının dosyalarında bulunan standardize yüz fotoğrafları ve ameliyat memnuniyet anketleri retrospektif olarak incelendi.

Bulgular: Ortalama takip süresi olan 22.5 ay içinde hastalarda sadece iki adet ameliyat gerektirmeyen minör komplikasyona rastlandı (minimal sarkık kolumella deformitesi ve tek taraflı soft triangle retraksiyonu). Hastaların çekilen ameliyat sonrası fotoğraflarında burun ve yüz görünümünde çok belirgin düzelme ve yapılan memnuniyet anketi sonucunda ise dramatik bir memnuniyet artışı saptandı.

Sonuç: Komplet dudak yarığına sekonder burun deformitesi olan hastalarda uygulanan başarılı bir septorinoplasti ameliyatı; gerek yüz görünümü, gerek nefes alıp verme fonksiyonu gerekse de kişinin sosyal hayatı ve özgüveni açısından son derece olumlu sonuçlar oluşturmaktadır.

Anahtar Sözcükler: Burun deformitesi; dudak damak yarığı; komplet dudak yarığı; septorinoplasti.