Original Investigation

Aesthetic and Functional Results of Lateral Crural Repositioning

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IMPORTANCE Thin or cephalically malpositioned lateral crura cause nasal obstruction by depressing nasal valves and decrease patient satisfaction with rhinoplasty as a result of nostril asymmetry and alar collapse.

OBJECTIVE To demonstrate the aesthetic and functional efficacy of lateral crural repositioning with lateral strut grafting in patients with cephalic malposition of the lateral crura undergoing primary septorhinoplasty.

DESIGN, SETTING, AND PARTICIPANTS We prospectively selected 80 patients with lateral crural malposition who underwent primary septorhinoplasty performed by the same surgeon from December 1, 2013, through May 30, 2014. The surgeon measured the angle between the lateral crura and midline intraoperatively with a goniometer to confirm malposition (angle, ≤30°). Data analysis was performed from March 13 to 23, 2015.

INTERVENTION All the patients underwent primary rhinoplasty with the open approach. Lateral crural repositioning with lateral crural strut graft was used in all selected patients.

MAIN OUTCOME AND MEASURES Preoperative and 6- and approximately 12–month postoperative scores on the Nasal Obstruction Symptom Evaluation (NOSE) scale (range, 0-20; decreased scores indicate improved functional results) and the Rhinoplasty Outcomes Evaluation (ROE) questionnaire (range, 0-24; increased scores indicate improved aesthetic results).

RESULTS Seventy-five of 80 patients were confirmed to have cephalic malposition intraoperatively. Four patients were excluded owing to selection of different surgical techniques, leaving 71 patients for analysis. The mean (SD) and median postoperative NOSE scores at 6 months (3.18 [3.12] and 2.0) and 12 months (0.39 [1.07] and 0) showed significant improvement compared with the preoperative scores (6.96 [5.10] and 7.0) ($P < .01$ for each comparison). The mean (SD) and median postoperative ROE scores also showed significant improvement at 6 months (21.06 [3.82] and 23.0) and 12 months (23.12 [2.09] and 24.0) compared with preoperative scores (7.03 [3.70] and 6.0) ($P = .001$). However, the changes from preoperative to 12-month postoperative scores (mean [SD] and median) were not significantly different between patients with normal (NOSE scores, 8.41 [4.59] and 90 to 0.28 [0.79] and 0, respectively; ROE scores, 6.97 [3.24] and 6.0 to 23.31 [1.91] and 24.0, respectively) and thin (NOSE score, 6.59 [5.09] and 8.0 to 0.11 [0.33] and 0, respectively; ROE scores, 7.76 [3.82] and 7.0 to 23.29 [1.72] and 24.0, respectively) skin types and those with thick skin types (NOSE scores, 5.52 [5.42] and 4.0 to 0.72 [1.54] and 0, respectively; ROE scores, 6.60 [4.16] and 6.0 to 22.80 [2.53] and 24.0, respectively) ($P > .05$).

CONCLUSIONS AND RELEVANCE Lateral crural repositioning is a useful and versatile technique to achieve successful functional and aesthetic results in a 1-year follow-up. We detected no significant difference by skin type in improvement of nasal function and aesthetic satisfaction.

LEVEL OF EVIDENCE 3.

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Rhinoplasty is one of the most complex of all aesthetic procedures. Despite the numbers of surgical techniques that have achieved satisfactory results, the surgeon's choice of appropriate technique should be based on the anatomic characteristics of the nasal skeleton, presence of nasal obstruction, skin type, and the surgeon's experience. Rhinoplasty is a patient-specific surgery and must be planned according to the patient's skin type, cartilage, and bony tissue characteristics. The shape of the nose and intranasal anatomy should be analyzed, and the anatomic variations that create pathologic conditions should be addressed carefully before every rhinoplasty. Bone and cartilage tissue constituting the nasal skeleton should be evaluated carefully.

Tip refinement is the most important part of rhinoplasty to create an aesthetically attractive nose. The size, shape, and position of the lower lateral cartilages create the appearance of the nasal tip.[1] Furthermore, the positioning and the properties of the lower lateral cartilages affect the air passage of the nose by forming the nasal valve area. The tissue supporting the alar rim is the lateral crus of the greater alar cartilage. Thin or cephalically malpositioned lateral crura cause nasal obstruction by depressing nasal valves and decrease patient satisfaction as a result of nostril asymmetry and alar collapse.

In this study, we evaluated lateral crural position after a repositioning technique with a lateral crural strut graft (LCSG). We investigated the effect of lateral crural repositioning and LCSG on the airway patency and the aesthetic satisfaction of the patients.

Methods

Patient Selection

In this study, we selected 80 patients who presented for primary septorhinoplasty to treat parenthesis tip deformity and malpositioning of the lateral crura from December 1, 2013, through May 30, 2014. The same surgeon (A.E.I.) performed all the procedures and selected the patients for the study according to results of preoperative examinations and photographs. All the patients underwent a detailed preoperative examination of the ear, nose, and throat. We excluded patients with chronic sinusitis, nasal polyposis, asthma, allergic rhinitis, or a previous septoplasty or rhinoplasty. This study was approved by the ethics committee of University of Acibadem, Istanbul, Turkey. Patients gave written and oral informed consent (eFigure 1 in the Supplement).

We measured the angle between the lateral crura and midline intraoperatively with a goniometer to confirm the preoperative selection made by the surgeon (**Figure 1**A and B). We included 75 patients with an angle of 30° or less who were considered to have malpositioned lateral crura. All procedures implemented in the surgery were standardized. Medial oblique and internal osteotomy starting from the aperture piriformis that preserved the Webster triangle and went down and then up to the inner canthus level (high-to-low-to-high) were performed in all the patients. Four patients who required single-sided or asymmetric spreader grafts were excluded from the study, leaving 71 patients who underwent middle vault structuring with bilateral spreader grafts and lateral crural repositioning with LCSG.

We divided the patients into 3 groups according to their skin thickness by intraoperative skin analysis. The patients whose nasal tip definition was restricted owing to expanded skin and subdermal tissue were classified as having a thick skin type. Patients whose tip cartilages were visible and observable despite the soft tissue covering the cartilages were described as having a thin skin type. If the tip cartilages did not affect the tip definition positively or negatively during the surgical procedure, the skin type was accepted as normal. The Nasal Obstruction Symptom Evaluation (NOSE) Scale (range, 0-20; decreased scores indicate improved functional results)[2] and Rhinoplasty Outcomes Evaluation (ROE) questionnaire (range, 0-24; increased scores indicate improved aesthetic results)[3] were administered to all the patients before and at 6 and approximately 12 months (range, 10-15; mean, 12.7 months) after the procedure. We compared the results among the 3 skin type groups.

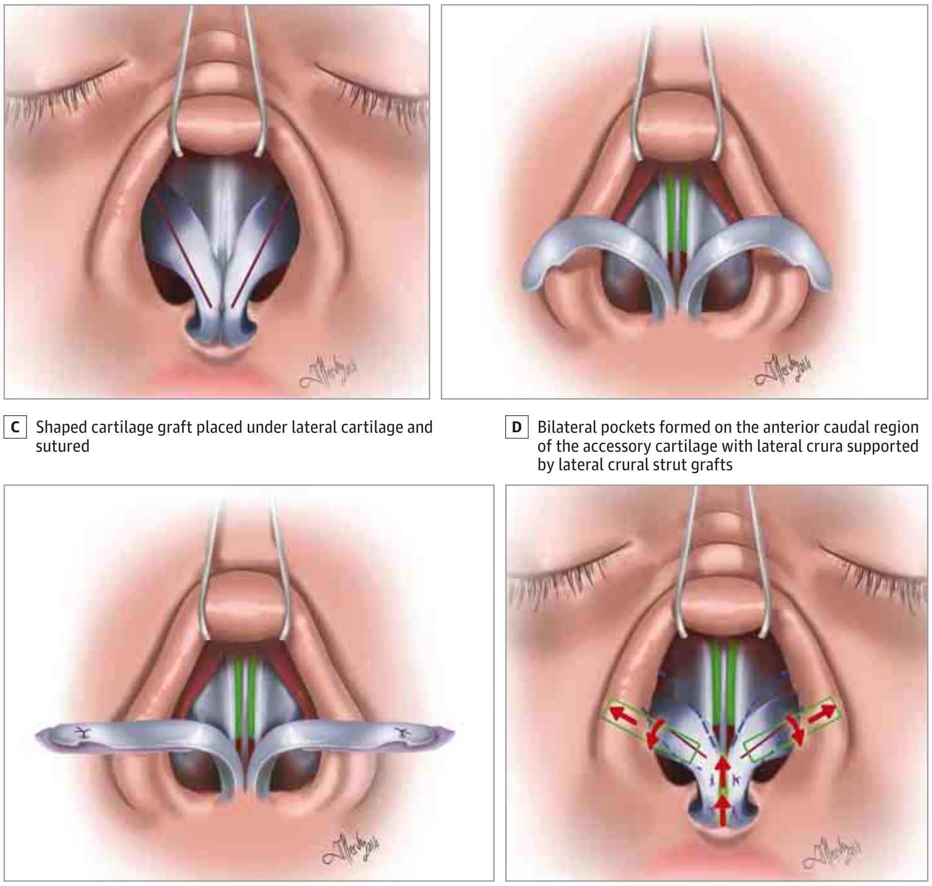
Surgical Technique

An open approach was used for all procedures, and patients underwent radiofrequency ablation for hypertrophic inferior turbinates if necessary. Patients who were assessed as having lateral crural malposition (Figure 1A) by goniometry underwent total release of the lateral crura, repositioning, and LCSG. The cartilage graft was obtained from the septal cartilage through septoplasty, leaving the L-strut, and applied as the LCSG. All the patients underwent medial oblique and high-low-high lateral osteotomies with preservation of the Webster triangle. The middle vault was restructured using bilateral spreader grafts in all patients.

Vestibular mucosa located under the lower lateral cartilage was dissected from the cephalic to the caudal edges, and the mucosal connection at the cephalic end was separated from the cartilage by leaving the skin connection at the anterior caudal region of the lateral cartilage. Lateral cartilages were exposed by separating them from their point of attachment to the accessory cartilages (Figure 1B). Cartilage obtained from the septum was 3 to 4 mm wide and 15 to 25 mm long. The shaped cartilage graft was placed under the lateral cartilage with its 5-mm tip brimming over the cephalic end of the lateral crura, and it was sutured from the 2 ends with 5/0 polyglactin 901 (Vicryl; Ethicon) (Figure 1C). Bilateral pockets were formed on the anterior caudal region of the accessory cartilage by pointing the tip of the scissors toward the lateral canthus, and the lateral crura supported by the LCSGs were placed in these pockets in contact with the anterior nasal aperture (Figure 1D). The increase in the intercrural angle was confirmed by goniometry.

Lateral crural strut grafts were fixed to the vestibular skin by suturing the skin with 5/0 polyglactin 910 sutures after placement of the newly formed lateral crura with the strut grafts in preformed pockets. The cephalocaudal interrotation of the lateral crura was obtained by applying hemitransdomal suturing after repositioning of the lateral crura for each patient during tip-plasty.[4,5] All patients underwent additional tip suturing (patients with thin and normal skin types) or cap grafts (pa-

Figure 1. Surgical Technique



A Measurement of angle between lateral crura and midline to confirm lateral crural malposition

B Lateral cartilages exposed by separation from their point of attachment to accessory cartilages

C Shaped cartilage graft placed under lateral cartilage and sutured

D Bilateral pockets formed on the anterior caudal region of the accessory cartilage with lateral crura supported by lateral crural strut grafts

tients with thick skin type) to make the tip definition standard in every patient according to their skin types and so as not affect overall aesthetic satisfaction. Finally, columellar strut grafts were applied in all the patients to provide the desired rotation, projection, and nasal tip support.

Statistical Analyses

Data analysis was performed from March 13 through 23, 2015. We used commercially available software programs (2007 Number Cruncher Statistical System [NCSS] and 2008 Power Analysis and Sample Size) for statistical analyses. In addition to descriptive statistical methods (mean [SD], median, frequency, proportion, minimum, and maximum), we used a normal distribution, 1-way analysis of variance for quantitative data comparisons among 3 or more groups and the Tukey Honestly Significant Difference test[6,7] to determine the group from which differences arose. For comparisons of 3 or more groups with nonnormal distribution, we used Kruskal-Wallis and Mann-Whitney tests, respectively. We used the Wilcoxon signed rank test to evaluate intragroup changes according to skin type. We compared qualitative data using the Pearson χ^2 and Fisher-Freeman-Halton tests.[8] Level of significance was $P < .05$. Unless otherwise indicated, data are expressed as mean (SD).

Results

Based on goniometry of the angle of the lateral crural axis and midline, lateral crural repositioning and LCSG were applied in 71 cases, included 64 women (90%) and 7 men (10%). Patients ranged in age from 17 to 42 years, with a mean (SD) age of 26.5 (5.9) years. Postoperative follow-up ranged from 10 to 15 months, with a mean duration of 12.7 months (**Table 1**).

No statistically significant differences were detected among the skin type groups by age ($P = .48$), sex distribution ($P = .21$), or duration of follow-up ($P = .61$). We found statistically significant differences in NOSE scores among the skin type groups in preoperative evaluations ($P = .10$) or at 6 ($P = .53$) or 12 ($P = .19$) months after the procedure.

For the entire patient group, mean (SD) NOSE scores were 6.96 (5.10) preoperatively, 3.18 (3.12) at 6 postoperative months, and 0.39 (1.07) at 12 postoperative months. The mean decreases in NOSE scores from the preoperative to 6-month postoperative evaluations (−3.77 [4.76]), from the preoperative to 12-month postoperative evaluations (−6.56 [5.04]), and from the 6- to 12-month postoperative evaluations (−2.78 [3.26]) were all statistically significant ($P < .01$ for each comparison) (**Table 2**).

Table 1. Evaluation of Demographic Characteristics by Skin Type

Characteristic	All Patients (N = 71)	Skin Type Group Thin (n = 17)	Normal (n = 29)	Thick (n = 25)	*P* Value
Age, mean (SD), y	26.5 (5.9)	28.1 (5.4)	26.0 (6.2)	26.1 (6.0)	.48[a]
Duration of follow-up, mean (SD), mo[b]	12.7 (1.7)	12.4 (1.8)	12.6 (1.8)	12.9 (1.6)	.61
Sex, No. (%)					
Female	64 (90)	14 (82)	28 (97)	22 (88)	.21[c]
Male	7 (10)	3 (18)	1 (3)	3 (12)	

[a] Calculated using 1-way analysis of variance.

[b] Postoperative follow-up ranged from 10 to 15 months.

[c] Calculated using the Fisher-Freeman-Halton test.

Table 2. Evaluation of NOSE Scale and ROE Questionnaire Scores by Skin Type[a]

	All Patients (N = 71)	Skin Type Group Thin (n = 17)	Normal (n = 29)	Thick (n = 25)	*P* Value[b]
NOSE Score					
Preoperative	6.96 (5.10) [7.0]	6.59 (5.09) [8.0]	8.41 (4.59) [9.0]	5.52 (5.42) [4.0]	.10
Postoperative					
6-mo	3.18 (3.12) [2.0]	2.59 (2.18) [2.0]	3.97 (4.16) [3.0]	2.68 (1.93) [3.0]	.53
12-mo	0.39 (1.07) [0]	0.11 (0.33) [0]	0.28 (0.79) [0]	0.72 (1.54) [0]	.19
P value[c]	.001	.008	.001	.04	NA
Change					
Preoperative to 6-mo postoperative	−3.77 (4.76) [−4.0]	−4.00 (4.88) [−4.0]	−4.45 (6.32) [−5.0]	−2.84 (5.73) [−2.0]	.34
Preoperative to 12-mo postoperative	−6.56 (5.04) [−7.0]	−6.47 (5.07) [−8.0]	−8.13 (4.48) [−18.0]	−4.80 (5.22) [−3.0]	.047
6- to 12-mo postoperative	−2.78 (3.26) [−2.0]	−2.47 (2.21) [−8.0]	−3.68 (4.28) [−20.0]	−1.96 (2.16) [−2.0]	.44
ROE Score					
Preoperative	7.03 (3.70) [6.0]	7.76 (3.82) [7.0]	6.97 (3.24) [6.0]	6.60 (4.16) [6.0]	.60
Postoperative					
6-mo	21.06 (3.82) [23.0]	22.65 (2.32) [24.0]	20.38 (4.69) [23.0]	20.76 (3.29) [22.0]	.07
12-mo	23.12 (2.09) [24.0]	23.29 (1.72) [24.0]	23.31 (1.91) [24.0]	22.80 (2.53) [24.0]	.83
P value[c]	.001	.001	.001	.001	NA
Change					
Preoperative to 6-mo postoperative	14.03 (5.12) [15.0]	14.88 (4.34) [16.0]	13.41 (5.82) [15.0]	14.16 (4.84) [14.0]	.75
Preoperative to 12-mo postoperative	16.09 (3.92) [17.0]	15.53 (4.01) [16.0]	16.34 (3.60) [18.0]	16.20 (4.31) [16.0]	.76
6- to 12-mo postoperative	2.07 (3.50) [1.0]	0.65 (2.84) [0]	2.93 (4.39) [1.0]	2.04 (2.33) [2.0]	.04

Abbreviations: NA, not applicable; NOSE, Nasal Obstruction Symptom Evaluation scale; ROE, Rhinoplasty Outcomes Evaluation questionnaire.

[a] Unless otherwise indicated, data are expressed as mean (SD) [median].

[b] Calculated using the Kruskal-Wallis test, difference among skin type groups.

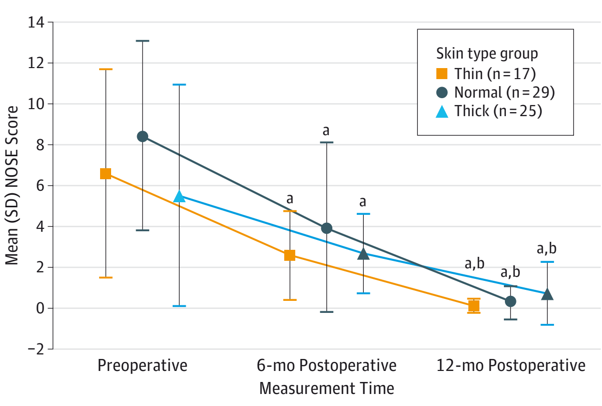
[c] Calculated using the Wilcoxon signed rank test, difference among evaluation periods.

Among patients with a thin skin type, mean (SD) NOSE scores decreased significantly from the preoperative to 6-month postoperative (−4.00 [4.88]; $P = .008$), preoperative to 12-month postoperative (−6.47 [5.07]; $P < .01$), and 6- to 12-month postoperative (−2.47 [2.21]; $P < .01$) evaluations (**Figure 2**). Among patients with a normal skin type, mean NOSE scores decreased significantly from the preoperative to 6-month postoperative (−4.45 [6.32]; $P = .001$), the preoperative to 12-month postoperative (−8.13 [4.48]; $P < .01$), and the 6- to 12-month postoperative (−3.68 [4.28]; $P < .01$) evaluations. Patients with a thick skin type also showed statistically significant decreases in NOSE scores from the preoperative to the 6-month postoperative (−2.84 [5.73]; $P = .04$), preoperative to the 12-month postoperative (−4.80 [5.22]; $P < .01$), and 6- to 12-month postoperative (−1.96 [2.16]; $P < .01$) evaluations. Evaluation of changes in NOSE scores revealed no statistically significant differences between skin types when comparing preoperative and 6-month postoperative scores or 6- and 12-month postoperative scores ($P > .05$) (Table 2).

The patients in this study showed no statistically significant differences according to skin type in ROE scores at the preoperative ($P = .60$) or 6-month postoperative ($P = .07$) evaluations. Postoperative ROE scores among patients with thick skin types were noticeably lower than those of patients with normal skin types, although the differences between skin types in 12-month postoperative ROE scores was not statistically significant ($P = .83$) (Table 2 and **Figure 3**).

Among all patients, mean (SD) ROE scores were 7.03 (3.70) at the preoperative evaluation, 21.06 (3.82) at the 6-month postoperative evaluation, and 23.12 (2.09) at the 12-month postoperative evaluation. The mean increases in scores from the preoperative to 6-month postoperative (14.03 [5.12]), preop-

Figure 2. Nasal Obstruction Symptom Evaluation (NOSE) Scale Score According to Skin Type

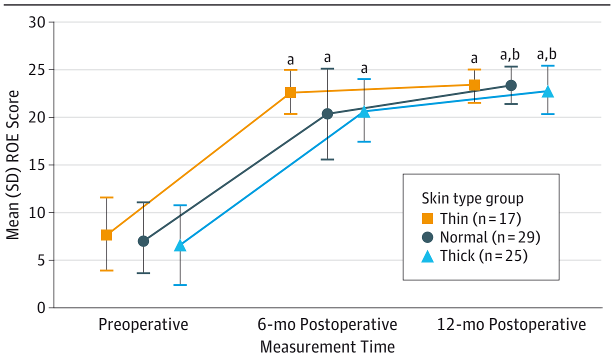


Possible scores range from 0 to 20. Decreased NOSE scores indicate improved functional results.

[a] $P \leq .01$ vs preoperative score.

[b] $P \leq .01$ vs 6-month score.

Figure 3. Rhinoplasty Outcomes Evaluation (ROE) Questionnaire Criteria According to Skin Type



Possible scores range from 0 to 24. Increased ROE scores indicate improved aesthetic results.

[a] $P \leq .01$ vs preoperative score.

[b] $P \leq .01$ vs 6-month score.

erative to 12-month postoperative (16.09 [3.92]), and 6- to 12-month postoperative (2.07 [3.50]) evaluations were all statistically significant ($P < .01$).

In patients with a thin skin type, mean ROE scores increased significantly from the preoperative to 6-month postoperative evaluations (14.88 [4.34]; $P = .001$) (Figure 3). The increase from the preoperative to 12-month postoperative evaluations (15.53 [4.01]; $P < .01$) was also significant, but the change from the 6- to 12-month postoperative evaluations was not (0.65 [2.84]; $P = .36$).

Patients with normal skin thickness showed significant increases in ROE scores from the preoperative to 6-month postoperative evaluations (13.41 [5.82]; $P = .001$) (Figure 3). The increases in ROE scores from the preoperative to 12-month postoperative evaluations (16.34 [3.60]; $P < .01$) and from the 6- to 12-month postoperative evaluations (2.93 [4.39]; $P < .01$) were also significant. In patients with a thick skin type, a significant increase in ROE scores was observed from the preoperative to 6-month postoperative evaluations (14.16 [4.84]; $P = .001$). Increases in ROE scores from the preoperative to 12-month postoperative evaluations (16.20 [4.31]; $P < .01$) and from the 6- to 12-month postoperative evaluations (2.04 [2.33]; $P = .001$) were also statistically significant (Table 2).

Analysis of ROE score differences revealed no statistically significant differences between skin types when comparing the preoperative and 6-month postoperative and the preoperative and 12-month postoperative evaluations ($P > .05$). We found a significant difference between skin types when comparing ROE scores at the postoperative 6- and 12-month evaluations ($P = .04$); patients with thin skin showed a significantly smaller difference in postoperative scores from 6 to 12 months than those with normal or thick skin types ($P = .04$ and $P = .02$, respectively). In patients with normal and thick skin types, no significant differences were detected between ROE scores at the preoperative and 12-month postoperative evaluations ($P = .76$) (Table 2).

Discussion

The terms *cephalic positioning* of the lateral crura and *malposition* were first introduced approximately 30 years ago.[1] Cephalic placement of the lateral crura is described as malposition. The term *malposition* was first introduced by Sheen[1] in 1978. According to this description, the angle of the cephalic-positioned lateral crura and midline is 30° or less.[1] The direction in which the lower lateral cartilage attaches to the accessory cartilages and its direction toward the ipsilateral medial canthus show that the cartilage is malpositioned, which is termed *cephalic malposition*.[9] The direction of the lateral crura toward the ipsilateral lateral canthus and the lateral crural-midline angle being 45° or greater are described as *orthotopic positioning*.[1,9] Sheen[1] and Sheen and Sheen[9] stated that malposition affects nasal tip shape and the constitution of alar rim support. According to the literature, malposition is one of the most common shape deformities of the nasal tip.[10] Malpositioned lateral crura are not parallel to the alar rim, resulting in abnormalities such as a boxy nasal tip, bulbous nasal tip, alar rim retraction, and alar rim collapse.[11] The fact that lateral crura with cephalic malposition causes parenthesis deformity was first introduced in 1992 by Sheen.[12] Many new techniques have been applied to fix noses with parenthesis deformity and cephalic malposition.[13] Our rationale for using intraoperative goniometry in this study was that the measurement provided a more precise patient selection through the correct determination of the angle and enabled us to observe the consistency of preoperative examination findings with intraoperative values. The LCSG was first described by Gunter and Friedman,[11] who claimed that this technique was a multidimensional and rational solution for pathologic situations of the lateral crura such as boxy tip, malposition, alar rim retraction, alar rim collapse, and concave lateral crura. We realized that the distal ends of the goniometer had to be measured by taking the attachment point of the lateral crura to accessory cartilages as a base;

otherwise, inaccurate results would have been obtained. Furthermore, we noticed that the patients with wide lateral crura were considered to have a parenthesis nose in the preoperative evaluations, although their intercrural angle was greater than 45°. Of the 80 patients included in the study, 9 were observed not to have malpositioning by means of intraoperative goniometry and were excluded from the study. Malpositioning of the lateral crura is commonly seen among patients of all skin types undergoing primary rhinoplasty (eFigures 2-5 in the Supplement). If a suitable technique is not used for fixation, patient satisfaction is negatively affected and the rates of revision rhinoplasty increase.[10] Constantian[10] detected alar cartilage malposition in 68% of his patients undergoing primary rhinoplasty and 87% of his patients undergoing secondary rhinoplasty among 200 patients. He concluded that malposition caused boxy and bulbous tip deformities and functional deficits according to the results of the rhinomanometry measurements obtained from the groups undergoing primary and secondary rhinoplasty.[10] According to Sepehr et al,[5] cephalic malpositioning affected tip shape by altering the projection, rotation, and lateral crura length in patients with parenthesis tip deformity and requires the use of different tip-plasty techniques for correction. We deduced that we can achieve the needed rotation and deprojection more easily with the "sliding in" effect of the whole tip complex by lateral crural repositioning and LCSG with the combination of selected tip-plasty maneuvers. The repositioning of the whole lateral crural complex provides a more attractive nasal tip by the change of the tip complex cephalically in the third dimension and a supportive effect to the alar rim region of repositioning the lateral crura laterally. The study by Bared et al[14] found that repositioning of the lower lateral cartilages results in volume loss in the supratip and nasal sidewall junction, and they proved this by 3-dimensional imaging. Lateral crural repositioning with the use of LCSG is a very effective tip-plasty technique in the correction of parenthesis deformity and is a very effective technique for creating an ideal tip complex in patients with different tip abnormalities, such as a drooping, overprojection, underprojection, and very thin or asymmetrical lateral crura, that ineffectively support the alar rims and nasal valve area. By repositioning the lateral crura to the ideal orthotopic position, alar rim support can be achieved, thereby optimizing the appearance of the nostril shape and the tip and positively influencing the ROE score during postoperative follow-up.

The simplest description of lateral crural malposition and its role in nasal valve insufficiency belongs to Sheen and Sheen.[9(pp953-956)] They described collapse of the lateral nasal wall on application of slight pressure as nasal valve insufficiency, which is frequently seen in patients with malpositioning. When we administered the NOSE scale preoperatively to the patients who were included in the study and who were considered to have malposition of the lateral crura, we observed that the scores were elevated, which supported the theory that malpositioning makes a great contribution to nasal obstruction. Constantian[10] confirmed this in his study through rhinomanometry. Alar rim grafts and the application of alar battens are the most frequent procedures implemented in the patients with nasal valve insufficiency in rhinoplasty. Alar rim grafts are used to support the external nasal valve and to correct the asymmetries of the nostrils and slight alar retractions.[15] Alar batten grafts have been found to be effective in long-term follow-up of internal and external nasal valve collapse in previous studies.[16] Toriumi[17] stated that the application of alar rim graft was not required in patients who underwent lateral crural repositioning with LCSG and stated that repositioning with LCSG supports the alar rims.

Toriumi and Asher[18] hypothesized that repositioning with LCSGs may also have a functional benefit compared with other grafts in the valve area, such as alar batten grafts. The statistically significant decrease of the NOSE scale score in our study shows functional improvement with repositioning and LCSG and supports their findings.[18] We also found that repositioning and an LCSG in patients with cephalic malposition support the nasal valve and positively affect the postoperative aesthetic results, as has been reported in previous studies.[5,14,18] Statistically significant decreases in NOSE scale scores and increases in ROE scores postoperatively demonstrated improvement in function and aesthetic satisfaction.

Skin thickness and elasticity are the most important factors that affect the overall satisfaction of patients undergoing rhinoplasty. We also wanted to investigate differences in functional and aesthetic outcomes of repositioning with LCSG in different skin types. We could not find any significant difference in functional or aesthetic outcomes according to the thickness of the skin. Functional and aesthetic outcomes showed significant improvement in all skin types.

Conclusions

Repositioning of cephalically malpositioned lateral crura with an LCSG is functionally and aesthetically effective. The technique can be used with all skin types. Furthermore, this technique can be used to increase overall patient satisfaction in patients with parenthesis deformity, nasal valve insufficiency, nostril asymmetries, or overprojected or underprojected tip and in patients with abnormalities that can be corrected by creating a more stable and symmetrical framework.

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Study concept and design: All authors.
Acquisition, analysis, or interpretation of data: Caypinar.
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