Gmail

E-POSTA YAZ

Gelen Kutusu
Gönderilmiş Postalar
Taslaklar
Spam
akademik.basvuru@yahoo…
Diğer

Fwd: Authorship Form Needed for FPS16-0260R2

Gelen Kutusu

Op. Dr. A. Emre İLHAN
Alıcı: bana

İngilizce Türkçe İletiyi çevir

Bu en son kabul edilen yayının kabul yazısı..

---------- Forwarded message ----------
From: <jamafacial@msubmit.net>
Date: Mon, Feb 6, 2017 at 5:32 PM
Subject: Authorship Form Needed for FPS16-0260R2
To: dremreilhan@rinoplasti.com

February 6, 2017

Dear Dr Ilhan:

Your manuscript, The Effect of Lateral Crural Repositioning on Alar Base Reducti
Patients, is being considered for possible publication in JAMA Facial Plastic Surg
on the link below to access the electronic authorship form.

https://manuscripts.jamafacial.com/cgi-bin/main.plex?el=A3n2Bad2D2CIX3w3A3

This form must be completed online. Each author needs to complete Section 1: A
Reporting of Funding and Conflicts of Interest, Section 3. Publishing Agreement,

TITLE PAGE

The Effect of Lateral Crural Repositioning on Alar Base Reduction According to Skin Thickness in Primary Rhinoplasty Patients

A.Emre ILHAN M.D. ; Tevfik Sozen M.D. ; Basak CAYPINAR ESER M.D. ; Betul Cengiz M.D.

Corresponding author: Basak Caypinar, M.D. – Special Ersoy Hospital-Istanbul, Turkey

A.Emre ILHAN, M.D.-Rinocenter-Istanbul, Turkey

Tevfik Sozen, M.D. Hacettepe University

Betul Cengiz, M.D. -Rinocenter-Istanbul, Turkey

The work was done in Rinocenter-Istanbul, Turkey - ENT Clinic

All of the authors work in ENT clinics.

Running title: The Relationship Between Lateral Crural Repositioning and Alar Base Reduction

There is no financial support or funding.

Corresponding author: Basak CAYPINAR ESER

e-mail: bskcypnr@hotmail.com

phone number: +90 5077620407

Conflict of Interests

No potential conflict of interests relevant to this paper was reported.

Word Count: 2,845

The Effect of Lateral Crural Repositioning on Alar Base Reduction According to Skin Thickness in Primary Rhinoplasty Patients

ABSTRACT

Objective: To investigate the frequency of alar base resection in patient with different skin thickness undergoing lateral crural repositioning and lateral crural strut graft, and to evaluate the results in the context of the current literature.

Material & Method: This retrospective study included 621 patients who underwent primary open septorhinoplasty by the same surgeon (A.E.I.) between January 2012 and June 2015 at the Rinocen-ter, Istanbul, Turkey.
From the surgical notes, operation type (Lateral Crural Reposition (LCrep) with Lateral Crural Strut Grefting (LCSG), with or without alar base resection) and skin type determined intraoperatively were recorded.
The study subjects' skin types were determined intraoperatively and divided into three groups. Pa-tients whose tip definition was limited by skin thickness and subcutaneous tissue were classified as having thick skin. Patients whose tip cartilage were visible and could be observed despite overlying soft tissue and skin were accepted as thin-skinned. If during the procedure the patient's tip cartilage had no effect on the tip definition, their skin was considered normal.
Results: Overall, the rate of alar base resection differed significantly based on whether (LCrep) + (LCSG) was performed ($p=0.001$).
In patients with thin skin, there was a marked difference in the incidence of alar base resection in relation to (LCrep) + (LCSG), but the difference was not statistically significant ($p=0.070$).
In patients with thick skin, we observed a significant difference in the frequency of alar base resec-tion related to (LCrep) + (LCSG) ($p=0.005$).
In patients with normal skin, LCrep+LCSG had no significant effect on the frequency of alar base resection ($p>0.05$).

Conclusion: The necessity of alar base reduction after repositioning with lateral crural struts is greater in patients with thick skin compared to those with thin and normal skin.

INTRODUCTION

The most important stage of an aesthetic nose surgery is tip-plasty. It is not always possible to correct nasal tip deformities and positional anomalies in the cartilage structures that form the nasal tip using classic suture and graft techniques. Lateral Crural Reposition (LCrep)+ Lateral Crural Strut Grefting (LCrep+LCSG) is one of the most advanced techniques in current aesthetic nasal tip surgery. It is imperative for surgeons who want excellent rhinoplasty outcomes to master the technique of (LCrep) + (LCSG). Patient selection for (LCrep) + (LCSG) requires preoperative planning based on existing tip position problems. (LCrep) + (LCSG) is one of the most effective techniques for correcting tip asymmetry and malposition, especially in cases that cannot be corrected with traditional tip-plasty suturing techniques, such as very thin, malpositioned, concave or asymmetric tip cartilage (1,2).

(LCrep) + (LCSG) is currently performed by many experienced surgeons as a very effective technique for achieving ideal tip anatomy and correcting problems like parentheses tip deformity and boxy nasal tip which cannot be corrected using other methods. In recent years lateral crural repositioning and LCSG have become the most common techniques employed in patients with cephalic positioning of the lateral crura. The technique of LCSG was first described by Jack P. Gunter, who claimed it was an effective solution for boxy nasal tip, malposition, alar rim retraction, alar rim collapse and pathologic conditions of the lateral crura such as concave lateral crura (3). Lateral crural repositioning eliminates length differences between nasal projection and the dorsum, defines projection by changing the dome position, and allows the liberation of the lateral crura and fixation to the medial crura at the desired position (1). However, every technique has advantages and disadvantages. One of the disadvantages of (LCrep) + (LCSG) is the possibility of postoperative problems such as graft visibility and palpable hardness, especially in patients with thin skin. Furthermore, a graft of the incorrect length under the lateral crura can cause the area of the lateral crural complex insertion to protrude into the nasal cavity, occluding the external valve and the airway. Other limitations of the procedure are that it requires extra cartilage, it is necessary to elevate the lateral crura from the underlying mucosa, and it is technically challenging. Toriumi et al. stated that by increasing alar spread, the procedure resulted in alar base widening and thus increased the frequency of alar base reduction (1). However, there have been no evidence-based studies conducted on this topic.
In this study we investigated the frequency of alar base resection in patients undergoing (LCrep) + (LCSG) in different skin types and we evaluated the results in the context of current literature.

MATERIALS AND METHODS

This retrospective study included 621 patients who underwent primary open septorhinoplasty by the same surgeon (A.E.I.) between January 2012 and June 2015 at the Rinocenter, Istanbul, Turkey. Surgical records of the patients were analyzed retrospectively. From the surgical notes, operation type (LCrep with or without LCSG, with or without alar base resection) and skin type determined intraoperatively were recorded.

Preoperatively all patients underwent a routine otorhinolaryngologic examination and were evaluated by endoscopic nasal examination using a 0 degree endoscope. All patients with wide alar bases; wide sills and alar flares are noted preoperatively and evaluated in operation following the other steps of rhinoplasty. Patients with chronic sinusitis, nasal polyps, history of asthma or allergic rhinitis, and those with previous septoplasty or rhinoplasty were excluded from the study.

Cases with an angle of 30 degrees or less between the caudal edge of the lateral crura and the midline of dorsum as measured by gonioscope were considered cephalic malposition (Figure 1,2,3,4) (4). These patients underwent LCrep+LCSG (5). Afterwards, tip sutures as well as columellar supporting grafts appropriate for the patient (tongue-in-groove or columellar strut) and cap grafts were applied to increase tip definition.

We also tried to identify how rhinoplasty maneuvers affects alar base width and flaring using sequental photographs taken intraoperatively after each stage of rhinoplasty.The surgeon's interpretation of the intraoperative photographs was that skeletonization of the lateral cruras, LCrep+LCSG increased alar width,tip suturing without lateral crural steal does not affect the width of the alar base whereas performing cap grafting and lateral crural steal reduced alar width (See e-images 1-8).

The study subjects' skin types were determined intraoperatively and divided into three groups. Patients whose tip definition was limited by extra skin and subcutaneous tissue were classified as having thick skin. Patients whose tip cartilage were visible and could be observed despite overlying soft tissue and skin were accepted as thin-skinned. If during the procedure the patient's tip cartilage had no effect on the tip definition, their skin was considered normal (6). The nasal alae were evaluated at the conclusion of the procedure after suturing of the inverted V incision. Alar base resection was performed in patients with alar base width exceeding the

intercanthal distance and patients with increased alar spread or nasal flare. When deciding whether to perform alar base resection, the width of the nasal tip in proportion to the base was considered in patients with wide nasal tips. Base reduction was not performed in patients whose nasal tip would look relatively wider, especially patients with thick skin. In cases that were still undecided regarding alar base resection, if the alae were within an acceptable distance of the medial canthus line, the procedure was not conducted and the natural structure of the nostrils was preserved (1).

Surgical Technique

Although a closed approach using endonasal techniques may be preferable for rhinoplasty, studies have demonstrated that open approach rhinoplasty is more suitable for patients undergoing repositioning (1). A standard 1% lidocaine 1:100,000 epinephrine mixture was injected into the septum and outer nose as local anesthesia. The standard inverted V incision was made with a No. 11 blade, then bilateral marginal incisions were made with a No. 15 blade. Following skeletalization, the caudal septum was exposed gently. Hump resection was performed, after which the primary nasal dorsum height was determined. The septodorsal and bony-cartilaginous junction, or the keystone area, was shaped by using a power rasp. The mucoperichondria were elevated bilaterally and the graft was obtained. The septal L-strut was left to support the dorsum and caudal. Before lateral crural strut grafting, a septal cartilage graft was obtained from each patient. Bony vault width and nasal bone spacing were evaluated in all patients and medial or paramedian osteotomy was performed in selected patients, followed by high-to-low internal osteotomy for all patients. Asymmetric spreader grafts were placed to reconstruct the middle vault, followed by tip-plasty. Patients requiring repositioning were identified by measuring the angle between the lateral crura and the midline with a goniometer. LCrep+LCSG was performed in patients with an angle of less than 30 degrees between the lateral crura and the midline, while the surgery proceeded directly to tip-plasty in patients with an angle of 30 degrees or more.

For patients undergoing LCrep+LCSG, the vestibular mucosa below the lower lateral cartilage was infiltrated with local anesthetic and hydrodissected, then dissected from the caudal edge to the cephalic edge with iris scissors. The mucosal connection at the cephalic edge of the lateral cartilage was separated while leaving the cutaneous connection in the anterior caudal region intact. The lateral cartilages were freed by separating them from the accessory cartilages. Pieces of cartilage 3-4 mm wide and 15-25 mm long were removed from the septum and shaped for grafting. The graft was placed under the lateral cartilage with its tip extending 5 mm beyond the

cephalic tip of the lateral crura and secured with a pair of 5/0 vicryl sutures. Bilateral pockets were created anterior and caudal to the accessory cartilage dissecting the tisuues in the direction of the lateral canthus, and the lateral crura supported by the lateral crural strut grafts were placed in these pockets in contact with the anterior nasal aperture. After the lateral crura and grafts were positioned in the pockets, the lateral crural strut grafts were fixed to the vestibular skin with 5/0 vicryl sutures (Figure 1, 2, 3, 4).

Following middle vault modification in patients who did not undergo LCrep+LCSG, columellar supporting grafts were applied using the appropriate graft type to achieve tip definition and the inverted V incision was sutured with 6/0 Prolene. After suturing, patients were assessed for alar base resection. In cases where the interalar distance exceeded the intercanthal distance or alar flare was increased, marking was done for alar base resection using the midline as a reference. Starting from a midline at the columella, the excess nostril and alar amount was determined independently on both sides and triangular flaps were marked bilaterally on the medial alae, after which the alar crease was marked extending at furthest to 9 o'clock on the right and 3 o'clock on the left. The excess skin was then marked and excised with a full-thickness incision right on the natural crease using a No. 15 blade. After achieving hemostasis, the nasal alae were reinserted with 6/0 Prolene sutures at close intervals. The columella was stabilized using bilateral fluted silicone tampons placed in the nasal passages. The operation was concluded by dressing the nose and applying a thermoplastic nasal splint.

Statistical Analysis

NCSS (Number Cruncher Statistical System) 2007 (NCSS, LLC, Kaysville, Utah, USA) software was used for all statistical analyses. Descriptive statistical methods (mean, standard deviation, frequency and percent) were used for quantitative and qualitative data accordingly. Three separate binary logistic regression analyses were conducted to analyze the effects of gender, skin type and application type on alar base resection. Multivariable logistic regression analysis was conducted where gender, skin type, application type and all two-way and three-way interactions were introduced as independent variables and alar base resection as dependent variable. Mantel-Haenszel tests were used to test the conditional independence of association between application type and alar base resection at different levels of skin thickness. P values ≤ 0.05 were accepted as statistically significant.

RESULTS

A total of 621 patients, 15.3% (n=95) male and 84.7% (n=526) female, who underwent surgery at the Rinocenter Clinic between January 2012 and 2015 were included in the study. LCrep+LCSG was performed in 51.4% (n=319) of the surgeries and alar base reduction was performed in 53% (n=329) (Table 1).

In the univariate analysis gender, application of LCrep+LSCG and skin thickness variables introduced separately as independent variables where alar base resection was introduced as the dependent variable. Being female increases the risk of positive alar base resection 2.061 fold [OR (95%CI): 2.061 (1.316, 3.228), p:0.002]. Application of LCrep+LSCG, increases alar base resection positivity with an odds ratio of 1.821 [OR (95%CI): 1.821 (1.324, 2.504), $p<0.001$). Skin thickness was not found to have an effect on alar base resection ($p>0.05$).

We performed binary logistic regression analysis using the enter method to analyze the effects of gender, skin type and application of LCrep+LSCG on alar base resection. Gender, skin type, LCrep+LCSG and all two-way and three-way interactions were introduced as independent variables where alar base resection was introduced as the dependent variable. None of the main effects and two-way interactions were found statistically significant ($p>0.05$). We found statistically significant effect at female, LCrep+LCSG applied and thick skinned subjects (p:0.022). Mantel-Haenszel statistics were calculated for female and male subjects separately. Effect of LCrep+LCSG application on alar base resection was analyzed at three different layers of skin thickness. Breslow-Day analysis was used to test preliminary assumption of the homogeneity of the odds ratios and rejected for both male and female gender. Conditional independence was rejected for female gender (χ^2:10.821, p:0.001). Rejection of conditional independence shows that, association between LCrep+LCSG application and alar base resection was significantly different in different skin thickness types. For female gender, %57.3 (n=51) of normal skinned LCrep+LCSG applied subjects had alar base resection positivity, where this percentage was found to be 58.2 and 68.6 for thin, thick skinned subjects respectively. Odds ratios, of alar base resection positivity when LCrep+LCSG was applied compared to not applied were calculated. Odds ratios were found to be 1.289, 1.990 and 2.383 for normal, thin and thick skinned subjects (p:0.386, p:0.108, p:0.001, respectively). These results showed that thick skinned, LCrep+LCSG applied, subjects had a greater odds ratio of alar base positivity compared to normal and thin skinned subjects.

DISCUSSION

Repositioning the lower lateral cartilages and supporting them with lateral crural struts is one of the most advanced shaping methods in the tip-plasty stage of aesthetic rhinoplasty. Changing the angle of the lateral crura and supporting them from below with cartilage strut grafts allows the correction of a host of deformities including boxy nasal tip, lateral crural malposition, alar retraction, nasal valve insufficiency, and concave lateral crura (3). The lateral crura are the principle anatomic structure forming the aesthetic and functional character of the nasal tip. Considering the importance of tip-plasty in nasal aesthetics, it is clear how important the LCSG technique is. With the right techniques, it is possible to create equilateral triangular nasal tip as well as functionally support the alar rims to prevent nasal obstruction. In lateral crural malposition, the angle between the midline and the lateral crural insertion point is 30 degrees or less. Studies indicate that malposition is one of the most common nasal tip deformities observed in primary and secondary rhinoplasty patients (7). Mathematical analysis of the effect of cephalic malposition on tip-plasty revealed differences in projection, rotation and lateral crural length. Malposition has been found to impact tip-plasty and has lead to the development and utilization of different tip-plasty techniques (8). Directing the lateral crural angle toward the medial canthus weakens the alae, resulting in 'parentheses tip deformity (9). New techniques have been attempted to correct this issue in noses with parentheses tip deformity and cephalic malposition (10).

Toriumi reported that alar rim grafting was not necessary in patients undergoing LCSG and repositioning because those procedures provided sufficient support to the alar rims (11, 12).

Various techniques have been described to support and strengthen the lateral crura, such as alar batten grafting, but malposition cannot be solved by alar batten grafts alone and requires the combination of multiple techniques. Alar batten grafting may correct nasal valve insufficiency (13). However, this technique alone is not adequate for other aesthetic deformities like parentheses deformity and boxy nose.

The repositioning and strut technique, although very effective, also has disadvantages in addition to its advantages. These disadvantages include dislocation of the lateral crural complex from the created pocket and visibility of the lateral crural structures through the skin in the long-term. In addition, because the lateral crural strut grafts do not extend to the anterior nasal aperture, they may protrude into the nasal cavity and occlude the airway. These problems usually occur when the surgeon is still

mastering the technique or are related to mistakes in patient selection. Further research into the patient selection criteria for the repositioning procedure is warranted. Separate analysis of patients with normal, thick and thin skin who underwent repositioning and strut grafting grafting revealed no differences in aesthetic satisfaction or functional improvement according to skin type (4). Toriumi claimed that this technique has led to an increase in the frequency of alar base resection (1). Although repositioning is quite effective at reducing projection and providing support to the alar rims, it leads to alar flare, wider nasal base. In the current study, the frequency of alar base resection was approximately two-fold higher in patients who underwent LCSG with the repositioning procedure. Our results of this current study supported Toriumi as patients of all skin types together. We selected skin types intraoperatively according to the observation of the surgeon (6). This is a limitation of our study that we did not have an objective tool like ultrasonogrophic measuring or biopsy pattern but the same experienced surgeon evaluated all patients as a standardized observation of skin thickness intraoperatively.

Procedures to narrow the alar base date back over a century. Alar base resection was first performed in 1892 by Robert Weir, who described the technique as an external wedge resection for the correction of unequal nostrils (14). In 1931, Joseph performed alar base resection by an internal excision, thus turning the alar base resection technique into an internal approach (15). Many investigators have refined the technique over the years in an attempt to minimize the scarring that can form due to the classic Weir incision (16-19).

In our analysis of patients undergoing lateral crural repositioning and strut grafting in terms of skin type (normal, thin or thick), we found that alar base resection was performed significantly more often in patients with thick skin. Looking at patients of all skin types together, we found the frequency of alar base resection was higher in patients who underwent repositioning and LCSG. Our results support the previous study by Toriumi et al. No significant difference was detected in patients with normal skin, while in patients with thin skin there was a marked but statistically nonsignificant trend toward a higher rate of alar base resection performed in conjunction with these techniques. Surgeons planning to utilize these techniques should consider the patient's skin type preoperatively.

CONCLUSION

Cephalic malposition is a common problem observed in primary and secondary rhinoplasties which impacts patient satisfaction both functionally and aesthetically. Among the various

techniques reported in the literature, the most effective is LCrep+LCSG. The combination of lateral crural repositioning with struts and alar base reduction is becoming more common. The necessity of alar base reduction after repositioning with lateral crural struts is greater in patients with thick skin compared to those with thin and normal skin. Surgeons using the technique should be aware of this possibility during their preoperative analyses and plan the operation accordingly.

Table 1. Distribution of Descriptive Characteristics

		Total (n=621)	**2013 (n=301; 48.5%)**	**2014 (n=220; 35.4%)**	**2015 (n=100; 16.1%)**
Gender, *n (%)*	**Male**	95 (15.3)	55 (18.3)	28 (12.7)	12 (12.0)
	Female	526 (84.7)	246 (81.7)	192 (87.3)	88 (88.0)
LCrep+LCSG, *n (%)*	**(-)**	302 (48.6)	145 (48.2)	89 (40.5)	68 (68.0)
	(+)	319 (51.4)	156 (51.8)	131 (59.5)	32 (32.0)
Alar base resection, *n (%)*	**(-)**	292 (47.0)	144 (47.8)	98 (44.5)	50 (50.0)
	(+)	329 (53.0)	157 (52.2)	122 (55.5)	50 (50.0)

Table 5: Univariate and multivariable analysis of gender, skin thickness and application of LCrep+LCSG on alar base resection

	Univariate		Multivariable				
						95% CI for OR	
	p	OR (%95 CI)	B	p	OR	Lower	Upper
Gender (Female)	**0.002****	2.061 (1.316, 3.228)	0.554	0.067	1.740	0.962	3.149
LCrep+LCSG (+)	**<0.001****	1.821 (1.324, 2.504)	0.579	0.056	1.784	0.986	3.229
Skin thickness	0.269	-		0.466			
Skin thickness (Thin)	0.758	1.074 (0.684, 1.686)	0.160	0.701	1.173	0.519	2.654
Skin thickness (Thick)	0.115	1.325 (0.934, 1.879)	0.313	0.217	1.368	0.832	2.250
LCrep+LCSG (+) by Gender (Female)	-	-	0.049	0.936	1.050	0.321	3.439
Gender * Skin thickness	-	-		0.687			
Gender (Female) by Skin thickness (Thin)	-	-	-0.679	0.415	0.507	0.099	2.594
Gender (Female) by Skin thickness (Thick)	-	-	-0.267	0.599	0.766	0.283	2.071
LCrep+LCSG * Skin thickness	-	-		0.501			
LCrep+LCSG (+) * Skin thickness (Thin)	-	-	0.110	0.895	1.117	0.218	5.714
LCrep+LCSG (+) * Skin thickness (Thick)	-	-	-0.545	0.283	0.580	0.214	1.568
LCrep+LCSG * Gender * Skin thickness	-	-		0.070			
LCrep+LCSG (+) * Gender (Female) * Skin thickness (Thin)	-	-	0.647	0.698	1.910	0.073	50.001

LCrep+LCSG (+) * Gender (Female) * Skin thickness (Thick)	-	-	2.319	0.022*	10.163	1.389	74.349

CI: Confidence Interval, OR: Odds Ratio,

Male gender, LCrep+LCSG (-) and normal skin thickness were accepted as reference categories for respective variables.

REFERENCES

1. Dean M. Toriumi , Scott A. Asher. Lateral Crural Repositioning for Treatment of Cephalic Malposition. Facial Plast Surg Clin N Am 23(2015)55-71

2. Sheen JH. Aesthetic Rhinoplasty. St Louis, MO: Mosby–Year Book Inc; 1978.

3. Jack P.Gunter,M.D.,and Ronald M. Friedman,M.D. Lateral Crural Strut Graft: Technique and Clinical Applications in Rhinoplasty.Plast.Reconstr.Surg. 1997 Apr;99(4):943-52; discussion 953-

4. Ilhan AE, Saribas B, Caypinar B. Aesthetic and Functional Results of Lateral Crural Repositioning. JAMA Facial Plast Surg. 2015 Jul-Aug;17(4):286-92.

5. SheenJH,SheenAP.AestheticRhinoplasty.2nded.StLouis,MO:Mosby; 1987.

6. Lavinsky-Wolff M, Dolci JE, Camargo HL Jr, Manzini M, Petersen S, Romanczuk S,Pizzoni R, Polanczyk CA. Vertical dome division: a quality-of-life outcome study.Otolaryngol Head Neck Surg. 2013 May;148(5):758-63.

7. Mark B. Constantian , M.D. The boxy nasal tip.the ball tip and alar cartilage malposition: Variations on a theme-A study in 200 consecutive primary and secondary rhinoplasty patients. Plast Reconstr Surg 2005 Jul;116(1):268-81

8. Sepehr A, Alexander AJ,Chauhan N,Chan H,Adamson PA. Cephalic positioningof the lateral crura: implacations for nasal tip plasty.Arch Facial plast Surg.2010;12(6):379-384

9. Sheen ,J.H. Malposition of alar cartilages .Presented at the Annual meeting of American Society of Aesthetic Plastic Surgery ,Los Angeles, May 1992

10. Oktem F, Tellioglu AT, Menevse GT. Cartilage Z plasty on lateral crus for treatment of alar cartilage malposition. J Plast Reconstr Aesthet Surg. 2010;63 (5):801-808.

11. Rohrich RJ, Raniere JJ Jr, Ha RY. The alar contour graft: correction and preventing of alar rim deformities in rhinoplasty.Plast Reconstr Surg. 2002;109(7):2495-2508

12. Toriumi DM. New concepts in nasal tip contouring. Arch Facial Plast Surg. 2006;8(3):156-185

13. Toriumi DM1, Josen J, Weinberger M, Tardy ME Jr. Use of alar batten grafts for correction of nasal valve collapse. Arch Otolaryngol Head Neck Surg. 1997 Aug;123(8):802-8.

14. WeirRF.Onrestoringnoseswithoutscarringtheface.NYMedJ.1892;56:449- 454.

15. Joseph J. Nasenplastik und sostige Gesichtsplastik nebst einem Anhang über Mamaplastik. Leipzig, Germany: Curt Koitzsch; 1931:110-113.

16. GuyuronB,BehmandRA.Alarbaseabnormalities:classificationandcorrection. Clin Plast Surg. 1996;23:263-270.

17. AdamsonPA,OakleyS,TropperGJ,McGrawBL.Analysisofalarbasenarrowing. Am J Cosmet Surg. 1990;7:239-243.

18. Ribeiro L. The nasal ala in rhinoplasty—a new approach. Ann Plast Surg. 1981; 6:448-452.

19. Watanabe K. New ideas to improve the shape of the ala of the oriental nose. Aes- thetic Plast Surg. 1994;18:337-344.