

Case Report

Sandwich Technique in the Management of Lower Lateral Cartilage Concavity

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Received Date: January 21, 2021

Publication Date: February 01, 2021

Abstract

Background Concavity of the lateral crus may be a hard problem both aesthetically and functionally. Flaccid lower lateral cartilages yield the forces of skin tension, inflicting the concavity of the nasal sidewall. These depressions produce not only a cosmetic deformity however they'll additionally cause airway obstruction by protrusive downward into the nasal vestibule, inflicting external valve pathology. To overcome this drawback, several techniques were conferred and successfully used by many authors. In this paper, the author presents the sandwich technique for the management of the lower lateral cartilage deformity.

Patient and method In 120 patients with an age range of 20-45 years, who underwent both primary and secondary rhinoplasties from 2018 to 2019 To restore the lower lateral cartilage concavity with sandwich technique, in this technique the caudal part of the LLC is not removed entirely. It is Flipped over and used as a graft for the defective part, then, sutured. Deformities were analysed pre-and postoperatively based on clinical evaluation and standardized photographs. Patient satisfaction was evaluated subjectively.



Results Improvement of the alar pinch was accomplished in 120 patients (100%) and the function of the external nasal valve was restored in (100%). The postoperative results showed a clear improvement in LLC concavity which was reflected in the tip symmetry (96.67%), alar retraction (98.33%), and tip ptosis (95%). The average follow-up period was 6 months. Patients rated the result as "excellent," (88.33%), as "very good," (6.67%) as "good," (3.33%) and as "not satisfied" (1.67 %).period was 6 months. Patients rated the result as "excellent," (88.33%), as "very good," (6.67%) as "good," (3.33%) and as "not satisfied" (1.67 %).

Conclusion Lower lateral cartilage concavity is frequently followed by dysfunction of the external nasal valve and aesthetic deformities, with the use of the sandwich technique we completely rebuild the structure of the nasal tripod and therefore the function and aesthetics, and the technique was proven to be effective and efficient.

Introduction

Concavity of the lateral crus is often a hard drawback both aesthetically and functionally.(1) Flaccid lower lateral cartilages consent to the forces of skin tension, causing the concavity of the nasal sidewall. These depressions produce not only a cosmetic deformity however they'll additionally cause airway obstruction by protruding downward into the nasal vestibule, inflicting external valve pathology, This is particularly seen once the whole lateral crura are concave.(2) That's why the position of the lower lateral cartilages (LLC) was found to be closely associated with the function of the external nasal valve (ENV).(3) Lower lateral cartilage concavities can exist secondary to inherent asymmetries, structural weaknesses of crura, or complete absence of the lateral crura, leading to a pinched tip. Normal anatomy of the distal nose may be a reflection of fine integration between the lower lateral cartilage, the upper lateral cartilage, the septum, and the skin. Understanding these relationships can facilitate the rhinoplasty operating surgeon diagnose and treat concavities of the distal nose. The area of concavity and the functional impairment dictates the correction. Once a unilateral irregularity exists in the lower lateral cartilage, the tripod length is affected, inflicting not only the topographic concavity but additionally a deviation of the nasal tip to the aspect of the shorter lateral crus.The lateral crura should be convex at the nasal dome with gradual flattening toward the pyriform aperture.(4) Anatomically this cartilage was found to possess a three-dimensional hemispheric look and to be connected to the upper lateral cartilage (ULC)



at the scroll space by an inward limb of this hemisphere. This inward limb might have a crucial role in producing asymmetry and flare of the anterior naris. At least one-third of the LLC analysed had a medial wall in addition to the lateral wall, which remarkably increased the flare and recoil force of this structure. This makes this cartilage more redundant to reshaping procedures (straightening). Thus, special attention should sometimes be paid to this common anatomic variation to provide symmetric nostrils and to get an additional aesthetically acceptable alar tip.(5) To overcome this drawback, several techniques were introduced and successfully used by many authors.(1)

Patients and methods

A retrospective study in 120 patients who underwent both primary and secondary rhinoplasties from November 2018 to November 2019 to restore the lower lateral cartilage concavity(fig.1) with Ashary sandwich technique, patients were followed up for 6 months, deformities were analyzed pre-and postoperatively based on clinical evaluation and standardized photographs. Patient satisfaction was evaluated subjectively.



Figure 1.concavity of the lower lateral cartilage

Operative procedure

Using an open rhinoplasty approach and before any shaping and tip management, in this technique, the caudal part of the lower lateral cartilage (LLC) is not removed entirely. It is flipped over and used as a graft for the defected part (fig.2,3), then, sutured. The LLC ligament is not removed to stabilize the



graft and there is no need for further fixation due to the stable position of the graft. Depending on the defect the surgeon can decide to perform the unilateral or bi-lateral sandwich technique. Besides, in rare cases such as cleft noses, if the sandwich technique cannot fill the defect, the surgeon can add a graft that is taken from the septum. Moreover, the author advised that vicryl is more efficient in graft fixation due to the non-irritation effect of the skin and causes less fibrosis on the dermis that usually affects the result. Most surgeons use proline because of its non-absorbable nature however, this suture cause more fibrosis and sometimes causes infection. (Figure4.a,b,c,d,e,f,g,h)



Figure 2. flip over of the caudal part of the LLC (anterior view)



Figure 3. flip over of the caudal part of the LLC (lateral view)



Figure 4.a

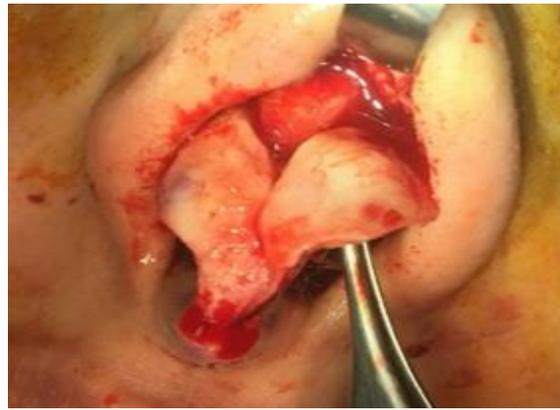


Figure 4.b



Figure 4.c



Figure 4.d



Figure 4.e



Figure 4.f



Figure 4.g



Figure 4.h

Results

The sandwich technique was performed in 120 rhinoplasties, 41 males and 79 females, 68 of these patients were in the age range of 20 to 29, 37 were in the range of 30 to 39, and 15 were in the range of 40 to 49, 75.83% of the operations were primary rhinoplasties and 24.16% were secondary.

The postoperative results showed a clear improvement in LLC concavity which was reflected in the tip symmetry (96.67%).

The alar retraction was improved by (98.33%), and tip ptosis was improved by (95%).

Results also showed that the function of the external nasal valve and the alar pinch was improved by 100% in both primary and secondary rhinoplasties, the average follow-up period was 6 months. Patient satisfaction was evaluated and Patients rated the result as "excellent," (88.33%), as "very good," (6.67%) as "good," (3.33%), and as "not satisfied" (1.67 %).

Figure 5. a, b, c, d: preoperative photographs of a patient with lower lateral cartilage concavity.

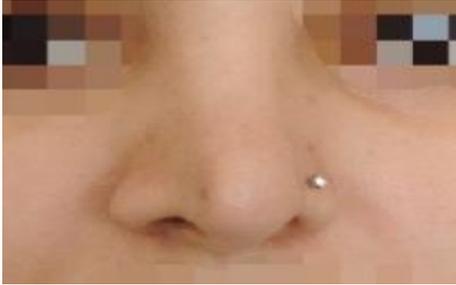


Figure 5.a



Figure 5.b



Figure 5.c

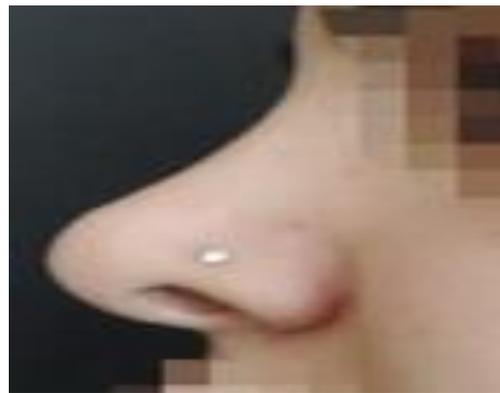


Figure 5.d

Figure 6. a, b, c, d: Post-operative photographs of the patient in figure 4, 6 months' post-surgery.



Figure 6.a



Figure 6.b



Figure 6.c



Figure 6.d

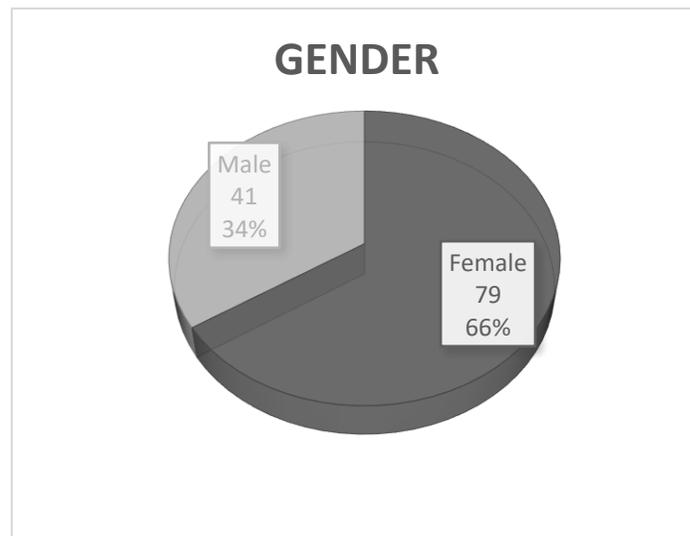


Fig.7. Gender distribution among patients

**Table1.** Age groups among gender and operation

Age group/gender/operation	Count of Patient
20-29	68
Female	44
primary	39
secondary	5
Male	24
primary	19
secondary	5
30-39	37
Female	24
primary	12
secondary	12
Male	13
primary	10
secondary	3
40-49	15
Female	11
primary	9
secondary	2
Male	4
primary	2
secondary	2
Grand Total	120

Table2. Evaluation of tip symmetry post operatively

operation	Tip symmetry		Grand Total
	Asymmetrical	Symmetrical	
primary	0.83%	75.00%	75.83%
secondary	2.50%	21.67%	24.17%
Grand Total	3.33%	96.67%	100.00%



Table3.Evaluation on alar retraction status post operatively

	Alar retraction		
operation	Improved	Unimproved	Grand Total
primary	75.83%	0.00%	75.83%
secondary	22.50%	1.67%	24.17%
Grand Total	98.33%	1.67%	100.00%

Table4.Evaluation of Tip ptosis status post operatively

	Tip ptosis		
operation	Improved	unimproved	Grand Total
primary	72.50%	3.33%	75.83%
secondary	22.50%	1.67%	24.17%
Grand Total	95.00%	5.00%	100.00%

Table5.patient satisfaction rated subjectively

Row Labels	Count of Patient
Excellent	88.33%
Very Good	6.67%
Good	3.33%
Not Satisfied	1.67%
Grand Total	100.00%



Conclusion

Lower lateral cartilage concavity is frequently followed by dysfunction of the external nasal valve and aesthetic deformities, with the use of the sandwich technique we completely rebuild the structure of the nasal tripod and therefore the function and aesthetics, and the technique was proven to be effective and efficient.

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Volume 2 Issue 2 February 2021

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