

# Lateral Crural Setback With Cephalic Turn-in Flap

## A Method to Treat the Drooping Nose

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**H**erein, I describe lateral crural setback with cephalic turn-in flap as a new technique for management of the drooping nose. I report a technique for reinforcement of the alar cartilage after partial removal of its caudal portion used in 23 patients during open rhinoplasty. An objective assessment, which included measurement of nasal tip rotation and projection, was applied preoperatively and postoperatively. The average follow-up period was 11 months. Satisfactory results were achieved that resulted in an increase in the degree of nasal tip rotation. The mean increase of the nasolabial angle was 12°. This technique allows increasing the nasal tip rotation in an incremental fashion with preservation of nasal valve function and the strength and stability of the tip complex. *Arch Facial Plast Surg.* 2010;12(6):427-430

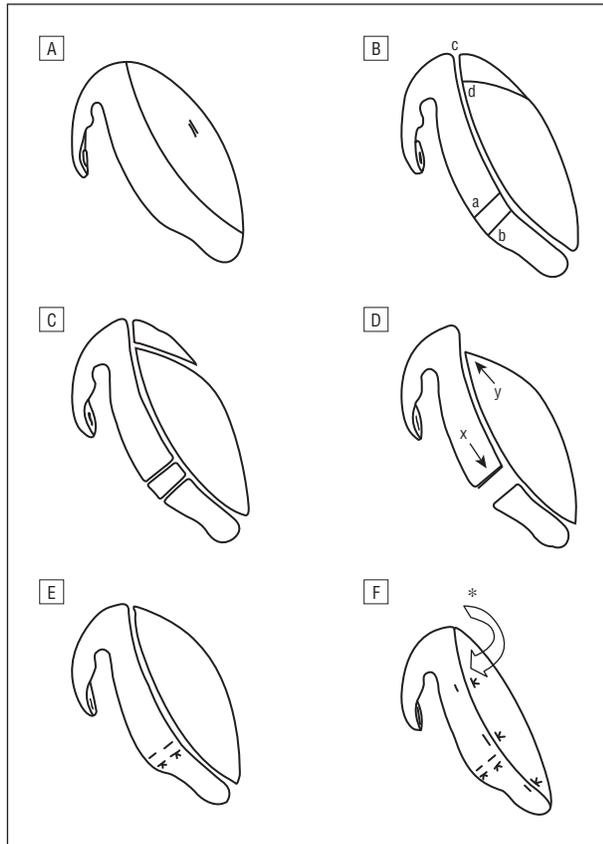
Nasal rotation and projection are essential measurements in determining nasal aesthetics. Tip rotation generally occurs along an arc produced by a radius based at the external auditory meatus and evaluated by measuring the nasolabial angle. The nasolabial angle defines the angular inclination of the columella as it meets the upper lip. This angle should measure 95° to 110° in women and 90° to 95° in men.<sup>1</sup> A downwardly rotated nose or drooping nose occurs when the nasal tip is more caudal than what is deemed ideal. The pathogenesis of the drooping nose can be divided into 2 groups. Intrinsic factors, such as an excessively long lateral crura (LC), a vertically oriented LC, and a short, weak, medial crura play important roles in the first group. The second group has a normal alar cartilage that is inferiorly pushed by the effect of extrinsic factors, such as elongated upper lateral cartilages or excessive caudal anterior septum and heavy nasal skin.<sup>2,3</sup> Correction of the drooping nose varies according to the cause of the deformity. Typically it has been achieved through a variety of cartilage-modifying maneuvers based on incising or excising cartilagi-

nous structures, generally LC of lower lateral cartilages (LLC).<sup>2-6</sup>

The LC of LLC is an essential aesthetic and functional structure of the nose. Aesthetically, it determines the shape, size, and position of the nasal tip. Functionally, it is a part of the external nasal valve in the anterior portion of the nasal airway. This part of the alar cartilage underwent various maneuvers for correction of tip deformity. One of the most commonly used procedures to reduce the volume of the nasal tip is resection of the cephalic portion of the LC. Resection of this part permits medialization of the tip-defining points and increases a visual gain in tip position.<sup>7,8</sup> Weakness of the LC during various techniques for the correction of tip deformities may cause a concave alar rim and even external nasal valve collapse. The structure and support of the alar cartilage may not seem compromised at first, but long-term stability as a result of contractile forces may cause weak cartilages to be at risk.<sup>9,10</sup>

Herein, I describe the lateral crural setback in combination with a cephalic turn-in flap (LSCT) as a new technique for management of the drooping nose. I tried to preserve structural integrity of alar cartilage as much as possible in this technique.

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**Figure 1.** Schematic diagram of the lateral crural setback with cephalic turn-in flap technique. A, Demarcation of the cephalic portion of the lateral crus. B, Vertical marking of the caudal portion of lateral crus and incising of the cephalic portion (ab=cd). C, Excision of a triangular piece of cartilage from the anterior of the cephalic portion of lateral crus and transecting of the caudal portion. D and E, Secondary movement of the cephalic portion in an opposite direction and fixing of the 2 ends of the caudal portion. F, Turn-in of the cephalic portion and stabilization with 5-0 nonabsorbable mattress sutures.

## METHODS

This study was conducted in a university and private practice settings. I used the LSCT technique in 23 patients (18 women and 5 men) for correction of the drooping nose. The procedure was performed during open rhinoplasty in all patients. An objective assessment was performed for all cases. The objective assessment of these patients included the measurement of the degree of nasal tip rotation and projection, both preoperatively and at 3, 6, and 12 months postoperatively. The nasolabial angle defines the angular inclination of the columella as it meets the upper lip. The angle is formed between the intersection of a line tangent to the labrale superius and subnasale and a line tangent to the subnasale and the most anterior point of the columella.<sup>1</sup> The average follow-up period was 11 months (range, 5-16 months).

The exposure provided by an open approach allowed direct assessment of nasal tip cartilages in their natural and undistorted position. The cephalic portion of the LC was demarcated preserving at least 7 mm of cartilage (**Figure 1A**). The cartilage was incised with a No. 15 blade scalpel. The nasal mucosa was not routinely dissected from the inner surface of the LC and preserved intact.

Then the caudal portion of the LC was vertically marked in 2 points (**Figure 1B** and **Figure 2**). The distance between these 2 points was related to the desired rotation, and the lat-



**Figure 2.** Vertical marking of the caudal portion of lateral crus and incising of the cephalic portion. In addition, a triangular piece of cartilage was also demarcated from the anterior part of the cephalic portion of lateral crus.



**Figure 3.** Transection of the caudal portion of lateral crus and excision of the cartilage between 2 cuts.

eral point was at the junction of the lateral third to the medial two-thirds of the LC. Before transecting the cartilage, the vestibular skin was elevated from the undersurface of the LC about 2 mm on each side of the planned cartilage incisions. Then the caudal portion of the LC was transected, and the cartilage between 2 cuts was excised (**Figure 1C** and **Figure 3**). In addition, a triangular piece of cartilage was also excised from the anterior portion of the cephalic portion of the LC (**Figure 1C**). The base of this triangle was equal to the distance of 2 transaction lines of the caudal part (**Figure 1B**). The cut ends of the caudal portion were then fixed end to end with 5-0 nonabsorbable, transcartilaginous, simple sutures. While the distal (anterior) part of the caudal portion was slid back, secondary movement of the cephalic portion occurred in an opposite direction (**Figure 1D** and **E**). Then the cephalic portion was turned in and stabilized with 5-0 nonabsorbable mattress sutures. Three mattress sutures were sufficient to fix the cephalic portion (**Figure 1F** and **Figure 4**). Minor skin folding over of the vestibule was resolved in the first month postoperatively and did not cause any problem. After the procedure was completed, a pocket was dissected downward between the medial crura, and a columellar strut was placed.

## RESULTS

Satisfactory results were achieved in all patients (**Figures 5, 6, and 7**). The LSCT technique resulted in



**Figure 4.** Fixation of the folded cephalic portion with 3 mattress sutures. Note the turn-in flap.



**Figure 5.** A female patient with a severely drooping nose deformity. Preoperative frontal (A) and lateral (B) views and postoperative frontal (C) and lateral (D) views. The preoperative and postoperative nasolabial angles were 59.6° and 93.7°, respectively.

an increase in the degree of nasal tip rotation as evidenced by the notable increase in the postoperative values of the nasolabial angle. The mean increase of the nasolabial angle was 12°. The procedure also enabled symmetric reduction of the LLC. Nasal valve collapse and pinch deformity were not observed in the postoperative period. There were no complications (eg, hemorrhage, suture infection, suture reaction, or suture visualization).



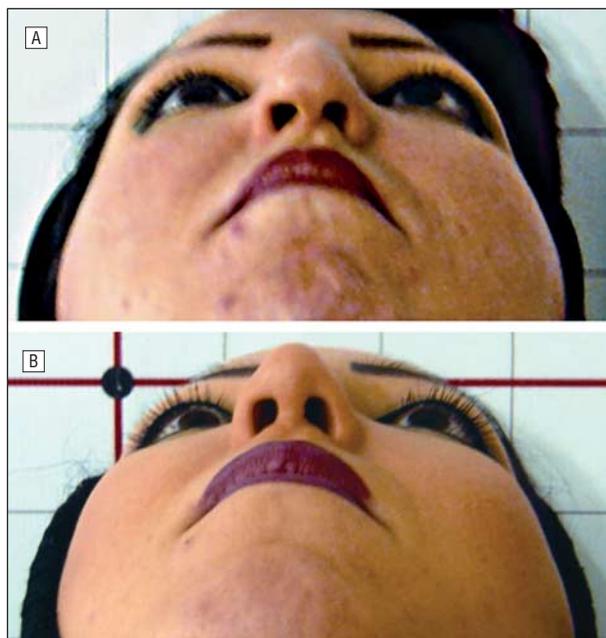
**Figure 6.** A female patient with drooping nose deformity. Preoperative frontal (A) and lateral (B) views and postoperative frontal (C) and lateral (D) views. The preoperative and postoperative nasolabial angles were 82.4° and 96.3°, respectively.

#### COMMENT

The drooping nose is a common nasal deformity.<sup>2</sup> There have been many reports on modifying the alar cartilage to correct this deformity. Removal of the cephalic portion of LLC is a well-known method of narrowing and rotating the nasal tip cephalically.<sup>3</sup> Other techniques using aggressive resection of LLC could compromise tip support and the nasal valve, creating a potential for future alar collapse.<sup>2,3</sup>

Alar collapse is the direct result of a weakness in the lateral portion of the LLC. This weakness is caused by overresection of the LC when the surgeon attempts maximal tip reduction. Collapse of this region produces nasal obstruction and typical nasal shape deformities. The importance of these complications has led to tailored surgical techniques to improve functional and aesthetic results.<sup>11,12</sup>

Conservative reduction of the volume of the cephalic portion of the LC and preserving the greater part of the crus while maintaining a complete (uninterrupted) strip of LLC is preferred. The LSCT technique improves nasal tip rotation while maintaining nasal tip support and strength. The turn-in flap used in this technique can prevent weakness of the LC and also can support it. Therefore, the technique can be used to avoid the external nasal valve dysfunction. In addition, it provides aesthetic



**Figure 7.** Preoperative (A) and postoperative (B) nasal base views of the patient shown in Figure 5. Minor skin folding over of the vestibule was resolved with preservation of the nasal airway.

nasal tip improvements by medialization of the tip-defining points and increases a visual gain in tip position without functional impairments as successfully as cephalic excision.<sup>7,8</sup> Objective evaluations of the outcomes of this technique revealed that it increased tip rotation but decreased tip projection. This result is very consistent with the tripod theory.<sup>3</sup> However, the turn-in flap used in this technique prevented considerable decrease of tip projection.

The lateral crural overlap technique has been advocated to achieve cephalic rotation of the tip without permanent division of the LC. End-to-end suturing of proximal and distal ends of the transected caudal portion of LC in the current technique instead of overlapping of them

prevented unwanted fullness of alar sidewall, especially on thin-skinned patients. Finally, the LSCT technique allows increasing the nasal tip rotation in an incremental fashion with preservation of nasal valve function.

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