

In addition, every patient in our study expressed satisfaction with the cosmetic outcome of the donor site and no complications were reported. Our study suggests that the superficial temporal vein and its branches may be safely employed in stapedotomy as an alternative interposition graft with good postoperative functional and aesthetic results.

Conflict of interest

None to declare.

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A new technique during septoplasty to prevent saddle nose

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Keypoints

- During septoplasty, especially in patients with severe deviation of the nasal septum, there is the risk of septal instability, which may result in a saddle nose deformity. Therefore, prevention of this unwanted outcome is very important and removes surgeon's anxieties.
- This article describes a simple technique during septoplasty to prevent the development of this serious complication.
- In this surgical technique, the dislocated nasal septum is lifted and stabilised with a temporary traction suture. This traction suture holds the mobile septal cartilage in the proper position to restore and support the nasal dorsum and provides it with a normal contour.
- The advantages of this technique are that it is (i) easy to perform, (ii) not time-consuming, (iii) is less traumatic compared to other methods, (iv) is comfortable for the patient and (v) provides long-term stability.

The nasal septum is an important physiological and supporting structure of the nose. When the nasal septum is severely deviated, either septoplasty or submucous resection is commonly recommended for the relief of the patient's symptoms.¹

When operating, care should be taken to preserve dorsal and caudal struts of the nasal framework. But if the severe deviation is near the anterosuperior part of the ethmoid bone junction, especially with presence of transfixion incision, there is the danger of septal instability,² which is more likely to result in a saddle nose deformity (Fig. 1). However, despite of respecting all fundamental directions, this floating of cartilage is inevitable in some patients. Furthermore, if dorsal depression occurs, it would be quite difficult to replace the cartilage in its proper position.³

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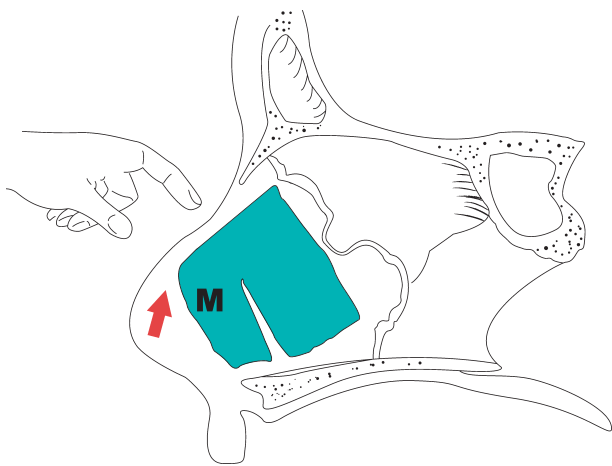


Fig. 1. (Sagittal view of the nose and septum): When some parts of the septum have been removed, there is the risk of septal instability, which is more likely to result in a saddle nose. While doing septoplasty, the nasal dorsum must be palpated to ensure that there is no instability (M = mobile septal cartilage).

Although the development of saddle nose deformity is a rare complication, it has serious and disastrous consequences for both the surgeon and the patient when it occurs. Substantial resection can be the cause of long-term complications and can also hinder any further restorative procedures.⁴ Reconstruction of the saddle nose deformity is an arduous task for the aesthetic surgeon.⁵ Thus, procedures that can prevent the development of this complication are worthy of consideration and remove surgeon's anxieties. Moreover they can eliminate 'unpleasant consequences' and 'unexpected difficulties' for the patient and the surgeon.

Patients and methods

This was a clinical case series of 23 patients. The study was approved by the Ethics Committee of Baqiyatallah University of Medical Sciences, Tehran, Iran. During a 6-year period from 1996 to 2002, in Baqiyatallah hospital, we performed septoplasty on 650 consecutive patients, to mainly correct severe septal deviations. All these patients were evaluated for possible septal dislocation while being operated (Fig. 1). Of the 650 patients, only 23 cases were found to encounter septal dislocation with consequent development of the saddle nose. So, this new reconstructive technique was applied to them. Then, the 23 patients were examined regularly for 1 year postoperatively for general complications and nasal dorsum stability. Additionally, they were followed-up for a further 2 years.

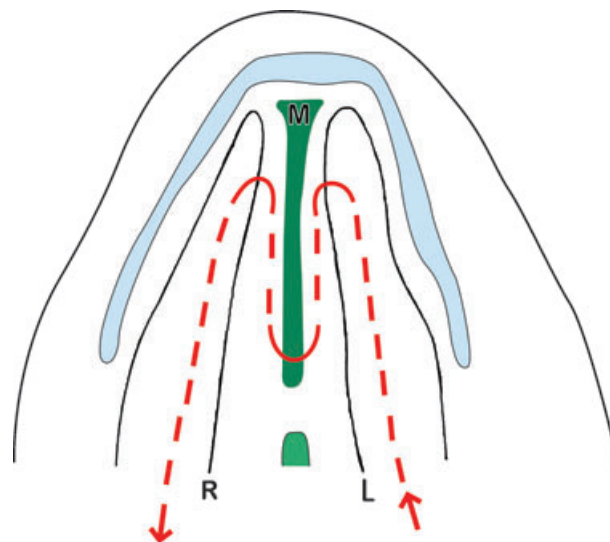


Fig. 2. (Coronal view of the nose): Course of passing the suture through the mucoperichondrial flaps (L and R) and mobile septal cartilage (M).

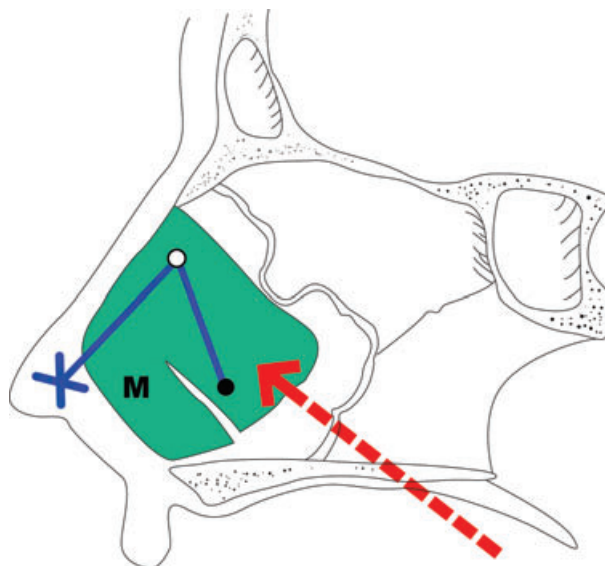


Fig. 3. Using this traction suture, the dislocated nasal septum (M) is held in its proper position and stabilised by several forces. The dotted arrow shows the direction of movement of the mobile cartilage (M) and its force on the nasal dorsal line. (Note: There is a temporary notch on the anterosuperior part of the columella until we remove this traction suture.)

Description of the surgical technique

Step 1 – A 2.0 polyglycolic acid suture (Vicryl®; Ethicon, Somerville, NJ, USA) is passed (for example in the left nasal cavity) through the mucosal surface of the

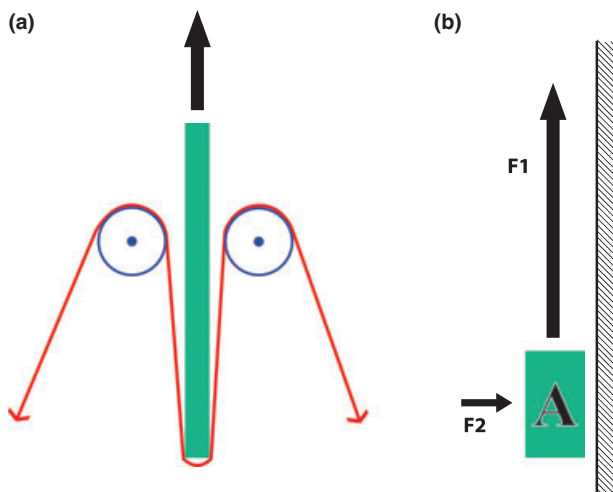


Fig. 4. Theoretical mechanical principles of the technique: (a) (Coronal view) Distribution of the forces, using the principles of combined rollers. (b) For holding the weight 'A' against the wall; by using the force F_1 , there is a need of at least 10 N of pulling force. By taking advantage of the frictional force, only about 2 N of pushing force (F_2) is needed.

posterosuperior part of the septal mucoperichondrial flap and is pulled out on its perichondrial surface.

Step 2 – The suture is passed through the anteroinferior part of the left side of the mobile septal cartilage, and is pulled out on its right side (Fig. 2).

Step 3 – The suture is passed through the perichondrial surface of the posterosuperior part of the right side of the septal mucoperichondrial flap, and is brought out through its mucosal surface.

Step 4 – The suture is passed through the anterosuperior part of the right side of the columella, and is pulled out on its left side.

Step 5 – Using straight mosquito forceps held in one hand, the mobile septal cartilage is grasped and is lifted until it touches the nasal dorsal line. At the same time, the nasal dorsum is palpated to ensure that it has been stabilised using the other hand (Fig. S1).

Step 6 – After ensuring stabilisation, both ends of the suture on the left side of the columella are tightly tied (Fig. 3). For better stability, two transseptal sutures can be also used.

Step 7 – The site of the placed transfixion or Killian incision is repaired.

Step 8 – Low pressure packing of the nasal cavities is done.

Step 9 – Removal of the sutures 2–4 weeks after the operation.

Thus, in this reconstructive technique, the dislocated nasal septum is lifted and stabilised in the proper position with a temporary traction suture. This traction suture

holds the mobile septal cartilage in its place to restore and support the nasal dorsum and provides it with a normal contour.

Theoretical mechanical principles of this simple technique

- 1 The forces are distributed, using the principles of combined rollers (Fig. 4a).
- 2 It relies on the use of several forces with different vectors (Fig. 3).
- 3 It uses multiple fulcrums (Superolaterals and posterior supports) (Figs 3 and 4b).
- 4 It exploits the frictional force on the posterior edge of the mobile cartilage (Fig. 4b).

By applying these mechanical principles, good stability ensues and rupture of the mucoperichondrial flaps is prevented.

Results

During the 3-year follow-up period, 21 of these 23 patients did not develop any postoperative complications. The new technique abrogated the development of saddle nose, with restoration of cosmesis and nasal function. A septal abscess developed in two patients (9%), within 1 month after the operation. In one patient, drainage of the abscess and curettage was performed by a local surgeon because the patient lived out of the catchment area, and the septal cartilage was dislocated. In the second case, the abscess was effectively treated by drainage and inserting a penrose drain. As a result, the patient was managed and controlled uneventfully. Based upon the results from 23 patients, the overall success rate was >95% and there was only one failure (4.5%).

Discussion

When deviation of the nasal septum is severe, it may be necessary to remove some parts of the septum during septoplasty. This may increase the risk of septal instability, and consequent development of the saddle nose deformity. Therefore, procedures that can prevent the development of this complication are worthy of consideration.

In a review of literature to find a preventive method for saddle nose deformity during septoplasty, we reviewed the descriptions of techniques in all the existing nasal surgery textbooks and retrieved relevant articles from Medline, which had been published in the last 25 years. To the best of our knowledge, it was found in two textbooks only, as follows:^{2,6}

Head and Neck Surgery. Naumann H.H., Vol. 1, (1980)

'If necessary, large parts of the septal cartilage can be removed. If there is a danger of instability, temporary traction sutures are used. In this situation, the suture is passed through the skin of the dorsum of the nose, the nasal septum is picked up and the suture is brought out through the opposite side and the skin of the dorsum. A thin metal splint is laid on the nasal dorsum; it has small holes through which the stay sutures are passed and tied over a sponge bolus. The traction suture described above may be used quite effectively to hold the dorsum in position as well as to restore normal contour and support'.²

Otolaryngology Head & Neck Surgery. Cummings C.W., Vol. 2, (2005)

'If there is loss of support either from injury or surgery, at the junction of the septal cartilage with the nasal bones and perpendicular plate of the ethmoid, the remaining caudal septum tilts downward. A draw suture may be passed through the skin of the dorsum of the nose and then used to pick up either the septum alone or the septum with the upper lateral cartilages. The draw suture is then passed through a soft thin metal nasal splint and tied over a bolus. Dorsal draw sutures may be used simply to maintain the position and support while all intranasal surgery is completed and the nose is packed. The sutures are then removed. When necessary, the sutures may remain in position for one week and are removed with the splint'.⁶

Compared to other techniques, the advantages of the technique are

- 1 It is easy to perform.
- 2 It is not time-consuming because it takes less than 5 minutes to perform.
- 3 It is not expensive because it requires only one 2.0 Vicryl[®] suture.
- 4 It is a less traumatic procedure.
- 5 It is comfortable for the patients, they do not have to wear extra face devices.
- 6 It gives long-term stability.

By means of the simple technique herein reported, with a temporary traction suture, the dislocated nasal septum is lifted and stabilised in the proper position to restore and support the nasal dorsum.

Conclusion

Considering all the above explanations, it seems logical to conclude that the 'Raessi technique' described here, can easily prevent the development of the saddle nose deformity during septoplasty.

Conflict of interest

None to declare.

Supplementary materials

The following supplementary materials are available as part of the online article from <http://blackwell-synergy.com/doi/abs/10.1111/j.1749-4486.2008.01669.x>:

Fig. S1. Using straight mosquito forceps held in one hand, the mobile septal cartilage is grasped and is lifted until it touches the nasal dorsal line. At the same time, the nasal dorsum is palpated to ensure that it has been stabilised using the other hand.

Video S2. A short movie about how to perform this technique (on the model).

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