Septoplasty can Change the Shape of the Nose

P. S. Saharia · Deepti Sinha

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Abstract ENT surgeons are familiar with anatomy as well as physiology to improve the form and function of the nose. Conventional septoplasty is done to improve the function of the nose. The nasal septum contributes to the shape of the nose in many ways like its height, length and position in the midline. And if septoplasty is extended to vary its dimensions it can grossly contribute to the improvement of the shape of the nose and would truly be called septo-rhinoplasty. This fact that septal surgery alone can improve the shape of the nose shall encourage young ENT surgeons to practice these techniques and offer the resulting cosmetic advantages to their patients.

Keywords Nasal septum · Septoplasty · Shape of the nose and septorhinoplasty

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The projecting nose on the face of homo-sapiens is a later development in the phylogenetic sequence [1]. It is the development of cartilaginous superstructure of the nose i.e. cartilaginous septum, upper alar cartilage, lower alar cartilage which makes the nose a prominent midline structure on the face and distinguishes us in the animal kingdom (Fig. 1).

ENT surgeons are familiar with the nasal septum and its role in breathing and maintaining the nasal physiology. In

the context of changing trends in economic and social awareness and surgical expansion, patients tend to be aware of subtle nasal deformities and want them corrected leaving aside cosmetic rhinoplasty. The nasal septum is responsible for many cosmetic deformities and thus one needs to visualize them in a different perspective to satisfy the patient.

The shape of the nose which also adds to the aesthetic beauty of the face depends on the underlying cartilages, bones and the subcutaneous tissue covering them [2]. The nasal septum anatomy needs to be revisualised to see its role in shaping the nose.

The width, sharpness and height of nasal dorsum depends on the dorso-ventral dimension of the cartilaginous septum and the attached upper lateral cartilages (Fig. 2). However the upper one-third of the nasal dorsum is formed by the nasal bones. The lower one-third is formed by lower alar cartilages. The caudal margin of the nasal septum forms the posterior border of membranous septum whose anterior border is formed by the posterior border of medial crurae. Thus the membranous septum and the medial crurae add to the midline partition of the nose in its more caudal aspect. The caudal margin of the nasal septum, determines the septolabial angle [3]. The anterior septal angle provides projection to tip of the nose. The inferior septal angle is attached to anterior nasal spine (Fig. 2).

The inferior border lies in the maxillary groove and the vomerine bone provides posterior attachment to the cartilaginous septum. Study of north Indian cadavers shows that on an average cartilaginous nasal septum measures 28 mm in antero-posterior dimension, 28.2 mm in dorso-ventral dimension, the thickness being 1.25 mm and the perichondrial thickness on either side is 1.1 mm (Fig. 2).

The nasal septum is a midline structure which gives the nose its central position. Any deviation of the dorsal border

P. S. Saharia
Max Hospital Pitampura, Shalimar Bagh & Patparganj, Delhi,
India
e-mail: neenasaharia@hotmail.com

Deepti Sinha (✉)
Max Hospital, Pitampura & Shalimar Bagh, Delhi, India
e-mail: drdeeptisinha@gmail.com

Fig. 1 Nose is a mid line structure on the face, consisting of bony upper third and cartilaginous lower two-third with mid line septum

Fig. 2 Midline partition of the nose consists of medial crura membranous septum, cartilaginous septum and bony septum. The height and the length of the cartilaginous septum contribute to the shape of the external nose

shifts its midline character and resulting effect is that of a crooked nose. It also affects the placement of upper alar cartilage, distorts the symmetry of lower alar cartilage, columella and the nostrils (Figs. 1, 3).

The independent lower alar cartilages have three parts. The lateral crurae provide flare to the nostrils and distinct

shape to lower third of the face. The dome of the lower alar cartilage gives a distinct shape to the lobule and height to the tip. It continues medially as the medial crurae which provide strength and dimension to the columella. Its posterior border forms the anterior limit of the membranous septum and adds to the columellar show (Fig. 1).

Fig. 3 When the septum is not in the midline, the nasal dorsum gets deviated. Pre-operative photograph on *left* and postoperative photograph on *right*

Fig. 4 Dorsoventral dimension deficiency causes the nose to saddle

The beauty of the nose lies in the dimensions and proportions of the underlying cartilages. No doubt the overlying skin cover provides smoothness to the nasal surface. It is adherent to the lower two-thirds and is mobile on the upper third of the nasal dorsum.

If we consider the septum in all its dimensions the various nasal deformities can be analysed in different perspective, confirming the saying as goes the septum so goes the nose.

When the nasal septum is deficient in dorso-ventral dimension, because of septal abscess or after surgery it causes the nose to saddle (Fig. 4). On the contrary when the dorso-ventral dimension is larger than normal a hump is formed (Fig. 5, 6). If the antero-posterior dimension is less, then a retracted columella is the result (Fig. 7) and if the antero-posterior length is more then there is an excessive show of columella (Fig. 6).

When the nasal septum is shifted from the midline, nose is said to be crooked or deviated. The attached upper alar

Fig. 5 An excessive dorsoventral dimension produces a hump

Fig. 6 Patient with a hump nose (*left*) and postoperative on the right

Fig. 7 When anteroposterior dimension is less, the columella gets retracted

Fig. 8 A dislocated caudal margin of the septum produces asymmetry of the nostril

cartilages also get twisted. When the septal cartilage does not lie in the maxillary groove it is likely that the caudal margin would lie on one side and cause asymmetry of the

nostril (Fig. 8). In such situation the position of anterior nasal spine needs to be checked as it may lie away from the midline (Fig. 9).

Fig. 9 Skulls showing the three possible positions of the anterior nasal spine

Fig. 12 Augment the caudal part of the septum by placing a graft in the columellar pocket (postoperative on the *right*)

Fig. 10 When the anterior septal angle is deficient the tip is blunted (*left*), postoperative on the *right*

Fig. 11 When the dorsoventral dimension is augmented the saddle gets corrected, postoperative on the *right*

The tip of the nose is blunted if the anterior septal angle is not projecting. It may also affect the positioning of lower alar cartilages (Fig. 10).

Other intranasal septal deformities, like deviated septum or a spur, may just affect the functions of the nose and not cause cosmetic deformities.

Thus when the dorso-ventral dimension of nasal septum is less, septum needs to be augmented by a graft on its

dorsal border (Fig. 11). In such a situation, one may also trim the medial border of upper alar cartilage on either side to add to the height of the nose. The height in the upper third is because of placement of nasal bones and frontal process of maxilla.

If the dorso-ventral dimension is large, a hump thus produced can be trimmed along with rasping the bony hump caused by larger nasal bones (Fig. 6). Lateral and

Fig. 13 Deviated lower one-third of the nose is corrected by septoplasty alone (postoperative on the *right*)

horizontal osteotomies help to close the open book deformity of nasal dorsum caused by hump removal.

A longer septal cartilage producing a larger show of columella can be trimmed in an appropriate dimension of the caudal margin after reflecting the perichondrial covers on either side of caudal margin. Removing an inverted triangular piece of caudal margin also rotates the tip of the nose (Fig. 6). A shorter septal cartilage causes retracted columella (Fig. 7), which needs to be augmented with a graft kept in a columellar pocket (Fig. 12).

When the nose is twisted in its cartilaginous part (Fig. 3) the septum needs to be released from its inferior, superior and posterior margins to bring it to midline and secured (Fig. 3). The principle of septoplasty of preserving the mucoperichondrium on one side needs to be observed in such a situation. The upper alar cartilages may need to be released to let the septal cartilage lie freely in midline to correct the crooked nose.

For a dislocated caudal margin of the septal cartilage, after freeing the septum and checking the position of anterior nasal spine which may need to be fractured to

midline, a columellar pocket is created and the septal cartilage is secured with adequate sutures. This shall correct the asymmetry of the nostrils as well (Fig. 8).

When the anterior septal angle is blunted and tip projection is affected, supplementing the caudal margin with appropriate cartilage graft and securing it between the two medial crurae gets the tip sharper (Fig. 10).

Understanding the anatomy of the cartilaginous nasal septum and its varied abnormal dimensions one may utilize septoplasty to achieve cosmetic advantage to the looks of the nose and thus to the face (Fig. 13).

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