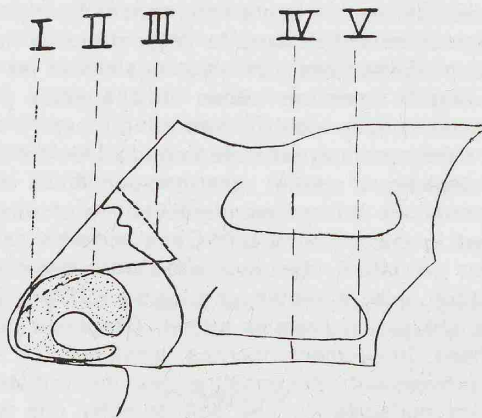


INTERNAL TRAUMATIC MALFORMATIONS OF THE NOSE SURGICAL TREATMENT

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The keystone of the treatment of internal traumatic malformations is a thorough knowledge of septal surgery. However, one also must be equipped to do necessary surgical procedures on the lobular cartilages, upper lateral cartilages, and nasal bones.

In order to localize areas of these deformities and specify their treatment, the five areas of the nose as taught by Dr. Cottle¹ will be used. (Fig. 1). Area One is the caudal end of the septum and the vestibule; Area Two is the valve area; Area Three is the area of the attic; Area Four is the mid-turbinate area; Area Five is the posterior turbinate area, or area of the sphenopalatine ganglion.



AREA ONE

In the vestibular area, the caudal end of the septum can be dislocated off of the premaxilla. There can be a reduplication of the septal cartilage. The nasal spine can be absent due to lack of development or can be hypertrophied. The spine may have sustained an injury causing it to be fractured to either side. There can be an overgrowth of the caudal end of the septum placing the lobular cartilages on a stretch and producing tension. The lobular cartilages can be hypertrophied or twisted.

The correction of Area One then resolves itself into surgery of the nasal tip and of the nasal septum.

The maxilla-premaxillary approach as described by Cottle² is used. The approach to the septum is through the right hemitransfixion. After the initial incision, the cartilaginous septum is pulled to the right by a hook, and the membranous septum is pulled to the left. This allows room to begin the dissection of the left muco-perichondrial flap by a sharp dissector such as

the Cottle knife. The operator cannot proceed unless he is absolutely sure that he is under the perichondrium. An anterior tunnel on the left is then made, above the premaxillary wing. Following this the base is undermined, and the spine and face of the alveolar portion of the maxilla are exposed. This requires careful removal of all periosteal fibers. The right pyriform crest is then exposed. At this point, the surgeon may want to correct a small internal os by mobilizing the pyriform crest, or the nasal spine may need to be fractured and placed in the midline. Now an inferior tunnel is made on the right under the premaxillary wing. Care must be taken to hug the bone in going down onto the floor of the nose by dissecting in an inferior caudal direction and then gradually going posteriorly. This procedure is now repeated on the left. Then, using a careful feel, cut and scrape technique the periosteal fibers are removed from the left premaxillary wing, and thus a complete mucosal flap on the left side is created since the previous anterior tunnel and now the inferior tunnel are connected. The cartilaginous septum is now dislocated over to the right by moving it off of the premaxilla. This makes it possible to correct any deformities of the caudal one-third of the septum.

The correction of a septum which is dislocated to either side of the premaxilla requires removing an inferior strip from the cartilage or the removal of a portion of the premaxilla by chisel or biting forceps. If the septum is acutely angulated so that the caudal end is projecting into the nostril, a vertical strip of cartilage can be removed in the area of the old scar or the angulation. This allows the cartilago to straighten into position. There should be a freedom of movement between the inferior border of the septal cartilage and the premaxilla and maxillary spine.

The septum which is straight but projects into the columella and thus places the lobular cartilage on a stretch, creates a tension nose. This may be corrected by shortening the caudal end of the septum and by trimming the anterior border, or dorsum. To accomplish this the soft tissues of the nose are elevated by way of the intercartilaginous route. The free portion of the upper lateral cartilages are separated from the septum, and a button end knife is used to perform a transfixion. The way is then prepared to trim the projecting septum.

There is always the possibility that the surgeon may wish to preserve the mucosal linings of the nose, for example, the projecting septal cartilage has stretched the mucosa to such a point that it has become atrophic. This can be corrected by doing a hemitransfixion and elevating small anterior tunnels on each side. The septum can be cleansed of all mucoperichondrium attached to its caudal and anterior portions by scraping it off with the Cottle knife. Intercartilaginous incisions are made and the soft tissues are elevated over the cartilaginous vault. The upper lateral cartilages are divided from the septum intraseptally. This allows one to trim the cartilage from all portions of the septum under direct vision without removal of any mucosa or cutting the mucosa.

Correction of the lobular cartilages is best done by using a slot incision along the caudal border of these cartilages. The skin and soft tissues over the cartilages are elevated by scissors and the cartilage is freed by continuing

the dissection into a previous intercartilaginous incision. The domes are marked by Methylene Blue using the eleven millimeter retractor. Utilizing the dome mark, the cartilage compound can be delivered by a straight hook placed at the dome and held on a Nievert hook. The cephalic margins can be equally trimmed and a new cephalic notch can be created at the dome. The domes should be preserved and not cut through if at all possible.

AREA TWO

Area Two, the valve area, is a most important one for breathing. Trauma in this area can result in a bending of the septum causing it to impinge against the upper lateral cartilages. This is best corrected by the premaxillary approach. Removing an inferior strip from the cartilage will often allow it to straighten out and thus remove the obstruction in the valve area.

The upper lateral cartilages can be "collapsed" against the septum in the tension nose. This is due to an overgrowth of the septal cartilage in the valve area which may have been stimulated by injury. Correction is done by trimming the anterior portion of the septal cartilage.

The os internum is sometimes obstructed by a pyriform crest or premaxillary wing. These may have been previously injured and osseous proliferation taken place. To care for this problem the premaxillary approach is used. Fracture of the bone by chisel or biting forceps places it into the proper position and relieves the obstruction.

A previous fracture of the nose may have caused the upper lateral cartilage or cartilages to impinge against the septum in the valve area. This is understood when one realizes that the upper lateral cartilage is attached by fibrous tissue underneath the distal portion of the nasal bone. Thus, an infraction of the bone would carry the cartilage inward towards the septum. This type of situation necessitates doing a medial osteotomy above the rhinion area, and then a lateral osteotomy. The latter is best done with saw, straight and curved chisel through an alar incision. The bony lamina are mobilized and placed lateral to the osteotomy cut; this opens the valve area.

Correction of the upper lateral cartilage which may be ballooned, returned or twisted, depends on good careful surgery of this area by the submucous route. Intercartilaginous incisions are done. Following this, the skin and subcutaneous tissues are dissected free over the cartilaginous and bony vaults. The upper lateral cartilages are divided from the septum either intraseptally or intranasally. Then using a curved dural hook to stabilize the cartilage, the mucous membrane is removed by sharp dissection using the Cottle knife. Any returned portion of the cartilage is removed. The cartilages can be trimmed and/or equalized. Grids or longitudinal cuts can be placed in the cartilage to break the spring and reduce the ballooning. To restore correct anatomical position the caudal end of the upper lateral cartilage should be five millimeters cephalic to the anterior-inferior corner of the septal cartilage.

AREA THREE

The attic area is high under the bony vault and thus has few malformations. A narrowing of this region may be due to a thick perpendicular plate of the ethmoid, septal process of the nasal bone, or septal process of the frontal bone. These can be corrected by elevating mucosal flaps high in the vault and removing the obstructing bone with the biting forceps. If the nasal bones are too narrow, they can be outfractured.

AREA FOUR

In Area Four trauma may have caused a deviation, obstruction, or impaction of the septum. An obstruction or anatomical deflection of the septum may be pressing against the turbinate, and can be relieved by decongestion of the mucosa. On the other hand, an impaction means the septum is pressing tightly against the middle or inferior turbinate and not relieved by decongestants.³ These deformities may not be discovered until the time of surgery. At this time, with the patient adequately sedated, the Epinephrine-moistened cotton applicator containing Cocaine flakes, decongests the mucosa and helps make the final diagnosis.

Surgical correction often entails the making of inferior tunnels. A complete elevation of the mucosa is made on the left. The mucosa on the right posterior to the bony cartilaginous junction is elevated. After adequate exposure, the vomer spurs or thick ethmoid plates can be removed. The strong, bonebiting scissors, the Cottle scissors, are useful in doing this procedure. A sharp spur can be removed without tearing if all accessible mucosa is elevated, and then the bone lifted away from the remaining mucosa. In this region, the surgeon will often find that a portion of the spur is paraseptal cartilage.

The turbinate bones frequently need mobilizing in order to produce a more adequate airway.

AREA FIVE

This area is important in that the septal deformity may be an impaction which is pressing in the region of the sphenopalatine ganglion. Surgery is the same as in Area Four. Often on the table after the impaction is removed, the patient will tell the surgeon that a pressure has been relieved.

In all cases, any bone removed from the septum is straightened and re-inserted at the end of surgery.

Thus, the surgery of internal malformations of the nose is dependent on a sound knowledge of septal surgery and surgery of the external nasal pyramid. The rhinologist must be able to correct the deformities of the lobule, the cartilaginous vault and the bony vault since they all are closely related to the septum and produce deformities.

LE TRAITEMENT CHIRURGICAL DES MALFORMATIONS TRAUMATIQUES DES FOSSES NASALES

Le traitement chirurgical des malformations traumatiques des fosses nasales dépend d'une connaissance de la chirurgie de la cloison et des structures environnantes. Afin de classifier ces malformations, les fosses nasales doivent être divisées selon Cottle en cinq aires:

- L'aire I est l'extrémité caudale de la cloison et du vestibule.
- L'aire II est l'aire de la ventilation.
- L'aire III est l'aire attique.
- L'aire IV est la région du cornet moyen.
- L'aire V est la région du ganglion sphenopalatin.

Dans l'aire I, la chirurgie est limitée à la correction de la partie inférieure de la cloison et de la pointe du nez. L'approche prémaxillaire est employée dans la chirurgie de la cloison et la chirurgie de la pointe est généralement conservatrice.

L'aire II demande la correction des déviations de cloison dans la région de ventilation. Les convexités et concavités des cartilages haut latéraux sont corrigées. De temps en temps la fracture des os nasaux est nécessaire avec le but de créer une bonne valve nasale. En cas d'obstruction des narines, l'aile prémaxillaire ou la crête pyriforme sont corrigées.

Les corrections des obstructions et impactions septales sont les interventions les plus fréquentes dans les aires III, IV, V. Dans certains cas la pyramide osseuse est enlevée et les cornets sont mobilisés.

Le rhinologue doit savoir diagnostiquer et corriger n'importe quelle malformation interne du nez. La correction consiste dans une combinaison de chirurgie de la cloison et de chirurgie de la pyramide nasale externe.

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