

## NEW THOUGHTS ON THE REPAIR OF THE CAUDAL AND ANTERIOR PARTS OF THE SEPTUM

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The major problem of surgery on the nasal septum is restoration of the caudal and anterior portion of the septal cartilage after loss by surgery, abscess, hematoma, or injury. In order to produce the desired post-operative result, I will describe the procedures which have worked best in my hands. I must confess that the title of this is misleading, none of these thoughts are new, but more an organization of ideas and methods learned during my association with Dr. Maurice Cottle, and my many colleagues in the American Rhinologic Society.

In 1948 (Fomon, Gilbert, Silver and Syrocuse), of New York described a method of restoring the anterior portion of the septum by a large cartilage implant which was pulled down by traction sutures into a columellar pocket. This was also known as the Galloway operation because it was taught by Dr. Tom Galloway of Chicago. This cartilage implant had the disadvantage of obliterating the membranous septum, and producing a stiff columella since it went between the medial crura.

A revised paper on the restoration of the septum was published in 1951 by Fomon, Bell, Berger, Goldman, Neivert and Schattner. They emphasized that to get good results it was often necessary to do a total reconstruction of the nose. To restore the ventral or anterior part of the nasal septum a cartilage implant was sutured to the upper lateral cartilages.

Cottle and Loring (1948) described various methods of repairing the caudal end of the septum by use of a one and two pieced cartilage implant using traction sutures through the anterior lip of the hemi-transfixion incisions. Lately, in some of his lectures, Dr. Cottle has advised using straight pieces of the perpendicular plate of the ethmoid to restore the caudal end of the septum.

In papers by Riggs (1957) and Sputh (1952), the complications and sequelae of septal surgery were outlined. From experience we know that gross changes of depression of the cartilaginous vault, widening of the nostrils, depression and widening of the nasal tip, and retraction of the columella all may occur on the operating table when there has been a total removal of the nasal septum. However, with a subtotal removal of the anterior and caudal portion of the nasal septum all of these things also may occur. Late changes after surgery may include production of a flaccid septum, atrophy, hypertrophy of the turbinates, ulceration, perforation, ballooning of the upper lateral cartilages. One of the complications which has occurred after septal surgery is the reforming of the deformity at the caudal end of the septum. This I believe

is due to scar tissue pulling the cartilage down so that it slips or subluxates to either side of the spine or the premaxilla. This produces moderate to severe breathing difficulties because of obstruction on the opposite side in the valve area. There also may occur twisting of the columella and roof. Because of these complications I have attempted to use methods which would restore the septal cartilage to its proper anatomical position.

## SURGERY

A subtotal removal of the nasal septum means that a large amount of the septum has been removed so that there is a loss of support from the roof of the floor of the nose. Thus, there is a piece of septal cartilage still attached to the right mucosal flap, but in most cases separated from the premaxilla and from the remainder of the septum by a space. These spaces once held cartilage which was removed in inferior and parallel (vertical) strips. Thus, this free piece of cartilage was allowed to swing to the midline.

To begin the repair a spine piece of autogenous bone is inserted under the pre-spine fascia, and this is held up by a base suture of chromic 00. After the packing has been inserted, pieces of bone and cartilage are inserted into the septal space. Then a tonsil suture of plain 00 cat-gut with a curved needle is passed through the anterior-caudal corner (sometimes called the A.I. or anterior inferior corner). It may be necessary to dissect back a small portion of the right mucoperichondrium. The needle is then cut off and both ends of the suture are passed through the eye of a straight needle. This needle then is carried past the dissected area on the left and through the roof and out the skin of the nose. It is called a septal dorsal suture. The cartilage can be further anchored by passing a suture through the caudal end of the septum and out the anterior lip of the hemi-transfixion incision. A through and through suture of chromic 00 is passed under the inferior border of the cartilage and forms a sling (the sling suture), thus keeping the cartilage from sinking and sub-luxating on either side of the pre-maxilla. The septal incision is closed by approximation with plain 0000 cat-gut. Further support may be necessary by using a suture which holds the anterior part of the septal cartilage to the upper lateral cartilages. Crushed cartilage is then placed on the roof through the inter-cartilaginous or the slot incision approach to the upper lateral cartilages.

When there has been a total removal of the septal bone and cartilage, it is imperative that repair of the anterior and caudal portions of the septum be done immediately. One of the best materials to repair this area is bone from the perpendicular plate of the ethmoid. A hole is bored in the bone with a Bard-Parker 11. Then a suture to the dorsum and a suture to the anterior lip of the incision are used to stabilize the implant. The hemi-transfixion incision is closed.

In cases of septal abscess or hematoma, bone from the ethmoid plate is used in the adult and posterior uninvolved cartilage can be used in the child. This can be inserted after the septal space has been drained. These patients should always be covered by antibiotics. In my experience, the end results have been gratifying.

In conclusion, a few surgical procedures are described that have been used in restoring the anatomy of the anterior and caudal portions of the septum.

These methods have helped prevent the sequelae of septal surgery after total and subtotal removal of the septum, and also prevented collapse of the nose after septal hematoma and abscess

### SUMMARY

A major problem of septal surgery is restoration of the caudal and anterior parts. The sequelae of septal surgery such as sagging or saddling of the cartilaginous vault, widening of the tip and nostrils, retraction of the columella all produce breathing problems, and occur if proper repair of the septum is not done. Another complication of septal surgery is sub-luxation of the cartilage to either side of the premaxilla to produce an obstruction in the vestibule or valve.

A method of anchoring the caudal end of the septum by sutures through the dorsum and anterior lip of the hemi-transfixion was described. A trans-septal sling suture helped to prevent subluxation.

When replacing the septum, ethmoid bone was recommended. It was held by a septal-dorsal suture and by a suture through the anterior part of the hemi-transfixion. Again, a trans-septal sling suture was used.

These methods of repairing the caudal and anterior parts of the septum helped prevent the sequelae of septal surgery, and were useful after loss of the cartilage support as in septal hematoma and abscess.

### REFERENCES

1. Cottle, M. H. and Loring, R. M., 1948: Surgery of nasal septum; new operative procedures and indications. *Ann. Otol. Rhinol. Laryng.*, 57, 705.
2. Formon, S., Gilbert, J. G., Silver, A. G. and Syrocuse, V. R., 1948: Plastic repair of the obstructing nasal septum. *Arch. Otolaryng.*, 47, 7-20.
3. Fomon, S., Bell, J. W., Berger, E. L., Goldman, I. B., Neivert, H. and Schattner, A., 1951: New approach to ventral deflections of the nasal septum. *Arch. Otolaryng.*, 54, 356-366.
4. Riggs, R., 1957: Complication of submucous resection. *Journal of the Louisiana State Medical Society*, 109, 361-365.
5. Spath, C. B. Jr. and Spath, C. B. Sr., 1952: Sequelae of septal surgery. *The E.E.N.T. monthly*, 31, 34-36.