

The Antero-inferior Premaxillary Approach to Surgery of the Nasal Septum*

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SUMMARY

The technique of operation for preservation of the cartilaginous septum of the nose is described in detail. There are several very good reasons for preserving the cartilage, among which are added stability of the nose, considerably improved function, and fewer complications.

In fact, this operation can be done with safety in young children. A few extra instruments are required and the technique requires some studying.

S. Afr. Med. J., 47, 49 (1973).

Cottle¹ has described this operation, using the descriptive term the 'maxilla-premaxilla' approach. He named the incision 'hemitransfixion' in order to indicate the operative detail required to perfect his technique.

There is no doubt that this anterior premaxillary approach to the septum is considerably superior to the standard Killian operation, for the following reasons:

1. The cartilaginous septum is largely preserved and thus the nasal framework retains its stability in the face of future trauma.

2. Preservation of the cartilage also protects and improves nasal function. Anterior valve action of the nasal vestibule depends on the retention of a firm septal wall to function efficiently. In the Killian operation this rigidity is lost, and it is this fact which explains why, after an apparently very successful Killian operation,

the patient returns complaining that there has been no improvement, rather his nasal breathing has become worse since operation.

3. Dislocations and other deformities of the anterior end of the nasal septum and premaxillary crests can be dealt with very much more easily.

4. This technique can be employed with absolute safety in children from the age of 6 years and upwards. The results in young children are particularly gratifying.

5. Late perforations of the septum never occur, while the risks of immediate perforation are reduced, and if these do occur, they can be dealt with most satisfactorily.

6. This approach offers the 'open sesame' for all rhinoplastic procedures, especially if one employs the conservative pyramid techniques as described by Cottle.

7. It offers an easier technique for the repair of all nasal perforations, and for the reduction of nasal cavities in atrophic rhinitis.

8. The initial incision is in skin, thus preserving the integrity of the nasal mucosa.

9. The very important group of late complications like saddle nose, broad nose, columella retraction, flapping septum, late atrophic rhinitis and perforation occur very seldom.

The disadvantages of this operation are that the operation time is prolonged, and new operation skills have to be learned. There is more bleeding, although this can be overcome by hypotension. Postoperative care is more meticulous, and nasal plugging has to be endured by the patient for an extra 2-3 days. Extra nasal instruments are required, and it may be advisable to

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employ some magnification with optical prisms or a loupe of about 2× magnification.

SOME ANATOMICAL CONSIDERATIONS

The premaxilla region features a fixed articulation, consisting of the caudal end of the septum splayed out like an inverted Y lying on top of the premaxilla, with a pair of lateral wings like an upright Y. There is a system of dense fibres binding the bone and cartilage (Figs. 1 and 2). To begin with, the field of operation

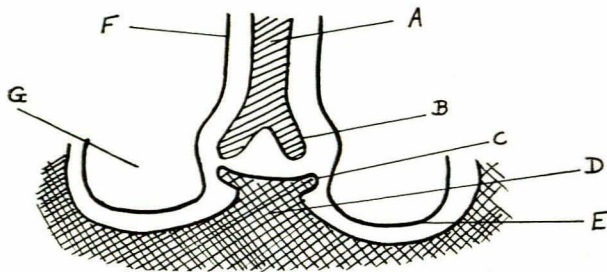


Fig. 1. Coronal section of anterior nasal area, showing (A) septal cartilage, with its lateral wing (B); maxilla (D), with its crest (C); (F) is the mucosa and (E) area of pyriform fossa.

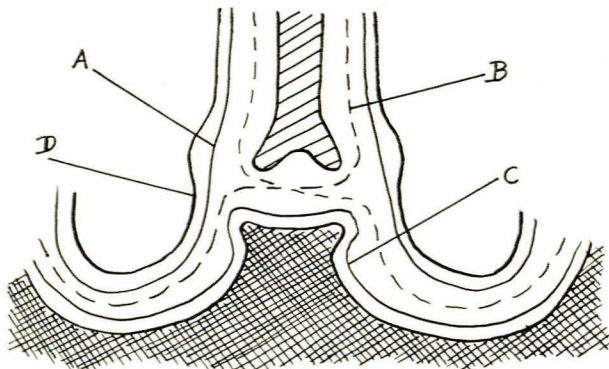


Fig 2. Chondromaxillary joint: (A) ipsilateral fibres; (B) cross-over fibres; (C) transverse fibres; (D) mucous membrane.

centres around the caudal end of the septum, the anterior nasal spine, the premaxillary bone, the maxillary crests and the pyriform fossae.

Before describing the technical details, it is well to know the following basic principles of the operation. Conservation and protection of nasal mucosa in all phases of the operation is mandatory. The initial incision is always in the skin of the nasal vestibule, and always on the right side for right-handed individuals. The mucous membrane is never dissected off the right side of the septal cartilage, thus conserving its viability. A system

of 3 tunnels is created, with 1 on the left side lying beneath the mucous membrane of the septum (tunnel 1) and the pyriform fossa (tunnel 3). Tunnel 2 is constituted by the pyriform fossa on the right side, beneath the mucosa. This tunnel enables the mucosa, which is attached to the septum on the right side, to be mobilized without laceration, for positioning of the septum in the midline. Pressure air function tests are very useful adjuncts to assess the success, or otherwise, of the surgeon's handiwork.

CLASSIFICATION OF SEPTAL DEFORMITIES

1. The smooth convex bend.
2. The bend with mild angulation.
3. The bend with sharp angulation, where the sharp angle lies impacted in the inferior turbinate. Correction of this type gives the most successful results.
4. S-bends in a vertical or horizontal plane.
5. Coupled with any of above, there may be spurs and crests.
6. Any of above may be further complicated by dislocation of the inferior septal edge.

The types of fracture dislocations involving septal cartilage and maxilla shown in Figs. 3 - 7, are known to occur in trauma to the nose.

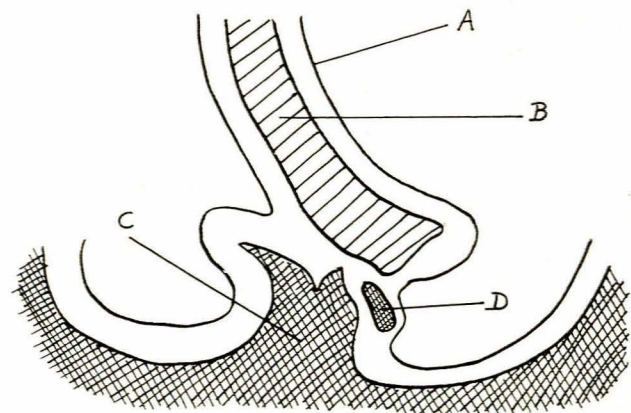


Fig. 3. Trauma to joint dislocation with splintering: (A) mucosa; (B) cartilage; (C) maxilla; (D) bone fragment.

THE OPERATION

All nasal vibrissae should be clipped, moustaches and beards should be ruthlessly shaved off. The area of the nose and face should be meticulously sterilized. The head should be flexed slightly at the neck.

Local or general anaesthesia may be employed. The American school use local anaesthesia where possible, as there is less bleeding. The writer prefers general anaesthesia with controlled hypotension. Using a Thudicum or spring-type speculum of about 25 mm the skin of the columella is pressed against the free edge of the nasal

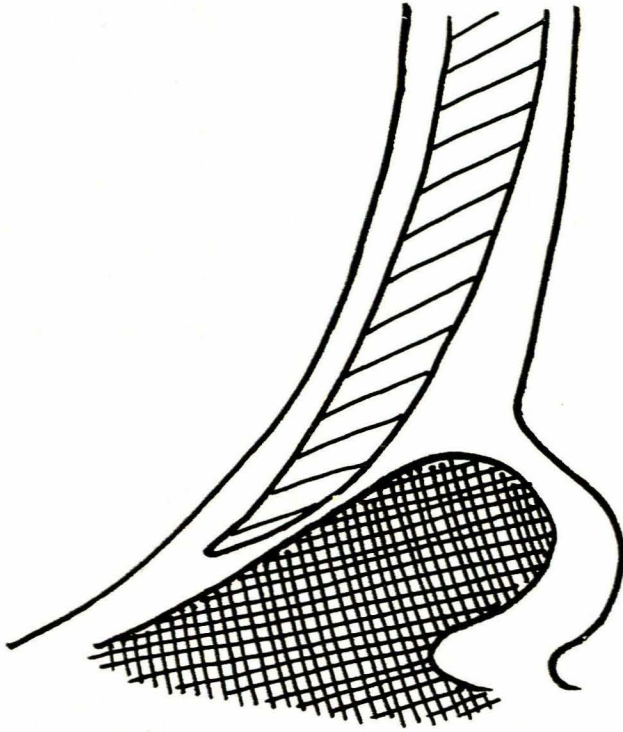


Fig. 4. Dislocation of the septal cartilage to the right of the maxillary bone which is partially displaced to the left and forms a rounded crest.

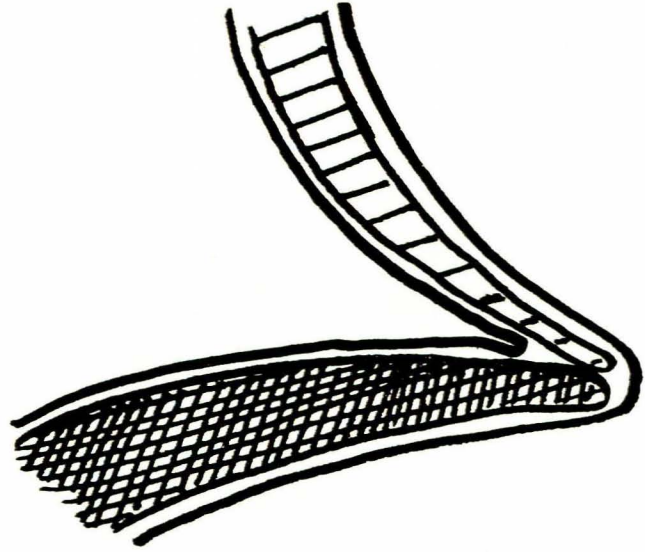


Fig. 6. Marked angulation of septal cartilage and maxilla, impacting into the inferior turbinate.

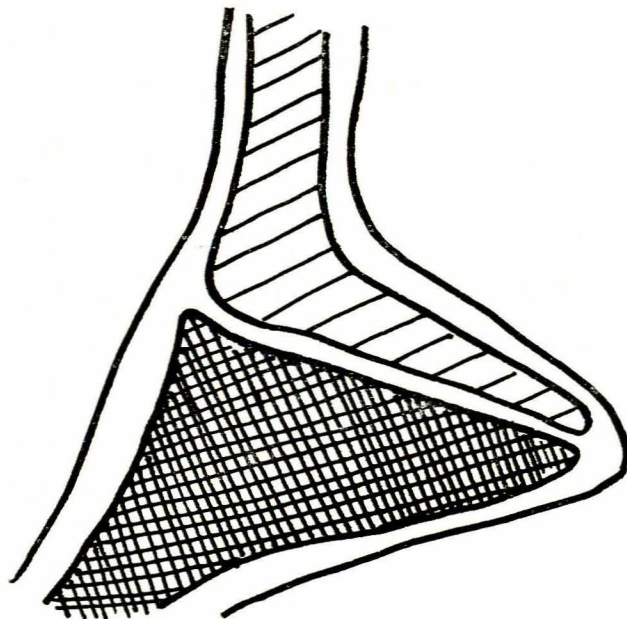


Fig. 5. Abnormal lateral projection of septal cartilage and maxilla forming a large crest, caused by trauma in early childhood.

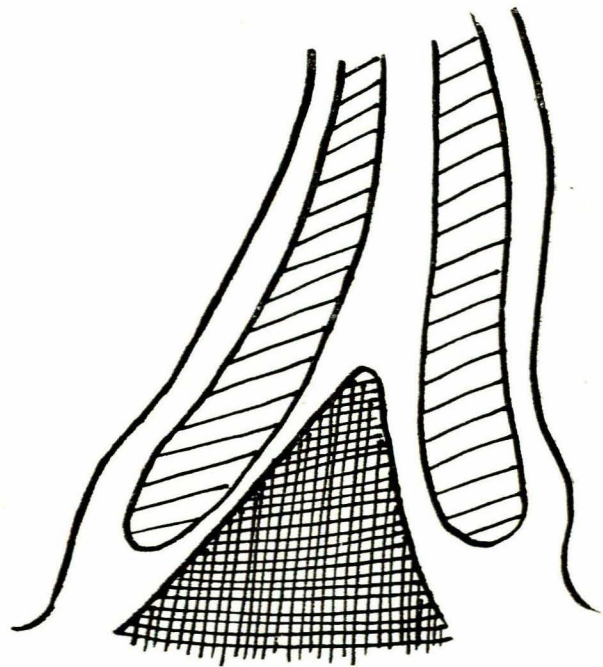


Fig. 7. Double or split septal cartilage embracing maxilla, presenting as a thickened septum.

septal cartilage. Keeping the speculum steady, 1 ml of local anaesthetic is infiltrated, then the incision is made on the right side of the septum about 3-4 mm caudal, or external to the mucocutaneous junction.

Use a No. 15 blade, or the rigid three-point knife like Lempert's 4 mm perforator. Make a full-length incision, going right down to cartilage. At this stage the operator

may encounter difficulty in getting into the correct sub-perichondral plane of the left side. Define the septal edge using small scraping movements and little incisions, going into the cartilage a little if necessary. Proceed slowly till the pearly grey cartilage comes through. Adjusting the speculum, continue this slow dissection on the left side of the septum, till the dissection suddenly becomes easier. This procedure can be considerably simplified by the use of a small blunt curved scissors of the Knapp type. The scissors should be used in opening and closing movements. This initial difficulty is due to fibrous tissue, and possibly also scar tissue. This step is laborious, because if the operator cannot find the correct plane, he cannot proceed with the operation from this point.

The Knapp scissors is now introduced in the posterior portion of the incision, and with opening and closing movements, the anterior portion of tunnel 1 is defined. This step can be simplified if the upper half of the upper lip is undermined from angle to angle, after some further local infiltration. The soft tissues must be freed from the maxilla. Change to a longer speculum for this procedure. The septomaxillary joint should be defined in the midline. For this procedure, sharp elevators like the Mackenty or even a scalpel may be used. The joint fibres are dense, and there may be scar tissue. Bone should be clearly exposed.

Having defined the left anterior tunnel (1), proceed to define the right inferior tunnel (2), dissecting the mucosa off the pyriform fossa of the right side. Note that when dissecting along the floor of the nose, the direction is caudal and posterior. Dissect medially up the maxillary spine up to the septal cartilage, but not off the cartilage. Bring the dissection beneath and around spurs and crests, if these are present, hugging the spine and coming up from the floor.

Proceed now to dissect tunnel 3 in the left pyriform fossa. Tunnels 1 and 3 should now be joined, and they should form one space beneath a continuous sheet of mucosa on the left side. Should large spurs or crests be present, then these can be chiselled off medially with

the mucosa attached, when the pieces can be dissected off the membrane to avoid tearing.

At this stage, insert a longer speculum and proceed to dissect the lower end of the septal cartilage off the bony maxilla, in its whole length. This procedure requires great care to avoid cutting through the mucosa of the right side.

The posterior end of the cartilage should then be dissected off the vomer and ethmoid, and posterior to this both sides of the bony septum are exposed and the removal of deformities of these bones can be effected in the depths of the nasal cavity. Maxillary spurs and crests can be dealt with now, using chisels or crushing forceps. Now that the cartilage has been freed inferiorly and posteriorly, it should be mobilized into the midline.

Bends or other deformities of the cartilage itself can be dealt with as follows: for straightening bends in the cartilage, horizontal strip incisions are made in the cartilage from the left side; these incisions should not penetrate the mucosa of the right side. For S-bends, parallel vertical incisions may be necessary. The septum should be straightened out, placed in the midline, and the nasal cavities should be inspected for any further obstructions.

The incision is now sutured with 00 catgut. A soft rubber breathing tube of about 7 mm diameter can be placed along the floor of the nose on one or both sides. The septum is further steadied in the midline with oily flavine gauze packs, placed superior to the breathing tubes. The packing should be left in for about 4 or 5 days, and should be removed slowly in stages.

The patient is advised not to blow his nose fiercely after the operation. One can expect oedema of the upper lip and columella, and final healing will take about 3 weeks. Patients should be forewarned of this delay in healing.

The operation can be varied as each case dictates, and it may not always be necessary to create all 3 tunnels.

REFERENCE

1. Cottle, M. H., Loring, R. M., Fischer, G. G. and Gaynon, I. E. (1958): *Arch. Otolaryng.*, **68**, 301.