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Reconstruction of the nasal septum and dorsum by cartilage transplants – autogeneic or allogeneic?

In the chair: E.H. Huizing (Utrecht)
Participants: I.S. Mackay (London), B. Petruson (Göteborg), G. Rettinger (Erlangen)

It is generally accepted that transplantation of cartilage is one of the most important procedures in nasal surgery. Cartilaginous transplants are used to reconstruct the septum, to correct the nasal dorsum, to reinforce the ala, to elevate the alar feet and to give the nasal tip more projection. Reviewing the literature it becomes clear that there is no general agreement about the techniques to be used in various pathological conditions. In particular there is no unamity as to the donor (autogeneic or allogeneic), the type of cartilage (site of origin) and the way of preservation.

It is the purpose of the present conference to elucidate and discuss possible differences in opinion that seem to exist among experts.
The participants are asked how they would treat the following pathological conditions:

1. Limited sagging of the cartilage dorsum after septal surgery.
2. Severe saddling and broadening of the nasal pyramid with loss of the anterior part of the nasal septum after trauma and infection.
3. An acute septal abscess in childhood.

CASE 1 - POSTOPERATIVE SAGGING OF CARTILAGINOUS DORSUM AFTER SEPTAL SURGERY

The case presented is a lady, aged 30, with a limited sagging of the cartilaginous nasal dorsum. She underwent septal surgery nine months ago for a septal deformity with functional complaints. Nasal breathing was restored but one to

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two months after surgery she noted a progressive sagging of the cartilaginous part of the nasal pyramid and some broadening of the lobule (Figure 1a, b).
All participants would treat this case by transplanting autogeneic cartilage into the dorsum. Conchal cartilage with perichondrium on both sides is preferred (M. and P.), septal cartilage without perichondrium may also be considered (R. and H.).
Rettinger would start by reopening the septal space in order to investigate whether the down and backward rotated septal cartilage can be brought back and fixed into its original position. He uses septal-columellar sutures as fixation to the prespinal tissues and septal splints (Figure 2). If still some sagging remains he will correct this by inserting crushed autogeneic septal cartilage through the hemitransfixion in the same procedure.
Huizing would act in a similar way. He also prefers to repair the septal dislocation before a cartilaginous transplant is carried out.
Mackay emphasizes that one might consider to remove in this case the relative hump that has been produced. This hump removal should then be followed by osteotomies in order to "complete", so to say, the septorhinoplasty.
Rettinger and Huizing point out that removal of a relative hump in a case like this will result into a lower pyramid and thereby to a nose that may become too long.

a b

Figure 1a, b. Sagging of the cartilaginous dorsum after septal surgery.

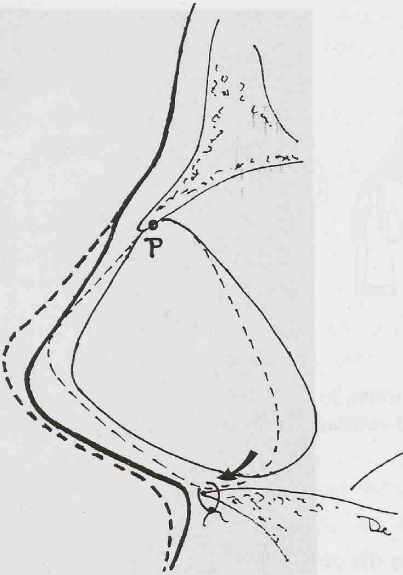


Figure 2. Repositioning of cartilaginous septum after mobilisation and fixation by a suture through the prespinal tissues. The dorsum is straightened and the retracted columella is corrected (P = pivot point).

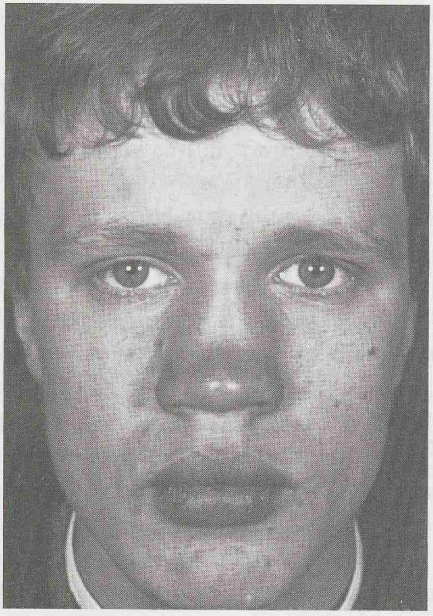
CASE 2 – SEVERE SADDLING AND BROADENING OF THE NASAL PYRAMID

The case presented is a young man, 23 years old. After nasal trauma and followed by infection in childhood he gradually developed this nasal deformity. The bony pyramid is low and wide, there is a severe cartilaginous saddling and broadening with loss of support of the lobule. The columella is retracted and the cartilaginous septum is almost totally missing (Figure 3a, b, c).

All participants agree that in this case extensive surgery, most likely in two stages is required: septal build-up, narrowing of the bony pyramid, and dorsal transplant. As an additional measure narrowing of the lobular base by means of wedge resections at the alar base may be considered.

Rettinger suggests to choose the external approach in this patient. Mackay and Huizing on the other hand are afraid that this route might be too hazardous for the already severely retracted columella. They prefer to reserve the external approach for patients with labioschizis and special deformities of the lobular cartilages.

There is no agreement about the type of cartilage by which the septum can best be reconstructed. Petruson is satisfied with the results which he obtains with conchal cartilage. He makes a silastic model of the defect to be reconstructed and then cuts the required amount of cartilage from the auricle by a posterior



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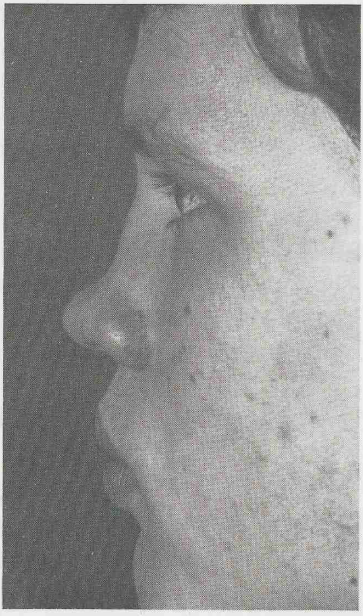

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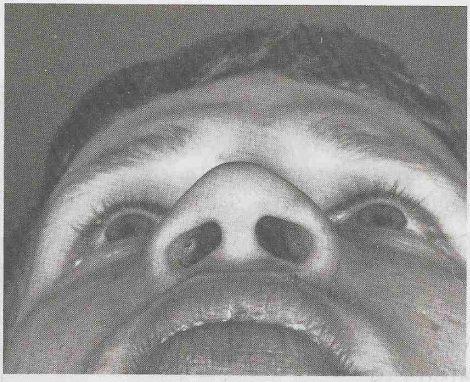

c

Figure 3a, b, c. Severe saddling and broadening of the nasal pyramid with loss of the cartilaginous septum after trauma and infection in childhood.

approach leaving the helix always intact. Convexities and concavities in the cartilage are straightened out by little cuts. His technique is illustrated in Figure 4a, b, c.

Others doubt whether it is possible to make a sufficiently straight and stiff septum out of conchal cartilage. Mackay would use cartilage from both ears. He fears an auricular deformity when too large a piece is taken from the periphery of the concha.

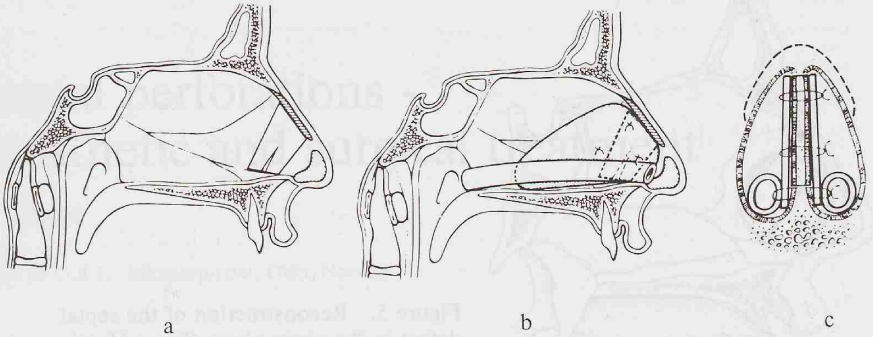

Figure 4a, b, c. Reconstruction of septum by autogeneic conchal cartilage. Fixation of Silastic ® splints and transseptal sutures (From Petruson, 1986).

Rettinger would use autogeneic rib cartilage (without perichondrium) both for the septal transplant and the dorsal transplant. However, when the bony septum is still remaining, he prefers to rebuild the anterior septum by an autogenous bony plate taken from the perpendicular plate. If the material available is insufficient, he will use allogeneic rib cartilage preserved in Cialit® 0.2% from his bank. However, he has found in a retrospective study that this material is resorbed in about 70% of the cases.

Huizing has the same experience, but he found reoperation only required in a few cases. Apparently sufficient stiffness of the septum remains.

Mackay and Petruson agree that also after using conchal transplants sufficient stiffness remains in a majority of cases.

Recently the risk of transmitting the H.I.V. virus by a transplantation of allogeneic rib cartilage was discussed by Davis (1988). Some authors doubt whether this virus will be killed by Cialit® (Dickson and Inglis, 1988), whereas others found it effective (Wilmes et al., 1987). It is agreed upon that donors will always have to be checked by serological tests that can also be done after death.

CASE 3 – ACUTE SEPTAL ABSCESS

The case presented is a boy, aged 9, with an acute septal abscess and high temperature after a nasal trauma five days ago. There is general agreement that a septal abscess has to be opened and drained under general anaesthesia the same day. A cephalosporin is to be administered parenterally.

Immediate reconstruction of the septal defect by a cartilage transplant is advocated as the best method to prevent the development of a saddle nose (Figure 5).

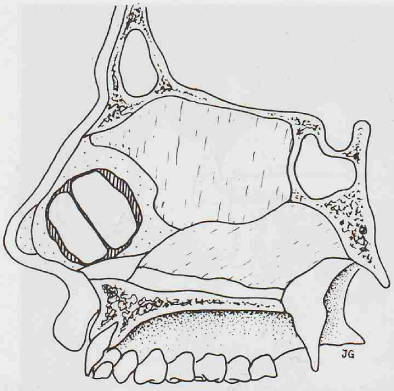

Figure 5. Reconstruction of the septal defect in the acute phase (From Huizing, 1986).

Petruson and Mackay sometimes decide to wait and see, Rettinger and Huizing stress the need for immediate reconstruction. They want to prevent that the mucosal blades grow together and retract in the healing phase. Sometimes they insert a new cartilage transplant some years later. Long-term follow-up studies have convinced them that septal reconstruction by transplantation in the acute phase greatly decreases the chances of a growth deformity of the nose.

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