

Transnasal microsurgical ethmoidectomy in nasal polyposis

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SUMMARY

A technique of microsurgical ethmoidectomy by a nasal route was devised for and applied to the treatment of nasal polyposis. A description of the operative procedure and the results in 30 cases with a 3-5 years of follow-up are reported.

The purpose of this paper is to report on the role of the transnasal microsurgical ethmoidectomy in the treatment of nasal polyposis.

It is generally admitted that the traditional operations have important disadvantages. The classical transnasal ethmoidectomy as described by Mosher (1912) and Halle (1915) is criticized for its narrow approach and inadequate control of a dangerous area, as well as the unsatisfactory radicality with frequent recurrences (Eckel, 1964).

The objections to the transmaxillary approach (Uffenorde, 1915) point to the excessive removal of bone, the maxillary fibrosis, the neuralgia and paresthesia of the infraorbital and dental nerves (Heermann, 1974). Both the transmaxillary and nasal approaches present the risk of cranial and orbital complications due to the operative rupture of the cranial and orbital walls of the ethmoid.

The experience with the microsurgical ethmoidectomy shows that this technique has no such disadvantages. More in general, it fits well in a medico-surgical plan based both on the surgical restoration of the air passage with minimal anatomic-physiological changes and on the prevention and treatment of recurrent rhinosinusitis.

MATERIALS AND METHODS

Forty patients were operated on between 1972 and 1978. Follow-up from 3 to 5 years was available in 30 cases of bilateral ethmoidectomy. Age was

between 27 and 76 years. The etiology was allergic, infectious, mixed or undetectable with the same frequency. The treatment was planned as follows: 1. Etiologic diagnosis and clinical staging, 2. Medical therapy (desensitisation, local and/or general cortison and antibiotics; sulphur inhalations et cet.), 3. Microsurgical ethmoidectomy and 4. Renewed medical therapy. Surgery was only considered a part of the medical treatment. Operation was considered indicated after a cycle of medical treatment, when the polyps produced nasal obstruction, and was regularly followed by the medical treatment.

Operative procedure

Positioning: the patient lies semisupine (40° to the horizontal) with the head lightly extended and rotated to the right. The surgeon sits at the right side of the patient.

Instruments: operative microscope with a 250 or 300 mm frontal lens; a long blade speculum with a screw stop, held by a snake flexible arm which is fixed to the patient's head by means of a head band (Figure 1); small nasal forceps, suction, suction-coagulation, drill with angled handpiece and long diamonds burrs, dissectors.

General anesthesia: oro-tracheal tube and light hypotension (90 mm Hg).

Operative steps: – If the septum is deviated or the nasal fossa is narrow, the cartilage septum is incised at its root and luxated to the other side.

–Middle turbinate resection: the middle turbinate is identified among the polyps, luxated medially and resected along its root. Bleeding may occur

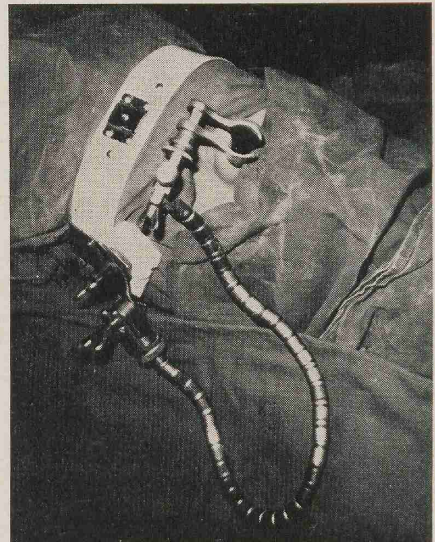


Figure 1. Long blade speculum held in place by a snake flexible arm, fixed to the patient's head.

from the turbinate tail or from an inadvertent lesion of the pterygopalatine artery.

– Exposure of the middle and posterior cells. Removal of the polyps and the incomplete, thin bony diaphragms of the cells is done in an antero-posterior direction and opens orderly the bulla cells and the middle and posterior cells. Note that the cells are grouped in an antero-posterior order and present their walls perpendicularly inserted to the lateral and medial walls of the ethmoid. They thus lie in an approximately frontal plane to the progressing instruments.

– Opening of the uncinate and agger cells is obtained by removing the uncinat process in a posterior to anterior fashion. The cells are limited anteriorly by the nasal process of the maxillary bone and laterally by the lacrimal bone. This step is often done with incomplete view.

– Control of the maxillary sinus, if necessary, is obtained by removal of the lateral wall of the ethmoid just above the superior limit of the lower turbinate. The sphenoid sinus may be opened by enlarging its ostium lying 10-15 mm medially and cranially to the tail of the middle turbinate. An additional communication between the antrum and the nasal fossa may be done with the classic opening on the inferior meatus. Removal of the anterior ethmoid affords a good drainage of the frontal sinus, which needs not to be opened.

The operation cavity, as it gradually opens up, is limited as follows:

- the medial wall is the residual root of the middle turbinate and the outer aspect of the lamina of the superior turbinate;
- the lateral wall is the os planum of the orbit and the residual ethmoido-maxillary wall;
- the superior wall is the ethmoidal roof corresponding to the floor of the anterior cranial fossa and lying at an higher level than the cribriform plate;
- the posterior wall is the anterior wall of the sphenoid.

The areas of surgical risk are the roof, the os planum and most of all, the retro-orbital extension of the posterior ethmoidal cells. When present, these cells extend between the anterior-lateral aspect of the sphenoid and the postero-medial sector of the orbit just medially to the pre-orbital portion of the optic nerve.

Blood transfusion is given according to demand. Nasal packing is left for 24 hours. On the second postoperative day the nose is irrigated with saline solution and the patient is discharged. Antibiotics are discontinued on the 5th postoperative day.

RESULTS

The results were evaluated according to the condition of the naso-ethmoidal mucosa: 1. normal mucosa, 2. hypertrophic mucosa without tendency towards polypoid degeneration, 3. recurrent polyps (table I).

Table I. Results in 30 cases (60 nasal fossae) of microsurgical ethmoidectomy for nasal polyps.

Nasal condition after:	1 year	2 and 3 years
1. normal mucosa	28 (93%)	26 (86%)
2. hypertrophic mucosa	2 (7%)	4 (14%)
3. recurrent polyps	0	0

Nine cases with a follow-up of five years six showed a normal, three a hypertrophic mucosa. Complications, in 4 cases, were a scar bridge between septum and inferior turbinate observed in four patients. All were cured by section and splinting.

DISCUSSION AND CONCLUSIONS

Operations on the nasal and ethmoidal cavities appear to be an ideal area for microsurgery burdened as they are by a narrow port of entry, deep situation and delicate or dangerous anatomy. Difficulties to the starting of this procedures are relatively small such a reappraisal of basic anatomy and the adaptation to the nose of the microsurgical technique. This includes the surgeon's sitting position, an autostatic nasal retractor, instruments of small size and traditional shape.

The results, despite the numerous and uncontrollable parameters, were better than with the classical transantral approach as used in the same institution (Bagatella and Staffieri, 1975) and warranted the further use of this technique.

The hyperplasic changes of the maximillary sinus, which may be felt to favor a transantral approach to the ethmoid, cleared away spontaneously after the ethmoidectomy. Yet, the nasal route permits to explore and clean the antrum through the middle and inferior meatus.

Vidian neurectomy, the value of which is still to be assessed in nasal polyposis (Krant, et al., 1979), may be associated to the ethmoidectomy by applying the electrocoagulation to the nasal end of the sphenopalatine channel (Guillen, 1978).

Conclusions:

1. Polyp removal is integrated in a program of prevention and treatment of rhinosinusitis and is indicated when the polyps are obstructive.
2. Microsurgical ethmoidectomy permits a safe and complete removal

with minimal changes of the nasal anatomy. It also seems to be a natural evolution of the traditional operations and an optimal introduction to the medical therapy. It restores the nasal fossae to a compensated condition where the medical care can be applied according to the need.

RÉSUMÉ

Une méthode d'ethmoïdectomie microchirurgicale par voie nasale fut mise a point et appliquée dans le traitement de la polypose nasale. La technique opératoire est décrite et les résultats sont évalués dans une casistique de 30 procédés avec un control de 3-5 ans.

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