Wedge Resection of the Middle Turbinate—An Adjunct to Functional Endoscopic Sinus Surgery (FESS)

S. K. Kaluskar, Dept. of E.N.T. & Head and Neck Surgery
Tyrone County Hospital, Omagh BT 79 OEB
N. Ireland

A simple technique of wedge resection of the anterior part of the middle turbinate allows a better access to the Osteo meatal complex (OMC) during FESS procedure. In post-operative period it facilitates proper ethmoid cavity care, mandatory to the success of the endoscopic sinus surgery. The technique keeps the middle turbinate away from the lateral wall of the nose and helps reducing the synechia formations. It also exteriorises the apparent and occult pneumatized middle turbinate. It is a simple and safe procedure to perform with minimal trauma to the middle turbinate without complications attributable to the technique. During functional endoscopic sinus surgery this technique affords improved exposure to the OMC in patients with high deviated septum, narrow nasal vault, a large concha bullosa and paradoxical turbinate.

Key Words

Sinus endoscopy/Post-operative/Ethmoid cavity/Adhesions.

INTRODUCTION

Successful endoscopic exenteration of sinus disease is primarily dependent on creating a contoured, easily accessible ethmoid cavity. This permits restoration of normal mucociliary clearance, leading to a marked improvement in symptoms in a large majority of patients. The two main techniques used are those of Wigand¹ and Messerklinger². The Wigand technique calls for a back to front approach to the disease, while Messerklinger deals with the anterior to posterior approach tackling the disease as it come across. It is well recognised that the post-operative period in FESS is as important as the operation itself.

The patient has to be followed up until the newly fashioned ethmoid cavity is well epithelialised and for this to happen a meticulous ethmoid cavity care is mandatory. More often than not the access to the end ethmoid cavity is limited due to the fact that the middle turbinate tends to lateralise cause adhesions between the middle turbinate and the lateral wall of the nose which is the commonest complication following FESS. In spite of meticulous atraumatic technique there remains some degree of trauma to the lateral surface of the middle turbinate during operation which add to the problem of formation of adhesions. These adhesions in turn impede both mucous drainage from sinuses and ventilation as well as access to the ethmoid cavity.

With this in mind we have slightly modified the Messerklinger technique to include a small wedge resection of the antero-inferior end of the middle turbinate, thus gaining wider access to the ethmoid cavity. This simple manoeuvre affords easy passage to the surgeon for proper post-operative care.

TECHNIQUE

Depending upon the extend of the disease, a routine Messerklinger² technique is performed using the intact, medialised middle turbinate as an important landmark. The wedge resection of the middle turbinate is usually performed at the end of the operation and only occasionally in the early part of the operation if the access to the osteo meatal complex (OMC) is very restricted.

A angled endoscopic scissor is used to make a cut in the anterior end of the middle turbinate in the postero-inferior direction (Fig.1). A second

cut is made joining the first from below upwards, thus freeing a small wedge of about one centimetre of the anterior end of the middle turbinate. Bleeding is usually minimal, and could be controlled by packing the nose for a few minutes. Occasionally a spurting vessel may need to be cauterised. The procedure can also be carried out under local anaesthesia following injection of 1% xylocaine with 1 : 200,000 adrenaline into the anterior end of the middle turbinate.

Fig-1

Lateral wall of the nose showing two cuts made in the anterior end of the middle turbinate for wedge resection

DISCUSSION

The anatomic boundaries of the ethmoid cavity are laterally the medial wall of the orbit i.e., lamina papyracea, superiorly skull base, i.e., fovea ethmoidalis and medially the lateral surface of the middle turbinate. Posteriorly it is related to the sphenoid, while antero-inferiorly it communicates with the nasal cavity. The ethmoid cavity essentially acts as a portal for drainage from the paranasal sinuses.

It is of paramount importance to maintain the patency of the ethmoid cavity. Various packing materials have been used from simple BIPP, finger glove packed with ribbon gauze to merocel pack in an attempt to keep the middle turbinate away from the lateral wall of the nose. Recently various sizes and shapes of sialastic splints to keep the middle turbinate away from the lateral

wall of the nose have been described. Even suturing middle turbinate to the septum have been tried which is a time consuming and cumbersome technique as sutures have to be taken high up in the narrow part of the nasal cavity. However, in author's experience packing with finger glove, merocel or splinting have not been found satisfactory as it causes considerable amount of discomfort and pain in the post-operative period. The synechia remains a major problem leading to stasis, reinfection and poor surgical outcome.

Partial resection of the middle turbinate is not a new concept. Wigand¹ routinely begins the

Fig-2

Left ethmoid cavity—Post operative one week. Crusts and blood clots in the cavity (MT- Middle Turbinate, S-Septum, IT-Inferior Turbinate, ET-Ethmoid Cavity, FR-Frontal Recess)

technique with a posterior excision of the middle turbinate. Stammberger³ and Kennedy⁴ advocate a vertical excision of the lateral half of the middle turbinate in cases of concha bullosa. LaMear et al.⁵ described partial (one half to two thirds) endoscopic resection of the middle turbinate and concluded that in 298 patients undergoing

endoscopic sinus surgery and followed for three years, there was a statistically significant decreased rate of synechia formations and closure of the antrostomy. However, we felt that excellent results could be obtained by simply resecting a

Fig-3

Right ethmoid cavity – Postoperative four years. Arrow-pointing Middle Meatal Antrostomy

wedge of the middle turbinate which would be a much less radical procedure (Fig. 2 and 3). As we use this technique almost routinely we find that a significant number of patients do contain conchal cell (a pneumatized middle turbinate) which is usually infected showing mucosal thickening and/or pus which otherwise was not suspected clinically or radiologically.

Stammberger³ has suggested that middle turbinate pathology may account for non specific headaches and/or facial pains and exteriorizing this occult conchal cell would eradicate these symptoms. None of our patients suffered any post-operative olfactory dysfunction or excessive crusting as a result of this procedure.

A correlation could be made between the mastoid and ethmoid cavity. Just as even a small mastoid bowl requires an adequate meatoplasty, an endoscopic ethmoidectomy must be permitted to drain and ventilate freely. Our experience shows that simple wedge resection of the anterior part of the middle turbinate achieves this aim and recommend its use as an adjunct to the technique of FESS.

References

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