

Middle Turbinate Fenestration Method: A New Technique for the Treatment of Olfactory Disturbance due to Chronic Sinusitis

Takaki Miwa, Naoki Uramoto, Toshiaki Tsukatani and Mitsuru Furukawa

Department of Otorhinolaryngology, Head and Neck Surgery, Kanazawa University, Graduate School of Medical Science, 13-1 Takaramachi, Kanazawa 920-8640, Japan

Correspondence to be sent to: Takaki Miwa, e-mail: mivataka@orl.m.kanazawa-u.ac.jp

Key words: endoscopic sinus surgery, middle turbinate fenestration method, olfactory cleft

Introduction

Sinusitis is a frequent cause of olfactory disturbance. The major mechanism of olfactory disturbance due to chronic sinusitis is thought to be nasal obstruction and blockade of odor molecules from reaching the olfactory mucosa within the nasal vault. Although other mechanisms of olfactory disturbance exist with chronic sinusitis, such as the degeneration of the olfactory epithelium caused by prolonged inflammation, they occur less frequently than conductive olfactory losses. Therefore, the prognosis for recovery of olfactory function with chronic sinusitis is not very bad with medical and surgical intervention. We developed a new surgical technique to obtain further improvement of olfactory function of patients with olfactory disturbance due to chronic sinusitis.

Surgical procedure

The basic strategy for treating olfactory disturbance due to chronic sinusitis is both the complete healing of sinusitis and maintaining air flow to the olfactory cleft. Recently, endoscopic sinus surgery (ESS) has become a common procedure in the treatment of chronic sinusitis. The basic concept of ESS is the maximal preservation of mucosa achieved by restoration of drainage and ventilation. This is the common concept for surgery of patients with an olfactory disturbance. Moreover, it is very important to treat the olfactory cleft. Polyps or polyp-like lesions in the olfactory cleft or superior meatus should be gently removed with a microdebrider to prevent adhesions to the nasal septum. It is also important to maintain airflow to the olfactory cleft, which often requires treatment of the middle turbinate. One method is to lateralize or totally remove the middle turbinate; however, sinusitis may recur by adhesion and narrowing of the middle meatus if this technique is employed. It is difficult to reconcile both the opening of the middle meatus and the maintenance of airflow to the olfactory cleft. We developed a new technique to solve this problem. A key feature of this new procedure is to open the middle turbinate wall widely in front of the anterior edge of the superior turbinate and to maintain airflow to the olfactory cleft via the middle meatus (Figure 1). We called this technique the ‘middle

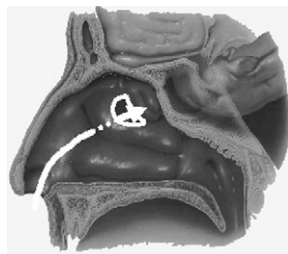


Figure 1 A diagram illustrating the MTFM method. The middle turbinate wall anterior to the superior turbinate was cut off with forceps.

turbinate fenestration method’ (MTFM). The actual procedure is as follows. First, lesions in the ethmoid sinus and medial to middle turbinate are removed as in the ESS method. Then the middle turbinate wall is opened by backward forceps in front of the anterior edge of the superior turbinate. The size of the opening is ~1 cm in diameter. Care should be taken not to make the opening too large, because it may cause the middle turbinate to become too fragile. The postoperative endoscopic result is shown Figure 2. Both superior turbinate and olfactory cleft can be seen through the new window from the middle meatus.

Results

Table 1 shows the improvement in olfactory threshold as measured by T&T olfactometer testing, a standard olfactory test used in Japan. Of the 14 patients who were treated by MTFM, 86% showed improvement in olfactory thresholds and two patients show no change. The improvement ratio for the MTFM method was high compared with that of the result obtained with our previous surgery (68%). The olfactory threshold in each patient is shown in Figure 3. There were some cases in which olfactory function decreased after

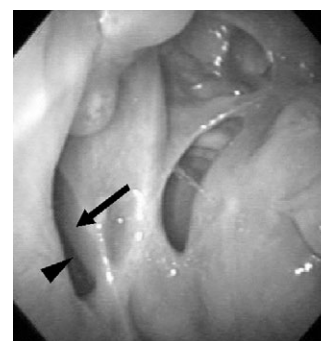


Figure 2 Fiberoptic finding of left nasal cavity 4 months after surgery. Both superior turbinate (arrow) and olfactory cleft (arrow heads) can be seen through the window.

Table 1 Postoperative change in olfactory function

	MTFM	Previous surgery
Marked improvement	8 (57%)	12 (34%)
Improvement	4 (29%)	12 (34%)
No change	2 (14%)	11 (32%)
Improvement ratio	86%	68%

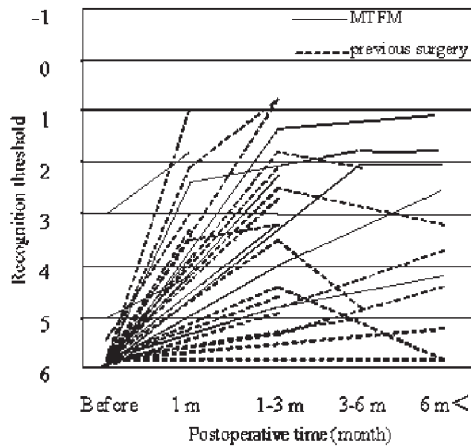


Figure 3 Pre- and postoperative olfactory thresholds for each patient. Olfactory function for MTFM patients shows improvement 3 months after surgery.

>3 months in our previous surgery, but in no cases did a decrement in olfactory function occur in late stages following MTFM.

Discussion

The most frequent cause of postoperative deterioration of olfactory function is recurrence of sinusitis. Adequate opening of the ostiomeatal complex is important for the prevention of recurrence, but it may cause closure of the olfactory cleft. With our new technique, airflow to the olfactory cleft is maintained through the middle meatus. The key points of MTFM surgery are as follows. The horizontal part of the lamella and anterior part of the middle turbinate should be left undisturbed so as to minimize the recurrence of sinusitis. Polyps originating on the septal side of the superior turbinate should be removed gently with a microdebrider to prevent adhesions between the superior turbinate and nasal septum.

In conclusion, olfactory disturbance due to rhinosinusitis is curable by surgery. We have developed new technique for these cases and obtained superior results for improved olfactory function in these patients. The most important point is 'don't give up hope for these patients' olfaction at first sight!'