

Surgical Management of Contact Point Headaches

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Introduction.—Contact point headaches are caused by contact between the nasal septum and the lateral nasal wall by a mechanism of referred pain involving the trigeminal nerve. Our goal was to investigate headaches caused by the contact between the septum and the superior turbinate or medial wall of the ethmoid sinuses and not the middle turbinate.

Materials and Methods.—A retrospective chart review was performed on patients who underwent septoplasty and sinus surgery for headache. The total number of patients who opted for surgery was 23. Only 12 patients met the criteria of having a contact point between the septum and medial wall of the ethmoid sinus, or septum and superior turbinate, which were demonstrated via CT scan of the sinuses. These patients underwent surgical intervention in order to relieve the contact points.

Results.—According to the same pain questionnaire given pre- and postoperatively, 83% no longer complained of headaches, while 8% had significant relief. Forty-one percent of our patients were previously diagnosed with migraines; 80% of these patients were successfully treated by surgery.

Discussions.—Contact point headaches and migraine without aura (MWOA) have similar symptoms (eg, photophobia, phonophobia, nausea and vomiting, pulsating nature). We believe contact point headaches should be considered in the patient with a diagnosis of MWOA headaches.

Key words: contact point headaches, sinus headaches

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The many possible causes of headaches make their diagnosis and treatment very challenging to the medical community. The most common sinonasal cause of headaches has traditionally been viewed as sinusitis. In 1980, middle turbinate headache syndrome was described by Morgenstein and Krieger.¹ They described contact between the middle turbinate and septum causing headaches secondary to referred pain. Most of the patients who underwent a middle turbinectomy and septoplasty felt relief from their symptoms. It should be noted that most of their patients were diagnosed with migraine without aura (MWOA) headache

and treated medically without success before the pain was surgically relieved. Although much attention has been paid to contact between the middle turbinate and septum, contact between the superior turbinate and septum or medial wall of the ethmoid cells and septum has not received much attention as a distinct cause of headaches. We present our experience with 12 patients with superior turbinate and/or ethmoid contact headaches who were treated surgically.

MATERIALS AND METHODS

This research project was approved by the New Jersey Medical School Institutional Review Board and that the requirement for written informed consent from patients was waived because of the retrospective nature of the investigation.

A retrospective chart review of patients who underwent endoscopic sinus surgery and septoplasty for contact point headaches was conducted. Patients complaining of headaches had a history and physical examination performed upon presentation to a private

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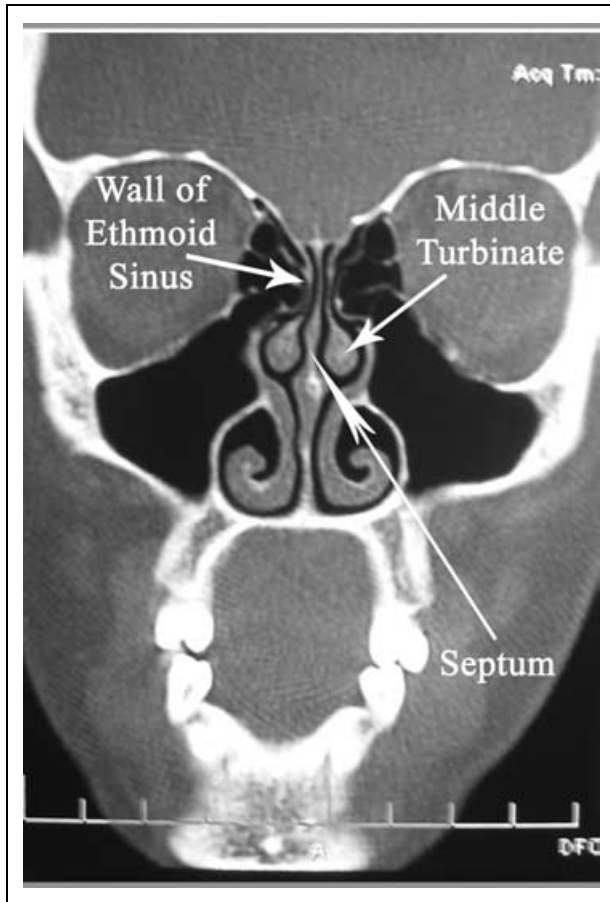


Fig 1.—This is a CT of a patient who does not demonstrate any contact between the septum and the lateral nasal wall. Please note the arrows showing the medial wall of the ethmoid sinuses, the middle turbinate, and the septum.

office setting. As a part of their history, patients were given a questionnaire to systematically and in a standardized reporting format collect information about their symptoms. Based on their histories and physicals, a cohort of patients then had a computed tomography study of their sinuses performed without any decongestion to investigate possible sinonasal causes of their headaches. Figure 1 represents a CT of a patient with no contact points between the septum and the lateral nasal wall. Those who demonstrated contact points between the septum and superior turbinate and/or medial ethmoid wall on CT scan (Figures 2 and 3) underwent surgery to relieve these pressure points. Contact point between the septum and the medial wall of the ethmoid air cells is possible without middle turbinate involvement if the posterior ethmoid cells are the ones

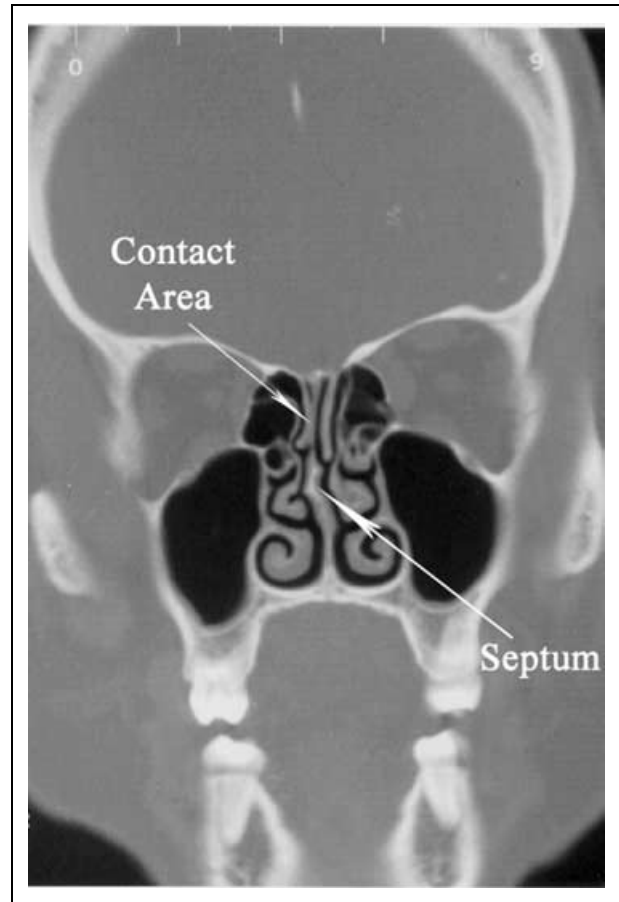


Fig 2.—Shown above is a coronal CT of the sinuses. Note that this patient demonstrates contact between the superior turbinate and the septum on the right as shown by the arrow. There is also no contact between the middle turbinate and the septum.

making contact with the septum. After the surgery, each patient completed the same questionnaire that was given to them preoperatively in order to assess the surgical outcome relative to headache relief.

The total number of patients who opted for surgery was 23. Since this was a retrospective chart review, the total number of patients who presented to the office with complaints of headaches is not known. Patients with evidence of sinus disease that could be the cause of their complaints were excluded even when contact points could be identified. Only patients who had contact between the septum and superior turbinate and/or medial wall of the ethmoid air cells were included. The only exception was when the superior aspect of the middle turbinate was being pushed over by the ethmoid air cells and the superior turbinate

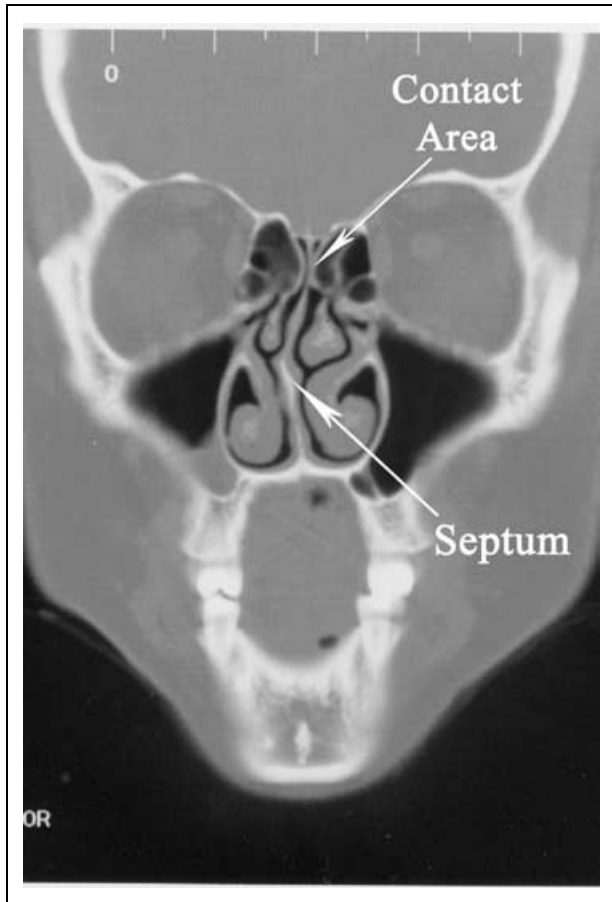


Fig 3.—Shown above is a coronal CT of the sinuses. Note that this patient demonstrates contact between the medial wall of the ethmoid sinus and the septum on the left as shown by the arrow. There is also no contact between the middle turbinate and the septum.

or the medial wall of the ethmoid air cells making contact with the septum as well. This contact could not be seen during the in-office endoscopic nasal examination due to the fact that any contact between the ethmoid air cells or superior turbinate and septum was in the superior aspect of the nasal cavity and the examination of this area was not tolerated by the patients. It should also be noted that for the same reason, it was felt that decongestion of this area would not be effective since the decongestion sprays may not reach that area. Ten patients did not meet this criterion and were excluded. Only patients followed for at least 2 months after the surgery were included in the study. There was only one patient who was excluded because he did not follow up for at least 2 months, and he did not complain of any pain postoperatively in his limited follow

up. However, he was excluded from the study in order to assure good length of postoperative follow up in the study. Only 12 of the original 23 patients met these criteria. Out of these 12 patients, 3 had contact between the superior turbinate and septum (patients number 2, 6, and 8).

The surgery included a septoplasty, middle turbinectomy, and medial ethmoidectomy in all patients. If the superior turbinate showed contact, it was either removed or lateralized. The septoplasty was performed first, followed by a middle turbinectomy in order to gain medial access to the ethmoid cells. Next, the ethmoidectomy was performed, after which the medial ethmoid wall was lateralized using a Freer elevator. In some patients, a sickle knife was used to incise the inferior anterior aspect of the ethmoid sinus delineating the border of medial and lateral ethmoid cells. An ethmoidectomy was performed medial to this line. If the superior turbinate was causing the contact, then it was fractured laterally at this point. Patients who had inferior turbinate hypertrophy or stenosis of the maxillary ostium underwent an inferior turbinectomy and maxillary antrostomy, respectively. Although some patients did undergo a maxillary antrostomy if the maxillary antrum was noted to be stenosed, it is not felt that this decreased their headaches since no sinusitis was noted on CT scan as read by a radiologist, and the pain described by the patients was not over the maxillary sinus. It should be noted that once the patients were in the OR and under general anesthesia, the area between the septum and ethmoid sinuses, and the superior turbinate was visualized and contact was noted, while contact between the septum and the middle turbinate or the inferior turbinate was noticed not to exist.

RESULTS

The onset of the symptoms ranged between 2 and 32 years (8 years average) while the follow up period was 2–34 months (mean of 13.75, median of 12, and mode of 5 and 21 months). Table 1 summarizes the preoperative complaints of our patients. It is important to note that the rate of nausea/vomiting, photophobia, phonophobia, and a pulsating nature of headaches was 58% or higher. Of these patients, 42% were previously diagnosed with migraine headaches by other

Table 1.—Results of Questionnaire Preoperatively

PRE-OP									
Pt.	Duration	Frequency	Pulsating	Severity	N/V	Photophobia	Phonophobia	Location	Migraine (dx)
1	5–15 min	4/month	No	9	No	No	Yes	Entire head	No
2	2–4 days	2–3/month	No	8	Yes	Yes	No	Frontal, eyes	No
3	10 min	3/day	Yes	7	No	No	No	Frontal	No
4	Hours to days	15/month	Yes	7	Yes	Yes	Yes	Eyes	Yes
5	2–3 days	1–15/month	Yes	10	Yes	Yes	Yes	Frontal, eyes	Yes
6	Few days	15/month	Yes	8	No	Yes	Yes	Frontal, eyes, cheeks	No
7	All day	Every day	No	8	No	Yes	Yes	R side, R eye	No
8	1–2 hr	Every day	Yes	6	Yes	Yes	Yes	Frontal, eyes, sides	Yes
9	All day	Every day	No	10	Yes	Yes	Yes	Frontal	Yes
10	1 hr	Every day	Yes	10	Yes	Yes	No	Periorbital b/l	Yes
11	All day	Every day	Yes	9	Yes	No	No	Frontal	No
12	1–2 days	20 days	Yes	8	No	Yes	Yes	On top of L eye	No
Average			67% (Y)	8.33	58% (Y)	75% (Y)	67% (Y)		41% (Y)

physicians. Out of these patients, 80% did not meet the criteria for migraine headaches since the headaches were not episodic and were reported to occur 15 times a month or every day. The patients rated their pain severity on a scale between 1 and 10 (10 being the worse pain), 8.33 on average (range of 6–10). Table 2 shows our postoperative results. Ten patients (83%) had no headaches postoperatively. One of the patients

(8%) had significant relief of his symptoms, significant relief being described as a decrease in severity, duration, and frequency by 67%. Patient number 4 had a significant decrease in duration (4 hours/day to 1 hour/day), frequency (15 times/month to once/month), and severity (7–2). Patient number 9 had only mild decrease in severity (10–8). Therefore, there was no significant relief of symptoms in this patient. It is also

Table 2.—Results of the Pain Questionnaire Postoperatively

POST-OP									
Pt.	Duration	Frequency	Pulsating	Severity	N/V	Photophobia	Phonophobia	Location	F/U (Months)
1	None								3
2	None								2
3	None								25
4	1 hr	1/month	No	2	No	Yes	Yes	Eyes	12
5	None								34
6	None								7
7	None								5
8	None								21
9	All day	Every day	No	8	Yes	Yes	Yes	Frontal	11
10	None								21
11	None								5
12	None								19
Average			0% (Y)	0.83	8% (Y)	17% (Y)	17% (Y)		Average 12.71

important to note that there was an overall decrease in pulsating nature of headaches (67% to 0%), severity (8.33 to 0.83), vomiting (58% to 8%), photophobia (75% to 17%), and phonophobia (67% to 17%). The patient who was previously diagnosed with migraine headaches and had episodic headaches had a complete relief of symptoms. Of the four who were previously diagnosed with migraine headaches and did not meet the diagnostic criteria due to the constant nature of their headaches, two had complete, one had a significant decrease, and one had no significant change in symptoms. It should be noted that the patients who reported relief, did so 1 week after surgery.

One interesting case is patient 11 who is a 70-year-old female, who was previously diagnosed with contact point headaches and had undergone a middle turbinectomy by another otolaryngologist. The patient's symptoms however did not subside. The pain could only be controlled by using Oxycodone. She presented complaining of persistent headaches all day everyday, rated 9 on a scale of 1–10, pulsating in nature, accompanied by nausea and vomiting but no photophobia or phonophobia. Figure 4 shows the results of her CT scan after the initial surgery. It can be noted that the patient still has contact between the medial wall of the ethmoid and the septum. When this was noted, she underwent an ethmoidectomy where the medial ethmoid air cells were removed, the medial ethmoid wall was preserved and fractured laterally in order to relieve the pressure point. Postoperatively, she did not complain of any more headaches.

None of our patients had any complications related to their surgery including visual changes, bleeding, or CSF leak. It should be noted that none of the patients consented to postoperative CT scans in order to show the relief of contact points.

DISCUSSION

Middle turbinate contact headaches are thought to act by referred pain through the first and second branches of the trigeminal nerve.^{1–6} These nerves also supply the sensation to the superior turbinate and ethmoid cells. V2 sensory fibers travel through the sphenopalatine ganglion and innervate the middle and inferior aspect of the nasal septum and lateral wall. V1 innervates the superior anterior aspect of the septum

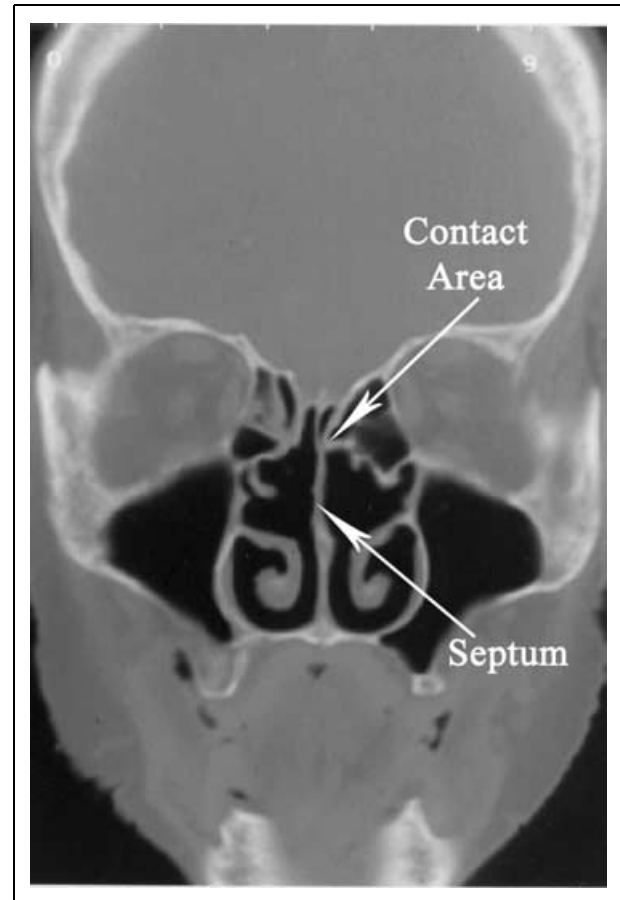


Fig 4.—Shown above is a coronal CT of the sinuses. This patient has had a resection of the middle turbinate on both sides in order to relieve headache symptoms, however, there is persistent contact between the medial wall of the ethmoid and the septum on the left.

and the superior aspect of the lateral nasal wall including the ethmoids. Therefore, while middle turbinate contact headaches are believed to be caused by referred pain through V2, contact in the superior aspect of the nasal cavity is jointly carried by VI and V2 fibers. Stammberger and Wolf felt that mucosal contact could cause headaches through substance P (SP) which is released to the nasal mucosa.^{5,6} As well as being a neuropeptide, SP is a vasodilator and probable mediator of pain. By showing that normal mucosa has a higher concentration of SP than chronic hyperplastic mucosa or polyps, they theorized that contact between mucosal surfaces in the nose would result in more pain than chronic inflammation.⁵ This phenomenon has been demonstrated with contact point between the superior turbinate and the septum in three patients by Clerico.⁷

By placing pressure on the superior aspect of the septum using a probe in the awake patient, pain was elicited at the medial and lateral canthus.⁵ Pressure on the superior turbinate can cause pain along the frontal region, medial canthus, eye, zygoma, and ear, while pressure on the ethmoids can cause pain at the inner and outer canthus, eye, as well as lacrimation and photophobia.⁵ These pains are believed to be carried by the trigeminal nerve.⁵ All of our patients complained of pain at the periorbital region, eye, or frontal area which coincides with the pain felt when these areas had pressure placed upon them. It is important to note that all these patients were shown to have these contact pressure points in those areas preoperatively according to the CT scans.

Forty-two percent of our patients were diagnosed with migraine headaches. In these patients we had an 80% success rate. Clerico et al diagnosed 17 patients with contact point headaches who were previously diagnosed with neurologic headaches and achieved 82% success rate.⁸ Goldsmith had a similar experience.⁴ Our patients demonstrated the following symptoms which have also been described for migraine without aura by the IHS: headaches lasting 4–72 hours (58%), nausea and/or vomiting (58%), pulsating (67%), moderate or severe intensity (100%), photophobia (75%), and phonophobia (67%).⁹ Lending more evidence to the theory that patients with contact point headaches can be misdiagnosed with migraine headaches is a work by Rowbatham who transected CN V (trigeminal nerve) in three patients diagnosed with migraine headaches with all of them reporting relief of their symptoms.¹⁰ Harris injected the Gasserian ganglion with alcohol in 29 patients; 19 were completely cured, 5 were much improved, and another 5 experienced temporary relief.¹¹ Penfield achieved temporary relief of headache by injecting novacaine in the Gasserian ganglion of two patients.¹² This brings into question whether those patients who had relief of their symptoms after CN V function was curbed actually had migraines, or whether they had contact point headaches which were relieved once the nerve responsible for carrying the referred pain was no longer functioning. In fact, the IHS states that before a diagnosis of any neurologic headache is made, secondary causes, which included sinonasal ones must be investigated.⁹

MWOA should be a diagnosis of exclusion since, unlike sinonasal causes of headaches, no definitive test exists to diagnose it.

Lending evidence to our belief that contact in the superior aspect of the nasal cavity is significant in patient 11 who had persistent headaches after undergoing a middle turbinectomy elsewhere. This reveals that by not examining the superior aspect of the nasal cavity, and only removing the middle turbinate to relieve contact in that aspect of the nasal cavity, significant contact points can be missed resulting in persistent headache symptoms.

Surgical management of contact point headaches has shown good success rates. Ramadan reported a 60% improvement rate.¹³ Parsons reported a 91% improvement in the intensity of HA in the patients they operated upon.¹⁴ Clerico et al showed that 76% of their patients reported a decrease of 50% in pain after the operation.⁸ Chow reported his success rate to be 82%.¹⁵ Out of the five patients operated on by Anselow-Lima, four had complete relief while one reported significant improvement.¹⁶ Morganstein and Krieger showed an 89% success rate with surgical management of contact point headaches.¹ Our patient population is different from the studies given above since we selected out patients with contact at the superior aspect of the septum and the lateral nasal wall, not the middle turbinate and the septum. Our results, however, are comparable, with 83% reporting complete relief and another 8% reporting at least 67% improvement, giving a success rate of 92%. In the two patients who had persistent headaches, one who had reported a pulsating nature and nausea/vomiting, no longer had this complaint postoperatively.

It should be noted in our study that there were no controls with which to compare the patients with headache. The incidence of contact points of the septum and superior turbinate and/or medial ethmoid wall has not been documented in the general population.

In our series we felt that the use of CT scan would be enough to make the diagnosis. As can be seen in Figure 3, the nasal septum and the superior aspect of the middle turbinate, which is being pushed medially by the ethmoid sinuses, are clearly making contact. Figure 2 represents contact between the superior turbinate and the nasal septum. The goal of surgery

was to relieve these contact points as shown in Figure 3. Other authors have also used CT scan to help make the diagnosis of contact point headaches between the middle turbinate and the septum.^{2,4,7,8,13-16} Therefore, if there was no contact demonstrated between the septum and middle turbinate or the inferior turbinate on CT scan, then the patients should not have contact points there. In our study we excluded the patients who demonstrated contact between the septum and the middle turbinate on CT scan to ensure that contact between the middle turbinate and the septum was not the cause of the headaches. This was reaffirmed by an endoscopic nasal examination.

CONCLUSION

We believe that contact point headaches can be caused by contact between the septum and medial ethmoid wall and/or superior turbinate. The mechanism of this pain is referred pain involving the trigeminal nerve. These headaches can appear to be MWOA headaches due to similarity of symptoms. This is why we along with the IHS believe that any patient who presents with these symptoms should have possible sinonasal causes of their headaches investigated before a diagnosis of migraines is made.⁹ The use of sinus CT scans can help diagnose this entity, and surgical management can be used to alleviate the headaches.

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