Facial Pain and Intranasal Contact Pressure Zones

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Abstract

Background: Patients with facial pain are commonly diagnosed as suffering from sinusitis and many of these patients do not have sinus disease and the pain can be attributed to other causes.

Aim: To provide evidence by therapeutic trial whether mucosal contact pressure zones do cause facial pain and headache,

Patients and methods: Clinical trial of Twenty four patients were complaining of facial pain or headache of at least moderate severity mucosal contact pressure zone(s) between middle or inferior turbinate and nasal septum and no evidence of sinus infection were included in this study which was carried out at Tikrit teaching hospital and private hospital by senior auther, during two years period from December.2007_december 2009 were visible endoscopically, and no evidence of sinus infection. All patients underwent initial treatment with topical nasal steroids for at least 6 weeks. Patients who failed to respond, or who only had partial response to topical nasal steroids, were offered surgery designed to eliminate the mucosal contact pressure zone. Surgery consisted of either septoplasty, subtotal resection of the turbinate, or both septoplasty and turbinate reduction. Patients followed up for between 6 months to one year

Results: Facial pain and headache were successfully relieved in 20/24 (83%) cases. Of the four failures, one had undiagnosed sphenoidal sinus infection which became apparent during follow-up nasendoscopy.Two patients were depressed. One patient persisted with pain and headache for unknown reasons.

Conclusions: The technical success rate of treatment of headache and facial pain in eliminating mucosal contact pressure zones was 100%, but this does not automatically translate into a 100% success rate in relieving symptoms.

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Introduction

The diagnosis and management of facial pain continues to pose a great challenge to clinicians even though it is a relative common problem [1]. The idea that intranasal abnormalities can cause facial pain and headaches, even in the absence of sinus infection, was proposed by Sluder (1918) and he put forward the concept of mucosal contact pressure zones, particularly involving the middle turbinates and septum, as one cause of headache. Fairley et al, 1992 and the earlier work of Harold Wolff and colleagues (Ray and Wolff, 1940; Wolff, 1943) show that the nasal mucosa is sensitive to pressure stimulation, and that the middle turbinate is more sensitive than other areas, but this was in healthy volunteers [3,4,5]. More recently Heinz Stammberger and other nasal endoscopists have emphasised the importance of nasal mucosal pressure contact zones, not only as a cause of facial pain and headache, but also as the pathophysiological basis of nasal polyp formation, and stagnation of mucociliary clearance leading to subsequent infection in the sinuses[6].

Aim Of the study:To provide evidence by therapeutic trial whether mucosal contact pressure zones do cause facial pain and headache .

Patients and Methods

Aprospective study, carrried out on 24 patients, with facial pain were treated with mediacal or/ and surgical .the operation were done under general anesthesia, at Tikrit teaching hospital and private hospital by senior auther, during two years period from December.2007_december 2009. The diagnosis was based on history of the pain including exact location and radiation, quality, frequency ,duration of pain, nasal obstruction, congestion, rhinorrhoea and physical examination by anterior rhinoscopy , rigid nasal endoscopy .Plain paranasal sinus x-ray and paranasal sinus (coronal and axial) CT scanning(in all patients) done preoperatively.

Criteria for selection of patient:

1. Complaining of facial pain or headache of at least moderate severity (Grade 2 or 3 on a scale from 0 - 3; 0 = none, 1 = mild, 2 = moderate, 3 = severe)
2. Mucosal contact pressure zone between middle or inferior turbinate and nasal septum visible on rigid endoscopy
3. No evidence of sinus infection[1].

One hundred ten out of 146patients scored 2 or 3 (moderate to severe) for either headaches or facial/eye pain on their first attendance. Of these, 86 had endoscopically documented mucosal

contact pressure zones, 65 of which were involving the nasal septum. 35 of these had evidence of sinus infection (history of purulent discharge, positive antral washouts, radiological evidence or rhinoscopic evidence of pus or inflamed mucosa in the middle meatus). Three of these within trigeminal neuralgia, leaving 27 eligible for the study. three of these were assessed and given medical treatment, but then lost to follow-up. This left 24 patients fulfilling all the criteria in whom follow-up data was available and Preoperatively in all cases were characterized by nasal endoscopy and paranasal sinus CT scanning. (See figures 1,2,3,4)

Medical treatment: All patients underwent initial treatment with topical nasal steroids. In most cases this consisted of Betamethasone drops in the head down and forward position, twice dialy for at least 6 weeks. In some cases Beclomethasone aqueous spray was used, again for at least 6 weeks.

Surgical treatment: If a good response was obtained to medical treatment, the patient was given the option of titrating the dose down against the symptoms, or opting for surgery to try and effect a permanent cure. Patients who failed to respond, or who only had partial response to topical nasal steroids, were offered surgery designed to eliminate the mucosal contact pressure zone. Surgery consisted of either Septoplasty, Subtotal reduction of turbinate or Septal surgery and subtotal turbinate reduction.

In each case, surgery was done specifically for the indication of pain relief, not to relieve airway obstruction. In 24 patients followed up for between 6 months to one year.

Outcome measures:

- The primary outcome measure was the reduction in subjective symptom scores for pain & headache 1 year following treatment.
- Outcome was classified as successful if both facial pain and headache scores were reduced to 0 (none) or 1 (mild).
- The technical success of treatment in eliminating mucosal contact pressure zones was documented endoscopically.

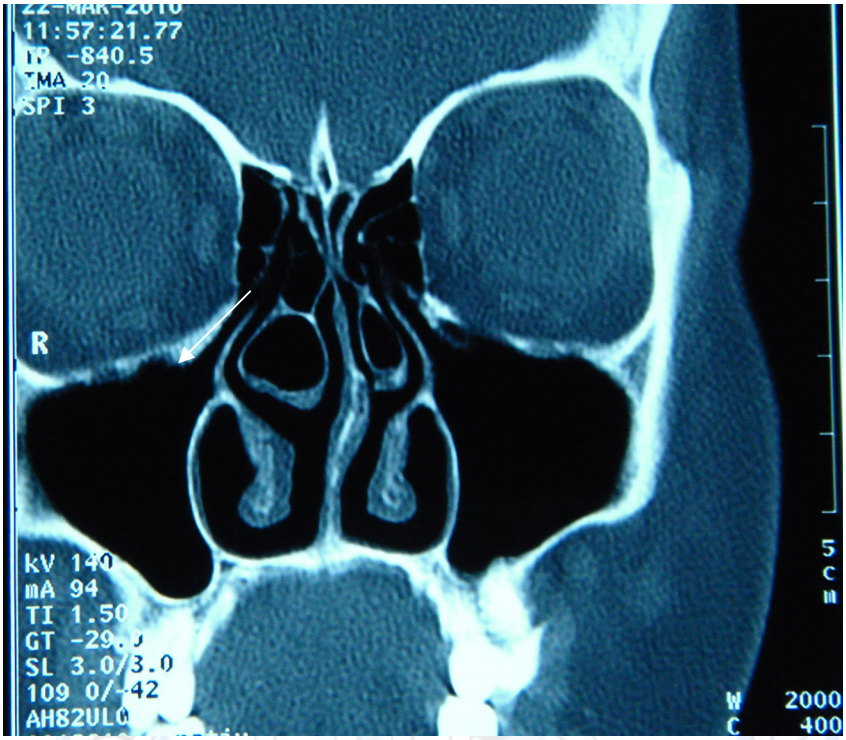

Figure (1): Shown above is a coronal CT of the siuses. Note that this patient demonstrates contact between the middle turbinate and the septum on left as shown by the arrow.

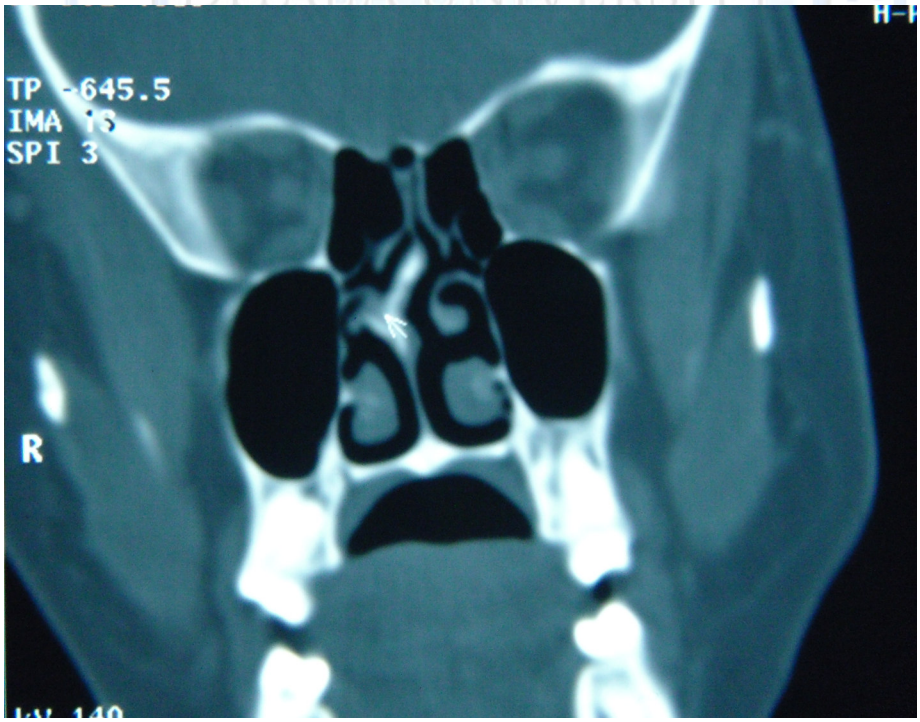

Figure (2): Shown above is a coronal CT of the siuses. Note that this patient demonstrates contact between the middle turbinate and the septum on right as shown by the arrow.

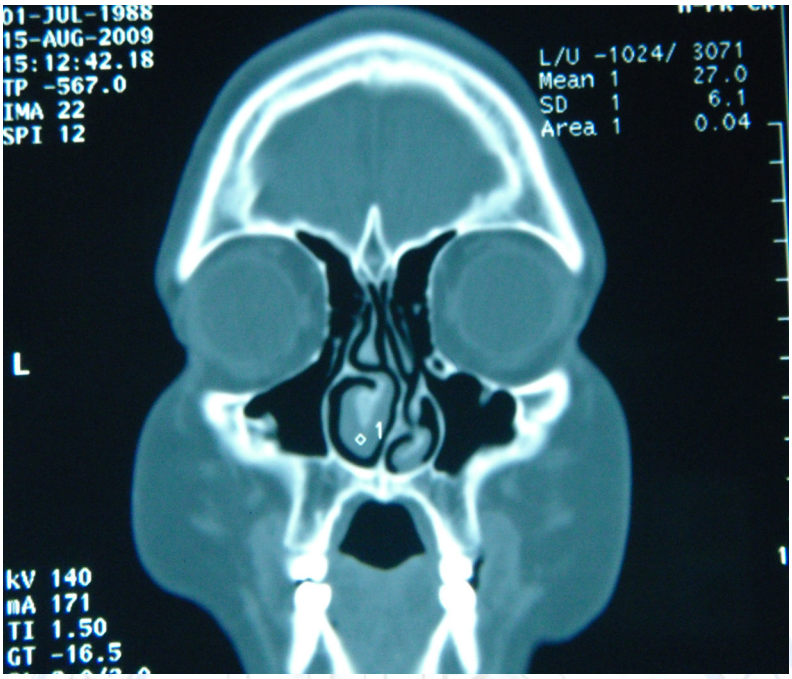

Figure (3): Shown above is a coronal CT of the sinuses. Note that this patient demonstrates contact between the inferior turbinate and the septum on left and right

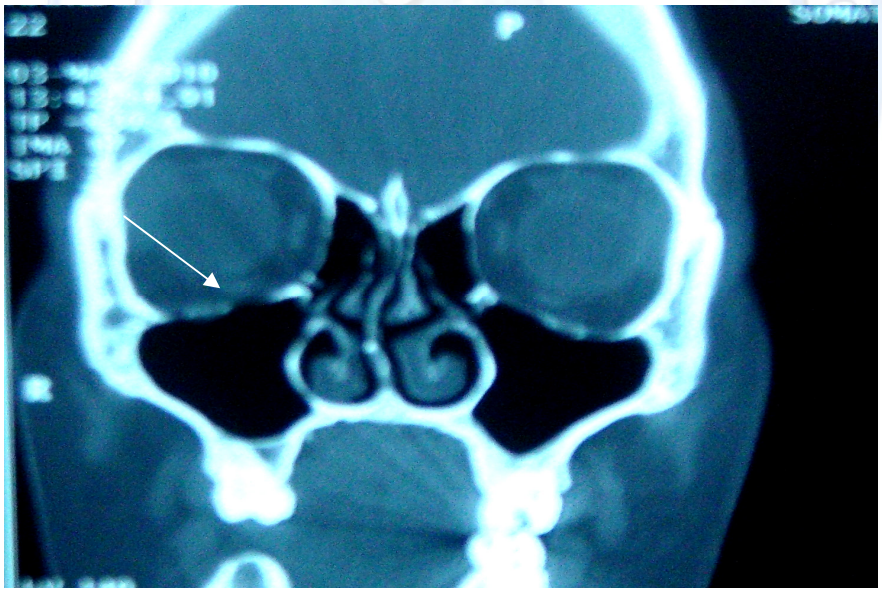

Figure (4):Shown Ct scan of paranasal sinus .Note MCPZ between middle turbinates and septum

Results

The 24 patients fulfilling all the criteria in whom follow-up data was available. There were 18 men and 6 women, mean age 36 years, range 18 to 58. The median length of history of pain was 6 years, range 1 to 15 years.

Table (1): Distribution of patients according to types of treatment

Type of treatment	Patients No.	Percentage
Medical treatment	24	100
Surgical treatment	20	83 %

Table (2): Distribution of patients according to the severity of pain before and after medical treatment

Grade of pain	No. of patients			
	Before Ŕ	%	After Ŕ	%
Grade 0	0	0%	4	16.7
Grade 1	0	0%	9	37.5%
Grade2	5	20.8	11	45.8
Grade 3	19	79.2	0	0%
Total	24	100%	24	100%

- Pv ≤0.05
- Successful rate of medical treatment = 16.66
- In all 24 cases, mucosal contact pressure zones were successfully eliminated, in four cases by medical treatment alone.

Table (3): Distribution of patients according to types of surgery

Types of surgical treatment	Patients No.		Total	Percentage
	Improved	Non improved		
Septoplasty	7	1	8	40.0%
Sepioplasty and tubenectomy	8	2	10	50.0%
turbenectomy	1	1	2	10.0%
Total of patient	16	4	20	100%

- Pv ≤0.05
- Successful rate of surgical treatment = 80%
- Failure rate of surgical treatment =20%
- Subjective symptoms of pain and headache were successfully relieved in 20 (83.0%)cases.

- No patients were made worse and there were no complications.

Table(4):Causes of failure of treatment

Cause of failure	No. of patient	persentage
Sphenoidal sinus infection	1	4.17%
depression	2	8.32%
Unkown reason	1	4.17%

- Failure rate of treatment =16.66%

By definition, all the failures were in the surgical group, since the patients who declined surgical treatment were those who had obtained sufficient relief from the topical steroids. Within the surgical subgroup, therefore, the success rate is only 83%.

Discussion

These results show that medical and surgical treatment designed to eliminate mucosal contact pressure zones between the turbinates and septum can be effective in treating facial pain and headache. By definition, all the failures were in the surgical group, since the patients who declined surgical treatment were those who had obtained sufficient relief from the topical steroids. Within the surgical subgroup, therefore, the success rate is only 83%.

Although sinus infection forms one of the differential diagnoses of facial pain, other rhinological causes have been hypothesized in the aetiology of facial pain. Stammberger and Kopp postulated that variations in the anatomy of the nasal cavity[7,8]. Other authors have also proposed such concepts to explain how anatomical variants such as a concha bullosa9 or pneumatized superior turbinate might produce similar symptoms[6]. It has also been shown by the Royal College of Radiologists Working Party[10] that MRI scans are not requested routinely as they do not show the bony architecture of the paranasal sinuses as well as CT scans[11].

Currently, CT scanning is the standard imaging technique undertaken for radiological evaluation of the paranasal sinuses. It is also used as a tool to establish the severity of disease and response to medical and surgical treatment[12,13,14].Since the introduction of endoscopic sinus surgery, various reports of the treatment's success have been described. In cases of facial pain secondary to sinusitis, a prospective clinical descriptive study of 252 patients, demonstrated that endoscopic sinus surgery has been shown to alleviate facial pain in

approximately 75% of cases [15]. These results have led some to advocate such treatment for facial pain even in the absence of any objective evidence of sinus disease [16,17].

In 1994, Cook et al stated that a selected group of patients with a normal CT scan and nasal endoscopy [18], endoscopic sinus surgery can help alleviate the symptoms of facial pain. The patient group was only followed up for one year. They found that 12 out of the 18 patients had a reduction of facial pain but not complete resolution of symptoms. All patients also had comprehensive medical treatment.

In another study, West et al described 101 out of 973 patients who had symptoms of facial pain but no endoscopic or CT evidence of chronic sinus disease. The 101 patients were followed up for a mean period of 2 years and 2 months. At the end of that period, after various treatment strategies, none of these patients were found to have pain attributable to sinus disease [19]. Eighty patients were treated with medical 'neurological' treatment and achieve complete resolution of symptoms, in 8 patients, their symptoms resolved spontaneously.

Whilst patients with facial pain are commonly diagnosed as having "sinusitis", this belief can be very misleading for the patients as there are non-sinogenic causes for facial pain. West et al highlights the need for the surgeon to consider the neurological causes of facial pain especially if there is lack of evidence of sinus disease [20]. These results show that medical and surgical treatment designed to eliminate mucosal contact pressure zones between the turbinates and septum can be effective in treating facial pain and headache. Sanderson and Rivron (1992) reported successful reduction of facial pain symptoms in a series of 60 patients undergoing septal surgery, 90% had some degree of reduction in the symptom of facial pain. These patients had no plain X-ray evidence of sinus infection, however the authors do not report detailed rhinoscopic findings, and do not mention the incidence of mucosal contact pressure zones. Some authors quote incredibly high success rates from nasal surgery for facial pain and headache, even in cases of migraine [21].

Novak (1992) operated on 299 patients with migraine, cluster and idiopathic headaches, using a standard technique of septal correction, middle turbinectomy and ethmoido-sphenoidectomy. He states that 78.8% were cured completely and 11.3% improved. [22].Hoover (1992) reported that 99.5% of 441 migraine patients were free of headaches following a combination of medical and surgical treatment of the nose [23].

Nasal septum deviation with inferior turbinate hypertrophy in clinical practice is more common nasal surgery, when the line must be accompanied by hypertrophy of the right inferior turbinate surgery to be successful in improving nasal obstruction and headache [24].

Derek Brown Kelly (1943) studied 50 cases of headache in sailors treated aboard the Royal Navy hospital ship Amarapoora in 1941 and 1942. He concluded that the use of the ephedrine test dispenses with the need for X-ray examination in many cases, and gives help in deciding whether operation is likely to give relief [25].

Conclusions

In a carefully selected series of patients with endoscopically documented mucosal contact pressure zones between the nasal turbinates and septum, headaches and facial pain was successfully relieved in 83% of cases by a combination of topical nasal steroids and nasal surgery. The technical success rate of treatment in eliminating mucosal contact pressure zones was 100%, but this does not automatically translate into a 100% success rate in relieving symptoms.

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