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Effect of endoscopic septoturbinal surgery in management of contact headache

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Effect Of Endoscopic Septoturbinal Surgery In Management Of Contact Headache

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ABSTRACT

Background: There are numerous causes for headache due to underlying local and systemic disorders. A rhinogenic headache that is studied here is a pain of the face and head caused by an intranasal contact mucosal point without any inflammation or tumour.
Aim of the work: Is to assess the value of endoscopic septoturbinal surgery in management of contact mucosal points.
Patients and methods: This a prospective cohort study done on 30 patients between May 2020 to June 2021 ,who had rhinogenic headache and did not had any nasal or paranasal sinus pathology nor other local or systemic causes were included in our study. Nasal endoscopy,xylocaine and computed tomography(CT) were used to confirm the presence of mucosal contact .The study done on 30 patients ,the visual analogue scale (VAS) was used to assess the severity of headache at the time of diagnosis and after 3 months of the endoscopic surgery and the results were compared.
Results: The most common cause of contact mucosal headache was the deviated septum with hypertrophied inferior turbinate 43.3% ,hypertrophied middle turbinate26.7% , deviated septum with hypertrophied superior turbinate 13.3%, deviated septum with septal spur10%,deviated septum with hypertrophied middle turbinate 3.3%, hypertrophied inferior and middle turbinate 3.3%. The (VAS) had significant statistical improvement from mean 7.6 at the time of diagnosis and changed into 1.8 after 6 months of the endoscopic septoturbinal surgery postoperatively.
Conclusion: In patients with rhinogenic headache caused by contact mucosal points, endoscopic surgical treatment yields a better results.

Keywords: *Rhinogenic headache; Isolated concha contact; Visual Analog Scale; Septoplasty.*

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INTRODUCTION

Chronic contact headache is a major problem affecting the quality of life. These patients were assessed by many different specialists as ophthalmologists ,neurologists,dentists and psychatrists without satisfactory treatment. That is kept in mind sino genic headache without sino nasal inflammation [1].

The principle of contact headache is contact of mucosal surfaces between the mucosa of the septum and mucosa of the lateral wall of the nose including the superior ,middle and inferior turbinate ,that is occurred in patients with septal deviation and concha bullosa compressing the ethmoidal nerves causing the facial pain .That is occurred in absence or presence of allergic and vasomotor rhinitis[2].

Stimulation of sphenopalatine ganglion is responsible for this facial pain ,this occurred through stimulation the medial branches of anterior ethmoidal nerves that supply submucosally the opposing turbinates and the septum and their compression stimulate the sphenopalatine ganglion[3].

The headache was classified by Stamberger and Wolf into 3 types 1)acute or chronic inflammation of the linning of the nose and PNS or barotrauma 2)not caused by inflammatory disease of the nose and PNS as neuralgia ,migraine and vascular headache 3)sinonasal in origin but its site cannot be confirmed ,that is assumed from pressure between the 2 opposing mucosal surfaces ,that is called contact headache[2].The development of various neuropeptides in areas of touch mucosal sites is a popular notion. The P substance is the most well-known neurotransmitter, and the septum and middle concha are the most prevalent sites of production[4].

Headache is a frequent ailment that affects the majority of individuals in varying degrees of severity. Neuralgias, migraines, cervical and vascular diseases, temporomandibular joint disorders, dental abscess, head and neck cancers, and intracranial and

ophthalmologic pathologies are different causes of headache[5].

Rhinogenic headache can be caused by any point of contact between the lateral nasal wall and the nasal septum. Although the pathophysiology is unknown, some propose that substance P (SP) and stimulation of unmyelinated C fibres play a role[2].When the lateral nasal wall and the septum come into contact, pressure and P substance are released, causing local reflexes such vasodilation, plasma extravasation, hypersecretion, and perivascular inflammation. All of these things can create a headache that looks like a migraine with an aura[6].

A comprehensive approach is required for the evaluation of rhinogenic headache. In addition to a thorough rhinoscopic and endoscopic examination, a paranasal computerised tomography (CT) should be performed to rule out sinusitis, nasal polyposis, concha bullosa, and other pathologies, as well as to rule out other causes[7].

Regardless of the type of therapy used, most writers emphasise the importance of carefully selecting cases with a rhinogenic headache and removing possible neurologic or psychiatric causes [2].However, multiple investigations show that such patients can be successfully managed[8].

The study is done to evaluate the efficacy of endoscopic septoturbinal surgery in resolving the headache that caused by contact points between the septum and the lateral wall of the nose.

PATIENTS AND METHODS

This prospective cohort study done on 30 patients on presented by chronic headache which is rhinogenic in orgin due to mucosal contact between the septum and the lateral wall of the nose due to either abnormalities of the septum or the lateral wall of the nose or both without other causes of headache . The mucosal contact is confirmed by rigid sinooscope and CT axial and coronal cuts without contrast and confirmed by xylocaine test (pledget of cotton soacked with 5 % xylocaine and placed in the nose at the site of mucosal contact for 15 minutes,if the patients felt relieve of pain more than 50 %, the test is positive and the patient is candidate for the surgery).

Inclusion criteria: patients with contact mucosal headache in which the contact points between the septum and the lateral wall of the nose is verified by rigid sinuoscope and CT nose and PNS and confirmed by xylocaine test.No another detectable cause of headache such as sinus disease ,neurological ,dental, ophthalomological or other cause after otolaryngological ,neurological,dental,opthalmological and other related specialist. No drug abuse of narcotic.

Exclusion criteria : patients with chronic headache caused by another cause as ophthalmological, dental, neurological ,vascular and another internal nasal diseases were excluded .Although patients with another intranasal anatomical variation and previous surgical procedures of the nose and paranasal sinuses were excluded from this study.

Written informed consent was taken from all participants after explanation of the study .Approval of the ethical committee for the study .

All patients were assessed by complete history , local examination of the nose ,anterior rhinoscopy, comprehensive endoscopic examination .The key point during endoscopic examination is determination the contact mucosal points that is not detectable by previous examination as result of septal deviation ,spur and mucosal turbinate hypertrophy. The first step is identifying the contact mucosal point by applying pledget of cotton soaked with 5% xylocaine for 15 minutes and sinuscopic examination to determine the impaction or the temporary release of mucosal surfaces. All patients underwent CT coronal and axial cuts to confirm the contact mucosal points and exclude another nasal or sinus diseases.

Surgical technique:

All patients underwent endoscopic correction of underlying pathological mucosal contact points as endoscopic septoplasty ,turbinoplasty for hyper trophied middle turbinate (resection the lateral lamellae of the middle turbinate with anterior ethmoidectomy that allow access lateralization the middle turinate away from the septum),turbinoplasty for contact of hypertrophied superior turbinate (anterior and posterior ethmoidectomy were done with resction the basal lamellae of the middle turbinate that allow lateralization the superior turbinate away from the septum with application of sialastic sheet between the septum and the lateral wall) and turbinoplasty for hypertrophied inferior turbinate (sub mucous resction of hypertrophied inferior turbinate with micro debrider shaver and laterally fracturing the turbinate along its entire length).

Nasal packing were done for all patients, nasal douching with normal saline and broad spectrum antibiotic was given for 1 week.

The patients were assessed pre and postoperative for headache by visual analogue scale which is psychometric response scale used for subjective measurement of headache pain level as follow: 0(absence of pain) 1-3(mild pain) 4-6(moderately severe pain ,7-9 (severe pain),10 (worse pain). We assess also the duration of headache (number of hours of headache over 24 hours) and the frequency of headache (number of attacks of headache over 1 month).All patients were followed up for 6 months postoperative.

RESULTS

The age of the studied group ranges from 15 to 46 years (mean 32.5years), with a male/female ratio of 0.5.The duration of headache before the septoturbinal surgery ranging from 3-60 months (the mean 24.6) the mean of frequency and severity of headache (visual analogue scale) was 7.6 for the patients before the septo turbinal surgery ,then changed into 1.8 after endoscopic removal of the contact mucosal points as shown in table (1).

Description:

	Mean	Standard Deviation	Median	Minimum	Maximum
Age	32.53	9.44	33.50	15.00	46.00
Duration of headache before surgery (month)	24.60	17.07	21.50	3.00	60.00
Pre- operative frequency and severity of headache(VAS)	7.60	1.43	8.00	5.00	10.00
Post- operative (VAS) after 6 months	1.80	2.19	1.00	0.00	8.00
				Count	**%**
sex		**Male**		15	50.0%
		Female		15	50.0%

Table 1: The distribution of age ,sex, duration of headache,pre operative frequency and severity of headache before surgery and 6 months postoperative among the studied group.

The prevalence of contact mucosal points among the studied patients were deviation of the nasal septum with septal spur in 3 patients (10%), septal deviation with septal spur(SD) and hypertrophied inferior turbinate (HI) in 13 patients (43.3%),contact between the hypertrophied superior turbinate (STH) and the deviated nasal septum (SD) in 4 patients , ,hypertrophied middle turbinate (MTH)with contact of the deviated nasal septum in 1 patient (3.3%), hypertrophied middle turbinate(MTH) was reported in 8 patients (26.7) and hypertrophied both middle turbinate and inferior turbinate in 1 patient (3.3%). The endoscopic surgeries were done either septoplasty for deviated nasal septum with septal spur in 3 patients (10%), both turbinoplasty and septoplasty in 18 patients(13 patients with SD with HI plus 4 patients SD with STH plus 1 patient SD with MTH) (60%) and turbinoplasy for hypertrophied inferior and middle turbinates in 9 patients (9 patients those 8 patients with hypertrophied middle turbinate(MTH) 26.7 plus 1 patient with hypertrophied both middle turbinate and inferior turbinate 3.3%) (30%).According the endoscopic and CT findings, the postoperative complications reported were synechia in 6 patients (20%) which were corrected in post -operative office visits by release of adhesion and insertion of sialistic sheet, septal perforation was reported in 1 patient (3.3%) and no more complications were reported table (2) Figure (1,2,3,4).

		Count	%
Contact points according C T and endoscopic finding	**SD**	3	10.0%
	SD,STH	4	13.3%
	SD,HI	13	43.3%
	SD,MTH	1	3.3%
	MTH	8	26.7%
	HI.MTH	1	3.3%
type of surgery	**Turbinoplasty**	9	30.0%
	Septoplasty	3	10.0%
	Septoplasty and turbinoplasty	18	60.0%
post-Operative complications	**Synechia**	6	20.0%
	septal perforation	1	3.3%
	No	23	76.7%

Table 2:The distribution of the pathological abnormalities that causing contact mucosal points with the underlying endoscopic surgery and the postoperative complications.SD(septal deviation),STH (superior turbinate hypertrophy),MTH (middle turbinate hypertrophy),HI (hypertrophied inferior turbinate).

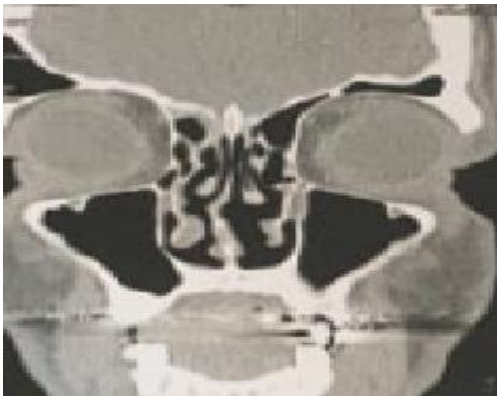

Fig. 1 : CT scan coronal cuts of 37 male patient presented with rhinogenic headache due to deviated nasal septum with contact hypertrophied superior turbinate.

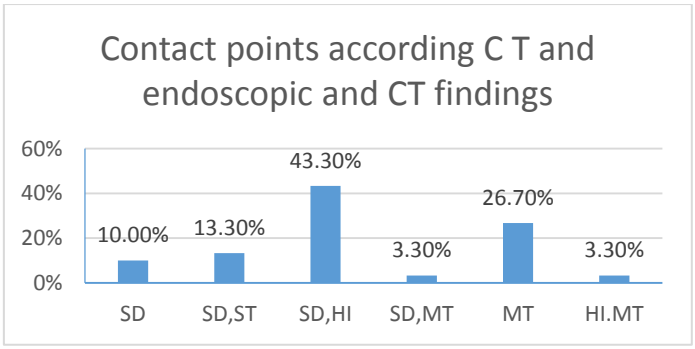

Fig. 2: Distribution of the studied group of patients with contact mucosal points according to endoscopic and CT finding .

Fig. 3 : endoscopic finding of 44 female patient presented by rhinogenic headache presented by deviated nasal septal spur contacting the inferior turbinate.

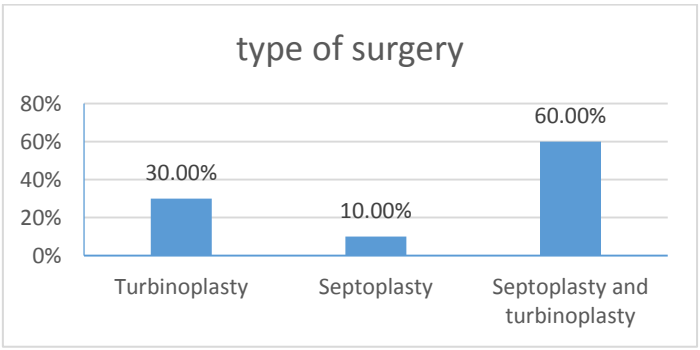

Fig. 4: Distribution of the endoscopic corrective surgery for the underlying contact mucosal points.

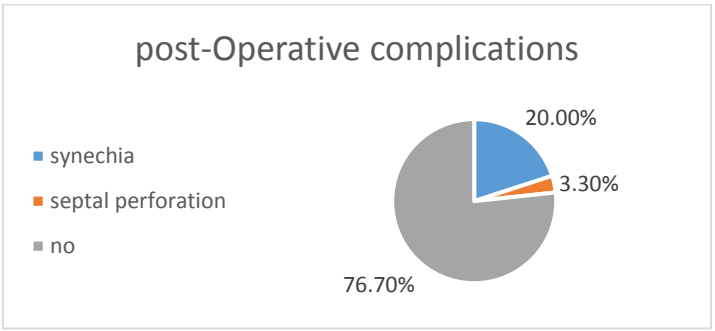

Fig. 5: Distribution of postoperative complications of the underlying endoscopic corrective surgery.

Evaluation of frequency and severity of headache (VAS) in our studied patients pre operatively was moderately severe pain in 6 patients (20%), severe pain in 21 patients (70%) and worse pain in 3 patients (10%).The (VAS) was assessed 6 months post operatively,9 patients were cured(30%),17 patients were improved (56.7) and 4 patients unchanged their characters of pain.table 3 figure (5,6).

		Count	%
Pre-operative frequency and severity of headache(VAS)	**moderately severe pain**	6	20.0%
	severe pain	21	70.0%
	Worse	3	10.0%
Post- operative (VAS) after 6 months	**Cured**	9	30.0%
	Improved	17	56.7%
	Unchanged	4	13.3%

Table 3: Distribution the frequency and severity of headache (VA S) of the studied patients at the time of diagnosis and 6 months postoperative.

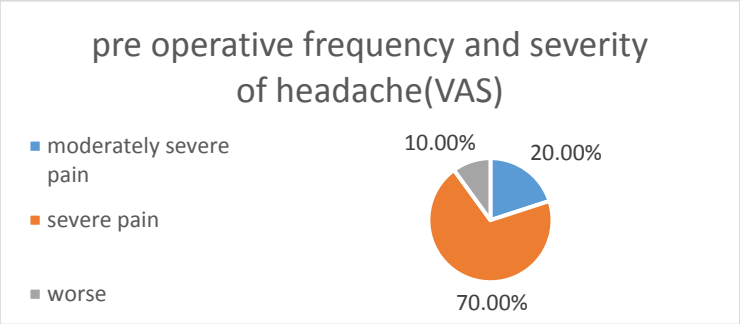

Fig. 5 : Distribution the frequency and severity of headache (VA S) of the studied patients at the time of diagnosis.

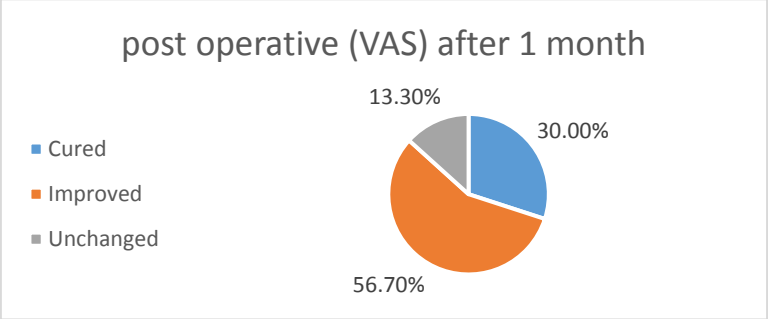

Fig. 6: Distribution the frequency and severity of headache (VA S) of the studied patients 6 months postoperative.

When compared the values of (VAS) at the time of diagnosis, to the values at the 3th month after surgical removal of the contact mucosal points, VAS scores were significantly lower at 3 months (M = 7.6 pre operative was changed into 1.8; p = 0.001)demonstrate a considerable improvement as shown in table 4 and figure (7).

	Mean	**Standard Deviation**	**Median**	**Minimum**	**Maximum**	**P value**
Pre- operative frequency and severity of headache(VAS)	7.60	1.43	8.00	5.00	10.00	< 0.001
post -operative (VAS) after 6 months	1.80	2.19	1.00	0.00	8.00	

Table 4 : Comparison of (V A S) preoperative at the time of diagnosis and 6 months postoperative.

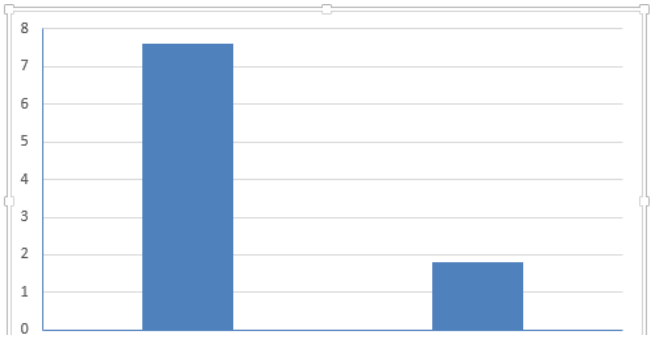

Fig. 7: The ratio of (V A S) at the time of diagnosis preoperative and 6 months post operative.

DISCUSSION

The International Headache Society (IHS) classification (1988) reports the existence of pain syndromes caused by sino-nasal pathology: it emphasized that is a nasal pathology that causing pain is evident and verified as acute sinusitis or a vacuum sinus or other unidentified pathology[5].

Tosun et al. proposed that a cocaine test may be used to predict surgical success in individuals with mucosal contact. However, they did not discover a link of success between positive test results and surgical intervention. This could be related to cocaine's placebo effect. Applying nasal decongestants and topical anaesthetics such as lidocaine to the contact region can also be utilized for the nasal shrinkage test. As in our study we use xylocaine test to confirm that the headache is caused by contact point after nasal endoscopic examination and CT nose and PNS[9].

In our study, the headache was in the frontal region mainly in the at the root of the nose ,eye and zygoma,this concides with study done by Lin and Ho[10].

We found the most common contact mucosal point was the deviated nasal septum and the hypertrophied inferior turbinate in 13 patients 43.3%,this correlates with study done by Bilal et al who reported the same finding [1].In another study done by Hammad and Gomma who reported that septal deviation causing nasal obstruction and headache and with correction of the deviated nasal septum ,the headache disappeared,this correlates with our study after endoscopic septoplasty ,the operative visual analogue scale improved from 7.6 changed into 1.8[11].

Huang et al. looked at 66 patients who had rinogenic headaches caused by nasal septum deviation, concha bullosa, or orbitoethmoidal (Haller's) cell. They discovered that following the surgical therapy, the intensity and frequency of headaches decreased[12].

After corrective surgery, , Parsons and Batra found 91 percent improvement, Chow et al. showed 82 percent improvement,Altin et al 96 percent improvement and Bilal et al. reported 92 percent improvement in headache level. In our research, we discovered that 96 percent of these patients with headache were improved[5].

There is no agreement on the length of the follow-up period. The average follow-up length in several research was 6 months. However, Harrison and Jones claimed that a 12-month follow-up trial is required to determine the role of surgery in the elimination of contact points for the treatment of facial pain. In our study, the follow-up period was 6 months, but we believe this is sufficient time. Studies with a longer follow-up time, however, could be conducted[13].

the mucosal contact between septal spurs and hypertrophies of the lower turbinates, according to Giacomini and Behin et al., could not be the source of headache. They reported that the mucosal contact areas between the upper component of the middle turbinate and the upper turbinate and septum is the cause of headache.in our study , the mucosal contact between the hypertrophied the superior turbinate and middle turbinate and the septum as cause of rhinogenic headache and the patients were improved after endoscopic correction[14].

According to Peric et al., pressure between the mucosal surfaces as in a mucosal surfaces of the septal spur peak and concha bullosa causes pain perception [15].

The study done by Lou supposed that The pressure between the hyperplasia of fibrosis of the inferior turbinate mucosa and the mucosperiostium of the nasal septum may cause persistent compression discomfort in the head and face, although simple mucosal edoema may not be enough to cause the pain. This correlates with our study at which the contact between the hypertrophied inferior turbinate , hypertrophied middle turbinate (concha bullosa) and the septal spur which show clinical improvement of their headache after endoscopic correction [16].

CONCLUSION

Rhinogenic headache is problematic espially in absence of inflammatory or mass lesion of the nose or para nasal sinuses that is caused by contact mucosal points between the septum and the lateral wall of the nose, that is confirmed by sinuscopic eamination,CT and xylocaine test. The better results were obtained after endoscopic correction encouraging this study.

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