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Effect of Nasal Contact Points Surgery on Patients Who had Snoring of Rhinological Origin

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Abstract

Background: Nasal obstruction is one of the most common complaints. Chronic nasal obstruction has many adverse sequelae including mouth breathing, dryness of the oropharynx, nasal speech, sleep disordered breathing (SDB), restlessness, malaise, and adverse effects on quality of life and reduced lung volumes. Nasal obstruction experienced by patients could be due to structural abnormalities (contact points inside the nasal cavity) e.g. deviated nasal septum, and enlarged turbinate.

Aim of Study: To study the outcome of surgical relief of the nasal contact points on patient had snoring.

Patients and Methods: The study enrolled 50 patients with snoring and contact points between nasal septum and nasal turbinates, subjected to thorough history taking, general examination and otorhinolaryngological examination.

Results: The mean age of the patients was 33.32 ±7.15 years (range=20-42). The most frequent pathology encountered was deviated septum (96%), hypertrophied inferior turbinate (78%) and concha bullosa (22%). After nasal surgery treating the nasal pathology and reliving the contact point, in 58% of patients, the snoring completely improved, 16% of patients were partially improved and 26% of patients were not improved.

Conclusion: Surgical relieve of the nasal contact point could improve snoring in selected patients.

Key Words: *Nose – Obstructive sleep apnea – Turbinectomy – Septoplasty – Contact point.*

Introduction

NASAL obstruction is common in patients had sleep disorder breathing. Nasal obstruction could result in mouth breathing, which is thought to destabilize the upper airway and worsen the sleep disorder breathing, Three conditions could be considered as the cause of the nasal breathing obstruction: Anatomical conditions of the nose (septum deviation, hypertrophy of the inferior turbinates), chronic rhinosinusitis (CRS) and chronic nasal inflammation caused by allergic rhinitis or non-allergic cellular rhinitis **[1-3]**.

Effective surgical management of OSA depends upon developing a complete database and determining different levels of obstruction, a systematic approach to clinical evaluation, treatment planning and surgical management is recommended and is likely to result in more predictable outcomes **[4]**.

Nasal procedures that have been performed for the treatment of sleep disorder breathing include the following septoplasty **[5]** and turbinates reduction surgery **[6]**. However dealing with the effect of reliving the contact point effect on sleep disorder breathing was not described clearly in the literature.

The aim of the present study is to study the outcome of relieving the nasal contact points on selected patients had snoring.

Patients and Methods

This study was conducted in ORL Department Zagazig and Al-Azhar University (Assuit branch) Hospitals, between January 2020 and January 2022 on patients with snoring and had clinically contact points between nasal septum and nasal turbinates with failed medical management.

Recurrent cases, unfit patients to surgery, patients with craniofacial anomalies, and patients

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with specific nasal pathology as nasal polyposis and nasal tumours were excluded from the study. Patients complaining of OSA symptoms due to retropalatal and/or retroglossal levels were also excluded.

All patients were subjected to snoring history, examination and CT evaluation. The demographic data, patient nasal symptoms, snoring, were assessed pre and post operatively and recorded, tabulated and analyzed. Patients were followed up on daily basis for the first week, on weekly basis for the first one month, on monthly basis for the next 3 months.

Statistical assessment was performed via SPSS 17 statistics software for Windows (SPSS Inc, Chicago, IL). p-value <0.05 was fixed as the significance level.

Results

Within the included 50 patients (33 males, 17 females), the mean age was 33.32 ±7.15 years (range: 20-42). All patients had snoring and nasal obstruction (100%); while 46% had headache with mean symptoms duration of 3.98 ± 1.93 years (range: 1-8).

The most frequent pathology encountered was deviated nasal septum (48 patients, 96%), followed by hypertrophied inferior turbinate (78%), then conchae bullosa (22%) (Table 3). The contact points were reported to be between the deviated nasal septum and inferior turbinate hypertrophy in 37 patients (74%), and between the deviated nasal septum and the middle turbinates in 11 patients (22%). While contact point was detected between the straight septum and the hypertrophied inferior turbinates in 2 patients (4%) (Tables 1,2).

Regarding snoring, 58% of patients were completely improved, 16% of patients were partially improved and 26% of patients were not improved (Table 3).

Regarding relation between age, sex, and clinical history and improvement of snoring, there were non-significant relations (p>0.05) (Table 4). Regarding relation between CT findings and improvement of snoring, there were non-significant relations (p>0.05) (Table 5).

Table (1): CT findings among the studied cases.

	The studied cases N=50	
	No.	%
Septum:		
Normal	2	4
Deviated	48	96
Turbinate:		
Hypertrophied Middle Turbinate	11	22
Concha bullosa	39	78

Table (2): Contact point description.

Contact point	The studied cases N=50	
	No.	%
Deviated septum in contact with middle turbinate at right side	3	6
Deviated septum in contact with middle turbinate at left side	8	16
Deviated septum in contact with hypertrophied inferior turbinate at right side	23	46
Deviated septum in contact with hypertrophied inferior turbinate at left side	14	28
Hypertrophied inferior turbinate in contact with non deviated septum	2	4

Table (3): Postoperative outcome among the studied cases.

Post operative outcome	The studied cases N=50	
	No.	%
Improvement of snoring:		
Complete	29	58.0
Partial	8	16.0
Not improved	13	26.0

Table (4): Relation between age, sex and clinical history and improvement of snoring.

	Improvement of snoring N=50						Test	*p*-value
	Complete N=29		Partial N=8		Not improved N=11			
Age:								
X ± SD	33.07±7.65		35.13±7.51		32.77±6.06		K	0.8
Range	20-49		27-47		23-42		0.44	
Duration/year:								
X ± SD	3.89±2.02		4.63± 1.69		3.77± 1.92		K	0.56
Range	1-8		3-8		1-7		1.17	
	No.	%	No.	%	No.	%		
Sex:								
Male	21	72.4	5	62.5	7	53.8	X^2	0.49
Female	8	27.6	3	37.5	6	46.2	1.43	
Snoring:								
Yes	29	100	8	100	13	100	–	–
No	0	0	0	0	0	0		
Nasal obstruction:								
Yes	29	100	8	100	13	100	–	–
No	0	0	0	0	0	0		
Headache:								
Yes	13	44.8	3	37.5	7	53.8	X^2	0.75
No	16	55.2	5	62.5	6	46.2	0.57	

X = Mean, SD = Standard deviation, No = Number, K = Kruskal Wallis test, X^2 = Chi squared test.

Table (5): Relation between CT findings and improvement of snoring.

	Improvement of snoring N=50						Test	*p*-value
	Complete N=29		Partial N=8		Not improved N=13			
	No.	%	No.	%	No.	%		
Septum:								
- Straight	2	6.9	0	0	0	0	1.51	0.47
- Deviated	27	93.1	8	100	13	100		
Turbinate:								
- Concha bullosa inferior Turbinate	5	17.2	3	37.5	3	23.1	1.51	0.47
- Hypertrophy	24	82.8	5	62.5	10	76.9		
Contact point:								
- Deviated septum contact with middle turbinate at right side	1	3.4	1	12.5	1	7.7	5.44	0.71
- Deviated septum contact with middle turbinate at left side	4	13.8	2	25.0	2	15.4		
- Deviated septum contact with inferior turbinate at right side	13	44.8	2	25.0	8	61.5		
- Deviated septum contact with inferior turbinate at left side	9	31.0	3	37.5	2	15.4		
- Inferior turbinate contact with non deviated septum	2	6.9	0	0.0	0	0		

X = Mean, SD = Standard deviation, No = Number, K = Kruskal Wallis test, X2 = Chi squared test.

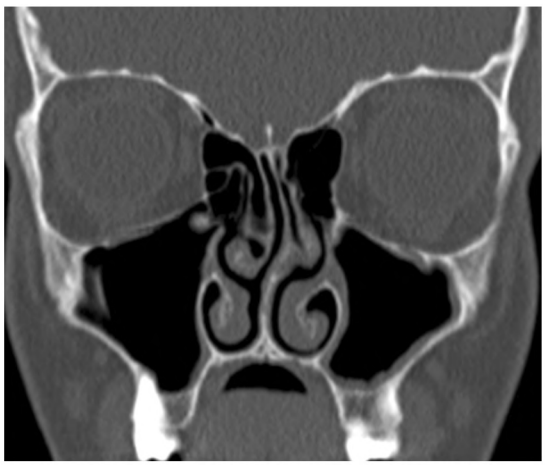

Fig. (1): Coronal CT scan showing deviated nasal septum to the left side with contact with left middle turbinate.

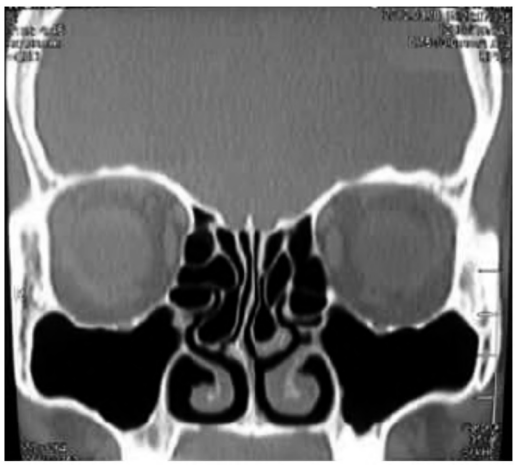

Fig. (2): Coronal CT scan showing deviated septum to right, pneumatized middle turbinate (right concha bullosa) with small left concha bullosa.

Fig. (3): Coronal CT scan showing Bilateral H.I.T, deviated nasal septum to the left side with contact with the left H. inferior turbinate.

Fig. (4): Coronal CT scan showing deviated nasal septum to right side with contact with right middle turbinate.

Fig. (5): Coronal CT scan showing Bilateral H.I.T, deviated nasal septum to the right with contact with right inferior turbinate.

Fig. (6): Coronal CT scan showing right hypertrophied inferior turbinate, deviated septum to the right with contact with the middle and inferior turbinate.

Fig. (7): Coronal CT scan showing Bil. Hypertrophied inferior turbinate, left concha bullosa Deviated septum to the left with contact with the inferior turbinate.

Fig. (8): Endoscopic view of the nasal cavity showing left concha bullosa in contact with deviated nasal septum.

Discussion

There is increasing interest in the field of sleep-related disorders (SRD) due to its impact on the global health **[7,8]**. Surgical treatments for SDB have been performed in various forms through the last 3 decades **[9]**. Nasal surgery has been performed extensively in these patients, often with good effect on the patients **[6,10]**.

To the best of our knowledge, there are no clinical studies that study the outcome of nasal contact points in patients with SDB. So, the purpose of this study was to study the outcome of relieving the nasal contact points on snoring.

The most frequent pathology encountered was deviated nasal septum (96%), and then hypertrophied inferior turbinate (78%) and lastly the Concha bullosa (22%). Comparable findings were detected by Verse et al., **[11]**.

Magliulo et al., **[3]** presented an assessment of possible sino-nasal aspects in OSA patients to correlate various nasal pathologies with nose obstruction. The mean age of the study group was 55.2 years (range 35-79): 33 subjects were male and 17 were female. Lan et al., **[12]** evaluated the correlation between nasal resistance and oximetry variables in polysomnography to better realize the role of nasal obstruction in the pathophysiology of OSA.

In our patients, all patients had snoring (100%) and nasal obstruction (100%); while 46% had headache. Magliulo et al., **[3]** confirmed nasal obstruction in 70% patients with SDB.

In our study. 58% of patients were completely improved from snoring, 16% of patients were partiality improved and 26% of patients were not improved. There were non-significant relations between age, sex and clinical history and improvement of snoring and between CT findings and improvement of snoring. Thus, nasal surgery managing the nasal contact point could improve snoring. On the other hand, Koutserelakis et al., **[13]** found that nasal surgery rarely treats OSA effectively.

In a meta-analysis of 13 studies that dealt with nasal surgery alone in OSA patients, Li et al., **[14]** concluded that nasal surgery for obstruction alone does not reduce apnea hypoapnea index (AHI) significantly but ameliorates snoring. Kim et al., **[15]** described a statistically significant reduction in AHI.

Li et al., **[16]** found no significant effect of surgery for inferior turbinate hypertrophy and deviated septum on AHI. While, Sher et al., predict 16.7% will have a reduction in AHI as overall effect of nasal surgery on OSA **[17]**. Li et al., **[16]** found that patients with a low Friedman tongue position had better results from nasal surgery. This is in agree with the result of the current study and reflect the effect of surgery for contact point in snoring patient without retropalatal and/or retroglossal cause on snoring. The increased contribution of pharyngeal structures to SDB will worsen the final results as the percentage of the nasal obstruction is diminished. On the other hand, it may also indicate that the effect of surgery was better for patients with concomitant increased volume of the turbinates and deviated septum because the total share of the nasal obstruction to SDB may bemore than in patients with deviated septum alone.

In agree with the current results, Moxness and Nordgard **[18]** documented that the effect on SDB was significantly better when indication for septoplasty combined with surgery of the inferior turbinates was present, compared to septoplasty alone.

So surgical management the contact points are more effective in treating SDB. This implies that nasal surgery has a good effect on snoring, while it is effect alone and in combination with retropalatal and/or retroglossal surgery on OSA in selected patients with both septal deviation and hypertrophy of the inferior turbinates or concha bullosa still is needed to be investigated.

Conclusion:

Surgical relieve of the nasal contact point could improve snoring in selected patients.

Conflict of Interest: The author declare no conflict of interest.

Financial Disclosures: No financial support or interest in this manuscript.

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دراسة نتائج العلاج الجراحى لإنسداد الأنف الناتج عن وجود نقاط تماس فى تجويف الأنف على المرضى الذين يعانوا من الشخير بسبب أنفى

الهدف من البحث هو دراسة نتائج العلاج الجراحى لإنسداد الأنف الناتج عن وجود نقاط تماس فى تجويف الأنف على المرضى الذين يعانوا من الشخير.

انسداد الأنف هو أحد الشكاوى الأكثر شيوعاً وخاصة انسداد الأنف المزمن حيث له العديد من الآثار السلبية بما فى ذلك التنفس المزمن عن طريق الفم، وجفاف البلعوم، وتغير الصوت، واضطراب التنفس أثناء النوم، والأرق، والشعور بالضيق، وكل هذا له تأثير سلبى على جودة الحياة.

يمكن أن يكون انسداد الأنف الذى يعانى منه المرضى بسبب تشوهات هيكلية (نقاط الاتصال أو التماس داخل تجويف الأنف) على سبيل المثال الحاجز الأنفى المنحرف، والقرينة المتضخمة.

وضمت هذا الدراسة ٥٠ مريضاً يعانون من الشخير ووجود نقاط اتصال بين الحاجز الأنفى والقرينات الأنفية، خضعوا لأخذ التاريخ الشامل والفحص العام والفحص الأنفى والحنجرة.

وكانت النتائج كالتالى كان متوسط عمر المرضى 33.32±7.15 سنة (المدى = ٢٠-٤٢). أكثر الأمراض المرضية شيوعاً كان انحراف الحاجز (٩٦٪)، القرينة السفلية المتضخمة (٧٨٪) والقرينة الوسطى الفقاعية (٢٢٪).

بعد جراحة الأنف وعلاج أمراض الأنف وفصل نقطات الاتصال، تحسن الشخير تماماً فى ٥٨٪ من المرضى، وتحسن ١٦٪ من المرضى جزئياً، ولم يتحسن فى ٢٦٪ من المرضى.

ولذلك خلاصة البحث هو أن العلاج الجراحى لفصل نقطات الاتصال فى تجويف الأنف يمكن أن يحسن الشخير لدى مرضى مختارين.