

Endoscopic Sinus Surgery of Chronic Rhinosinusitis Results and Complications

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ABSTRACT:

BACKGROUND :

The technique of Endoscopic Sinus Surgery (ESS) has been widely accepted and applied to many diseases of the paranasal sinuses with internationally reported results of this technique having been very good.

OBJECTIVE:

To assess the results & complications of E.S.S. for chronic rhinosinusitis.

PATIENTS AND METHODS:

Forty three patients underwent ESS at Al-Kadhymia Teaching Hospital (Baghdad) for one year period. A thorough history and ENT examinations, endoscopic examinations and CT-scan imaging of the nose & paranasal sinuses were performed.

These patients diagnosed as having chronic rhinosinusitis and prepared for E.S.S. after failure of maximal medical treatment to improve their symptoms. The post operative follow-up period was 3-6 months and evaluated subjectively regarding the outcome of their endoscopic sinus surgery.

RESULTS:

The age ranges from 17 to 53 years, the mean age was (32.44 years \pm 9.83 STDEV), the commonest age group affected was between 31-40 years (34.88%),male to female ratio was 1.15:1 The commonest symptom were Headache in 30 patients (69.76%) ,Nasal obstruction in 29 patients (67.44%),Post nasal drip in 18 patients (41.86%).The duration of symptom was 1-5 years in (44.18%) of patients. During surgery all the patients underwent uncinectomy& anterior ethmoidectomy. Major complication not occurred in our study commonest minor complication was synechia 8 patients (18.60%) .Commonest symptoms that improved were ; nasal obstruction 24 out of 29 patients (82.75%) which is significant {p-value=0.02} , postnasal drip 7 out of 18 patients (38.88%) which is significant {p-value=0.002},while headache 21 out of 30 patients (70%) not significant {p-value=0.077 }

CONCLUSION :

ESS is efficacious in treatment of chronic rhinosinusitis with few minor complications and rare major complications.

KEY WORD: sinusitis, endoscopic sinus surgery.

INTRODUCTION:

The primary objective of (FESS) is to restore paranasal sinus function by re-establishing the physiologic pattern of ventilation and mucociliary clearance. Surgery is always used as an adjunct to medical therapy. The goal is to remove diseased mucosa and bone, preserve normal tissue, and judiciously widen the true natural Ostia of the sinuses. The OMC is most often the primary target of ESS because minimal

inflammation in this area can lead to disease in the maxillary, anterior ethmoid, and frontal sinuses.⁽¹⁾

Primary surgery for chronic rhino sinusitis is now performed almost exclusively endoscopically. Endoscopic approaches also now dominate the surgical treatment of many other sinonasal disorders.

Understanding of the anatomy and pathophysiology of each disease process is necessary before one can embark on surgery.⁽²⁾

Messerklinger pioneered the study of the endoscopic anatomy and pathophysiology of the paranasal sinuses, publishing his experience with ESS in 1978. He highlighted the role of the ostiomeatal complex (OMC) in the

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ENDOSCOPIC SINUS SURGERY

pathophysiology of rhinosinusitis and directed attention to it during surgery.⁽³⁾

His resident, Stammberger, was instrumental in popularizing this technique outside Germany and Austria.⁽⁴⁾

Kennedy is credited with the introduction of ESS to the United States in 1985.⁽⁵⁾

PATIENTS AND METHOD:

A prospective study of 43 patients selected in Al-Kadhymia teaching hospital (Baghdad) for one year period.

A thorough history, ENT examination & endoscopic examination of the nose and paranasal sinuses under local anesthesia were performed in the outpatient clinic. CT-scan imaging was done for all patients.

These patients diagnosed as having chronic rhinosinusitis and prepared for E.S.S. after failure of maximal medical treatment.

SELECTION OF PATIENTS:

Each patient who was diagnosed as having chronic rhinosinusitis was included in this study after failure of medical treatment for at least 4 weeks (Amoxicillin + Clavulanic acid 625 mg/three times daily.

Clarithromycin 250 mg /twice daily in penicillin sensitive patients, Budesonide intranasal spray /2 times daily).

Surgical operation:

All the patients underwent the surgery under general anesthesia, Messerklinger's technique Surgery was performed using 0 & 30 degree

4mm, rigid Hopkin rods to explore the ostiomeatal complex, if septoplasty was considered it was performed.

The first step is removal of the uncinate process, the true natural ostium of the maxillary sinus enlarged when needed, anterior ethmoidectomy is completed, then dissection continue to exenterate the posterior ethmoid cells and then opening of the sphenoid sinus (according to the pathology of sinuses).

Patient follow-up;

Patients were seen weekly for the first month and then monthly for 3- 6 months. In each visit, the following were done:

a- The cavity was cleaned under endoscopic guidance following the application of local anesthesia (remove any debris or crusts).

b- Any adhesions were divided.

Statistical analysis:

The chi-square (χ^2) test was used to evaluate the association between categorical variables; to determine whether association was significant the P value was calculated for the results as follow:

Significant (S) when the P value is ≤ 0.05

Not significant (NS) when the P value is ≥ 0.05

RESULTS:

1-AGE INCIDENCE:-

The age ranges from 17 to 53 years, the mean age is (32.44 years \pm 9.83 STDEV) the commonest age group affected was between 31-40 years (34.88%).

Table 1: Age distribution.

Age (years)	No. of patients	percentage
11-20	4	9.3
21-30	13	30.23
31-40	15	34.88
41-50	8	18.6
51-60	3	6.97

2-Gender distribution:

Male to female ratio 1.15:1 .

Table 2: Gender distribution.

Sex	No. of patients	percentage
Male	23	53.48
Female	20	46.52

3-Duration of symptoms:

Duration of symptoms ranging between 1-5 years were seen in 44.18% of patients .

Table 3: Duration of symptoms.

Duration (years)	No. of patients	percentage
<1 years	16	37.2
1-5 years	19	44.18
6-10 years	6	13.95
>10 years	2	4.65

4-Occurrence of symptoms:

The commonest symptom was headache in 30 patients(69.76) .

Table 4: Occurrence of symptoms.

Symptom	No. of patients	Percentage
Headache	30	69.76
Nasal obstruction	29	67.44
Postnasal drip	18	41.86
Sore throat	9	20.93
Facial pain/ pressure	17	39.53
Rhinorrhea	13	30.23
Sneezing	11	25.58
Snoring	8	18.60
Hyposmia	14	32.55
Cacosmia	2	4.65
Otagia	2	4.65

5- Details of surgical procedures:

All the patients(43 patients) underwent uncinectomy & Ethmoidectomy, 9 of them underwent Septal surgery .

Table 5: Details of surgical procedures.

Type of operation	No. of patients	percentage
Uncinectomy	43	100
Middle meatal antrostomy	35	81.39
excision of bulla ethmoidalis	43	100
Ethmoidectomy	43	100
Ant. Ethmoidectomy	43	100
Post. ethmoidectomy	25	58.13
Septal surgery	9	20.93
Polypectomy	14	32.55
Partial middle turbinectomy	10	23.25
Partial inferior turbinectomy	10	23.25

6 -Symptoms improvement in patients underwent surgery:

Nasal obstruction improved in 24 patients(29 total number) 82.75% while the least improved was postnasal drip in 7 patients (18 total number) 38.88% .

Table 6: Symptoms improvement in patients underwent surgery.

Symptoms	Total no.	Improved	%	not improved	%	Chi-square	p-value
Headache	30	21	70	9	30	0.34	0.077
Postnasal drip	18	7	38.88	11	61.11	6.87	0.02
Nasal obstruction	29	24	82.75	5	17.24	4.87	0.04
Hyposmia	14	7	50	7	50	0.73	0.072
Rhinorrhea	13	8	61.53	5	38.46	0.111	0.079
Sore throat	9	6	66.66	3	33.33	Not valid	Not valid
Facial pain/ pressure	17	11	64.70	6	35.29	0.006	0.08

7 -Post operative complications:

The complications free were 29 patients (67.45%).

The complications occur in 14 patients (32.55%) all of them minors. Commonest complication was adhesions occur in 8 patients (18.60%) & the least was Periorbital emphysema.

Table 7: post operative complications.

Complications	No. of patients	percentage
Adhesions "synechia"	8	18.60
Periorbital emphysema	5	11.62
Per operative bleeding	6	13.95
Postoperative bleeding	Nil	---
CSF leak	Nil	---
Intracranial complication	nil	---

DISCUSSION:

AGE & SEX

In the current study 43 patients with age ranges from 17 to 53 years, the mean age is (32.44± 9.83 STDEV) years the most common age group was 31-40 years old (34.88%) the sex ratio was male: female 1.15:1.

In study done by Ling FT ,Kountakis SE, Jun 2007⁽⁶⁾ the average age was 49.4 (range 18-80 years) this difference may be due to that the older age group in our study carries some medical co morbidities, make the surgical operation risky on their life. Male-to-female ratio of 1.1:1. Which is similar to our findings.

Other study done by Ashoor Abdul Aziz, Hani Sayed Hassan , Khalid Abo Shama March 2006⁽⁷⁾

(160 male, 68 female and 18 pediatric) adult male: female ratio 2.35:1 and these results different from current study findings, may be due to large number of patients which included. Patients' age ranged between 5-72 years (mean 34.2 years) which is similar to our findings.

SYMPTOMS

In the current study the common symptoms in order of frequency were as follows: Headache 69.76%) Nasal obstruction (67.44%) Post nasal drip (41.86%) Rhinorrhea (30.23%) hyposmia (32.55%) facial pain/ pressure (39.53%) .(table 4)

In study done by Netkovski J,Sirgovska B⁽⁸⁾ Dec 2006 the finding were ,nasal obstruction in 93.7% and post nasal discharge in 86.2% of patients, Furthermore, patients reported anterior discharge(Rhinorrhea) in 72.5%, headache in 65% and hyposmia in 62.5% of the patients. This is may be due to that their patients more concern with nasal obstruction, that leading to sleep disturbance and its impact on the daily activity. While headache is the commonest problems that obligate the patients for seeking a medical advice in our society.

In study performed by Chester AC, Sindwani R⁽⁹⁾Dec 2007 , results of 29333 patients were reported in 240 studies ,facial pain-pressure 35%, facial congestion –fullness 10%, nasal obstruction 42%, nasal discharge-post nasal discharge 47%, hyposmia-anosmia 35%.

These differences may be due to variation in demography in which these studies were done and the large numbers of patients selected.

SURGICAL OPERATION

During surgery uncinectomy& ant. Ethmoidectomy were done in all patients(43 patients 100%) , middle meatal antrostomy was done in 35 patients (81.39%). posterior ethmoidectomy in 25 patients (58.13%). Septal surgery was done in 9 patients (20.93%) because

the Septal deviation obscured the surgical field . Polypectomy was done in 14 patients (32.55%) at the beginning of operation.(Table5)

Nair ,RS Bhadauria ,S Sharma. (2010) ⁽¹⁰⁾ uncinectomy performed in 100% of patients anterior ethmoidectomy in 48.2%, posterior ethmoidectomy in 30.9% septoplasty 19.8%.

Nasser A. Fageeh; Edilberto O. Pelausa; Adel Quarrington⁽¹¹⁾ (1996) septoplasty and turbinate manipulations were done in 17.3% .67% of patients had anterior ethmoidectomy and maxillary ostium enlargement 24% involved the posterior ethmoids.

So in the current study and other studies the extent of surgery depends on extent of pathology.

SYMPTOM IMPROVEMENT

In the current study Symptoms improvement were; nasal obstruction 24 out of 29 patients (82.75%) this is significant {p-value=0.02} , postnasal drip 7 out of 18 patients (38.88%) this is significant {p-value=0.002} headache 21 out of 30 patients (70%) not significant {p-value=0.077 } , facial pain/ pressure 11 out of 17 patients (64.70%) not significant {p-value=0.08}, rhinorrhea 8 out of 13 patients (61.53%) not significant {p-value=0.079 } hyposmia 7 out of 14 patients (50%) not significant { p-value=0.072} .(table 6).

Incomplete improvement of the symptoms may be due to, incomplete clearance of the sinuses from diseased mucosa in hidden spaces, or may be due to the impact of general medical comorbidities on the healing process or irreversible changes in the mucosa of the paranasal sinuses.

In study performed by Damm M, Quante G, Jungehuelsing M, Stennert E. Feb 2002 ⁽¹²⁾(279) patients included, improvements were nasal obstruction (84%), headache (82%), and postnasal drip (78%).

In study performed by Bunzen DL et al March 2006 ⁽¹³⁾ The best symptoms relief results were: nasal obstruction (83, 3%), cacosmia/halitosis (80%), hyposmia/anosmia (63,15%), headache (62%)

In study performed by Valerie J. Lund, Ian S. MacKay 1994 ⁽¹⁴⁾ (650) patients, improvements were nasal Discharge 78% nasal Blockage 92% Headache 83% Facial pain 86% improvement in Smell 79%.

In study done by Nasser A. Fageeh , Edilberto O. Pelausa, Adel Quarrington⁽¹¹⁾ 1996 ;220. patients ,improvements were Nasal obstruction69% Nasal discharge 48%

Headache59% improved Loss of smell 40% Facial pain 46% Post-nasal drip 47%.

The difference may be due to their high experience in the field ,well trained, using sophisticated (navigation) system.

COMPLICATIONS

In the current study the follow up of patients was for 3-6 months. The complications occurred in 14 patients (32.55%) all of them were minors, no major complication was happened.(table7).

In study performed by Smith LF,Brindley PC⁽¹⁵⁾ 1993 a retrospective and prospective review of 200 patients under went FESS with a mean follow-up of 17 months 88% of the patients were symptom-free. Minor complications developed in 8% of the patients, only one major complication occurred (0.05%).

In study done by McMains KC⁽¹⁶⁾. Jun 2008 Major complications occur in 0 - 1.5% of cases and minor complications occur in 1.1 - 20.8% of functional endoscopic sinus surgery cases.

In study done by Marleen Vleming, Rene J. Middelweerd⁽¹⁷⁾, 1992 in 593 patients Forty-five patients had complications 7.58% mostly minor except 0.3% of which is major.

There was no major complication in the current study when compared with (above) studies & this is may be due to large number of patients in their studies.

CONCLUSION:

ESS is efficacious in treatment of chronic rhinosinusitis with few minor complications and rare major complications.

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ENDOSCOPIC SINUS SURGERY

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