

*Original Research Article*

**Incidence of Recurrent Nasal Polyposis After Endoscopic Polypectomy**

Harith Fathi Hameed\* Lateef Hussien Alwan Safaa Sahib Naji  
Al-Hilla General Teaching Hospital, Hilla, IRAQ

\*E-mail:harithfathi10@gmail.com

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**Abstract**

This a prospective study done to provide reference information about the incidence of recurrent nasal polyposis and associated risk factors among 30 patients operated on by means of Endoscopic Sinus Surgery between Jan. 2012 –Jan 2014.

These patients presented in otorhinolaryngology dept. in Hilla General Teaching Hospital presented with symptoms and signs of sinonasal polyposis not responding to medical treatment, the diagnosis confirmed by history taken, clinical examination which involved: anterior and posterior rhinoscopy, flexible and rigid nasoendoscopy, with radiological examinations as plain X-ray films and CT- scan of nose & paranasal sinuses (mainly coronal view) taken to all patients to see middle meatal complex.

Then the patients underwent polypectomy by means of Endoscopic Sinus Surgery, after that follow-up done during mean period of 12 months (range 3 months – 24 months) included: regular flexible & rigid nasoendoscopy. In our study we estimated the incidence of recurrent nasal polyposis after Endoscopic Sinus Surgery which was 30% and highlighted the risk factors affected this incidence as: age (mostly affected patients at 4<sup>th</sup> & 5<sup>th</sup> decade 66.67%), gender (males more than females 3.5:1), presence of some conditions (allergic rhinitis in 33.33%, allergic fungal sinusitis in 22.22%, childhood asthma in 22.22%, eczema in 11.11%, aspirin intolerance in 11.11%, and Samter's triad in 11.11%), previous nasal surgery (simple polypectomy) in 44.44%, and polyp extension as extensive polyposis in 77.78% .

**Key Words:** Fess, Functional Endoscopic Sinus Surgery.

**الخلاصة**

هذه دراسة انتظاريه لنسبة حدوث السيليات الأنفية المتكررة والعوامل المؤثرة لزيادة حدوثها, في 30 مريض خضعوا لاستئصال السيليات بواسطة جراحة الأنف الناظورية للفترة ما بين ك2-2012 إلى ك2-2014.

هؤلاء المرضى هم من مراجعي قسم الأنف و الإذن و الحنجرة في مستشفى الحلة التعليمي العام من الذين يعانون من أعراض و علامات تدل على وجود السيليات الأنفية والتي لم تستجيب للعلاج التحفظي الموسع , وتم التشخيص بواسطة اخذ تاريخ الحالة والفحص السريري المتضمن الفحص الأمامي والخلفي للأنف ,الناظور الأنفي المرن و الصلب,الفحص الشعاعي بالأشعة السينية للجيوب الأنفية (صورة وتر) وأشعة المفراس للجيوب الأنفية، بعد ذلك خضع المرضى لعملية استئصال السيليات الأنفية بالناظور الجراحي, وتمت متابعتهم لمدة سنتين بواسطة فحصهم بالناظور الأنفي المرن و الصلب.

وفي هذه الدراسة تم إحصاء نسبة حدوث السيليات الأنفية المتكررة والتي كانت 30% , وسلطنا الضوء على العوامل المؤثرة في زيادة هذه النسبة والتي شملت:العمر (أكثر المرضى في العقد الرابع و الخامس 66,67%),الجنس(الرجال أكثر من النساء:3,5),بعض الأمراض والحالات المصاحبة مثل(حساسية الانف33,33%, التهاب الجيوب الانفية الفطري المثير للحساسية 22,22%, الربو الولادي22,22%, حساسية الجلد11,11%, حساسية الاسبرين11,11%, ثلاثيةسامترز(11,11%),العمليات السابقة 44,44% والسيليات الواسعة الانتشار 77,78%.

**الكلمات المفتاحية:** عملية استئصال السيليات الانفية بالناظور الجراحي.

## **Introduction**

The lateral wall of the nasal cavity is formed by the contribution of several bones [1]. The nasal surface of maxilla, Inferior concha (turbinate), Superior and middle turbinates of the ethmoid bone, Perpendicular plate of the palatine bone. The three most important features of the lateral wall of the nose are the inferior, middle and superior turbinates with their meati. The sinuses (maxillary, anterior ethmoid and frontal) open into the middle meatus, while posterior ethmoidal sinuses into superior meatus and the sphenoid sinuses into sphenoid recess. Hence these are the key areas to be assessed & operated on by endoscopy [2,3]. **Ostio-Meatal Complex (OMC):** Middle meatus, Uncinate process, Hiatus semilunaris, Infundibulum, Maxillary os, Ethmoidal bulla, Agger nasi. Polyp is derived from Greek, meaning many footed (poly, many; pous, footed), but a polyp has only one 'foot' (stalk). A disease characterized by the occurrence of multiple polyps is most correctly named nasal polyposis and it is not a nasal but a sinonasal disease [12]. Nasal polyps are round, soft, semi-translucent, pale or yellow glistening swelling that originate from any part of nasal mucosa or paranasal sinuses [11,12]. Nasal polyposis is endoscopically staged as follows [4,5]: no polyps 0, Restricted to middle meatus 1, Below middle meatus 2, Massive polyposis. FESS is a minimally invasive technique. The same procedure has also simply been referred to as endoscopic sinus surgery (ESS) or endoscopic polypectomy [9,10]. The majority of procedures are bilateral [10,14].

**Approach:** Intranasal surgery is the approach used in FESS for the excision of nasal polyps and involves access to the sinuses via the nasal cavity [14].

**Illumination:** All FESS procedures must involve the use of a standard rigid ENT endoscope/Hopkins rod telescope: 0°, 30°, 45°, and 70° [6]. The following types of procedures may be performed as part of sinus surgery [14,15]: Nasal polypectomy: simply removal of the polyps (not defined

as FESS); Maxillary sinus surgery: opening the maxillary sinus; middle meatus antrostomy: involves creating an opening in the middle meatus; Infundibulotomy: involves creating an opening by removing part or all of the uncinat process (Uncinectomy); Ethmoid sinus surgery to the bulla; Anterior ethmoid sinus surgery; Posterior ethmoid sinus surgery; Sphenoid sinus surgery.

## **Materials and Methods**

A prospective study during a period from January 2012 to January 2014, involved 30 patients, attended in the outpatient of ENT department in Hilla General Teaching Hospital suffered from symptoms & signs of sinonasal polyposis.

Initial patients work-up included questionnaire form presented by history about the symptoms and their duration, included: nasal obstruction, cold feeling, running nose, hyposmia/ anosmia, facial pain...etc. also examination including anterior and posterior rhinoscopy, flexible and rigid nasoendoscopy under local anaesthesia, throat, ear and neck examination was done.

Standard plain X-ray films (water's view) of paranasal sinuses taken to all patients. All patient given medical treatment for 2 weeks (broad-spectrum Antibiotics), with or without antihistamines and local vasoconstrictor and local steroid as Betamethasone spray or drops applied for 4 weeks with 10 days systemic steroid as prednisolon 30mg/day with tapering. Then CT-Scan of paranasal sinuses done (mainly coronal views). Surgery/ESS under General Anaesthesia after doing the investigations, full blood count, clotting time and bleeding time, GUE, chest X-ray, ECG and other relevant investigations.

Polypectomy, Uncinectomy, anterior, and posterior ethmoidectomy, middle-meatal antrostomy and frontal recess clearance in all patients. Sphenoid sinus ostium was widened only involved in CT scan. Any anatomical variations also dealt with in surgery. At discharge from the hospital, patients advised to apply steroid

nasal spray (Betamethasone) with nasal douching & decongestant drops.

In addition, patients advised to followed after 1 month for mean period of 12 months. Each patient attended in the consultant clinic monthly for 3 months, & every 3 months for 1<sup>st</sup>yr, and every 6 months in the second yr (contact them by phone). Subjective assessment for symptomatic improvement and diagnosis of recurrent nasal polyposis assessed by check endoscopy. Post-operative care restricted to remove crusts, division of adhesions, which were performed under endoscopic guidance and for prescription of further medications.

#### **Post-operative Care:**

Including cleansing the surgical cavities. Give a prophylactic broad-spectrum antibiotics (Augmentin tab. 40mg/kg b.i.d /day) for 2 weeks after surgery, combined with nasal douche (dissolved sodium bicarbonate powder in

water) & an intranasal steroid preparation (betamethasone spray or drops). Those patients with extensive polyposis receive course of oral steroids with tapering dose (prednisolon 30mg /20mg/10mg/day each for one week) [7].

Then patients usually seen:1 week to ten days after the surgery then as necessary, usually on a 2-week basis until the cavities healed. Then are seen at: 3,6,12 and 24 months postoperatively. In every visit the cavity is cleaned with endoscope, synechiae are divided, debri removed, further polypoidal mucosa removed, after application of topical local anesthesia , also additional medication prescribed [13].

Most of the patients with recurrent nasal polyposis treated conservatively by topical and systemic steroid +Antibiotics with analgesia, few cases planned for revision ESS.

## **Results**

### **I. Age incidence:**

In our study of 30 patients, the age ranged from 12-55 years, the mean age is 33.7 years, mean age of patients with recurrent nasal polyyps is 35.4 years.

Age/years	No. of patients	%	No. of patients with recurrence	%
12-20	3	10	1	11.11
21-30	10	33.33	2	22.22
31-40	9	30	3	33.33
41-55	8	26.67	3	33.33
<b>total</b>	<b>30</b>	<b>100</b>	<b>9</b>	<b>99.99</b>

### **II. Pre and postoperative incidence of nasal polyposis among genders:**

Gender	No. of patients	%	Post-op recurrence	%
Male	20	66.67	7	77.78
Female	10	33.33	2	22.22
<b>Total</b>	<b>30</b>	<b>100</b>	<b>9</b>	<b>100</b>

### III. Incidence of pre-op symptoms among all patients & post-op symptoms among patients with recurrent nasal polyps.

	Symptoms	No. of patients Preop.	%	Post-op no. with recurrence	%
a.	Unilat. Nasal obstruction Bilat.	30 $\begin{cases} 9 \\ 21 \end{cases}$	100	7 $\begin{cases} 2 \\ 5 \end{cases}$	77.78 $\begin{cases} 22.22 \\ 55.56 \end{cases}$
b.	Running nose	27	90	5	55.56
c.	Hyponasal speech	26	86.67	1	11.11
d.	Mouth breathing	24	80	1	11.11
e.	Postnasal drip	22	73.33	5	55.55
f.	Cold feeling	21	70	3	33.33
g.	pain/facial headache	16	35.33	3	33.33
h.	Anosmia/hyposmia	10	33.33	2	22.22
i.	<b>Epistaxis</b>	<b>6</b>	<b>20</b>	-	-

### IV. Preoperative findings among 30 patients, physical & endoscopic examination:

	Findings	No./ physical examination	%	no./ endoscopic examination	%
a.	Bilateral nasal polyp	30	100	30	<b>100</b>
b.	Post nasal discharge	22	73.33	22	<b>73.33</b>
c.	Congested mucosa	15	50	15	<b>50</b>
d.	Pale mucosa	10	33.33	10	<b>33.33</b>
e.	Mucopus in nasal cavity	10	33.33	10	<b>33.33</b>
f.	Septal deviation	5	16.67	6	<b>20</b>
g.	Clear discharge (serous)	5	16.67	5	<b>16.67</b>
h.	Normal mucosa	5	16.67	5	<b>16.67</b>
i.	septal spur	4	13.33	10	<b>33.33</b>
j.	Hypertrophy of inferior turbinate	2	6.67	2	<b>6.67</b>
k.	Paradoxical middle turbinate	2	6.67	5	<b>16.67</b>
l.	Unilateral polyp	-	-	-	-
m.	Abnormal uncinata	-	-	6	<b>20</b>
n.	<b>Agger nasi</b>	-	-	<b>8</b>	<b>26.67</b>

**V. Incidence of associated diseases & conditions among patients with nasal polyposis and those with recurrence.**

	Associated diseases	No.	%	No. among patients with recurrent NP	%
<b>a.</b>	Allergic Rhinitis	13	43.33	3	<b>33.33</b>
<b>b.</b>	Eczema	4	13.33	1	<b>11.11</b>
<b>c.</b>	Childhood asthma	3	10	2	<b>22.22</b>
<b>d.</b>	Late onset asthma	2	6.67	-	-
<b>e.</b>	Aspirin intolerance	2	6.67	1	<b>11.11</b>
<b>f.</b>	Samter's triad	2	6.67	1	<b>11.11</b>
<b>g.</b>	Allergic fungal sinusitis	2	6.67	2	<b>22.22</b>
<b>h.</b>	Previous nasal surgery	8	26.67	4	44.44

**VI. Endoscopic Staging of nasal polyposis among 30 patients:**

Stages	pre-operative	%
0 no polyp	-	-
1 middle meatal polyp	5	16.67
2 Below middle meatus	15	50
3 Massive polyposis (completely obstructing the nose)	10	33.33

**VII. Details of surgical procedures:**

Details	no.	%
Polypectomy	30	100
Uncinectomy	30	100
Middle meatal antrostomy	30	100
Decapping of bulla	30	100
Anterior ethmoidectomy	22	73.33
Posterior ethmoidectomy	10	33.33
Septal surgery	4	13.33
Aggernasi resection	8	26.67
Resection of concha bullosa	4	13.33
<b>Sphenoid opening</b>	2	6.67

**VIII. Duration of post-operative recurrence-free period in patients with recurrent nasal polyposis.**

Duration	no.	%
< 3 months	2	22.22
3-12 months	6	66.67
> 12 months	1	11.11
<b>Total</b>	<b>9</b>	<b>100</b>

**IX. Post-operative endoscopic staging of nasal polyp among patients with recurrent nasal polyposis (9 patients).**

Stages	no.	%
<b>0 no polyp</b>	-	-
<b>1 restricted to middle meatus</b>	5	<b>55.56</b>
<b>2 below middle turbinate</b>	4	<b>44.44</b>
<b>3 massive polyposis (completely obstructing the nose)</b>	-	-

**X. Endoscopic findings in patients with postoperative recurrent nasal polyposis.**

Findings	no./ endoscopic examination	%
<b>a. Bilateral polyps</b>	7	<b>77.78</b>
<b>b. Postnasal discharge</b>	5	<b>55.55</b>
<b>c. Pale mucosa</b>	4	<b>44.44</b>
<b>d. Unilateral polyp</b>	2	<b>22.22</b>
<b>e. Adhesion (synechae)</b>	2	<b>22.22</b>
<b>f. Congested mucosa</b>	1	<b>11.11</b>
<b>g. Mucopus in nasal cavity</b>	1	<b>11.11</b>
<b>h. Normal mucosa</b>	1	<b>11.11</b>
<b>i. Clear discharge</b>	1	<b>11.11</b>
<b>j. Middle meatalantrostomy narrowing</b>	1	<b>11.11</b>
<b>k. Ostiomeatal complex obstruction</b>	-	-

**Discussion**

In this study, 30 patients underwent polypectomy by means of Endoscopic Sinus Surgery. The mean age in our study is 33.7 years (most common age affected was 21-30, then 31-40years).Male to

female ratio: 2:1, and the mean postoperative follow-up period is 12mts (range 3-24mts), three patients (10%) were lost to followed.

In comparison with other studies reported the above results as in the following table:

Study	no.	age/year (mean)	male: female	length of follow-up/months
Klossek et al [16]1997	50	47 yr	27:23	Minimum 36
DanielsenandOlfsson[17]1996	230	2-79	25:105	14
Jankowski et al [18] 1997	37 39	44 (26-65) 47(25-71)	20:9 24:10	24(18-31) 34(32-36)
Stoop et al[19] 1992	72	44	-	6-12
Kennedy [20] 1992	120	15-77	-	14(3-51)
Gulati&colleagues [21] 2007	30	15-50	2:1	17(6-30)
Our study 2012,13,201430	12-55	2:1	3-24	

During post-operative follow-up period we quantified the number of patients who developed recurrent nasal polyposis, were 9 (30%) and the mean age of them was 35.4 years (mostly affected being 31-55 years), male to female ratio was 3.5:1.

The conditions that are associated with nasal polyposis among all patients estimated as follows: Allergic Rhinitis in 13 patients (43.33%). Childhood asthma in 3 patients (10%), Late onset asthma in 2 (6.67%), Allergic fungal sinusitis (which diagnosed by peroperative finding of mud and histopathological finding of rich eosinophils and hyphae in nasal secretion) in 2 (6.67%), eczema in 4 patients (13.33%), Aspirin intolerance in 2 (6.67%), Samter's triad in 2 (6.67%) and previous nasal surgery in 8 patients (62.67%). These findings differ from studies of: Settupane and colleagues [14] 1997; reported the incidence of associated conditions with nasal polyposis as follow; Aspirin 1.5%, childhood asthma 0.1% and Allergic fungal sinusitis 85%. Bajaj and colleagues [23] 2007; reported 42.9% had previous nasal surgery, history of asthma 26.3%, 13.5% had allergies, Aspirin sensitivity was in 3.4%. Intra operative Findings: - Were also recorded as follows: Bilateral nasal polyps in all patients (100%) and its staging was: Stage I: polyps restricted in middle meatus in five patients (16.67%), stage II: polyps below middle turbinate in 15 (30%) and stage III: massive polyposis in 10 patients (33.33%). The above results studied by Kennedy [20] 1992; who reviewed 120 patients undergoing ESS of which 28% had diffuse nasal polyposis (stage 3) and 31% had polyps restricted to middle meatus (stage 1). Postnasal discharge in 22 patients (73.33%), congested mucosa (injected-red) in 15 patients (50%), pale mucosa in 10 (33.33%), normal mucosa (pinkish) in 5 (16.67%), mucopus in 10 (33.33%), septal deviation & spur in 16 (53.33%), serous discharge in 5 (16.67%), abnormal uncinate process in 6 (20%), paradoxical middle turbinate in 5 (16.67) and agger nasi mold in 8 patients (26.67%). The incidence of recurrent nasal polyps in our study as

mentioned was 30% and as compared with other studies was provide a reference information of this incidence and as follows: Kennedy [20] 1992; reported 4 % polyp recurrence, Gulati and colleagues [21] 2007; reported 10% polyp recurrence. Klossek and colleagues [16] 1997; report a range of recurrence from 3 to 49%. Department of otolaryngology, Downstate medical center at Brooklyn, 11203, USA [22], report 60% developed polyp recurrence. Department of otolaryngology, Head and Neck Surgery University of medicine, Romania [24], reported 24% recurrence. The post-operative period during which patients remain free from nasal polyposis among patients with recurrent nasal polyposis classified as follows: Less than 3 months in 2 patients (22.22%). 3-12 months in 6 patients (66.67%). More than 12 months in 1 patient (11.11%). As in (table: 3-9) (page: 40). The post-operative symptomatic recurrence among patients with recurrence also recorded as follows:- Nasal obstruction presented in 7 (77.78%): 2 (22.22%) was unilateral and 5 (55.56%) bilateral, running nose and postnasal drip in 5 (55.56%), pain / facial headache and cold feeling in 3 (33.33%), Hyponasal speech and mouth breathing in 1 patient (11.11%) and anosmia/hyposmia in 2 patients (22.22%) as (Table: 3-3; page: 31). Wigand et al [8] recorded post-operative Nasal obstruction in 6.7%, rhinorrhoea 14.5%, postnasal drip 15.3%, facial pain and headache 6.6% and hyposmia 15.3%. Lund & Mackay [25] reported that 23% of patients had pre-operative symptoms involving smell. Six months after FESS 79% of patients reported improve smell (12% reported being cured), 21 reported being the same. Also reported 70% of patients had nasal blockage prior to surgery, six months after ESS 92% were improved (23% were cured), 6% were the same and 2% worse. After a mean follow-up of 17 months, 3% of patients reporting having, nasal obstruction & anosmia compared with 32% nasal obstruction and 16% anosmia prior to surgery respectively

in a study by Levine. Royal college of surgeons England audit [26] showed success rate of 84% for blockage, 75% for pain relief and 96% for discharge after ESS. Endoscopic examination of patients with recurrent nasal polyposis revealed the followings: Bilateral Nasal polyps in 7 patients (77.78%), unilateral polyp in 2 (22.22%), postnasal drip in 5 (55.55%), pale mucosa in 4 (44.44%), normal mucosa and congested mucosa in 1 (11.11%), mucopus in 1 (11.11%), clear discharge(serous) in 1(11.11%), adhesions (synechiae) in 2 (22.22%) and narrowed middle meatal antrostomy in 1 patient (11.11%). Gulati and colleagues [21] reported 10% bilateral polyps, 6.67% post-operative middle meatal antrostomy closure and synechiae was zero. Bajaj and colleagues[23] reported 3.4% synechiae post-operatively.

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