



Original Article



Comparison of Effectiveness of Conventional Polypectomy with Functional Endoscopic Sinus Surgery

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ABSTRACT

It is common for rhinologists to face nasal polyposis. When other treatments have failed, patients must undergo Functional Endoscopic Sinus Surgery (FESS) with a microdebrider or traditional equipment to clear out their sinuses and restore normal airflow. **Objective:** To compare the effectiveness of conventional polypectomy with functional endoscopic sinus surgery in patients presenting to tertiary level care hospital in Islamabad, Pakistan. **Methods:** This study was conducted at Department of ENT Head and Neck Surgery, Pakistan Institute of Medical Sciences, Islamabad from November 2017 to December 2018. Eighty-eight patients were enrolled and they were randomly into group A and group B assigned for conventional polypectomy and functional endoscopic sinus surgery, respectively. **Results:** There were 27 (61.4%) males and 17 (38.6%) females and mean age was 34.59 ± 12.00 years in conventional polypectomy and 28 (63.6%) males and 16 (36.5%) females and mean age was 36.64 ± 10.76 years in function endoscopic sinus surgery. The recurrence rate after 6 months in patients underwent conventional polypectomy was 18 (40.9%) and functional endoscopic sinus surgery was 2 (4.5%). **Conclusions:** The frequency of recurrence of nasal polyps after conventional polypectomy was more than in patients receiving functional endoscopic sinus surgery procedure.

INTRODUCTION

Edematous mucosal outpouchings of the nasal and paranasal sinuses, known as sinonasal polyps, can be observed in the nasal cavity or isolated in the sinuses, typically in the early stages of the disease. Allergies and asthma are common causes of sinonasal polyps. When they're little, they might not create any problems, but when they grow, they clog the nose and prevent the sinuses from draining properly [1]. The recurrence rate, chronicity, and severity of sinonasal polyposis make it a significant issue for clinicians. This widespread condition affects about 4% of the global population at some point in their lives. It may be the only issue or a symptom of other serious conditions,

such as asthma or aspirin idiosyncrasy [2]. Restoring nasal breathing and preventing its recurrence are both achieved via appropriate management and therapy of this condition [1, 3]. For smaller nasal polyps, medical therapy often consists of systemic and local steroids; however, surgery is sometimes necessary for bigger polyps [4]. In contrast to FESS, which necessitates a skilled surgeon, endoscopes of varying diameters and angles, and extensive sedation, conventional polypectomy makes use of standard devices that are readily available in even small-setup hospitals. The high upfront cost and recurring expense of bits, tips, and blades make microdebriders an inefficient instrument [3-



6]. Hereditary predisposition and persistent nasal mucosal irritation are common causes of polyp development. They are associated with nonallergic conditions more frequently than allergic ones. Inflammatory alterations were characterized by Gohar MS et al., as the pathophysiology of nasal polyps [7]. Airflow turbulence and polyps typically originate in the ethmoidal area's narrowed spaces, which are narrowed due to mucosal inflammation. An increase in sodium intake, water retention, and polyp development are all outcomes of fibroblasts' effects on the bioelectric integrity of sodium channels. The primary method of medically treating nasal polyp(s) is with topical or oral nasal steroids. When administered alone, immunotherapy fails to eradicate polyps [8]. When other forms of therapy have failed, surgical intervention may be necessary. When it comes to nasal symptoms, polypectomy is most effective in relieving them. Nevertheless, there is a greater recurrence incidence after polypectomy for numerous nasal polyps. Some surgical procedures include Functional Endoscopic Sinus Surgery and snare and forceps removal of a polyp (polypectomy). Constant sinusitis, brought on by an obstructive blockage in the outflow system, makes breathing painful and difficult. Citations [9, 10]. The high recurrence rate of conventional nasal polypectomy has rendered treatment unappealing. Patients with nasal polyposis and chronic rhinosinusitis were less likely to need sinus surgery after 12 weeks of therapy with fluticasone propionate nasal drops, according to Galletti C et al [11]. However, 14 out of 27 patients still needed surgery. When conventional medical methods fail to alleviate symptoms of nasal polyposis or chronic rhino sinusitis, FESS has recently been the therapy of choice. After an average of 31.7 years of follow-up, Zong H and Lou Z found that 85 percent of patients' quality of life improved [12]. The restriction of having to use just one hand for everything became apparent as endoscopes became standard equipment for surgery. The necessity for a multi-function surgical tool was an inevitable consequence of this fact. A number of decades ago, with the advent of the microdebrider, powered sinus devices became commonplace. In 1969, Urban developed a "vacuum rotary dissector" the precursor of the modern microdebrider. In 1970, the House group began using it for arthroscopy and then for morselizing auditory neuromas. In 1994, Setliff and Parsons introduced these devices for use in nasal surgery [13]. Recurrence of illness is one of the most common serious consequences following this operation. Another author found that recurrence rates were 36% for individuals who underwent conventional polypectomy and 8% for people who had functional endoscopic sinus surgery.

The purpose of this study was to compare the recurrence rates of nasal polyps after FESS and conventional polypectomy. By comparing the two, we can improve

patient care by increasing access to endoscopes and microdebriders, which will reduce the need for patients to undergo multiple surgeries to address the same problem.

METHODS

This Quantitative experimental was conducted at Department of ENT Head and Neck Surgery, Pakistan Institute of Medical Sciences, Islamabad (Ref# F.1-1/2015/ERB/SZABMU) from November 2017 to December 2018 and 88 patients were enrolled. They were divided in two groups; each group comprised 44 patients. With level of significance as 5%, power of the test as 80%, P1 as 125 and P2 as 365, N was 44 in each group. Sample size came to be 88. Probability simple random sampling technique with lottery method was utilized. All patients undergoing polypectomy in ENT department between 18 to 60 years of age, both genders were included. All patients with acute infection of the nose, upper respiratory tract and paranasal sinuses assessed by clinical examination and radiological findings as acute ENT infections are relative contraindication for polypectomy due to increased chances of infection and post-operative complications, not fit for surgery, general anesthesia, bleeding diathesis and deranged coagulation profile due to increased risk of bleeding and pregnant ladies which is relative contraindication for polypectomy were excluded. Patients were collected and admitted from the outdoor department of the ENT department, Pakistan Institute of Medical Sciences Islamabad. Group A treated by conventional intranasal polypectomy method and group B was treated by Functional Endoscopic Sinus Surgery (FESS). Patient demographic data along with registration number was noted. Informed written consent with research inclusion consent was taken from all patients preoperatively. Detailed history was taken and clinical and ENT examination was done and findings were noted. Baseline investigations and pre-operative anesthesia fitness for surgery was done. Patients underwent the procedure by expert surgeon. General anesthesia was used during the surgery, which also included thoracotomy and endotracheal intubation. Group A underwent endoscopy with the assistance of a magnum microdebrider. Group B, the conventional endoscopic group, used the traditional endoscopic surgical equipment and the typical Messerklinger procedure as described by Stammberger. The duration of the operation, which began with the insertion of the vasoconstrictor nasal pack and ended with the insertion of the antibiotic-impregnated nasal pack, was meticulously recorded by an impartial intern doctor stationed in the ENT department. In both groups A and B cases were kept on follow up after 6 months; anterior and posterior rhinoscopy was done so that we can be able to look for any recurrence and to compare the recurrence of both groups. Data were then analyzed using SPSS version 24.0. Comparison in the recurrence after 6 months in both

groups was done by using Chi-square test considering p-value <0.05 as significant.

RESULTS

Mean age of the study participants was 34.59 ± 12.00 in conventional polypectomy and 36.64 ± 10.76 years in functional endoscopic sinus surgery (Table 1).

Table 1: Descriptive Statistics of Age of Patients (n=88)

Age (Years)	Conventional Polypectomy Mean \pm SD	Functional Endoscopic Sinus Surgery Mean \pm SD
	34.59 \pm 12.00	36.64 \pm 10.76

There were 27 (61.4%) males and 17 (38.6%) females in conventional polypectomy and 28 (63.6%) males and 16 (36.5%) females in function endoscopic sinus surgery (Table 2).

Table 2: Frequency of Genders (n=88)

Gender	Conventional Polypectomy N (%)	Functional Endoscopic Sinus Surgery N (%)
Male	27 (61.4%)	28 (63.6%)
Female	17 (38.6%)	16 (36.4%)

The recurrence rate after 6 months, patients underwent conventional polypectomy and functional endoscopic sinus surgery (FESS) was 18 (40.9%) and 2 (4.5%). Statistically the significant ($P < 0.05$) was difference between the groups (Table 3).

Table 3: Comparison of Recurrence Rate after 6 Months (n=88)

Recurrence	Conventional Polypectomy N (%)	Functional Endoscopic Sinus Surgery N (%)	P-Value
Yes	18 (40.9%)	2 (4.5%)	<0.05
No	26 (59.1%)	42 (95.5%)	

Note: $2 = 16.565$, $df = 1$, $P\text{-value} = 0.000$

DISCUSSION

Every day, doctors see cases of nasal polyposis, a condition characterized by the development of polyps inside the nasal cavity. The intensity, chronicity, and increased likelihood of recurrence make it a major problem for western nations [14]. Aspirin idiosyncrasy and asthma are two major medical conditions that might be causing this symptom or another one altogether. Nasal polyposis can be effectively treated and managed to restore normal nasal airflow and reduce the likelihood of recurrence [15]. Recurrence rates at 6 months were the primary endpoints for this study's design, which compared functional endoscopic sinus surgery to traditional polypectomy. The majority of polyps in patients are caused by anterior ethmoids. Polyps typically manifest in the ethmoidal space of the fundibulum, turbinates, and uncinat process. The anterior portion of the ethmoidal bulla is another, less common, location where polyps can originate, blocking the hiatus semilunaris channel Citations [16, 17]. When describing the endoscopic method of sinus surgery for the

treatment of nasal polyposis, a recent research adopted the name FESS [18]. The majority of infections affecting the frontal and maxillary sinuses, according to FESS, originate in the nose and anterior ethmoids. Clearing sick air cells and mucosal contact sites is a specific function of FESS in the osteomeatal area. The natural ostia of the maxillary and frontal sinuses are used to restore ventilation and drainage. Patients with severe illness who had a preoperative CT scan with FESS reported significant symptom relief, according to Galluzzi F et al [19]. In every patient except five, we were able to maintain the central turbinate. To improve access and visibility, we need to remove or cauterize the central turbinate in those five situations. Throughout the procedure, we had no significant complications. Prior research has shown that functional endoscopic sinus surgery has a very low complication risk of 0.5 percent. It has two possible treatments: medicine and surgery. For endoscopic surgery, the most important instrument is the microdebrider. Ultrasonic aspirators, coblators, and endoscopic drills are only a few of the advanced instruments that have their roots in powdered sinus devices, which are in widespread usage [18]. The microdebrider is an electrically driven shaver with a cylindrical form that effectively protects the nasal mucosa while minimizing blood loss. The continual suction of the microdebrider, together with the short healing period and absence of damage, crusting and blockage, allows the nasal cavities to be repaired and resume normal functioning. In A total of 55 (62.5%) male and 33 (37.5%) female patients participated in our research. Likewise, in a research carried out by Calus L et al., there were 10 male patients (50%) and 10 female patients (50%) respectively [20]. After 6 months, patients who received Functional Endoscopic Sinus Surgery (FESS) had a recurrence rate of 4.5 percent, whereas those who underwent conventional polypectomy had a recurrence rate of 18. Similarly, Varman et al., found that recurrence occurred at a rate of 36% in patients who underwent traditional polypectomy and only 8% in individuals who had functional endoscopic sinus surgery [1]. A highly advantageous surgical technique for enhancing mucociliary transport by reducing inflammation, oedema, and polyp development is FESS, according to Dadgarnia M et al [21]. In order to improve patient care and reduce the need for recurrent surgeries, more research comparing FESS to traditional polypectomy is needed. This will help increase access to modern tools and knowledge, such as endoscopes and microdebriders, which in turn will improve patients' quality of life. The indications for sinus surgery have been broadened simultaneously by both FESS and CT technologies [22]. The If you're worried about problems with your brain, eyes, or major blood arteries, you may want to look into the emerging field of imageguided endoscopic surgery. When a patient has exceptionally atypical sinus architecture,

severe chronic sinusitis, or a history of sinus surgery that left anatomical markings, this sort of surgery may be indicated.

CONCLUSIONS

The frequency of recurrence of nasal polyps after conventional polypectomy was more than in patients receiving functional endoscopic sinus surgery procedure.

Authors Contribution

Conceptualization: MZ

Methodology: AU

Formal analysis: MZ, WUD, SRM, MR

Writing, review and editing: MZ, MB, MR, MA

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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