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ORIGINAL ARTICLE

Efficiency of FESS in Comparison to Conventional Polypectomy for Treatment of Nasal Polyps

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ABSTRACT

OBJECTIVE: To compare recurrence rate of nasal polypi, operative time and hospital stay after functional endoscopic sinus surgery (FESS) and conventional (CNV) methods.
METHODOLOGY: A prospective cohort study conducted at Department of Otorhinolaryngology Head & Neck Surgery, Sindh Govt Qatar Hospital and Patel Hospital, Karachi from October 2019 till October 2023 after taking approval from Ethical Review Committee (ERC). This study includes 50 patients having nasal polypi of varying age and sex recruited from ENT OPD in which one group underwent conventional method for removal of nasal polyps and other group underwent FESS surgery.
RESULTS: A total of 50 patients were analyzed between two groups. The average operating time in CNV technique was higher (1.84 ± 0.48 hours) as compared with FESS technique which was (1.78 ± 0.38 hours). Similarly, average hospital stay in patients who underwent FESS operative technique was lower (2.48 ± 0.51 days) as compared to CNV which was (3.92 ± 0.86 days). Overall recurrence rate of nasal polypi was also calculated in CNV and FESS techniques and was observed 56% and 4% respectively.
CONCLUSION: FESS is found to be more efficient than conventional intranasal polypectomy in terms of recurrence of sinonasal polyposis and post-operative stay duration.

Key Words: Choroidal neovascularization (CNV), functional endoscopic sinus surgery (FESS)

INTRODUCTION: The nasal mucosa and paranasal sinuses are affected by allergies and inflammatory reactions that can cause nasal polyps, which are invaginations of the nasal mucosa connected by a pedicle that originates from the maxillary sinuses, middle turbinate, ethmoidal sinuses, and occasionally the septum[1]. It manifests as smooth, pedunculated, semitranslucent, pear- or round-shaped masses that are gelatinous and semi translucent and are made of inflammatory mucosa that out pouches into the nose[2]. The estimated prevalence of nasal polyposis is 1% – 4%[3], with a little male preponderance (3–4%)[4]; nevertheless, in a small number of investigations, the rates have been as high as 32%[5].

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Many variables are thought to be involved for the development of nasal polyposis; however, the precise aetiology and pathophysiology of the condition are unknown. Allergies, viral, bacterial, or fungal infections are examples of potential starting stimuli that can accelerate nasal mucosal inflammation and lead to the development of polyps[6,7]. On the histology of the nasal polyp lamina propria, more inflammatory cells—particularly eosinophils, neutrophils, and lymphocytes—have been detected versus in the healthy nasal mucosa[8,9].

The first line of treatment for nasal polyps is medical supervision. Intranasal steroids or a brief course of systemic steroids are the two forms of medical treatment. Leukotriene modifiers, antibiotics, and antiallergic medications are among the other medicinal therapies examined[10]. If medicinal care is not effective, surgical removal is the next course of action. By clearing the nose of nasal polyps and enabling the drainage of diseased sinuses, surgery aims to restore the nasal physiology. In case of failed medical therapy various surgical approaches might be useful to get rid of the polyps but with the possibility of recurrence after the surgery[11].

Over the last 25 years, endoscopic sinus surgery has essentially taken the role of more traditional, invasive intranasal procedures. FESS, a well-recognized approach that employs a variety of methods to open the sinuses under direct visualisation, is used to treat sinonasal polyposis[12]. When considering procedures, FESS is safer and more effective than traditional intranasal polypectomy. Additionally, the overall rate of nasal polyposis complications and recurrences has decreased[13,14].

One of the most popular procedures used nowadays to treat chronic sinus problems is functional endoscopic sinus surgery (FESS)[15]. With a 98% success rate, this procedure has been utilised to treat roughly 200,000 patients yearly in the United States[16]. In addition to polyp removal, FESS is a minimally invasive approach that uses endoscopy for drainage and ventilation process improvement. In comparison to other traditional modalities, this treatment is superior since it not only removes polyps but also aids in opening middle meatus clefts, which significantly reduces the likelihood of recurrence.

A research examined the effectiveness of conventional and endoscopic endonasal polypectomy in terms of nasal polyposis recurrence, finding that 36% of cases with conventional polypectomy and 12% with FESS had recurrence[17]. These results were reported in another research to be 30% in conventional and 5% in FESS[18]. The appeal of traditional polypectomy has declined due to high recurrence[19]. Humayun et al. reported in their study that between 24 and 48 hours, 73.33% cases in FESS and 46.67% cases using the traditional approach were discharged (p=<0.05, df=1, Chi-square = 4.44), also they reported that following FESS, 6.67% of cases had a recurrence; while following conventional surgery, 30% of cases did[20].

Hence the aim of this study is to compare recurrence rates of nasal polypi, operative time and hospital stay after functional endoscopic sinus surgery (FESS) and conventional (CNV) methods.

METHODOLOGY: This is a prospective cohort study conducted at Department of Otorhinolaryngology Head & Neck Surgery, Sindh Govt Qatar Hospital and Patel Hospital, Karachi from October 2019 till October 2023, after getting approval from the Hospital Ethical Review Committee (ERC). The study includes 50 patients having nasal polypi of varying age and sex recruited from ENT OPD in which one group underwent conventional method for removal of nasal polyps and other group underwent FESS surgery.

The inclusion criteria were patients having nasal obstruction due to nasal polyps and underwent surgery by conventional method or FESS. However, patients who were on medical treatment for nasal obstruction and those having nasal obstruction due to atrophic rhinitis were excluded.

Surgical Technique: A total of 50 patients were analyzed between two groups who were suffering from nasal polyps and were admitted for surgical removal. Two different methods were adopted after dividing patients into two groups. In Group "A" conventional methods like simple polypectomy, intranasal ethmoidectomy and extra nasal ethmoidectomy were done. In group B, the FESS technique was performed. Patients were followed over a period of 6 months.

RESULTS: In our study, there were 35 male and 15 female patients. The ratio of nasal polyp in male & female has been 2.3 : 1 (Figure 1).

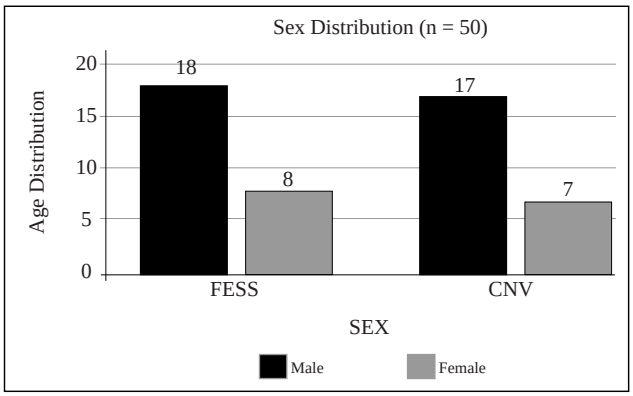

Figure 1: Sex Distribution

The range of age in which nasal polyps were more frequent was from 18 to 35 years (Mean age 27 ± 4.91) (Figure 2).

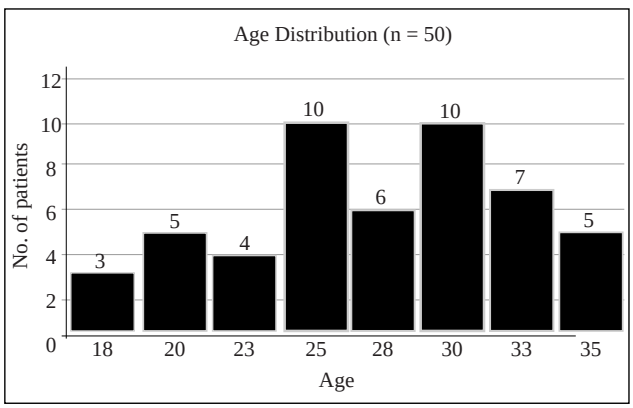

Figure 2: Age Distribution

Further, we also found a higher incidence of nasal polyps in rural population as compared to urban ones. In our study it has been reported that 45% of our patients belong to lower socio-economic status, 50% belongs to middle class background and 5% were from high Socio- economic status.

Smoking did not seem to be an etiological factor for nasal polyps and no special relationship could be found with occupation in our study.

Regarding symptoms in our study, all patients had nasal obstruction, 70% had history of rhinorrhea, 80% had postnasal drip, 60% complains of sneezing, 70% had anosmia and 30% encountered facial pain.

The average operating time in CNV technique was slightly higher (1.84 ± 0.48 hours) as compared with FESS technique which was (1.78 ± 0.38 hours). Similarly average hospital stay in patients who underwent FESS surgery was slightly lower (2.48 ± 0.51 days) as compared to CNV which was (3.92 ± 0.86 days) Table No. 1

Table 1: Comparison of Patient's Demography of Nasal Polypi Between Fess and Conventional Procedures

Variables	CMV (n=50)	FESS (n=50)	Significance
Age (Years)	27.40+5.06 (18–35)	27.28+4.86 (18–35)	t= 0.10 p=0.93
Operative Time (Hours)	1.84+0.49 (1–2.5)	1.78+0.38 (1–2.5)	t= 0.50 p=0.63
Hospital Stay (Days)	3.92+0.86* (2–5)	2.48+0.51 (2–3)	t= 7.19 p=0.001*

Key:
Given measurement given in column 2 & 3 is Mean +/- Standard deviation. (Range)
Shows significantly greater at $p < 0.05$.
CNV: Conventional operative procedure
FESS: Functional endoscopic sinus surgery

We performed simple polypectomy in 15 patients, intranasal ethmoidectomy in 5 patients, extra nasal ethmoidectomy in 5 patients, and FESS in 25 patients and overall recurrence rate of nasal polypi in CNV and FESS procedure was found to be 24% and 4% respectively. The recurrence was significantly associated with the method of surgical treatment, and it was more in CNV method as shown in (Table 2).

Table 2: Comparision between Recurrence rate of CNV and FESS

Follow Up Duration	CNV (n = 25)	FESS (n=25)	
1 month	0	0	
2 months	1(4%)	1(4%)	p = 0.8
6 months	5(20%)	1(4%)	p = 0.001

DISCUSSION: In 1985, Kennedy introduced the term "functional endoscopic sinus surgery" (FESS), which involves utilizing an endoscope to address issues related to nasal clearance, drainage, and sinus aeration. The advent of rigid endoscopes has been a significant stride in rhinology, facilitating enhanced visualization of sinonasal structures. FESS promotes swift ciliary regeneration compared to procedures involving extensive tissue removal, thereby facilitating expedited drainage[12]. FESS emerges as a viable treatment avenue for chronic rhinosinusitis accompanied by polyposis that remains unresponsive to medical interventions. However, the recurrence of polyps is frequent, likely attributed to scarring and constriction within the osteomeatal complex drainage routes[11,21]. In our investigation, the average age at disease onset was approximately 27.4 ± 5.06 years for the CNV group and 27.28 ± 4.86 for the FESS group, with a distribution of 70% male patients and 30% female patients. By comparison, Sandhauset et al. and Adnane et al. observed a slightly older age at presentation, with a mean of 49.3 ± 12.7 years. Both of these studies also noted a predominance of male participants[15,22]. In another study[19], the average age was reported as 37.9 years, with males comprising 64.7% of the participants[4,23]. Their age range spanned from 18 to 60 years, which contrasts with our study where the age range was 18 to 35 years. Sandhauset et al. observed a narrower age range of 27 to 46 years, while Barac et al. documented a wider range from 16 to 71 years[24,7]. In a separate study, the mean age was noted as 37.9 years, with males constituting 64.7% of the cohort. Their age distribution ranged from 18 to 60 years, differing from our study's narrower range of 18 to 35 years. Sandhauset et al. observed a more limited age span, ranging from 27 to 46 years, while Barac et al. documented a broader spectrum from 16 to 71 years[16]. Recurrence rates following FESS were documented at 12% by Gohar et al., 8% by Dalziel et al., and 16.85% by Chaaban et al., figures which align closely with our findings. Conversely, Van der Veen et al. reported slightly higher recurrence rates at 35.6%, and Singh et al. at 25%, a figure consistent with our study's findings. However, studies by Barac et al. (56%) and Wynn et al. (60%) yielded rates un proportionally higher to the reported literature[7,11,12,19,23,25]. Singh et

al. observed nasal polyposis recurrence in 55% of cases following polypectomy. In contrast, Dalziel et al. reported a lower recurrence rate of 35%, demonstrating some variability in outcomes among different studies[4,12]. In a prospective randomized single-blind study involving 311 cases of bilateral nasal polyps, one side was treated with Blakesley forceps and the other with a microdebrider. Over a follow-up period of 13.3±1.2 months, significantly lower nasal polyp recurrence rates were observed with Blakesley forceps compared to the microdebrider ($p<0.001$)[26]. However, it's worth noting that in our procedures, we exclusively utilized the microdebrider for all FESS procedures.

FESS offers enhanced management of both nasal polyps and various other sinonasal pathologies, demonstrating reduced complications and lower recurrence rates compared to conventional polypectomy. The higher recurrence rates associated with the disease are attributed to its severity, as evidenced by the frequent reappearance of polyps in cases of more advanced disease stages[23]. FESS entails a more intricate procedure that typically necessitates longer surgical durations compared to conventional polypectomy. However, its advantages lie in offering superior visualization of the surgical field and employing powered instruments, rendering it a preferable option over traditional intranasal polypectomy[12].

CONCLUSION: It can be concluded that FESS is significantly efficient as compared to conventional intranasal polypectomy in terms of recurrence of sinonasal polyposis and duration of stay in post operative period.

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