

## A 5-Year Experience in Functional Endoscopic Sinus Surgery under Local Anaesthesia

Amrit Raj Sharma<sup>1</sup>, Kirty Chandra<sup>2</sup>, R. P. Thakur<sup>3</sup>

<sup>1</sup>Senior Resident, Department of ENT, Anugrah Narayan Magadh Medical College, Gaya, Bihar, India,

<sup>2</sup>Post Graduate Resident, Department of ENT, Anugrah Narayan Magadh Medical College, Gaya, Bihar, India

<sup>3</sup>Head of Department, Department of ENT, Anugrah Narayan Magadh Medical College, Gaya, Bihar, India

---

Received: 25-09-2023 / Revised: 23-10-2023 / Accepted: 18-11-2023

Corresponding Author: R. P. Thakur

Conflict of Interest: Nil

---

### Abstract:

**Background:** Functional endoscopic sinus surgery (FESS) under local anaesthesia is the best option for many nasal and sinus surgeries and has low risk factors and associated complications. The main aim is to study nasal endoscopic surgery.

**Materials and Methods:** The type of the analysis was retrospective study. The patients who experienced FESS for over a time of 5 years from Anugrah Narayan Magadh Medical College in Gaya, Bihar, India were included in this study. The required details about the participants such as pre and post operative evaluation, surgical complications and associated risk factors were all collected.

**Results:** Totally 300 patients were selected for the study among which most of them, nearly 80% experienced chronic rhinosinusitis with nasal polyp as a common complication. 8 patients were affected with epistaxis post-operation but did not need surgical intervention. All the patients were sent back home the very next day.

**Conclusion:** Functional endoscopic sinus surgery is known to be more convenient for the patients and has low associated risk factors. Therefore, functional endoscopic sinus surgery under local anaesthesia is considered to be a safe and feasible procedure.

**Keywords:** FESS, Chronic Rhinosinusitis, Nasal Polyp, Nasal Endoscopic Surgery, Post Operative Evaluation.

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

---

### Introduction

Endoscopic nose surgery is an important surgical procedure in the department of otorhinolaryngology. Current developments in rhinological techniques have paved the way for more advanced procedures to be performed under local anaesthesia [1, 2]. In the otorhinolaryngological unit, functional endoscopic sinus surgery is used to treat sinus related conditions such as sinusitis which is known as the inflammation of sinus. Globally, procedures like epistaxis treatment, endoscopic septoplasty and endoscopic turbinoplasty under local anaesthesia are very commonly conducted by experienced surgeons in the well-equipped otorhinolaryngology unit.

Functional endoscopic sinus surgery is usually conducted with general anaesthesia, but the risks and complication of general anaesthesia is higher and takes more time to recover [3]. Hence many surgeons are now adopting functional endoscopic sinus surgery in association with local anaesthesia to attain low risks and complications to the

patients. Functional endoscopic sinus surgery (FESS) under local anaesthesia is the better option and has low risk factors and associated complications. Well developed countries like Malaysia are now opting FESS under local anaesthesia [4].

In this research article, a study about functional endoscopic sinus surgery under local anaesthesia was conducted and outcome of patients with five years of experience was studied.

### Materials and Methods

This study was a retrospective study. All the participants who experienced functional endoscopic sinus surgery under local anaesthesia at Anugrah Narayan Magadh Medical College in Gaya, Bihar, India were included in this study. The inclusion criteria were the patients who experienced functional endoscopic sinus surgery under local anaesthesia and the exclusion criteria was the patients whose data were lost or removed from regular checkups. The required details about the

participants such as pre and post operative evaluation, surgical complications and associated risk factors were all collected.

Totally 300 patients were selected with appropriate inclusion criteria. Complete data about the patient's age, gender, surgery indication and its type, complications of the surgery (pre and post operation) and waiting time were all collected and recorded. Individually the patient's condition of sinuses, unilateral or bilateral functional endoscopic sinus surgery, time taken for the surgery and any previous record of operations were also questioned to the patients.

#### Collection of Data:

The last visit to the clinic by the patients to the time the surgery was performed was called the waiting time of the individual patient. A total of 5 surgeons were given responsibility for all the surgeries and they had an experience of minimum three years in the procedures. All the scheduled functional endoscopic sinus surgeries were conducted in the Otorhinolaryngology department of the Anugrah Narayan Magadh Medical College in Gaya, Bihar, India.

#### Surgical Procedure:

All the patients were admitted a day before in the ENT clinic and then the next day they were taken to the surgery. The levels of BP, pulse rate and oxygen saturation of the patients were all assessed throughout the treatment. 25 minutes before the surgery topical anaesthesia and nasal packing with 4% xylocaine mixed with adrenaline were applied to the patients.

The nasal cavity was filled with cottons immersed in a mixture of 4% xylocaine and adrenaline. Saline

was used to clean the face of the patients. Local anaesthesia (dental) was given to the middle nasal conchae for the functional endoscopic sinus surgery to be performed. In case of any pain the patients were given pethidine (25 µg to 50 µg) intravenously. Once all the arrangements were done the procedure of functional endoscopic sinus surgery was performed.

Awareness to the patients was given to gulp down any blood or saliva fluids from the nasopharynx in order to protect them from coughing. A thorough observation was done to the patients post surgery and they were allowed back to home after 5 to 6 hours of observation. The prescribed medicine post surgery to the patients was given such as oral antibiotics, antihistamines and analgesics.

#### Results

Totally 300 patients were included in this study out of which 198 were male and the remaining 102 were female. The majority of the patients in this study were 50–60 years which is about 28% and 15 years was the minimum age of the patient, and the maximum age of the patient were 78 years of age. Hence the average age of the patients in this study was  $45.3 \pm 15.2$  years. About 60% of the patients did not face any long term conditions and only the remaining patients had an association of one or more conditions like blood pressure, asthma and DM.

However, the most common condition was chronic rhinosinusitis with nasal polyps (Table 1) which was observed in more than 79.33% of the patients and the chronic rhinosinusitis without nasal polyps was seen in 11.33% of the patients and antrochoanal polyposis was seen in the remaining 9.33% of the patients.

**Table 1: Diagnosis**

Diagnosis	Number of patients (n = 300)
Chronic rhinosinusitis with nasal polyp	238
Chronic rhinosinusitis without nasal polyp	34
AntroChoanal polyp	28

About 80% of the patients had no history of previous operations and the remaining 20% of the patients had gone through operation for the current conditions. The average waiting time of the patients was 5.2 weeks and about 58% of the patients got the treatment done in a month from their final visit to the clinic. 8 patients were affected with epistaxis

post-operation but did not need surgical intervention. All the sinuses such as the ethmoid, maxillary, frontal and sphenoid sinuses were handled in the surgery as per requirement. The data on the names of required sinuses in the surgery are listed in Table 2.

**Table 2: Paranasal sinus operated**

Paranasal sinus operated	Number of patients
Maxillary sinus	300
Anterior ethmoidal sinus	222
Posterior ethmoidal sinus	152
Sphenoid sinus	20
Frontal sinus	8
Combination	226
Full house FESS	8

The majority of the sinus was maxillary sinus, which was operated in all the 300 patients, anterior ethmoid sinus was operated in about 222 patients, posterior ethmoid sinus was operated in about 152 patients, sphenoid sinus was operated in about 20 patients, frontal sinus was operated in about 8 patients and full house FESS was operated on 8 patients in association with local anaesthesia.

About 72 % of the patients experienced the treatment bilaterally and the remaining 28% of the patients experienced the treatment unilaterally. In accordance with anaesthesia, about 130 patients needed only local anaesthesia and 170 patients needed local anaesthesia in combination with pethidine intravenously. The average surgery duration of functional endoscopic sinus surgery was  $49.3 \pm 20.8$  minutes and the mean quantity loss of blood during the surgery was 30-35 mL. No major complications were observed during the surgery. The patients were discharged in a maximum of six days of time.

### Discussion

Over 3-4 decades the procedure of rhinological surgeries has been conducted in association with local anaesthesia and is never a new technique to the world [5]. Functional endoscopic sinus surgery is usually conducted with general anaesthesia, but the risks and complication of general anaesthesia is higher [6]. Hence many surgeons are now adopting functional endoscopic sinus surgery in association with local anaesthesia to attain low risks and complications to the patients [7].

Functional endoscopic sinus surgery (FESS) is the best option for many head and neck surgeries and has low risk factors and associated complications [8, 9]. The major indication of functional endoscopic sinus surgery in our study was chronic rhinosinusitis with and without nasal polyposis and the second complication was antrochoanal polyposis. This study revealed that all types of paranasal sinuses such as ethmoid, maxillary, frontal and sphenoid sinuses can be managed under local anaesthesia and so general anaesthesia is not required. Also, the procedure of functional endoscopic sinus surgery in association with local anaesthesia costs considerably less when compared to general anaesthesia [10, 11].

Functional endoscopic sinus surgery in association with local anaesthesia requires short time for the patients to recover and shows very low indications of epistaxis [12]. The patients are also allowed to go back home and continue their routine life with more quality when compared to general anaesthesia [13, 14]. The average waiting time of the patients in this study was 5.2 weeks which is a very short duration of time when compared to the duration of surgery performed with general anaesthesia.

Gittelman et al conducted a study and concluded that the rhinological treatments in association with local anaesthesia experienced less blood loss of about 23 mL whereas in the procedure associated with general anaesthesia the blood loss was higher of about 58 mL [7]. In this study, the average blood was estimated to be 30-35 mL, and this may be due to the selected participants' less extensive disease conditions. However, all these risk factors and complications can be minimized by careful selection and assessment of patients [15]. The patients must be let to know about the procedure carefully since the surgery associated with local anaesthesia involves no movement and even a minute action of the patient can result in severe reactions.

### Conclusion

Functional endoscopic sinus surgery under local anaesthesia is known to be more convenient for the patients and has low associated risk factors. Therefore, functional endoscopic sinus surgery under local anaesthesia is considered to be a safe and feasible procedure. However future studies are needed to assess the outcome of this procedure under several different conditions.

### References

1. Lee JT, DelGaudio J, Orlandi RR. Practice Patterns in Office-Based Rhinology: Survey of the American Rhinologic Society. *Am J Rhinol Allergy*. 2019;33(1):26–35.
2. Varshney R, Lee JT. New innovations in office-based rhinology. *Curr Opin Otolaryngol Head Neck Surg*. 2016;24(1):3–9.
3. Prickett KK, Wise SK, DelGaudio JM. Cost analysis of office-based and operating room procedures in rhinology. *Int Forum Allergy Rhinol*. 2012;2(3):207–211.
4. Fedok FG, Ferraro RE, Kingsley CP, Fornadley JA. Operative times, post anesthesia recovery times, and complications during sinonasal surgery using general anesthesia and local anesthesia with sedation. *Otolaryngol Head Neck Surgery*. 2000;122(4): 560–566.
5. Unsal AA, Gregory N, Rosenstein K. Current opinions in office-based rhinology. *Curr Opin Otolaryngol Head Neck Surg*. 2018;26(1):8–12.
6. Armstrong M. Office-based procedures in rhinosinusitis. *Otolaryngol Clin North Am*. 2005; 38(6):1327–1338.
7. Gittelman PD, Jacobs JB, Skorina J. Comparison of functional endoscopic sinus surgery under local and general anaesthesia. *Ann Otol Rhinol Laryngol*. 1993;102(4 Pt 1): 289–293.
8. Scott JR, Sowerby LJ, Rotenberg BW. Office-based rhinologic surgery: A modern experience with operative techniques under local an-

- esthetic. *Am J Rhinol Allergy*. 2017;31(2):135–138.
9. Radvansky BM, Husain Q, Cherla DV, Choudhry OJ, Eloy JA. In-office vasovagal response after rhinologic manipulation. *Int Forum Allergy Rhinol*. 2013;3(6):510–514.
  10. Thamboo A, Patel ZM. Office procedures in refractory chronic rhinosinusitis. *Otolaryngol Clin North Am*. 2017;50(1): 113–128.
  11. Francesco Asprea, Annunziata Maceri, Gregorio Micali, Francesco Carfi. Endoscopic Septoplasty: An Alternative Technique to Traditional Septoplasty. *International Annals of Medicine*. 2018;2(12).
  12. Clark DW, Del Signore AG, Raithatha R, Senior BA. - Nasal airway obstruction: Prevalence and anatomic contributors. *Ear Nose Throat J*. 2018 Jun;97(6):173-176
  13. Shah J, Roxbury CR, Sindwani R. - Techniques in Septoplasty: Traditional Versus Endoscopic Approaches. *Otolaryngol Clin North Am*. 2018 Oct;51(5):909-917.
  14. Jin HR, Kim DW, Jung HJ. - Common Sites, Etiology, and Solutions of Persistent Septal Deviation in Revision Septoplasty. - *Clin Exp Otorhinolaryngol*. 2018 Jul 20.
  15. Zhao KQ, Pu SL, Yu HM. - Endoscopic Septoplasty with Limited Two-line Resection: Minimally Invasive Surgery for Septal Deviation. *J Vis Exp*. 2018 Jun 20;(136).