

Role of Nasal Endoscopy in Sinonasal Diseases

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Abstract

Introduction: Nasal endoscopy allows detailed and complete evaluation of intranasal anatomy and identification of pathology that was impossible to see using standard techniques with headlight or head mirror. The following study was undertaken in order to ascertain the efficacy of endoscopy in diagnosing a spectrum of nasal and nasopharyngeal pathology which otherwise remain unrevealed clinically.

Aims and Objectives: To evaluate sinonasal diseases with the help of nasal endoscopy. To study the efficacy of nasal endoscopy in diagnosing nasal pathology over clinical examination. To define medical and surgical (FESS) management according to the type of nasal pathology. To define applications of nasal endoscopy (biopsy, swab, epistaxis control, foreign body removal, rhinolith removal, follow up).

Materials and Methods: Total 100 patients were studied. Patients came with complaints of nasal blocking, nasal discharge, mass in nasal cavity, bleeding etc., included in study. Pre endoscopic assessment was carried out like history, examination, investigation. Endoscopic was done after consent under necessary anaesthesia. Endoscopy was done using 0 degree and 30 degree endoscope with 3 standard passes.

Result: Total 100 patients were studied. Male to female ratio was 1.8:1. Out of 100 patients maximum number of patients had chronic sinusitis on nasal endoscopy examination (22); followed by nasal polyp (27) and deviated nasal septum and epistaxis (10). Nasal endoscopy was an excellent diagnostic aid in condition like epistaxis, nasal mass, nasal obstruction, foreign body, nasopharyngeal tumour.

Conclusion: Diagnostic nasal endoscopy offers high diagnostic accuracy in patient with sinonasal complaints. Diagnostic nasal endoscopy is gold standard tool in patient having sinonasal complaints. It has High accuracy due to vision control, has less bleeding, minimal complication, and early post operative recovery. It's a good tool for diagnosing anatomical variation.

Keywords: Anatomical variation, Chronic sinusitis, Nasal endoscopy, Nasal passes

INTRODUCTION

In 1901 Hirschmann¹ first used the modified cystoscope to examine middle meatus. Based on the experience and teaching of Messerklinger, Stammberger and Kennedy²⁻⁴ the diagnosis and treatment of inflammatory sinus disease continue to evolved. Nasal endoscopy allows detailed and complete evaluation of intranasal anatomy and identification of pathology that is impossible to see using standard techniques with headlight or head mirror. With the endoscope, the surgeon gains capacity for precise anatomy identification and angled, illuminated, magnified

viewing of the internal nose preoperative, intraoperatively, and postoperatively. As an added benefit, an attached camera can provide a photographic demonstration to the patient or create documentation for the permanent record.⁵ Recently combination of diagnostic endoscopy and imaging study has become the corner stone in the evaluation of the paranasal sinus diseases. This is the basis of the new concept of the functional endoscopic sinus surgery (FESS).

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MATERIALS AND METHODS

It was a prospective study. The study was conducted at Indira Gandhi Govt. Medical College during a period from August 2009 to December 2013. Total 100 patients were studied. Inclusion criteria were patient presenting with nasal complaints like nasal blockage, running nose, bleeding from nose, nasal mass, foul breath, foreign body in nose, and patient above 10 years of age. Exclusion criteria were patient with acute infection of nose and paranasal sinuses, and age less than 10 years. Local ethics committee approval was acquired for this study.

A detailed history and ENT examination was done. Written and informed consent was taken before the diagnostic nasal endoscopy. 0 degree, 30 degree rigid nasal endoscope were used (4 mm). All diagnostic nasal endoscopies were performed under local or general anaesthesia. Nasal cavity was packed with patty of 4% Xylocaine with adrenaline (1:1000) or xylomethazoline/oxymethazoline. A complete examination was successfully accomplished in an organized manner with three mentioned nasal passes of the endoscopy. The findings of nasal endoscopy were recorded in the proforma. Various endoscopic assisted procedures and surgeries were done as and if required. Patients were followed up after medical or surgical management at intervals of 1 week, 1 month, 3 months, and 6 months.

RESULTS

Total 100 patients were studied. The age ranged from 11 years to 80 years. Maximum patients were in 31-40 years of age group, which contribute 26% of total patients. In study male preponderance was 65% and female was 35%, Male to Female ratio was 1.8:1.

In study most common complaint was nasal discharge seen in 32 patients (32%), followed by nasal obstruction

in 24 (24%), while least common complaints was foreign body in nose 3 (3%). Many patients came with multiple complaints at a time for particular pathology, most common symptom with which patients presented considered as a primary complaints (Table 1).

Most common finding on anterior rhinoscopy was nasal discharge seen in 46 patients, followed by deviated nasal septum, nasal polyp and inferior turbinate hypertrophy seen in 21 patients. Least common finding was synaechia in 1 patient. Most common finding on nasal endoscopy was middle meatus discharge seen in 40 patients, followed by polyp in 30 patients, followed by Inferior turbinate hypertrophy in 26 cases.

Most common anatomical variation seen in nasal endoscopy was spur it was seen in 10 patients, followed by concha bullosa in 7 patients. Anatomical variation was most commonly associated with chronic sinusitis; Out of 22 patients of chronic sinusitis anatomical variation was seen in 16 patients (72.72%) (Table 2).

Patients were grouped on basis of presenting chief primary complaints and studied.

Patients with Nasal Discharge

32 patients had primary complaint as nasal discharge. Out of 32 patients, 8 patients had ethmoidal polypoid, 15 patients of chronic sinusitis, Antrochoanal polyp seen in 3 patients, 2 patients had deviated nasal septum, Allergic rhinitis in 3 patients. One patient on endoscopy had clear watery fluid discharge from frontal recesses. CT showed defect in cribriform plate and final diagnosis of CSF rhinorrhea was confirmed.

Table 1: Presenting primary complaints of patients

Symptoms	No. of patients	Percentage
Nasal discharge	32	32%
Nasal obstruction	24	24%
Nasal bleeding	15	15%
Nasal mass	15	15%
Foul breath	6	6%
Olfactory disturbance	5	5%
Foreign body	3	3%

Table 2: Anatomical variation

Anatomical variants on nasal endoscopy	No. of patients
Concha bullosa	7
Bulla ethmoidalis	4
Paradoxical turbinate	6
Accessory ostea	1
Spur	10
Total	28

Patients with Nasal Obstruction

24 patients had primary complaint of nasal obstruction. Out of 24, 8 patients had deviated nasal septum. 2 patients were of maxillary malignancy, the biopsy was taken from the mass endoscopically. 3 patients of nasal obstruction had ethmoidal polyposis on nasal endoscopy which was not seen on anterior rhinoscopy. 4 patients had chronic sinusitis. Antrochoanal polyp was seen in 3 patients and 3 had inverted papilloma, patients with inverted papilloma showed polypoidal mass on anterior rhinoscopy, nasal endoscopy was done and biopsy was taken for histopathological examination. One patient had synechia in right nostril with history of traumatic epistaxis in past, routine anterior rhinoscopy examination not showed any synechia. These patient underwent endoscopic release of synechia.

Patients with Nasal Bleeding

15 patients presented as nasal bleed. 6 patients had epistaxis in woodruffs area; in these patients anterior rhinoscopy examination was normal. These patients were managed by endoscopic cauterization. 4 patients had bleeding and congestion in Little's area on anterior rhinoscopy. Nasal endoscopy was done to find out other bleeding site and status of nasal cavity. These patients were also managed by endoscopic cauterization. 2 patients of nasal Angiofibroma presented with history of nasal bleed. Nasal endoscopy was done to locate the size, extension of mass and site of bleeding in operation theatre only with preparation for general anaesthesia if needed, nasal endoscopy was done as non touch technique to avoid epistaxis. Rest 3 patients showed mass in nasal cavity. Endoscopic biopsy was done and histopathological examination report suggestive of squamous cell carcinoma, haemangioma and rhinosporidiosis in each.

Patients with Olfactory Disturbances

5 patients had olfactory disturbance. All these patients were case of atrophic rhinitis. Out of these 5, 1 patient had history of Hansen's disease; other 2 had history of nasal myiasis. Diagnostic nasal endoscopy revealed exact pathology; crust was present in all of them. On nasal endoscopy of these, 2 patients had bony and 1 show cartilage perforation over septum. Atrophic rhinitis patients were managed by counseling, nasal douches and regular endoscopic removal of crust.

Patient with Nasal Mass

15 patients with nasal mass were included in study. 4 patients were of ethmoidal polyposis, 6 had antrochoanal polyp, while chronic sinusitis feature was seen in 2 patients. In 2 patients with history of nasal mass endoscopic biopsy was taken and histopathological examination report was suggestive of haemangioma and rhinosporidiosis

respectively. 1 patient who presented with nasal mass had Nasal Angiofibroma.

Patient with Foul Breath

6 patients present with such complaint. 1 patient had normal clinical finding, and show foreign body in right nasal cavity on endoscopy and was removed with the help of endoscope. 1 had chronic sinusitis, while 4 patients of foul breath had atrophic rhinitis.

Patient with Foreign Body Nose

3 patients presented with foreign body in nose. In 2 patients there was mucoid discharge in right nasal cavity and 1 had normal clinical finding. It was only by nasal endoscopy that foreign body was identified and removed. In 1 patient foreign body was present posteriorly in nasal cavity.

In this study, out of 100 patients 39 patients had no pathology on routine clinical examination related to particular diseases which was further confirmed after doing nasal endoscopy.

Out of 100 patients maximum number of patients had chronic sinusitis on nasal endoscopy examination (22); followed by nasal polyp (27) and deviated nasal septum and epistaxis (10) (Table 3).

DISCUSSION

The development of modern rigid nasal endoscopy represents a major advance in rhinologic diagnostic capability. The study conducted by Aminnu Bakari et al⁶ and Levine et al.⁷ had maximum number of patients in between 31 to 40 years with mean age 33.3 and 35.6 respectively. In our study majority of patients was in the age group of 31 to 40 years with total 26 cases (mean 39.1). In the present study

Table 3: Diagnosis of patient on nasal endoscopy

Diagnosis	No. of patients
Chronic sinusitis	22
Ethmoidal polyposis	15
Antrochoanal polyp	12
Deviated nasal septum	10
Epistaxis	10
Atrophic rhinitis	9
Rhinolith	4
Carcinoma maxilla	3
Inverted papilloma	3
Angiofibroma	3
Allergic rhinitis	3
Hemangioma	2
Rhinosporidiosis	2
CSF rhinorrhea	1
Nasal synechia	1
Total	100

65 patients were male while 35 patients were female with male to female ratio was 1.8:1. In the study conducted by Kirtane et al.⁸ there were 48 (61.5%) males and 30 (38.4%) females and male to female ratio was 1.6:1. Abtin Tabaei⁹ had 39 (63.9%) male and 22 (36%) female with ratio 1.7:1 in his study. Similarly study conducted by Aminnu Bakari et al.⁶ showed 42 (55.2%) male and 34 (44.7%) female and had ratio 1.2:1. In the study conducted by Kirtane et al.⁸ the commonest complaint was nasal discharge seen in 61% patients, followed by nasal obstruction in 59% patients. In the study conducted by Aminnu Bakari et al.⁶ the nasal discharge (97.4%) was the most common presenting complaints followed by nasal obstruction (94.7%). Out of 22 patients of sinusitis, 16 (72.72%) patients had associated anatomical variations on diagnostic nasal endoscopy. This was well in agreement with the study done by Lolyd et al.¹⁰ who reported a figure of 62%. Similarly study conducted by Levine et al.⁷ showed anatomical variation in 56.6% in his 150 studied patients.

Diagnostic nasal endoscopy was of great significant in patients of epistaxis. It helped in accurate diagnosis of cause of epistaxis and proper management of the same. This measure was better tolerated and less uncomfortable as compared to nasal pack or balloon. This conclusion was consistent with those of McGarry et al.¹¹

Diagnostic nasal endoscopy was useful in identifying conductive olfactory loss and associated pathology with it. Clinical examination failed to diagnose pathology in 3 out of 5 (60%) cases of olfactory loss and endoscopy was necessary to make the proper diagnosis. This figure is close to the figure of 51% given by Allen et al.¹²

Rigid endoscopy helped in careful manipulation and removal of nasal foreign bodies and rhinolith under direct vision which were posteriorly placed and were not visible on clinical examination. Also, posterior extent of rhinolith was carefully evaluated. This conclusion was also supported by studies of Keck et al.¹³ and Hade et al.¹⁴ Nasal endoscopy helps in exact localization and minimizing trauma to surrounding structure and prevents bleeding during foreign body removal.

In this study endoscopic biopsy was taken in 6 patients with sinonasal mass. Nasal endoscopy showed exact site in the region of pathology from where biopsy had to be taken which help in accurate histopathological diagnosis and help to minimize the bias. This conclusion was supported in the study conducted by Abtin Tabaei *et al.*⁹ who stated that office based nasal endoscopy with biopsy represent a safe and important tool in evaluation of sinonasal neoplasm and this procedure provides diagnostic information that may alter treatment decision.

In this study 5 patient of olfactory disturbance had atrophic rhinitis which was best diagnosed and managed by nasal endoscopy. This conclusion was supported by studies of Sevil Ari et al.¹⁵ who managed cases of atrophic rhinitis on regular follow up and endoscopic removal of nasal crust. In our study, anterior rhinoscopy did not reveal pathology and diagnosis in 39 cases (39%) which were diagnosed on Nasal endoscopy. This finding is consistent with Levine et al.⁷ study showed a figure of 38.7%. Thus, nasal endoscopy is efficient over clinical examination for diagnosing nasal and nasopharyngeal pathologies.

CONCLUSION

The worldwide acceptance of nasal endoscopes as an important diagnostic tool and useful surgical aid has contributed much to the world of Rhinology. It allows an unparalleled vision with brilliant illumination of nose and paranasal sinuses. In our study, we see that nasal endoscopy was an excellent diagnostic aid in many situations like sinusitis, unexplained headache, epistaxis, olfactory disturbances, nasal masses, nasal polyposis, nasal obstruction, nasal foreign bodies, nasal discharge, sinonasal malignancies. Diagnostic nasal endoscopy offers a high diagnostic accuracy in patients with sinonasal complaints. Diagnostic nasal endoscopy is capable of detecting nasal and nasopharyngeal pathologies which would otherwise be missed and this supports diagnostic nasal endoscopy as investigation of gold standard in the field of rhinology. Some nasal fossa pathologies are better defined on Diagnostic Nasal Endoscopy. Endoscopic directed procedures have high accuracy due to vision controlled and incomparable guidance in treatment of nasal and nasopharyngeal pathologies. Clinical examination and Diagnostic nasal endoscopy are complementary in making correct diagnosis. Diagnostic endoscopy must be done prior to any functional endoscopic sinus surgery, as they help in assessing the extent of sinus diseases and to know the variation and vital relation of the paranasal sinuses.

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