

Evaluation of Sino-Nasal Diseases Using Diagnostic Nasal Endoscopy

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Abstract

Introduction: Nasal endoscopy allows detailed & complete evaluation of intranasal anatomy and identification of intranasal pathology that is not possible to visualise with routine anterior rhinoscopy. This study was undertaken in order to ascertain the importance of diagnostic nasal endoscopy (DNE) in diagnosing a spectrum of nasal, sinus & nasopharyngeal pathology which otherwise remains unrevealed clinically.

Aim: Evaluation of sino-nasal diseases using Diagnostic Nasal Endoscopy.

Objectives: To assess the anatomical details of nasal cavity and lateral nasal wall. To assess the intranasal appearance of sino-nasal diseases.

Materials & Methods: Study was undertaken in department of ENT from 01.09.18 to 30.05.19. Total 100 patients were studied. All patients attending ENT OPD with symptoms of Nose & para-nasal diseases were included. Informed consent taken. A detailed clinical history was recorded. Anterior rhinoscopy using Thudichum nasal speculum done & findings recorded,

then diagnostic nasal endoscopy were done in all patients using 4mm, 0 & 70 degree endoscopes.

Results: Total 100 patients were studied. Male to female ratio was 1.6:1. Out of 100 patients. Majority had chronic sinusitis (25); followed by nasal polyp (26, Ethmoidal-14 , Antrochoanal-12) , Deviated nasal septum (14), epistaxis (10), Nasopharyngeal Angiofibroma (02), haemangioma (02) and Rhinosporidiosis(02), Inverted papilloma (01)

Conclusion: Diagnostic nasal endoscopy offers high diagnostic accuracy in patients with sino-nasal pathology which cannot be visualised by routine anterior rhinoscopy. Diagnostic nasal endoscopy is gold standard tool in patients having sino-nasal complaints. It has high accuracy. It's a very good tool and should be made a part of routine clinical examination.

Keywords: Diagnostic Nasal endoscopy, Chronic sinusitis.

Introduction

Technology has always been a part of the practice of medicine particularly in the field of otorhinolaryngology-head and neck surgery, where diagnostic and therapeutic

advances have made understanding and managing the pathology more accurate.

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 access to identify the anatomy precisely and good illumination and magnified view. Availability of angled scopes have made the examination more comfortable for pre, intra, and postoperative. As an added benefit, an attached camera with monitor can provide teaching and documentation. Recently combination of diagnostic endoscopy and imaging study has become a routine in the evaluation of the nose and para-nasal sinus diseases. This is the basis of the new concept of the functional endoscopic sinus surgery (FESS).

The following study was undertaken in order to ascertain the efficacy of nasal endoscopy in diagnosing a spectrum of nasal, paranasal sinuses and nasopharyngeal pathology clinically.

AIM: Evaluation of sino-nasal diseases using diagnostic nasal endoscopy

Objectives

- To assess the anatomical details of nasal cavity and lateral nasal wall.
- To assess the intranasal appearance of sino-nasal diseases.
- To study the efficacy of nasal endoscopy in diagnosing nasal pathology over routine anterior rhinoscopy

To make a conclusion about medical and surgical management

Materials and Methods

A prospective study conducted at Sri Siddhartha Medical College Hospital & Research Centre Tumkur, during a period from September 2018 to May 2019. Total 100 patients were studied.

Inclusion Criteria

- Patient presenting with nasal symptoms like nasal blockage, running nose, bleeding from nose, nasal mass, foul breath, foreign body in nose,
- Patient above 10 years of age.

Exclusion Criteria

- Patient with acute infection of nose and paranasal sinuses

A detailed history was recorded and a systematic ENT examination was carried out. Then a written and informed consent was taken before the diagnostic nasal endoscopy. All diagnostic nasal endoscopies were performed under local anaesthesia. Nasal cavity was packed with ribbon gauze soaked in 4% lignocaine with adrenaline (1:1000) or xylometazoline/ oxymetazoline. Then 4mm 0 and 70 degree rigid nasal endoscope were used. A complete examination was successfully accomplished in an organized manner with three standard passes of endoscopy. The findings of nasal endoscopy were recorded in the proforma.

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 62% and female was 38%, Male to Female ratio was 1.6:1.

In study most common complaint was nasal discharge seen in 33 patients (33%), followed by nasal obstruction

26 (26%), while least common complaints was foreign body in nose 2 (2%). 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 with thudichum nasal speculum was nasal discharge seen in 47 patients, followed by deviated nasal septum, nasal polyp and inferior turbinate hypertrophy seen in 20 patients. Least common finding was synechiae in 1 patient.

Most common finding on nasal endoscopy was middle meatus discharge seen in 42 patients, followed by polyp in 26 patients, followed by Inferior turbinate hypertrophy in 23 cases. Most common anatomical variation seen in nasal endoscopy was spur it was seen in 12 patients, followed by concha bullosa in 8 patients. Anatomical variation was most commonly associated with chronic sinusitis. Out of 25 patients of chronic sinusitis anatomical variation was seen in 18 patients (72%) (Table 2).

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

Patients with Nasal Discharge

33 patients had primary complaint as nasal discharge. Out of 33 patients, 7 patients had ethmoidal polyposis, 17 patients of chronic sinusitis, Antrochoanal polyp seen in 2 patients, 4 patients had deviated nasal septum, Allergic rhinitis in 2 patients. One patient on endoscopy had clear watery fluid discharge from frontal recess. 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	33	33 %
Nasal obstruction	26	26 %

Nasal bleeding	14	14 %
Nasal mass	15	15 %
Foul breath	5	5 %
Olfactory disturbance	5	5 %
Foreign body	2	2 %

Table 2: Anatomical variation

Anatomical variants on nasal endoscopy	No. of patients
Concha bullosa	8
Bulla ethmoidalis	6
Paradoxical turbinate	7
Accessory ostea	2
Spur	12
Total	35

Patients with Nasal Obstruction

26 patients had primary complaint of nasal obstruction. Out of 26, 10 patients had deviated nasal septum. 1 patients were of maxillary malignancy, the biopsy was taken from the mass endoscopically. 4 patients of nasal obstruction had ethmoidal polyposis on nasal endoscopy which was not seen on anterior rhinoscopy. 6 patients had chronic sinusitis. Antrochoanal polyp was seen in 4 patients and 1 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 synechiae. This patient underwent endoscopic release of synechiae.

Patients with Nasal Bleeding

14 patients presented as nasal bleed. 5 patients had epistaxis in woodruffs area; in these patients anterior

rhinoscopy examination was normal. These patients were managed by endoscopic cauterization. 5 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. 1 patient 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 counselling, 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

5 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 3 patients of foul breath had atrophic rhinitis.

Patient with Foreign Body Nose

2 patients presented with foreign body in nose. In 1 patient there was mucoid discharge in right nasal cavity. 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 42 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 (25); followed by nasal polyp (26) and deviated nasal septum (14) and epistaxis (10) (Table 3).

Discussion

Modern rigid nasal endoscopy represents a major developmental advance in rhinologic diagnostic capability. The study conducted by Aminnu Bakari et al.⁶ 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 62 patients were male while 38 patients were female with male to female ratio was 1.6:1. 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.

Table 3: Diagnosis of patient on nasal endoscopy

Diagnosis	No. of patients
Chronic sinusitis	25
Ethmoidal polyposis	14
Antrochoanal polyp	12
Deviated nasal septum	14
Epistaxis	10
Atrophic rhinitis	9
Rhinolith	3
Carcinoma maxilla	2
Inverted papilloma	1
Angiofibroma	2
Allergic rhinitis	2
Hemangioma	2
Rhinosporidiosis	2
CSF rhinorrhea	1
Nasal synechiae	1
Total	100

Abtin Tabae⁹ 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 25 patients of sinusitis, 18 (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 Mc Garry 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 sino-nasal 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 Tabae⁹ et al. who stated that office based nasal endoscopy with biopsy represent a safe and important tool in evaluation of sino-nasal 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 42 cases (42%) 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

Nasal endoscopy should be an important diagnostic tool contributing much to the world of Rhinology. It allows an unparalleled vision with brilliant illumination of nose and nasopharynx. In our study, we see that nasal endoscopy was an excellent diagnostic aid in many situations like chronic sinusitis, unexplained headache, epistaxis, olfactory disturbances, nasal masses, nasal polyposis, nasal obstruction, nasal foreign bodies, nasal discharge, sino-nasal malignancies. Diagnostic nasal endoscopy offers a high diagnostic accuracy in patients with sino-nasal 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. and useful surgical aid has contributed much to the world of Rhinology.

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