ORIGINAL RESEARCH

Diagnostic Nasal Endoscopy As A Pre-Operative Evaluation Tool In Patients With Sino-Nasal Diseases

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ABSTRACT

Background: The present study was undertaken for assessing the role of diagnostic nasal endoscopy as a pre-operative evaluation tool in patients with sino-nasal diseases. **Materials & methods:** The study was conducted at Chirayu Medical College and Hospital Bhopal (M.P) during a period from January 2023 to March 2023. 30 patients who presented with persistent complaints related to the nose and paranasal sinuses were evaluated by both diagnostic nasal endoscopy and CT PNS. All the patients were evaluated by both office nasal endoscopy and CT scan PNS. The nasal cavities were packed with Nasal decongestants like xylometazoline and 4 % xylocaine for 5 min and then removed the pack. Examination of the nasal cavity in a systematic fashion was done in supine position. The CT scans were performed. Any Sino-nasal finding in CT was considered as a positive scan. The diagnostic value of the findings of nasal endoscopy and CT scan PNS for the evaluation of sino-nasal pathology was compared. **Results:** On Nasal endoscopy, Significant deviated nasal septum, chronic rhinosinusitis without polyposis, Ethmoidal polyposis, Antrochoanal polyp, CSF Rhinorrhea, Inverted papilloma were seen in 10Patients, 7 patients, 5 patients, 5 patient and 1 patients, 2 patients respectively. Sensitivity and specificity of diagnostic nasal endoscopy in detection of sino-nasal diseases was 96 percent and 100 percent respectively. **Conclusion:** Nasal endoscopy is a valid and objective diagnostic tool in the work up of patients with sino-nasal diseases.

Key words: Sino-nasal, Diseases, Nasal Endoscopy

INTRODUCTION

Sino-nasal imaging has advanced steadily as each generation of imaging modalities has gradually expanded on the capabilities of the previous generation. The view of sino-nasal imaging has been drastically altered by the new generation of imaging techniques. In the past, plain radiography was used the most frequently, but due to the endoscopic sinus surgeon's necessity for greater anatomic precision, CT has taken its place. Sino-nasal disease refers to a broad range of diseases and ailments that affect the paranasal sinuses and nasal passages. A wide range of disorders, from inflammatory to neoplasms, both benign and malignant, are included in the sino-nasal pathologies. Sino-nasal disorders require a thorough radiological evaluation because their clinical symptoms can be vague.[1-3]

Technology has always been a part of the practice of medicine particularly in otorhinolaryngology-head and neck surgery, where diagnostic and therapeutic advances can make disease process more accessible. Nasal Endoscopy is an excellent example of this. In the 1960s, Hopkins developed the rod optic endoscope, which revolutionized the optical quality available to surgeons.[4] In the 1970s, this new and exciting armamentarium of endoscopic tools allowed surgeons such as Messerklinger, Stammberger, Draf and Wigand to transition sinus surgery from a radical operation to a minimally invasive procedure.[5, 6] Nasal endoscopy allows a detailed examination of the nasal and sinus cavities not possible by standard examination such as anterior rhinoscopy using headlight or head mirror. It is more sensitive than computed tomography for the evaluation of accessible disease and provides valuable information regarding persistent asymptomatic disease postoperatively.[7-9] Hence; the present study was undertaken for assessing the role of diagnostic nasal endoscopy as pre-operative evaluation tool in a patients with sino-nasal diseases.

MATERIALS AND METHODS

The present study was undertaken for assessing the role of diagnostic nasal endoscopy as pre-operative evaluation tool in a patients with sino-nasal diseases. It was a prospective study. The study was conducted at Chirayu Medical College and Hospital Bhopal (M.P) during a period from January 2023 to March 2023. 30 patients who presented with persistent complaints related to the nose and paranasal sinuses were evaluated by both diagnostic nasal endoscopy and CT PNS. All the patients were evaluated by both office nasal endoscopy and CT PNS. The nasal cavities were packed with Nasal decongestants like xylometazoline and 4 % xylocaine for 5 min and then removed the pack. Examination of the nasal cavity in a systematic fashion was done in supine position. The CT PNS were performed. Any Sino nasal finding in CT was considered a positive scan. The diagnostic value of the findings of nasal endoscopy and CT PNS for the evaluation of sino-nasal pathology was compared.

Inclusion criteria were patient presenting with persistent nasal complaints like nasal blockage, nasal discharge, bleeding from nose, nasal mass 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

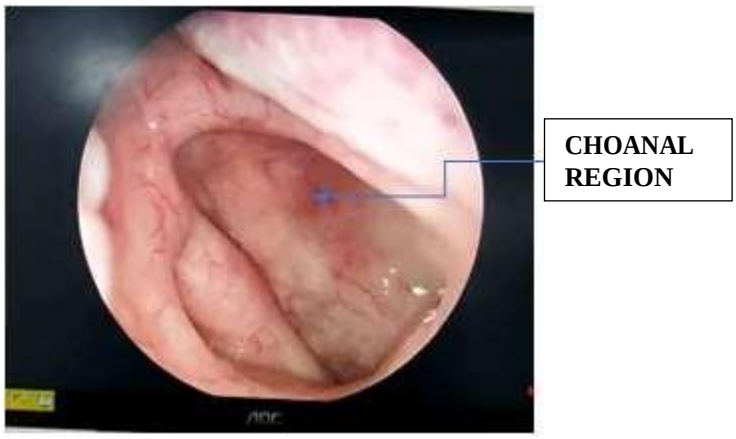

FIG. 1(A):- SHOWING :- 0 DEGREE NASAL ENDOSCOPIC VIEW OF Rt. CHOANAL REGION

FIG. 1 (B):- SHOWING 0 DEGREE NASAL ENDOSCOPIC VIEW OF RIGHT ANTROCHOANAL COMING OUT FROM RIGHT MAXILLARY OSTIUM

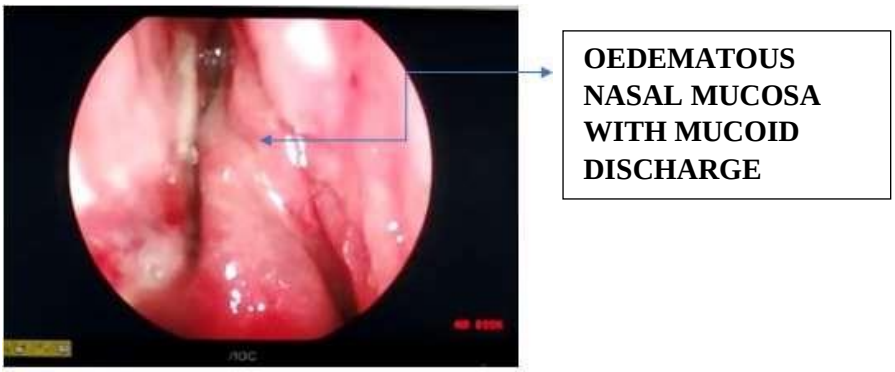

FIG. 2 (A): SHOWING 0 DEGREE NASAL ENDOSCOPIC VIEW OF RT. NASAL CAVITY SHOWING OEDEMATOUS NASAL MUCOSA WITH MUCOID DISCHARGE

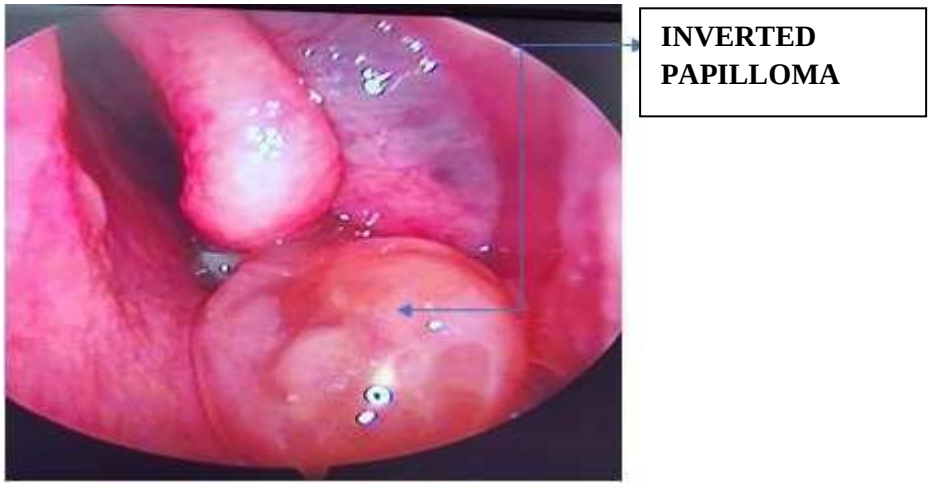

FIG. 2 (B): SHOWING 0 DEGREE NASAL ENDOSCOPI VIEW OF LEFT NASAL CAVITY SHOWING GRAPE LIKE POLYPOIDAL MASS SUGGESTIVE OF INVERTED PAPILLOMA.

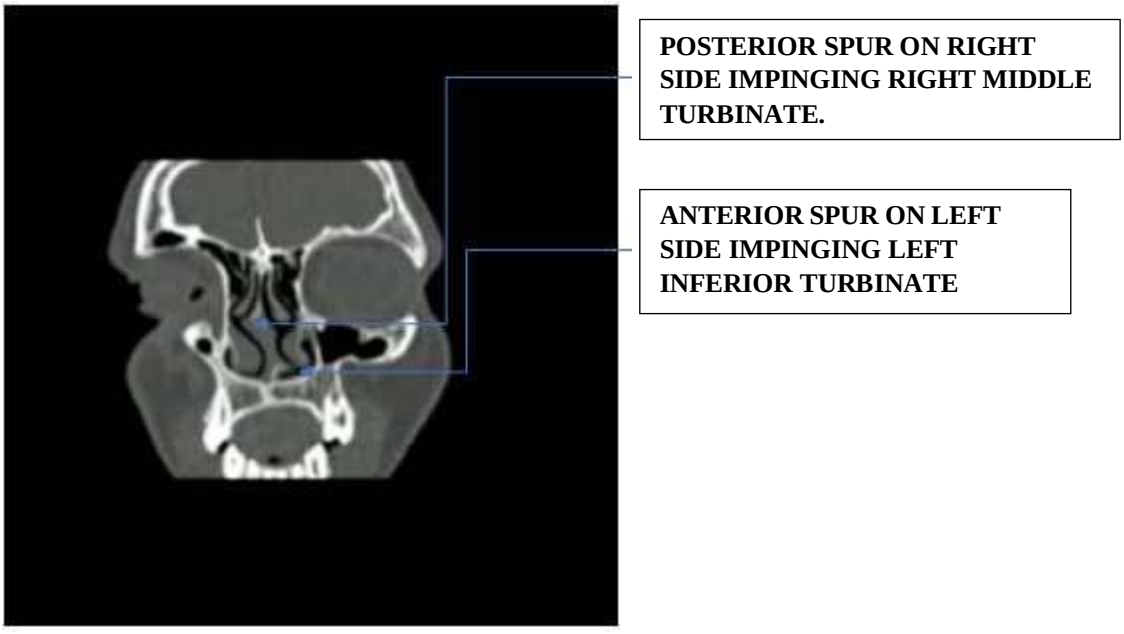

FIG. 3 (A) :- CT SCAN OF NOSE AND PNS CORONAL VIEW SHOWING ANTERIOR SPUR ON LEFT SIDE IMPINGING LEFT INFERIOR TURBINATE AND POSTERIOR SPUR ON RIGHT SIDE IMPINGING RIGHT MIDDLE TURBINATE.

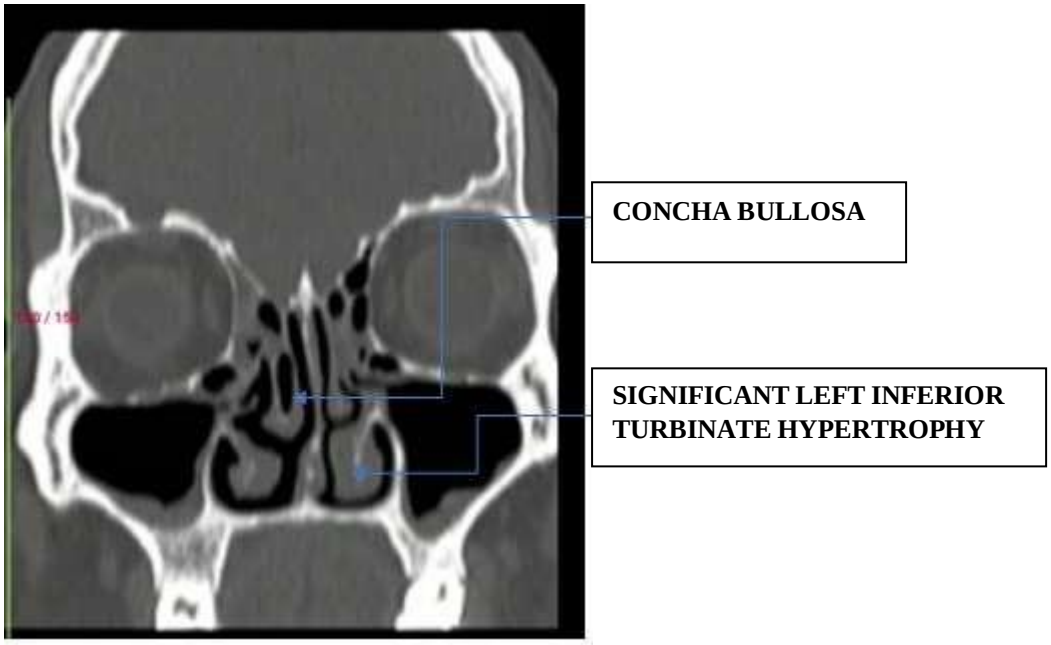

FIG. 3 (B) :- CT SCAN OF NOSE AND PNS CORONAL VIEW SHOWING SIGNIFICANT LEFT INFERIOR TURBINATE HYPERTROPHY AND CONCHA BULLOSA ON RIGHT SIDE.

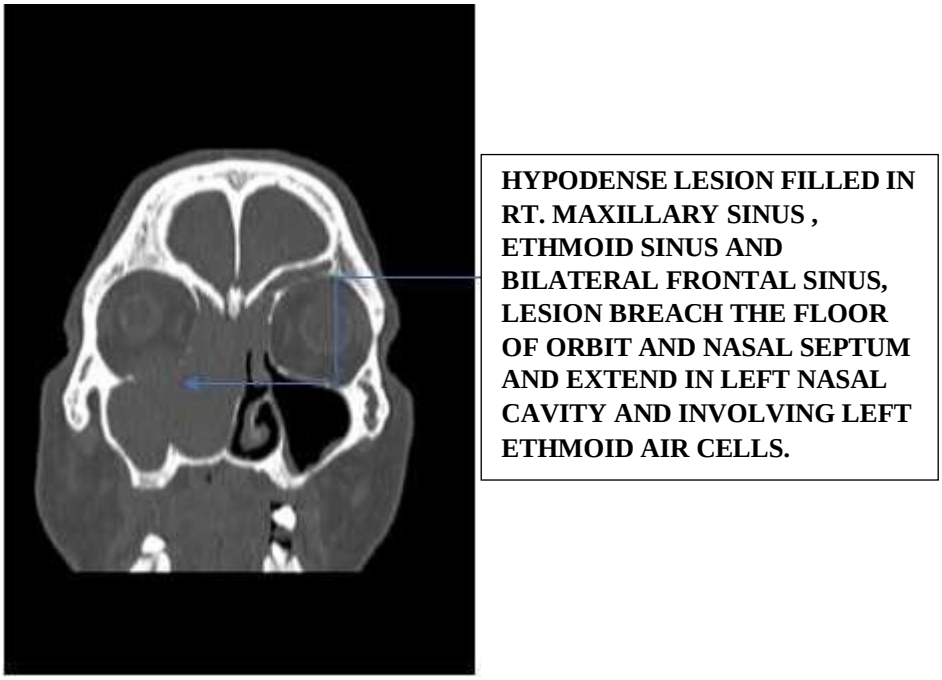

FIG.4 (A) :- CT SCAN NOSE AND PNS CORONAL VIEW SHOWING HYPODENSE LESION FILLED IN RT. MAXILLARY SINUS , ETHMOID SINUS AND BILATERAL FRONTAL SINUS, LESION BREACH THE FLOOR OF ORBIT AND NASAL SEPTUM AND EXTEND IN LEFT NASAL CAVITY AND INVOLVING LEFT ETHMOID AIR CELLS.

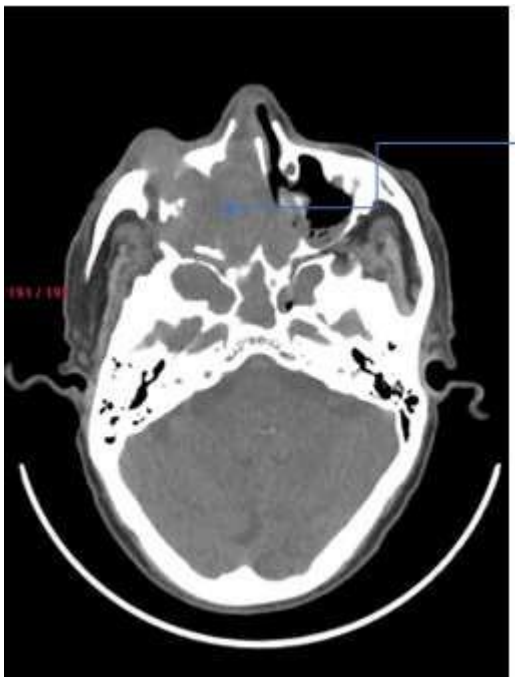

FIG. 4 (B) :- CT SCAN NOSE AND PNS AXIAL VIEW SHOWING HYPODENSE LESION INVOLVING RT MAXILLARY SINUS , ETHMOID AIR CELLS AND B/L FRONTAL SINUS. LESION BREACH THE FLOOR OF ORBIT AND NASAL SEPTUM GOES TO LEFT NASAL CAVITY.

RESULTS

Out of 30 patients, nasal discharge, nasal obstruction, nasal bleeding and nasal mass was seen in 40 percent, 26.67 percent, 23.33 percent and 26.67 percent of the patients respectively. Anatomical variations was seen in 6 patients on nasal endoscopy. On Nasal endoscopy, Significant Deviated nasal septum, chronic rhinosinusitis without polyposis, Ethmoidal polyposis, Antrochoanal polyp, CSF Rhinorrhea and Inverted papilloma were seen in10 Patients, 7 patients, 5 patients, 5 patient and 1 patients, 2 patients respectively. Sensitivity and specificity of diagnostic nasal endoscopy in detection of sino-nasal diseases was 96 percent and 100 percent respectively.

Table 1: Presenting symptoms

Symptoms	Number	Percentage
Nasal discharge	12	40
Nasal obstruction	8	26.67
Nasal bleeding	7	23.33
Nasal mass	8	26.67
Others	6	20

Table 2: Anatomical variations

Anatomical variation on nasal endoscopy	Number
Concha bullosa	4
Paradoxical turbinate	2
Total	6

Table 3: Diagnosis of patients on nasal endoscopy

Diagnosis	Number
Significant Deviated nasal septum	10
Chronic rhino-sinusitis without polyposis	7
Ethmoidal polyposis	5
Antrochoanal polyp	5
CSF Rhinorrhea	1
Inverted Papilloma	2

Table 4: Correlation of diagnostic nasal endoscopy and CT

Endoscopy findings	CT finding		Total
	Positive	Negative	
Positive	24	0	24
Negative	1	5	6
Total	25	5	30
p-value	0.4512		

Table 5: Sensitivity and specificity of Endoscopy in detection of Sino-nasal pathology

Sino-nasal pathology	Value
Sensitivity	96 %
Specificity	100 %
Accuracy	96.67 %

DISCUSSION

In Surgical field, diagnosis is an important aspect to get a clue to cure the disease. In 1997, criteria for diagnosis of CRS were developed by American academy of Otorhinolaryngology—Head and Neck Surgery (AAO-HNS). According to the guidelines of AAO-HNS published in 2007, a combination of symptom criteria and objective findings are required for the diagnosis of CRS. A positive diagnosis of CRS was defined as complaints of 2 or more major criteria or 1 major criteria and 2 or more minor criteria lasting for 12 weeks or longer. In addition, objective measures, such as evidence of nasal polyps or purulent mucus in the middle meatus or ethmoid region on nasal endoscopy, or radiographic evidence of paranasal sinus inflammation are also recommended. Computed tomography (CT) scan plays a vital role in the diagnosis of CRS and in detecting its complications. It has the ability to detect mucosal disease and anatomical variations, to demonstrate a primary obstructive pathology and to visualise posterior ethmoid, sphenoid sinuses and thus helps in the management of CRS. Nasal endoscopy helps in evaluation of the osteomeatal complex for evidence of the disease and to detect anatomical defects that compromise ventilation and mucociliary clearance.[10- 12] Hence; the present study was undertaken for assessing the role of diagnostic nasal endoscopy as pre-operative evaluation tool in a patients with
sino-nasal diseases.

Out of 30 patients, nasal discharge, nasal obstruction, nasal bleeding and nasal mass was seen in 40 percent, 26.67 percent, 23.33 percent and 26.67 percent of the patients respectively. Anatomic variations was seen in 6 patients. Sensitivity and specificity of diagnostic nasal endoscopy in detection of sino-nasal diseases was 96 percent and 100 percent respectively. Our results were in concordance with the results obtained by K Maru et al who also reported similar findings. In their study, authors evaluated the role of nasal endoscopy as primary examination in the early and accurate diagnosis of sinonasal diseases in comparison to other diagnostic tools in rhinology. A retrospective and prospective study was carried out on 200 patients with clinical evidence of sino-nasal diseases. The level of agreement between anterior rhinoscopy and nasal endoscopy was substantial for deviated nasal septum, inferior turbinate hypertrophy and polyp (0.735, 0.712 and 0.709, respectively), but moderate for middle turbinate hypertrophy (0.418). The results of endoscopy and CT comparison among 80 patients, whose symptoms warranted CT, indicated that although for most of the findings, there was almost perfect to substantial level of agreement between the results of the two methods, five patients had normal CT imaging report, while they demonstrated early polyps during endoscopic evaluation.[13]

On Nasal endoscopy, chronic rhinosinusitis without polyposis, ethmoidal polyposis, Antrochoanal polyp, CSF Rhinorrhea and Inverted papilloma were seen in 10 patients, 7 patients, 5 patients, 5 patient, 1 patients and 2 patients respectively. In another similar study conducted by Chakraborty P et al, authors evaluated the role of nasal endoscopy as an effective alternative to CT-scan in diagnosing chronic The sensitivity and specificity of nasal endoscopy was calculated with respect to diagnosing chronic rhinosinusitis in comparison to CT-scan. The results were: sensitivity was 78.08% (95% CI 66.57–86.58%), specificity was 66.67% (95% CI 30.91–90.95%) while the positive predictive value: 95% and the negative predictive value was 27.27%.[14]In another similar study conducted by Kolethekkat AA et al, authors defined the role of endoscopic evaluation of middle meatus in adult patients clinically diagnosed to have chronic rhino-sinusitis and its ability to predict intra-sinus mucosal involvement as compared to CT scan. Among the 75 study patients with symptom based chronic rhino-sinusitis, nasal endoscopy was abnormal in 65 patients (87%). Of these patients, 60/65 (92%) showed positive findings on CT scan. 10 patients had normal endoscopy, of these 6/10 (60%) had abnormal CT scan. Sensitivity and specificity of diagnostic nasal endoscopy against CT scan were 91% and 44%, respectively.[15]

CONCLUSION

From the above results, It is concluded that nasal endoscopy is a objective and valid diagnostic tool in

the pre-operative work up of patients with sino-nasal diseases.

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