Nasal Endoscopy In ENT: Should it be included as a part of routine examination in ENT OPD?

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ABSTRACT
AIMS AND OBJECTIVES: To evaluate the role of nasal endoscopy in routine OPD based ENT examination. To study the efficacy of nasal endoscopy in diagnosing nasal pathologies over anterior rhinoscopy. To define applications of endoscopy in routine ENT practice (biopsy, epistaxis control, foreign body removal).
MATERIALS AND METHODS: It was a prospective study of 300 patients. Patients with complaints of nasal blockage, nasal discharge, mass in nasal cavity, bleeding and other sinonasal complaints were included in the study. All patients included in our study were examined by anterior rhinoscopy first and then by nasal endoscopy.
OBSERVATION AND DISCUSSION: Total 300 patients were included in our study. Of 300 patients with sinonasal pathologies, 119 cases (39.67%) were missed by anterior rhinoscopic examination. Septal spurs and turbinate hypertrophy were common causes of missing the diagnosis by anterior rhinoscopy. The common presenting complaints were nasal obstruction and discharge. Conditions most commonly encountered were chronic rhinosinusitis (81) and nasal polyps (72). Common anatomic variants were septal spurs (12) and concha bullosa (10).
CONCLUSION: Nasal endoscopy should be included as a part of routine OPD based examination in patients with sinonasal complaints. Nasal endoscopy offers high diagnostic accuracy and it is gold standard tool for diagnosis of sinonasal pathologies.

Keywords: Nasal endoscopy, Anterior rhinoscopy, Sinonasal pathologies.

INTRODUCTION
Nasal endoscopy involves evaluation of the nasal and sinus passages with direct vision using a magnified high-quality view. It is an objective diagnostic tool in the evaluation of nasal mucosa, sinonasal anatomy and nasal pathology. Nasal endoscopy provides improved illumination, greater magnification and the ability to navigate directly to pathologic areas, thus providing an accurate and thorough evaluation. Endoscopy plays an important role in preoperative, postoperative and medical management of patients having sinonasal complaints. As an added benefit, an attached camera can provide a photographic demonstration to the patient or create documentation for the permanent record. Recently combination of diagnostic endoscopy and imaging study has become the cornerstone in the evaluation of the paranasal sinus diseases. In 1901, Hirschman first used the modified cystoscope to examine middle meatus. Based on the experience and teaching of Messerklinger, Stammberger and Kennedy, the foundation of functional endoscopic sinus surgery was laid.
AIMS AND OBJECTIVES
• To evaluate the role of nasal endoscopy in patients with sinonasal complaints.
• To correlate the findings of anterior rhinoscopy with nasal endoscopy.
• To compare anterior rhinoscopy and nasal endoscopy in diagnosis of certain sinonasal pathologies.
• To study the age and sex distribution of patients with sinonasal complaints.
• To study the incidence of various pathologies in patients with sinonasal complaints.
• To define applications of nasal endoscopy in biopsy, swab, epistaxis control and foreign body removal.

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MATERIALS AND METHODS
It was a prospective study of 300 patients who presented at Civil Hospital, Ahmedabad, ENT department from July 2013 to December 2015 with sinonasal complaints like nasal blockage, bleeding, nasal discharge and foul smell. Patients under 5 years of age were excluded from the study. All the patients with sinonasal complaints were evaluated by nasal endoscopy after performing anterior rhinoscopy. Detailed history was elicited and ENT examination was done. Endoscopy was performed using zero degree, 4 mm endoscope. Nasal cavity was packed with patty of 4% xylocaine with adrenaline and xylometazoline. Examination with endoscope was done using three standard passes of endoscopy. The findings of endoscopy were recorded in the proforma.

OBSERVATION AND DISCUSSION
Total 300 patients were included in our study. Patients were classified as per their diagnosis on endoscopy.

Age Distribution: The age ranged from 5 to 85 years. Maximum patients were in age group 21-30 years. In study conducted by Nitin Deosthale et al and Kamal Kishore et al, the age group commonly affected was 21-30 years. In study conducted by Levine et al and Ritesh Shelkar et al the age group commonly affected was 31-40 years.

Sex Distribution: Out of 300 patients, 194 were males and 106 were females. So the male: female ratio was approximately 1.8:1. In study conducted by Nitin Deosthale et al and Kamal Kishore et al, the age group commonly affected was 21-30 years. In study conducted by Levine et al and Ritesh Shelkar et al the age group commonly affected was 31-40 years.

Common Symptoms: Nasal obstruction and nasal discharge were the most common complaints in our study. In study conducted by Sheetal et al and Zojaji et al the common complaints were nasal obstruction and headache. In study conducted by Kirtane et al and Aminnu Bakari et al, the common complaints were nasal obstruction and discharge.

Anatomical Variants Encountered During Nasal Endoscopy

<table>
<thead>
<tr>
<th>Anatomical Variant</th>
<th>No. Of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Septal spur</td>
<td>34</td>
</tr>
<tr>
<td>Concha bullosa</td>
<td>23</td>
</tr>
<tr>
<td>Paradoxical Middle turbinate</td>
<td>18</td>
</tr>
<tr>
<td>Enlarged bulla ethmoidalis</td>
<td>17</td>
</tr>
<tr>
<td>Accessory ostia</td>
<td>4</td>
</tr>
</tbody>
</table>

Anatomical variants encountered during Nasal endoscopy. The findings are comparable with the study conducted by Ritesh Shelkar et al who found spurs and concha bullosa as most common variants. Kaluskar et al concluded that concha bullosa and paradoxical middle turbinate were common variants.

Incidence Of Various Conditions: Of 300 patients included in our study, the common pathologies encountered were chronic rhinosinusitis, nasal polyposis and allergic rhinitis.

<table>
<thead>
<tr>
<th>Condition</th>
<th>No. Of Subjects (300)</th>
<th>% Of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic rhinosinusitis</td>
<td>81</td>
<td>27%</td>
</tr>
<tr>
<td>Allergic rhinitis</td>
<td>68</td>
<td>22.67%</td>
</tr>
<tr>
<td>Nasal polyps</td>
<td>72</td>
<td>24%</td>
</tr>
<tr>
<td>Septal deformity</td>
<td>49</td>
<td>16.33%</td>
</tr>
<tr>
<td>Adenoid hypertrophy</td>
<td>8</td>
<td>2.67%</td>
</tr>
<tr>
<td>Nasal mass</td>
<td>6</td>
<td>2%</td>
</tr>
<tr>
<td>Fungal sinusitis</td>
<td>7</td>
<td>2.33%</td>
</tr>
<tr>
<td>Epistaxis</td>
<td>5</td>
<td>1.67%</td>
</tr>
<tr>
<td>Rhinolith</td>
<td>2</td>
<td>0.67%</td>
</tr>
<tr>
<td>Maggots</td>
<td>2</td>
<td>0.67%</td>
</tr>
</tbody>
</table>

Incidence of various conditions in our study. The findings are consistent with the findings of Ritesh Shelkar et al who concluded that chronic rhinosinusitis and nasal polyps were the commonest pathologies encountered. Nitin Deosthale et al in their study found chronic rhinosinusitis and deviated nasal septum to be the most common pathologies.

Conditions Missed On Anterior Rhinoscopy: In our study, 39.67% cases were missed on anterior rhinoscopy.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Total Cases</th>
<th>Cases Missed By AR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic rhinosinusitis</td>
<td>82</td>
<td>34</td>
</tr>
<tr>
<td>Allergic rhinitis</td>
<td>70</td>
<td>21</td>
</tr>
<tr>
<td>Nasal polyps</td>
<td>70</td>
<td>34</td>
</tr>
<tr>
<td>Septal deviation</td>
<td>48</td>
<td>17</td>
</tr>
<tr>
<td>Adenoid hypertrophy</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Fungal sinusitis</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Nasal mass</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Epistaxis (cause)</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Rhinolith</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Maggots</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Number of conditions missed by Anterior rhinoscopy. In study conducted by Ritesh Shelkar et al 39% cases were missed.
on anterior rhinoscopic examination. In study conducted by Levine et al 38.7% cases were missed by anterior rhinoscopy.

- **Chronic Rhinosinusitis (CRS):** 81 of the 300 patients with sinonasal complaints were diagnosed with CRS. The common symptoms were nasal obstruction, headache, facial pain and nasal discharge. Of 81 patients with CRS, 47 were apparent on anterior rhinoscopy and were confirmed by nasal endoscopy showing purulent secretions and oedematous nasal mucosa. 34 cases were confirmed by nasal endoscopy, which were missed on anterior rhinoscopy due to septal deviations and turbinate hypertrophy.

- **Allergic Rhinitis:** 68 of the 300 patients in this series with sinonasal complaints were diagnosed with allergic rhinitis. Rhinorrhea, nasal obstruction and itching were the most common symptoms. 47 cases of allergic rhinitis were apparent on anterior rhinoscopy. The remaining cases which were missed on rhinoscopy due to septal deviation and spurs, were diagnosed by endoscopy. Inferior turbinate hypertrophy, pale mucosa and watery discharge on the floor of nose were the most common signs on NE associated with allergic rhinitis. Most of the patients with allergic rhinitis were in the age group 21-30 years.

- **Nasal Polyps:** 72 of the 300 patients with sinonasal complaints had nasal polyposis. Of these, only 38 were diagnosed by anterior rhinoscopic examination. 34 patients with nasal polyps were missed on anterior rhinoscopic examination because of septal deviation, turbinate hypertrophy or presence of only minimal polypoidal tissue in middle meatus. These findings are consistent with the study performed by Kishore et al who studied 150 patients and diagnosed 23.75% on anterior rhinoscopy and 36.25% on nasal endoscopy.

- **Septal Deviation:** 49 patients had symptomatic septal deviation in our study. Of these, 32 were diagnosed by anterior rhinoscopy but 17 were missed due to posterior septal spurs and high DNS. In study conducted by Kamal Kishore of the 50 patients with septal deviation and spurs, 12 were missed on anterior rhinoscopy.

- **Adenoid Hypertrophy:** 8 cases of adenoid hypertrophy were encountered in our study. Anterior rhinoscopic examination revealed watery nasal discharge in 5 patients and in the remaining 3, it was normal. Thus anterior rhinoscopy together with clinical evaluation could point to the diagnosis of adenoid hypertrophy only in 5 out of 8 cases. Posterior rhinoscopy was not possible because all the cases were in the age group 5-15 years and were not cooperative for posterior rhinoscopic examination. Of the 8 patients, endoscopy was carried out and enlarged adenoids were found in nasopharynx.

- **Fungal Sinusitis:** 6 patients were diagnosed with chronic invasive fungal sinusitis. All the 6 patients were diabetic and were in the age group 51-70 years. 4 cases were diagnosed by anterior rhinoscopy revealing extensive necrosis and crusting in the nasal cavity. The remaining 2 cases had limited necrosis and erosion in nasal cavity and were missed by rhinoscopy but were diagnosed by endoscopy.

- **Nasal Mass:** 7 of the 300 patients presented with nasal mass. 4 were diagnosed by anterior rhinoscopy. 3 cases which were missed by rhinoscopy due to septal deviation and mass in nasopharynx, were diagnosed by endoscopy. Biopsy was taken under endoscopic guidance, 3 were diagnosed as inverted papilloma and the remaining 4 turned out to be Squamous cell carcinoma.

- **Epistaxis:** 5 patients presented with epistaxis. In 3 cases, septal spurs as the cause of epistaxis was apparent on anterior rhinoscopy. The remaining 2 cases had posterior spurs and were apparent only on endoscopy.

- **Rhinolith:** Rhinolith was diagnosed in 2 patients with complaint of unilateral foul smelling discharge. 1 case was apparent...
on anterior rhinoscopy and in the other case diagnosis was established by endoscopy due to septal deviation. Nasal endoscopy also helped in rhinolith removal under direct vision in both cases.

- **Maggots:** 2 patients presented with maggots in the nose and complaints of unilateral blood stained discharge and foul smell from nose. On anterior rhinoscopy, blood stained discharge was seen. Nasal maggots in both the cases were diagnosed only after performing nasal endoscopy. Ranga RK et al conducted a study in 144 patients with nasal myiasis and concluded that endoscopic removal eradicated maggots completely and in shorter period of time compared to the conventional techniques.

**CONCLUSION**
Nasal endoscopy offers high diagnostic accuracy in patients with sinonasal complaints. Diagnostic nasal endoscopy is gold standard tool in patients having sinonasal complaints. Endoscopy should be included as a part of routine OPD based ENT examination in all patients with sinonasal complaints.

**REFERENCES**
11. Lanza DC, Kennedy DW. Current concepts in the surgical management of nasal polyposis. *J Allergy ClinImmunol.* Sep 1992;90(3 Pt 2);543-; discussion 546

