

Role of Anterior Rhinoscopy, Nasal Endoscopy and Computed Tomography in the Detection of Early Polyposis of Nasal Mucosa

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Abstract

Introduction: Nasal endoscopy is a standard test to precisely assess nasal obstructive disease and is considered necessary in all patients with nasal obstruction. It is performed by otolaryngologists for both diagnostic and therapeutic reasons.

Aims & Objectives: The present study was conducted to evaluate the role of nasal endoscopy, anterior rhinoscopy and computed tomography in the early and accurate diagnosis of sinonasal polyposis.

Material & Methodology: The study was carried out on 80 patients with clinical evidence of sinonasal diseases. They were evaluated with anterior rhinoscopy, nasal endoscopy and computed tomography of paranasal sinuses. Chi-square and Student's t tests were used for statistical analyses. P value <0.05 was considered statistically significant.

Results: The results of anterior rhinoscopy and diagnostic nasal endoscopy findings were evaluated in them. The middle meatus polyps in 11 cases revealed by nasal endoscope were not obvious by anterior rhinoscopic examination. The level of agreement between anterior rhinoscopy and diagnostic nasal endoscopy was substantial for sinonasal polyposis (0.690). The results of endoscopy and CT comparison indicated five patients to have normal CT imaging based on the radiologist's report, while they demonstrated nasal polyps during endoscopic evaluation.

Conclusion: Nasal endoscopy is a better diagnostic tool to detect early polypoidal changes in the mucosa, which are otherwise missed on Computed Tomography or inaccessible on anterior rhinoscopy especially in the key area comprising the ostiomeatal complex.

Keywords: Nasal polyposis, Endoscopy, Computed tomography

Introduction:

Rhinology has undergone revolutionary changes in the last 20 years,¹ especially after the development of the rod optic endoscope in 1960s by Hopkins.^{2,3} 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 (CT) for the evaluation of

accessible disease and provides valuable information regarding persistent asymptomatic disease postoperatively. Early mucosal changes in chronic rhinosinusitis and nasal polyposis can often be seen in areas of the uncinate process, semilunar hiatus, and ethmoid bulla. Grading of polyposis is done according to the following classification⁴: grade 1 = hidden by the middle turbinate, grade 2 = to the level of the

middle turbinate, grade 3 = beyond the middle turbinate and grade 4 = filling the entire nasal cavity. It is highly desirable that all Rhinologists treating nasal and sinus disease be able to perform a complete endoscopic evaluation of the nose and sinuses, especially for evaluation of inflammatory disease. The present study was conducted to evaluate the role of nasal endoscopy, anterior rhinoscopy and CT in the early and accurate diagnosis of sinonasal polyposis.

Material and Methodology:

The study was carried out on 80 Patients with clinical evidence of sinonasal diseases in the age group 10 years and above irrespective of sex. They were evaluated with anterior rhinoscopy, nasal endoscopy and CT scan of paranasal sinuses. Patients with previous alteration of paranasal sinus anatomy due to maxillofacial trauma and history of previous sinus surgery were excluded. All the patients were subjected to detailed clinical history particularly for nasal symptoms, general examination and ENT examination with special reference to diagnostic nasal endoscopic examination for anatomical and mucosal abnormalities. Thereafter, they were subjected to x-ray paranasal sinuses (water's view) and CT scan of paranasal sinuses.

Statistical analysis of the data collected was done with SPSS, version 20.0 for statistical analysis. The level of agreement between CT and Endoscopy findings was determined by calculating kappa statistics; considering kappa coefficient: ≤ 0 poor, 0.01–0.20 slight, 0.21–0.40 fair, 0.41–0.60 moderate, 0.61–0.80 substantial, and 0.81–1 almost perfect. Chi-square and Student's t tests were used for statistical analyses. P value < 0.05 was considered statistically significant

Results:

Out of 80 cases examined 19 patients showed polyposis on anterior rhinoscopy while 29 patients were diagnosed with nasal polyposis on endoscopy. Anterior rhinoscopy missed 11 cases of polyp of which 2 were bilateral and 3 left and 6 right; while on nasal endoscopy, 1 case of left nasal polyp diagnosed

on anterior rhinoscopy was found to be negative being mucoid secretion. (Table No. 1)

Out of 80 cases examined 25 patients showed polyposis on CT scan as well as on endoscopy (Figure No. 1) while, 05 patients were diagnosed with nasal polyposis on endoscopy only.

Thus, CT missed 5 cases of polyp, detected bilaterally in 2, on left side in 1 and on right side in 2 by nasal endoscopy (Figure No. 2). On the other hand, endoscopy did not show one case of polyp reported on right side in CT. (Table No. 2)

Discussion:

Nasal obstruction may be unilateral or bilateral or is intermittent, progressive or persistent. The routine anterior and posterior rhinoscopy give very little information as we can see only the structures which lie directly in the line of sight and moreover the posterior rhinoscopy may not be possible in some cases. As a result, the early diagnosis of some unpleasant lesions remained elusive without nasal endoscopy. The study by Kishore et al, 2012⁵, strongly recommends thorough endoscopic examination of nose and postnasal space especially when anterior and posterior rhinoscopy fail to reveal the cause of nasal obstruction.

Similar to the results of their study on 150 cases of nasal obstruction aged 15-70 years, we found anterior rhinoscopy to detect 23.75% patients with nasal polyp and 36.25% on nasal endoscopy. The level of agreement between anterior rhinoscopy and diagnostic nasal endoscopy was substantial for sinonasal polyposis (0.690). Moreover, many of the early polypoidal changes revealed with the help of nasal endoscope were not obvious by traditional anterior rhinoscopic examination in 11 cases of middle meatus polyps and in one case what appeared to be a polyp on anterior rhinoscopy turned out to be mucoid secretions on endoscopy. Prolapsed edematous mucosa in the infundibulum and inflamed ethmoidal bulla are evidence of disease in the anterior ethmoid. Mucosal oedema and polypoidal mucosa in the area of attachment of middle turbinate anteriorly strongly suggest disease in the frontal recess.

Table No. 1: Cross Tabulation of Anterior Rhinoscopy and Nasal Endoscopy Findings of Polyp

			NE				Total
			-	B/L	Lt	Rt	
AR	-	Count	50	2	3	6	61
		% within AR	82.0	3.3	4.9	9.8	100.0
		% within NE	98.0	20.0	50.0	46.2	76.2
	B/L	Count	0	8	0	0	8
		% within AR	0.0	100.0	0.0	0.0	100.0
		% within NE	0.0	80.0	0.0	0.0	10.0
	Lt	Count	1	0	3	0	4
		% within AR	25.0	0.0	75.0	0.0	100.0
		% within NE	2.0	0.0	50.0	0.0	5.0
	Rt	Count	0	0	0	7	7
		% within AR	0.0	0.0	0.0	100.0	100.0
		% within NE	0.0	0.0	0.0	53.8	8.8
Total		Count	51	10	6	13	80
		% within AR	63.8	12.5	7.5	16.2	100.0
		% within NE	100.0	100.0	100.0	100.0	100.0

Kappa = 0.690

(NE-nasal endoscopy, AR-anterior rhinoscopy, B/L-bilateral, Lt-left, Rt-right)

Table No. 2: Cross Tabulation of Nasal Endoscopy and Computed Tomography Findings of Polyp

			NE				Total
			-	B/L	Lt	Rt	
CT	-	Count	50	2	1	2	55
		% within CT	90.9	3.6	1.8	3.6	100.0
		% within NE	98.0	20.0	16.7	15.4	68.8
	B/L	Count	0	8	0	0	8
		% within CT	0.0	100.0	0.0	0.0	100.0
		% within NE	0.0	80.0	0.0	0.0	10.0
	Lt	Count	0	0	5	0	5
		% within CT	0.0	0.0	100.0	0.0	100.0
		% within NE	0.0	0.0	83.3	0.0	6.2
	Rt	Count	1	0	0	11	12
		% within CT	8.3	0.0	0.0	91.7	100.0
		% within NE	2.0	0.0	0.0	84.6	15.0
Total		Count	51	10	6	13	80
		% within CT	63.8	12.5	7.5	16.2	100.0
		% within NE	100.0	100.0	100.0	100.0	100.0

Kappa=0.856

Figure No. 1: Endoscopic and CT Paranasal Sinus (Coronal View) Photograph Showing Sinonasal Polyposis

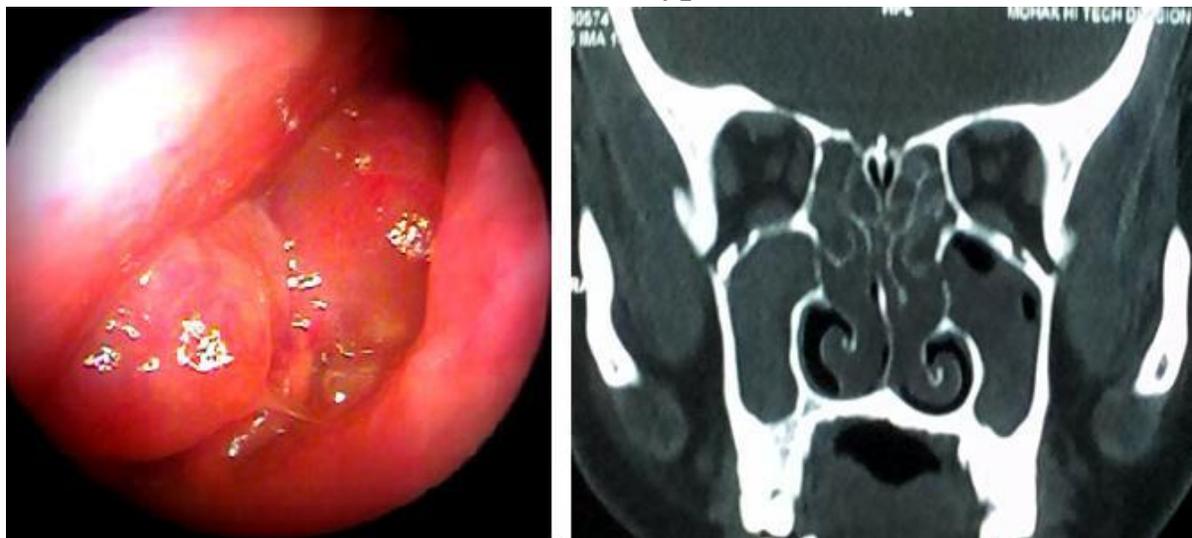
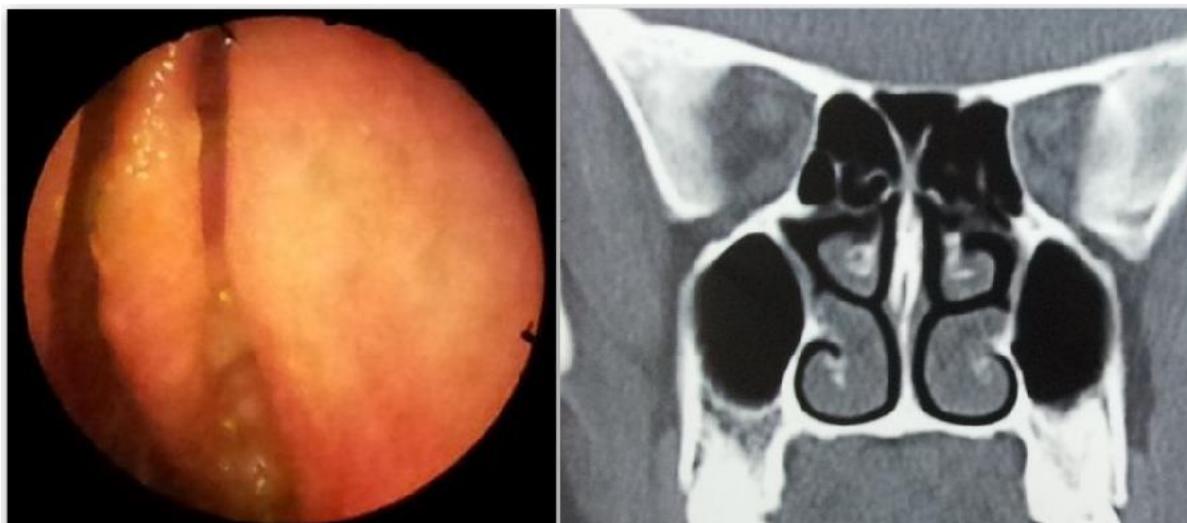


Figure No. 2: Endoscopic Photograph Showing Early Polypoidal Changes in Middle Turbinate with Mucoïd Discharge, Not Seen on CT Paranasal Sinus (Coronal View).



Occasionally the area of mucosal oedema noted at a contact point may serve as the base for polyp development. These findings were consistent with those in the study conducted by Levine, in 1990.⁶ Based on these results he concluded that for patients with unexplained nasal sinus symptoms, the general otolaryngologist might consider rigid nasal endoscopic office examination as part of the routine office examination because nasal endoscopy can find nasal and sinus pathology that might easily be missed with routine speculum and nasopharyngeal examination.

The results of endoscopy and CT comparison among 80 patients indicated 5 patients had normal CT imaging based on the radiologist's report, while they demonstrated nasal polyps during endoscopic evaluation. Also, one case of Allergic fungal rhinosinusitis was falsely diagnosed as sinonasal polyposis on CT. Similar findings were reported by Zojaji et al⁷ in his study, in which patients who had negative CT scans, showed endoscopic exams with nasal polyposis. The level of agreement between CT scan and diagnostic nasal endoscopy was almost perfect for sinonasal polyposis (0.856). Thus, the development of the modern rigid nasal endoscopy has proved to be a major advance in rhinologic diagnostic capability.

Conclusion:

Nasal endoscopy is a better diagnostic tool to detect early polypoidal changes in the mucosa, which are otherwise missed on CT or inaccessible on anterior rhinoscopy especially in the key area comprising the ostiomeatal complex. This can aid in early diagnosis and medical management of sinonasal diseases thereby preventing patient from unnecessary surgical exposure. It is easily available, most inexpensive and the endoscopic images can be captured and recorded for documentation. Thus, by performing diagnostic nasal endoscopy prior to CT,

patients can be spared from unnecessary cost and radiation exposure.

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References:

1. Orlandi RR, Marple BF. Developing, Regulating, and Ethically Evaluating New Technologies in Otolaryngology-Head and Neck Surgery. *Otolaryngol Clin N Am.* 2009 Oct.; 42(5):739-45.
2. Chandra RK, Conley DB, & Kern RC. Evolution of the Endoscope and Endoscopic Sinus Surgery. *Otolaryngol Clin N Am.* 2009; 42: 747-52
3. Govindaraj S, Adappa ND & Kennedy DW. Endoscopic sinus surgery: evolution and technical innovations. *The Journal of Laryngology & Otology.* 2010;124: 242-50.
4. Durr DG, Wright ED, Gall RM. Sinonasal Endoscopy Reporting Format: Emphasis on Chronic Rhinosinusitis. *The Journal of Otolaryngology.* 2005; 34(3):183-88.
5. Kishore K, Badial V, Luthra D. Pattern of Abnormal Findings in Adult with Nasal Obstruction on Rhinoscopy and Nasal Endoscopy. *JK Science.* 2012;14(3):125-28.
6. Levine HL. The office diagnosis of nasal and sinus disorders using rigid nasal endoscopy. *Otolaryngol Head Neck Surg.* 1990;102(4):370-73
7. Zojaji R, Mirzadeh M, Naghibi S. Comparative Evaluation of Preoperative CT Scan and Intraoperative Endoscopic Sinus Surgery Findings in Patients with Chronic Rhinosinusitis. *Iran J Radiol.* 2008;5(2):77-82

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