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Original Research Article

COMPARATIVE STUDY OF DIAGNOSTIC VALUE OF CT PARANASAL SINUS AND DIAGNOSTIC NASAL ENDOSCOPY IN PATIENTS OF CHRONIC RHINOSINUSITIS

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Abstract

Background: Chronic rhinosinusitis (CRS) is a common condition characterized by nasal and sinus inflammation. Diagnostic nasal endoscopy (DNE) and computed tomography (CT) scans are essential diagnostic tools. **Objectives:** To compare the diagnostic accuracy of DNE and CT scans in evaluating nasal and sinus pathology in patients with CRS. **Materials and Method:** This prospective comparative study recruited 100 patients with CRS symptoms from the ENT Outpatient Department (OPD) and Inpatient Department (IPD) of Subharti Medical College, Meerut, over 18 months. Patients underwent DNE and CT PNS scans. **Results:** DNE and CT-PNS showed similar detection rates for septal deviation (93% vs 89%), nasal discharge (41% vs 45%), and polyps (38% vs 49%). DNE detected more mucosal changes (47% vs 35%) and middle turbinate variations (23% vs 15%). CT-PNS visualized sinus pathology better. DNE demonstrated 100% sensitivity, specificity, positive predictive value, negative predictive value, and accuracy for diagnosing chronic sinusitis, with confidence intervals ranging from 96.38% to 100.00%. **Conclusion:** Diagnostic nasal endoscopy is a reliable tool for diagnosing CRS, with excellent sensitivity, specificity, and accuracy. CT scans are vital for preoperative planning and detecting sinus pathology. Both modalities complement each other, providing comprehensive evaluation of nasal and sinus pathology.

INTRODUCTION

Rhinosinusitis is the preferred term to describe the inflammation of the nose and paranasal sinuses.[1] The Sinus and Allergy Health Partnership Task Force for Rhinosinusitis had previously produced the following definition, which the organization supported and adopted: "Rhinosinusitis is a group of disorders characterized by inflammation of the mucosa of the nose and the paranasal sinuses."[2] Chronic rhinosinusitis (CRS) is clinically associated with nasal obstruction, sinus pressure, nasal congestion, rhinorrhea, and a decreased sense of smell persisting for greater than 12 weeks. CRS can be subdivided into 2 major categories based on whether nasal polyps are present (chronic rhinosinusitis with nasal polyps [CRSwNP]) or absent (chronic rhinosinusitis without nasal polyps [CRSsNP]).[3]

The American Academy of Otolaryngology-Head and Neck surgery, in 2007 boiled down 12 major and minor symptoms of CRS to four specific symptoms towards a proper diagnosis and management of CRS that consisted of twelve weeks or longer of two or more of the following signs and symptoms i.e. mucopurulent drainage (anterior, posterior, or both); nasal obstruction (congestion); facial pain-pressure-fullness; or decreased sense of smell.[4,5]

Diagnostic nasal endoscopy enables clear visualization of all structures of the middle meatus and of the osteomeatal complex. It serves as the main diagnostic tool for all anatomical changes and additional lateral nasal wall pathogenic variables that anterior/posterior rhinoscopy is unable to identify. Moreover, endoscopic management of the therapy's effects is conceivable, and surgery may be done if necessary.[6]

Because CT scan is not widely available in resource poor countries, it is often indicated after failed medical treatment, when surgical treatment is planned and if there is complication. It is also reliable, accurate and effective at demonstrating the extent of disease spread and its associated complications.[7]

To evaluate the objective components of CRS diagnosis, diagnostic nasal endoscopy (DNE) and the

computed tomography (CT) scan play important roles. Studies in past has been attempted to compare the diagnostic utility of CT-scan and nasal endoscopy in CRS but this has been a matter of debate because of high variability of results. However, in present times both CT scan and nasal endoscopy are called for evaluation of patients of suspected chronic rhinosinusitis. CT scan has its own disadvantages because of risk of radiation exposure, high false positivity and high costs.[8]

Hence both CT scan and diagnostic nasal endoscopy possess their pros and cons. Nevertheless, both nasal endoscopy and CT scan are implemented for diagnosis of chronic rhinosinusitis in routine practice since the relative values of each have not been well established. Therefore, the current study aims to compare both the diagnostic tools to come to a conclusion that which modality is better.

MATERIALS AND METHODS

The present prospective comparative study was conducted in the Department of Otorhinolaryngology at Subharti Medical College, Chattrapati Shivaji Subharti Hospital, Meerut, Uttar Pradesh, over a period of 18 months from August 2022 to February 2024. The study recruited 100 patients presenting to the ENT Outpatient Department (OPD) and Inpatient Department (IPD) with clinical symptoms of chronic rhinosinusitis. The inclusion criteria comprised patients aged 18-70 years with symptoms of chronic rhinosinusitis. However, patients were excluded if they had an acute attack of sinusitis (less than 4 weeks duration), subacute rhinosinusitis (4-12 weeks duration), sinonasal malignancies, or previous nasal surgeries such as septal, turbinate, or endoscopic surgeries. Additionally, patients unwilling to participate in the study were also excluded.

Approval was obtained from the ethical committee of Swami Vivekanand Subharti University and Informed consent was taken from all subjects.

Patients' detailed clinical histories were evaluated, encompassing demographic information and specific complaints related to chronic rhinosinusitis. The assessment included symptoms such as nasal obstruction (duration, laterality, variability, aggravating and relieving factors), nasal discharge (type: watery, mucoid, mucopurulent, or blood-stained), headache (location: frontal, facial, medial canthal, retro-orbital), and other associated symptoms like hyposmia/anosmia, sneezing, epistaxis, postnasal drip, cough, and seasonal variations. Additional symptoms considered were eye-related issues, including watery or itchy eyes.

The symptoms were categorized on the basis of major and minor symptoms as described by Lanza and kennedy.[9]

Chronic Rhinosinusitis symptoms include

Major symptoms – facial pain/pressure, facial congestion/fullness, nasal obstruction, nasal discharge, post nasal drip, anosmia/hyposmia, purulence on nasal examination

Minor symptoms – headache, fever (nonacute), halitosis, fatigue, dental pain, ear pain /pressure/fullness, cough.

Diagnosis requires two major symptoms or one major and 2 minor symptoms.9

After confirmation of diagnosis of chronic rhinosinusitis, patients first underwent diagnostic nasal endoscopy (DNE), after DNE and suction of excess secretions from nose patients were subjected to CT PNS scan.

Diagnostic nasal endoscopy (DNE) was performed using a 0-degree rigid endoscope, light source, camera, and antifog solution to evaluate nasal cavity anatomy and pathology. The assessment included:

- Nasal cavity size and mucosa condition (normal, hyperemic, edematous, purulent)
- Septal deviation (type: anterior, posterior, high, low)
- Inferior turbinate (normal, atrophy, hypertrophy, bony/mucosal hypertrophy)
- Inferior meatus (patency, mucopus, adhesions, nasolacrimal duct opening)
- Middle turbinate (normal, hypertrophied, concha bullosa, paradoxically curved, polypoidal)
- Middle meatus evaluation

The procedure was conducted with the patient in a supine position, head slightly elevated and turned towards the examiner. Topical anesthesia was administered using 4% lignocaine and adrenaline (1:10,000) via applicators and cotton nasal pack. This comprehensive DNE evaluation provided detailed information on nasal anatomy and pathology.

Diagnostic nasal endoscopy (DNE) was performed in three systematic passes to thoroughly examine the nasal cavity and surrounding structures. The procedure entailed:

The first pass involved inserting the endoscope along the nasal floor towards the nasopharynx to visualize key structures, including the inferior turbinate and meatus, Eustachian tube orifice, nasopharyngeal mucosa, and nasolacrimal duct orifice, noting any pathological variations.

The second pass focused on the middle turbinate region, visualizing the inferior portion of the middle turbinate, middle meatus, sphenoethmoidal recess, superior turbinate, and natural sphenoid ostium.

The third pass involved rotating the scope laterally beneath the middle turbinate to access deeper areas of the middle meatus, allowing visualization of the bulla ethmoidalis, hiatus semilunaris, infundibular entrance, uncinate process, and overlying mucosa.

Following DNE, excess nasal secretions were suctioned, and patients subsequently underwent a computed tomography (CT) scan of the paranasal sinuses (PNS) to further evaluate nasal and sinus pathology.

A CT scan was performed by the radiology department using 128 slice MDE CT scan (PHILIPS COMPANY) showing axial, coronal and sagittal sections. Most of the anatomical structures can be seen in coronal section except of structures such as

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fossa of rosenmuller and sagittal section allows to see lateral nasal wall.

The diagnostic accuracy of nasal endoscopy and computed tomography (CT) scans were compared in evaluating nasal and sinus pathology. Specifically, the study assessed and compared the sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and P-value between diagnostic nasal endoscopy and CT scan findings. To analyze the data, the Statistical Package for Social Sciences (SPSS) version 21.0 was utilized. The observations were summarized as proportions, and statistical significance was determined using the chi-square test and Student's T-test where applicable. A P-value less than 0.05 ($p<0.05$) was considered statistically significant, indicating a reliable difference between the diagnostic modalities.

RESULTS

Table 1 shows age group and gender wise distribution of study participants results revealed that 3% study patients that is minimum were belonged to 0-20 years of age, 34% that is maximum study participants belonged to 21-30 years; gender wise distribution of study participants results revealed that 79 male and 21 female participants participated in the study. The results of the 1st Pass Diagnostic Nasal Endoscopy (DNE) (table 2) revealed significant nasal abnormalities among the study participants. Septal deviation was observed in 41 participants on the right anterior side and 37 on the left, with posterior deviations found in 30 participants on the right and 17 on the left. Additionally, spurs were detected in 32 participants on the right and 24 on the left. Nasal mucosa congestion was noted in 47 participants on both the right and left sides, while pale mucosa was observed in 8 participants on each side. Polypoidal mucosa was present in 23 participants bilaterally.

Furthermore, hypertrophic inferior turbinate was found in 36 participants on the right and 20 on the left. Nasopharyngeal congestion was observed in 12 participants on the right and 16 on the left, with nasal polyps detected in 8 participants on the right and 6 on the left. These findings highlight the prevalence of nasal septal deviations, mucosal abnormalities, turbinate hypertrophy, and nasopharyngeal congestion/polyps among the study population.

Table 3 shows distribution of study participants according to 2nd pass findings during diagnostic nasal endoscopy examination results revealed that superior turbinate congested in 4 participants at right side and in 2 participants at left side and polypoidal in 2 participants at right side and 2 participants at left side, Spheno- ethmoidal recess was found congested in 2 participants at right and one subject at left side it was not visualized among 32 participants at right side and 20 participants at left side, superior meatus was congested in 2 subjects at right side and one participants at left side and it was polypoidal in 2 subjects at left side and sphenoid ostia was noticed polypoidal among 2 participants at left side. [Table 1]

Table 4 shows distribution of study participants according to 3rd pass –findings during diagnostic nasal endoscopy examination results revealed that in middle turbinate polypoidal was found in 11 participants at right side and 13 participants at left side , conchal changes was found among 10 participants at right side and in 12 participants at left side and congested in 15 participants at right side and in 15 participants at left side, paradoxical middle turbinate was found in 10,middle meatus polyp was found in 11 participants at right side and in 13 participants t left side discharge was found among 29 participants right side and in 30 subjects at left side and congested in 15 participants at right side and in 15 participants at left side and bulla ethmoidal enlarged in 20 participants at right side and 15 participants at left side and was not visualized due to polyp or discharge in one subject at each side. [Table 4]

Table 5 shows comparative parameters of Diagnostic nasal endoscopy and CT-PNS results revealed that septal deviation found in 89 participants in CT-PNS and in 93 participants in diagnostic nasal endoscopy, discharge in nasal cavity found in 45participants in CT-PNS and in 41 participants in diagnostic nasal endoscopy, polyp found in 49 participants in CT-PNS and in 38 participants in diagnostic nasal endoscopy and mucosal discharge found in 35 participants in CT-PNS and in 47 participants in diagnostic nasal endoscopy. Middle turbinate changes and anatomical variation was noted in 15 patients in CT scan and 23 participants in diagnostic nasal endoscopy, Abnormal cells (including haler and onodi cell) were found in 10 participants in CT PNS and only 5 on diagnostic nasal endoscopy. All the sinuses were only visualized on CT PNS and not in diagnostic nasal endoscopy, Sinus ostia of sphenoid r maxillary were better visualized and appreciated in diagnostic nasal endoscopy and not in CT scan Fungal rhinosinusitis signs were visualized in 15 participants in CT PNS and only in 9 patients in diagnostic nasal endoscopy. [Table 5]

Table 6 the diagnostic accuracy of diagnostic nasal endoscopy for various forms of chronic sinusitis demonstrates remarkable performance, with sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and accuracy all at 100.00%. Confidence intervals for these values range from 96.38% to 100.00%, indicating a high degree of certainty in the results. This suggests that diagnostic nasal endoscopy is an exceedingly reliable tool for diagnosing chronic sinusitis, exhibiting near-perfect agreement between test results and the actual presence or absence of the condition.

CT scan on other hand is also an excellent modality in terms of detecting sinus pathology and is vital in terms of preoperative planning for chronic rhinosinusitis patients. CT scan has been considered as gold standard in detecting of rhinosinusitis in

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patients and has been kept for comparison with diagnostic nasal endoscopy. [Table 6]

Table 1: Age and gender wise distribution of study participants

Variable		Frequency
Age	0-20	3
	21-30	34
	31-40	33
	41-50	27
	51-60	3
Gender	Female	21
	Male	79

Table 2: Distribution of study participants according to 1st Pass DNE (Diagnostic Nasal Endoscopy)

Ist Pass DNE		Right	Left
Septal Deviation	Anterior	41	37
	Posterior	30	17
	Spur	32	24
Nasal Mucosa	Congested	47	47
	Pale	8	8
	Polypoidal	23	23
Inferior Turbinate	Hypertrophy	36	20
Nasopharynx	Congested	12	16
	Polyp	8	6

Table 3: Distribution of study participants according to 2nd pass findings during diagnostic nasal endoscopy examination

2nd Pass DNE		Right	Left
Superior Turbinate	Congested	4	2
	Polypoidal	2	2
Spheno-ethmoidal Recess	Not Visualized	32	20
	Congested	2	1
	Polypoidal	1	3
Superior Meatus	Congested	2	1
	Polyp	0	2
Sphenoid Ostia	Polyp	0	2

Table 4: Distribution of study participants according to 3rd pass –findings during diagnostic nasal endoscopy examination

3rd Pass DNE		Right	Left
Middle Turbinate	Polypoidal	11	13
	Paradoxical	4	3
	Congested	15	15
	Conchal changes	10	12
Middle Meatus	Polyp	11	13
	Discharge	29	30
	Congested	15	15
Bulla Ethmoidalis	Enlarged	20	15
	Not visualized	1	1

Table 5: Comparative parameters of Diagnostic nasal endoscopy and CT-PNS

Comparative Measures	CT-PNS	DNE Diagnostic Nasal Endoscopy
Septal Deviation	89	93
Discharge/secretions In Nasal Cavity	45	41
Polyp in nasal cavity or sinuses	49	38
Middle turbinate changes & Anatomic variations	15	23
Mucosal Changes	35	47
Middle meatus and osteomeatal complex changes	20	27
Abnormal cells (onodi cell, haler cell)	10	5
Ethmoid sinus finding	20	Not visualized
Sphenoid sinus ostia changes	5	9
Sphenoid sinus changes	10	Not visualized
Maxillary sinus changes	25	Not visualized
Signs indicating fungal sinusitis (calcification, heterogenous density)	15	9

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Table 6: Diagnostic accuracy of diagnostic nasal endoscopy in diagnosing various forms of chronic sinusitis in comparison with CT paranasal sinus

Statistic	Value	95% CI
Sensitivity	100.00%	96.38% to 100.00%
Specificity	100.00%	96.38% to 100.00%
Positive Predictive Value (*)	100.00%	96.38% to 100.00%
Negative Predictive Value (*)	100.00%	96.38% to 100.00%
Accuracy (*)	100.00%	98.17% to 100.00%

DISCUSSION

The comparative analysis of diagnostic nasal endoscopy and CT-PNS results showed septal deviation was identified in 89 participants via CT-PNS and 93 through endoscopy, while nasal cavity discharge was detected in 45 and 41 participants, respectively. Polyps were found in 49 participants through CT-PNS and 38 through endoscopy, and mucosal discharge was observed in 35 and 47 participants, respectively.

Middle turbinate changes and anatomical variations were more frequently detected through endoscopy (23 participants) compared to CT-PNS (15 participants). However, abnormal cells, including Haller and Onodi cells, were more accurately identified through CT-PNS (10 participants) than endoscopy (5 participants).

CT-PNS provided comprehensive visualization of all sinuses, whereas endoscopy had limitations in this regard. Conversely, endoscopy offered better visualization of the sphenoid and maxillary sinus ostia compared to CT-PNS. Furthermore, signs of fungal rhinosinusitis were detected in 15 participants through CT-PNS and 9 through endoscopy.

These findings suggest that while CT-PNS excels in detecting certain structural abnormalities and sinus visualization, diagnostic nasal endoscopy provides superior visualization of specific areas, such as sinus ostia. The study highlights the complementary nature of these diagnostic modalities, emphasizing the importance of combining both for comprehensive evaluation of nasal and sinus pathology. The variations in detection rates underscore the need for clinicians to consider both diagnostic approaches to ensure accurate diagnoses and effective treatment plans.

The diagnostic accuracy of diagnostic nasal endoscopy for various forms of chronic sinusitis demonstrates remarkable performance, with sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), and accuracy all at 100.00%. Confidence intervals for these values range from 96.38% to 100.00%, indicating a high degree of certainty in the results. Our results are in comparison to a corresponding study reported by Lohiya SS et al4 that compared endoscopy to the gold standard CT scan and observed that endoscopy had a sensitivity of 88.04%, specificity of 28.57%, positive predictive value of 94.19%, negative predictive value of 15.38%, positive likelihood ratio of 1.23, and negative likelihood ratio of 0.42. These results indicate that nasal endoscopy is highly sensitive in diagnosing the disease, but lacks the required specificity to confidently rule out the diagnosis whereas our study suggested that diagnostic nasal endoscopy is an exceedingly reliable tool for diagnosing chronic sinusitis, exhibiting near-perfect agreement between test results and the actual presence or absence of the condition. Nathan K et al,[10] reported the sensitivity of DNE, when compared to CT, was 92.31%. The specificity was 73.33%. The positive predictive value was 93.75%, while the negativepredictive value was 68.75%. The diagnostic accuracy was 88.75% and was recommended the utilization of nasal endoscopy as an initial diagnostic method in the clinical evaluation of patients with suspected chronic rhinosinusitis (based on the diagnostic symptom criteria). Goel A et al,[11] proposed that in the majority of situations, there is a significant level of concordance between the outcomes of the two modalities. Endoscopy is a similarly effective method as CT scanning for identifying chronic rhinosinusitis (CRS) in locations that may be easily accessed, particularly for detecting local alterations that are more clearly observed during endoscopy. Another akin study by Pandey A et al,[12] concluded that the accessory maxillary ostium, which is more prevalent in patients with chronic rhinosinusitis (CRS), can only be visualized by endoscopy.

Corresponding to our study, Shahizon AMM et al,[13] found that CT scans can detect modest bone deviations, while endoscopy is able to identify nasal septal deviation if it is causing obstruction. In this study, even deviations less than 5mm were regarded significant on CT scans. Ferguson BJ et al,[14] conducted a study on 125 individuals with CRS and found that nasal endoscopy has a of 100% and a sensitivity of 24% which indicates that nasal endoscopy is valuable for confirming a diagnosis of CRS, but not for excluding it.

Another analogous study conducted by Rosbe et al,[15] aimed to determine if a combination of patient symptoms and nasal endoscopy could accurately predict chronic rhinosinusitis (CRS) on CT scans. The study prospectively compared the results of nasal endoscopy, CT scanning, and a symptom questionnaire in 92 consecutive patients who were referred for sinonasal symptoms. The study conducted CT scans on all individuals who had endoscopic findings that were either positive or inconclusive for chronic rhinosinusitis (CRS). It was found that 91% of patients who had positive results on endoscopy also had CT scans that were in line with chronic rhinosinusitis (CRS). All patients who

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presented with nasal obstruction and had a positive result on nasal endoscopy showed CT results that were in line with chronic rhinosinusitis (CRS). The study determined that when combined with a symptom history, nasal endoscopy can be a very accurate approach for predicting positive CT findings of chronic rhinosinusitis (CRS). It was discovered that individuals who presented with headache or facial pain as their primary complaint had a lower likelihood of exhibiting signs of sinusitis compared to patients whose primary complaint was nasal obstruction or postnasal drip. Furthermore, it was demonstrated that nasal endoscopy has a moderate level of sensitivity and a high level of specificity in predicting the outcomes of CT scanning.

Similarly, Stankiewicz JA et al,[16] found a strong correlation between positive endoscopic results and CT scans, as well as a 71% correlation between negative endoscopic results and negative CT results. The endoscopy results revealed the presence of purulence, nasal polyps, or watery congested mucosa, were consistent with the findings from the CT scan. There was a correlation between negative endoscopic and CT results in 65% of the patients. The validity of using endoscopy to confirm the diagnosis of nonpolypoid or nonpurulent rhinosinusitis in individuals who have not previously had surgery is being called into question. Patients who fulfill the subjective criteria for chronic rhinosinusitis should undergo endoscopy or CT with a high level of sensitivity and specificity.

Another study by Bhattacharyya N et al,[17] assessed patients with chronicrhinosinusitis (CRS) using the rhinosinusitis symptom inventory (RSI), nasal endoscopy, and sinus computed tomography (CT). A comprehensive analysis was conducted on a cohort of 202 patients. The incidence of chronic rhinosinusitis (CRS) was 39.6 percent, as determined by computed tomography (CT) using a Lund score of4 or above as the defining criteria. The symptom criteria alone yielded a sensitivity of 88.7%, specificity of 12.3%, positive predictive value of 39.9%, and negative predictive value of 62.5% for CRS (P = 0.82). Incorporating endoscopic data into the symptom criteria resulted in a substantial enhancement of the specificity, predictive value, and negative predictive value, which reached 84.1%, 66.0%, and 70.3% respectively (P < 0.0001). The odds ratio for accurately diagnosing CRS increased from 1.1 to 4.6, with a 95% confidence interval of 2.3-9.2. Modifying the severity of symptoms in sensitivity analysis did not have a substantial impact on the diagnostic accuracy. Benninger MS et al18 conducted a study on 100 consecutive patients and found that nasal endoscopy was a factor in 11% of cases. However, in none of the cases did endoscopy alter the diagnosis or treatment strategy. Endoscopy enabled the observation beyond a swollen turbinate or deviated septum in six individuals, verified a suspected diagnosis in three through visualization of the middle meatus, and identified the location of a significant choanal polyp in one patient. Endoscopy revealed a paradoxical turbinate on the side opposite to the symptoms and radiologicalfindings in a specific patient. Performing routine nasal endoscopy is not necessary for evaluating all patients with nasal sinus problems. However, it is very useful for verifying diagnosis, particularly in individuals whose anterior rhinoscopy is hindered by anatomical blockage. The advancement of contemporary rigid endoscopy demonstrates significant enhancement in diagnostic capacity. Nasal endoscopy is a more effective diagnostic tool compared to conventional speculum and nasopharyngeal examination for identifying nose and sinus pathology. It provides an objective assessment that can help detect issues that may otherwise be overlooked. Computed Tomography (CT) of the Paranasal Sinuses (PNS) is a crucial diagnostic technique used to guide therapeutic decisions and plan surgical interventions. The preferred way for evaluating the paranasal sinuses, nasal cavity, and their anatomical variations through this assessment.

DNE has proven to reduce the utilization of CT scans, resulting in reduced expenses and minimized radiation exposure. Computed tomography may be utilized in cases where patients have anatomical anomalies that hinder endoscopic visualization or have refractory disease, and when surgery has been scheduled.[11] Furthermore, diagnostic endoscopy, a cost-effective and readily available tool, provides a benefit in the diagnosis of CRS. CT scan is beneficial for diagnosing diseases in patients who have restricted or poor endoscopic visibility due to factors such as polyps, septal deviation, crowding of the osteomeatal complex, and the existence of hidden air spaces such the sphenoid sinus, ethmoid bulla, and posterior ethmoids.[4]

Therefore, Nasal endoscopy is useful for assessing the osteomeatal complex to identify signs of illness and identify structural abnormalities that hinder proper breathing and mucociliary clearance. Therefore, nasal endoscopy and CT scans have significantly advanced our comprehension of CRS. The CT scan is often regarded as the most reliable and accurate diagnostic tool for chronic rhinosinusitis (CRS). Performing a CT scan to confirm CRS is unnecessary and increases the danger of exposure to ionizing radiation. It also adds to the cost of the procedure.19 Based on these data, we suggest that if a patient fulfills the symptom criteria outlined in the guidelines and has good endoscopic results during evaluation, it would be justifiable to commence treatment for chronic rhinosinusitis (CRS) based on an assumed diagnosis, without first having a CT scan of the paranasal sinuses. For individuals who continue to experience symptoms despite receiving the most effective treatment and for cases where surgery is being planned, sinus imaging may be explored.

The current study was of limited number of patients with lack of multicenter studies. The study might be prone to bias or interpretive error because of the anatomical variation and stage of disease. The

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process of selecting patients based on the symptoms can also lead to bias due to presence of smear symptoms in other diseases.

CONCLUSION

This study concludes that combining nasal endoscopy and CT scans enhances the accuracy of diagnosing chronic rhinosinusitis (CRS). Nasal endoscopy is valuable for confirming diagnosis and assessing severity, particularly in symptomatic patients. CT scans are recommended for patients with high clinical suspicion but no endoscopic signs, or those requiring Functional Endoscopic Sinus Surgery.

Prioritizing nasal endoscopy as an early diagnostic tool reduces the need for CT scans, resulting in cost savings and minimized radiation exposure. Diagnostic nasal endoscopy and CT scans work synergistically, providing objective data for CRS diagnosis.

CT scans assess anatomical configurations, variations, and extent of sinus disease, while endoscopy determines pathology type. Understanding the advantages and limitations of each modality reveals their complementary nature, enabling precise diagnosis and optimal endoscopic treatment of CRS.

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