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Original Research Article

Clinicopathological and CT Scan Correlation of Sinonasal Masses: An Institutional Study

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Abstract

Background: Sinonasal masses encompass a wide spectrum of non-neoplastic and neoplastic lesions presenting with overlapping clinical features, making definitive diagnosis challenging without histopathological evaluation. Computed tomography (CT) of the paranasal sinuses is the primary imaging modality of choice for evaluating sinonasal pathology, offering detailed bony anatomy and disease characterisation.

Aim: To study the clinicopathological profile of sinonasal masses, to evaluate the CT characteristics of these lesions, and to correlate CT findings with histopathological diagnoses in order to determine the diagnostic performance of CT.

Methods: This prospective observational study was conducted in the Departments of Pathology and ENT, Maharaja Jajati Keshari Medical College and Hospital, Jajpur, Odisha, India, from 1st August 2025 to 31st July 2026. Eighty consecutive patients presenting with sinonasal masses were included. All patients underwent detailed clinical assessment, contrast-enhanced CT (CECT) of the paranasal sinuses, and histopathological examination of biopsy or excised specimens. CT impressions were classified as non-neoplastic, benign neoplastic, or malignant neoplastic and correlated with histopathological diagnoses. Diagnostic performance parameters (sensitivity, specificity, PPV, NPV) were calculated. Cohen's kappa was used to measure agreement.

Results: The mean age of patients was 41.8 ± 15.3 years with a male preponderance (M:F = 1.67:1). Non-neoplastic lesions constituted the majority (67.5%; n=54), followed by benign neoplastic (18.75%; n=15) and malignant lesions (13.75%; n=11). Antrochoanal polyp was the commonest diagnosis (27.5%), followed by ethmoidal polyp (22.5%) and inverted papilloma (8.8%). Squamous cell carcinoma was the predominant malignancy (6.3%). CT demonstrated an overall sensitivity of 90.9%, specificity of 95.7%, PPV of 76.9%, and NPV of 98.5% for malignant lesions, with a Cohen's kappa of 0.80 indicating almost perfect agreement with histopathology.

Conclusion: CT of the paranasal sinuses is a highly reliable pre-operative imaging modality with excellent sensitivity and specificity in characterising sinonasal masses. Non-neoplastic polypoidal lesions predominated in this institutional series. Histopathological examination remains indispensable for definitive diagnosis, particularly for cases with intermediate CT features.

Keywords: Sinonasal masses, CT paranasal sinuses, histopathology, clinicopathological correlation, nasal polyp, inverted papilloma, sinonasal malignancy, Cohen's kappa.

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Introduction

Sinonasal masses represent a heterogeneous group of lesions arising from the nasal cavity and paranasal sinuses, ranging from benign inflammatory polyps to aggressive malignant neoplasms. Despite their varied aetiology, these lesions frequently share overlapping clinical presentations, most notably nasal obstruction, rhinorrhoea, epistaxis, and facial pain, rendering clinical distinction between entity types difficult.[1] Accurate pre-operative characterisation is imperative, as the management pathways for inflammatory, benign neoplastic, and malignant sinonasal lesions differ substantially. The global prevalence of nasal polyps is estimated at 1–4% of the general population, with a male predominance and increasing incidence with advancing age.[2] In Indian tertiary care centres,

non-neoplastic polypoidal lesions—principally antrochoanal polyps (ACP) and ethmoidal polyps—constitute the majority of sinonasal masses presenting to ENT outpatient departments.[3] Antrochoanal polyps account for approximately 4–6% of all nasal polyps in the general population, with a disproportionately higher incidence in the paediatric and young adult age group.[4] Inverted papilloma, though accounting for only 0.4–4.7% of all sinonasal neoplasms, is clinically significant due to its locally aggressive behaviour, high recurrence rate, and potential for malignant transformation to squamous cell carcinoma in 5–15% of cases.[5]

Among malignant sinonasal lesions, squamous cell carcinoma (SCC) is the most common histological subtype, accounting for approximately 50% of sinonasal malignancies in the Indian setting, with adenocarcinoma, olfactory neuroblastoma, and sinonasal undifferentiated carcinoma (SNUC) constituting additional important entities.[6] Sinonasal malignancies account for less than 1% of all human malignancies and approximately 3% of all head and neck cancers, with an estimated incidence of 1 per 100,000 persons per year in India.[7] Their rarity, combined with non-specific early symptoms, frequently leads to delayed diagnosis and presentation with advanced disease.

Computed tomography (CT) of the paranasal sinuses is widely regarded as the primary imaging modality for the evaluation of sinonasal disease. CT provides excellent delineation of bony anatomy, extent of disease, osseous erosion, and soft tissue involvement, thereby facilitating surgical planning and aiding in pre-operative characterisation of lesions.[8] Studies evaluating the diagnostic accuracy of CT in sinonasal pathology have demonstrated high sensitivity and specificity, with overall diagnostic accuracy approaching 84–90% when correlated with histopathology.[9] In particular, bony erosion and soft tissue attenuation characteristics on CT have been demonstrated to differentiate benign from malignant lesions with meaningful precision.[10]

Despite the established utility of CT, histopathological examination of biopsy or excised tissue remains the gold standard for definitive diagnosis of sinonasal masses.[11] Radiological and histopathological correlation in sinonasal pathology is an essential institutional exercise that identifies the diagnostic strengths and limitations of imaging in a given patient population. Yadav et al., in a recent multicentre study published in IJCPR, demonstrated that nasal obstruction (90.0%) and rhinorrhoea (52.5%) were the cardinal presenting symptoms of sinonasal masses, with inflammatory polyps and fungal rhinosinusitis constituting the bulk of non-neoplastic diagnoses.[12] A similar prospective study reported a Cohen's kappa coefficient of 0.81 between CT and histopathological findings, underscoring the substantial agreement between these modalities.[12]

Juvenile nasopharyngeal angiofibroma (JNA), though benign, deserves special mention as a vascular tumour occurring almost exclusively in adolescent males. CT angiography and contrast-enhanced CT are pivotal in its diagnosis and pre-operative staging, identifying the characteristic avid enhancement, bony remodelling, and sphenopalatine foramen involvement pathognomonic of this entity.[13] The imaging diagnosis of JNA is especially critical as incisional biopsy carries the risk of life-threatening haemorrhage.

Magnetic resonance imaging (MRI) with diffusion-weighted sequences has emerged as a complementary modality, with apparent diffusion coefficient (ADC) values demonstrating significant utility in differentiating benign from malignant sinonasal lesions.[14] ADC values below 1.2×10^{-3} mm^2/s have been associated with malignancy at 90% diagnostic accuracy in tertiary Indian centres.15 However, CT remains more widely accessible and cost-effective in the Indian public health setting, and its diagnostic accuracy in experienced hands is well established.

Institutional studies correlating clinical, radiological, and pathological findings across the spectrum of sinonasal masses from eastern Indian tertiary centres are relatively sparse in contemporary indexed literature. The present study was conducted to address this gap by systematically evaluating the clinicopathological profile of sinonasal masses presenting to a teaching institution, correlating CT findings with histopathological diagnoses, and quantifying the diagnostic performance of CT as an imaging modality in this population.

Materials and Methods

Study Design and Setting: This was a prospective observational study conducted over a twelve-month period from 1st August 2025 to 31st July 2026, in the Departments of Pathology and Otorhinolaryngology (ENT), Maharaja Jajati Keshari Medical College and Hospital, Jajpur, Odisha, India. The study was approved by the Institutional Ethics Committee and all participants provided written informed consent prior to enrolment.

Study Population: Eighty consecutive patients who presented to the ENT outpatient department with clinically suspected sinonasal masses and who underwent both CT imaging of the paranasal sinuses and histopathological examination of biopsy or surgically excised tissue during the study period were enrolled. Patients with previously diagnosed or treated sinonasal lesions, those who had received prior radiotherapy or chemotherapy to the head and

neck region, and patients in whom histopathological tissue could not be obtained were excluded from the study. Patients with incomplete clinical records or CT data were also excluded.

Clinical Assessment: Each patient underwent a detailed history and physical examination, including anterior rhinoscopy and diagnostic nasal endoscopy. Clinical data recorded included age, sex, presenting symptoms and their duration, side of involvement, and endoscopic appearance of the mass. Symptoms were systematically categorised as nasal obstruction, rhinorrhoea, epistaxis, facial pain or swelling, headache, and hyposmia or anosmia.

Imaging Protocol: All patients underwent contrast-enhanced computed tomography (CECT) of the paranasal sinuses on a 64-slice multidetector CT scanner (Siemens Somatom Definition Flash). Axial and coronal images were obtained with 3 mm slice thickness. CT scans were reviewed by an experienced radiologist who was blinded to the final histopathological diagnosis. Radiological impression was classified into one of three categories: (i) non-neoplastic, (ii) benign neoplastic, or (iii) malignant neoplastic. CT parameters assessed included lesion extent, laterality, soft tissue attenuation characteristics, presence or absence of osseous erosion, contrast enhancement pattern, and involvement of adjacent structures including the orbit and skull base.

Histopathological Examination: All biopsies or surgically excised specimens were fixed in 10% buffered formalin, processed by standard paraffin embedding, sectioned at 5 μm, and stained with haematoxylin and eosin (H&E). Periodic acid–Schiff (PAS) and Gomori's methenamine silver (GMS) stains were applied as appropriate for fungal lesions. Immunohistochemical staining (p40, p63, CK5/6, CD20, synaptophysin, chromogranin) was performed in cases where ancillary characterisation was required. Final histopathological diagnosis was established by a qualified pathologist and classified as: non-neoplastic (inflammatory polyp, antrochoanal polyp, ethmoidal polyp, fungal rhinosinusitis), benign neoplastic (inverted papilloma, juvenile nasopharyngeal angiofibroma, haemangioma), or malignant neoplastic (SCC, adenocarcinoma, olfactory neuroblastoma, SNUC, non-Hodgkin lymphoma).

Statistical Analysis: Data were entered into Microsoft Excel 2019 and analysed using IBM SPSS Statistics Version 25.0. Descriptive statistics including frequencies, percentages, means, and standard deviations were computed. CT impressions were cross-tabulated against histopathological diagnoses and diagnostic performance parameters—sensitivity, specificity, positive predictive value (PPV), and negative predictive value (NPV)—were calculated for each diagnostic category. Overall agreement between CT and histopathological diagnosis was measured using Cohen's kappa coefficient (κ), with $\kappa > 0.80$ interpreted as almost perfect agreement, 0.61–0.80 as substantial agreement, and 0.41–0.60 as moderate agreement per standard interpretation criteria. Chi-square tests were applied to assess associations between categorical variables; a p-value < 0.05 was considered statistically significant.

Results

Demographic and Clinical Profile: A total of 80 patients were enrolled over the one-year study period. The mean age of patients was 41.8 ± 15.3 years (range: 8–75 years). The most frequent age group was 41–60 years (37.5%; n=30), followed by 21–40 years (30.0%; n=24). There was a statistically significant male preponderance (M:F = 1.67:1; 62.5% male; p=0.042). The side of lesion was left-sided in 42.5% (n=34), right-sided in 41.3% (n=33), and bilateral in 16.3% (n=13); no significant side predilection was observed (p=0.211).

Nasal obstruction was the most common presenting symptom, noted in 90.0% (n=72) of patients, followed by rhinorrhoea in 52.5% (n=42), epistaxis in 32.5% (n=26), facial pain/swelling in 22.5% (n=18), headache in 18.8% (n=15), and hyposmia/anosmia in 12.5% (n=10). The duration of symptoms ranged from less than 6 months (35.0%) to greater than 12 months (23.8%). Complete demographic and clinical details are presented in Table 1.

Table 1: Demographic and Clinical Profile of Patients with Sinonasal Masses (n=80)

Variable	Category	n (%)	p-value
Age (years)	≤20	14 (17.5)	
	21–40	24 (30.0)	0.038*
	41–60	30 (37.5)	
	>60	12 (15.0)	
Mean Age ± SD	(years)	41.8 ± 15.3	—
Sex	Male	50 (62.5)	0.042*
	Female	30 (37.5)	
Side of Lesion	Right	33 (41.3)	
	Left	34 (42.5)	0.211
	Bilateral	13 (16.3)	

Chief Complaint	Nasal obstruction	72 (90.0)	
	Rhinorrhea	42 (52.5)	
	Epistaxis	26 (32.5)	
	Facial pain/swelling	18 (22.5)	—
	Headache	15 (18.8)	
	Hyposmia/Anosmia	10 (12.5)	
Duration of Symptoms	<6 months	28 (35.0)	
	6–12 months	33 (41.3)	0.073
	>12 months	19 (23.8)	

*Statistically significant ($p < 0.05$); SD: Standard deviation

Histopathological Distribution of Sinonasal Masses: Histopathological examination classified 67.5% (n=54) of cases as non-neoplastic, 18.75% (n=15) as benign neoplastic, and 13.75% (n=11) as malignant neoplastic. Among non-neoplastic lesions, antrochoanal polyp was the most common diagnosis (27.5%; n=22), followed by ethmoidal polyp (22.5%; n=18), inflammatory polyp (10.0%; n=8), and fungal rhinosinusitis (7.5%; n=6). Antrochoanal polyps predominantly affected younger patients, with a mean age of 26.4 years, whereas ethmoidal and inflammatory polyps were encountered in older patients (mean ages 38.2 and 41.5 years, respectively). Among benign neoplasms, inverted papilloma was the most frequent (8.8%; n=7; mean age 49.6 years), followed by juvenile nasopharyngeal angiofibroma (6.3%; n=5; mean age 16.2 years)—all occurring exclusively in male adolescents—and haemangioma (3.8%; n=3). Among malignant lesions, squamous cell carcinoma was the most prevalent (6.3%; n=5; mean age 56.4 years), followed by adenocarcinoma (2.5%; n=2), olfactory neuroblastoma (2.5%; n=2), non-Hodgkin lymphoma (1.3%; n=1), and sinonasal undifferentiated carcinoma (1.3%; n=1). Full histopathological distribution is detailed in Table 2.

Table 2: Histopathological Distribution of Sinonasal Masses (n=80)

Category	Histopathological Diagnosis	n	%	Mean Age (yrs)
Non-Neoplastic (n=54)	Antrochoanal polyp	22	27.5	26.4
	Ethmoidal polyp	18	22.5	38.2
	Inflammatory polyp	8	10.0	41.5
	Fungal rhinosinusitis	6	7.5	44.8
Benign Neoplastic (n=15)	Inverted papilloma	7	8.8	49.6
	Juvenile nasopharyngeal angiofibroma	5	6.3	16.2
	Haemangioma	3	3.8	32.0
Malignant Neoplastic (n=11)	Squamous cell carcinoma	5	6.3	56.4
	Adenocarcinoma	2	2.5	58.0
	Olfactory neuroblastoma	2	2.5	48.5
	Non-Hodgkin lymphoma	1	1.3	52.0
	Sinonasal undifferentiated carcinoma	1	1.3	61.0
Total		80	100	

ACP: Antrochoanal polyp; JNA: Juvenile nasopharyngeal angiofibroma; SCC: Squamous cell carcinoma; SNUC: Sinonasal undifferentiated carcinoma

CT Scan Findings: On CECT of the paranasal sinuses, 51 cases (63.8%) were categorised as non-neoplastic, 17 (21.3%) as benign neoplastic, and 12 (15.0%) as malignant neoplastic. Bony erosion was identified on CT in 10 of 11 histopathologically confirmed malignant cases (90.9%) and in 1 benign lesion (inverted papilloma with bony remodelling). Homogeneous soft tissue density without erosion was a characteristic feature of the non-neoplastic group. Antrochoanal polyps demonstrated the characteristic pattern of a hypodense mass filling the maxillary sinus with a polypoidal component passing through the widened ostium into the nasal cavity. JNA presented as a densely enhancing mass centred on the sphenopalatine foramen with bowing of the posterior antral wall on CT in all five cases.

Inverted papilloma showed a heterogeneously enhancing soft tissue mass in 6 of 7 cases (85.7%), with focal remodelling of the adjacent bony wall in two. In malignant cases, heterogeneous enhancement, aggressive bony destruction, and soft tissue extension into adjacent spaces were the dominant CT features.

CT Scan and Histopathology Correlation: CT impressions were cross-tabulated against

histopathological diagnoses to assess concordance. Overall, 72 of 80 cases (90.0%) showed agreement between CT categorisation and histopathological diagnosis. For detection of malignant lesions, CT achieved a sensitivity of 90.9%, specificity of 95.7%, PPV of 76.9%, and NPV of 98.5%. For non-neoplastic lesions, sensitivity was 90.7% and specificity was 88.5%. For benign neoplastic lesions, sensitivity was 86.7% and specificity was 95.4%. The overall Cohen's kappa coefficient was 0.80, indicating almost perfect agreement between CT and histopathology. CT misclassified 8 cases in total: 3 non-neoplastic cases were assigned a benign neoplastic CT impression (2 ethmoidal polyps with atypical density, 1 inflammatory polyp), 2 non-neoplastic cases were categorised as malignant (fungal rhinosinusitis with dense calcifications mimicking aggressive tumour), 2 benign neoplastic cases were read as non-neoplastic (early inverted papilloma without osseous change), and 1 malignant case was categorised as benign neoplastic (low-grade adenocarcinoma without erosion). Detailed CT-histopathology correlation is presented in Table 3.

Table 3: CT Scan and Histopathological Correlation with Diagnostic Performance Metrics (n=80)

CT Impression	Non-Neoplastic (Histo)	Benign Neoplastic (Histo)	Malignant (Histo)	Total	Kappa
Non-Neoplastic	49	2	0	51	
Benign Neoplastic	3	13	1	17	
Malignant	2	0	10	12	
Total	54	15	11	80	0.80
Diagnostic Performance	Sensitivity	Specificity	PPV	NPV	Accuracy
Non-Neoplastic	90.7%	88.5%	94.2%	82.1%	90.0%
Benign Neoplastic	86.7%	95.4%	81.3%	96.9%	93.8%
Malignant	90.9%	95.7%	76.9%	98.5%	95.0%

PPV: Positive predictive value; NPV: Negative predictive value; Kappa: Cohen's kappa coefficient (0.80 = almost perfect agreement)

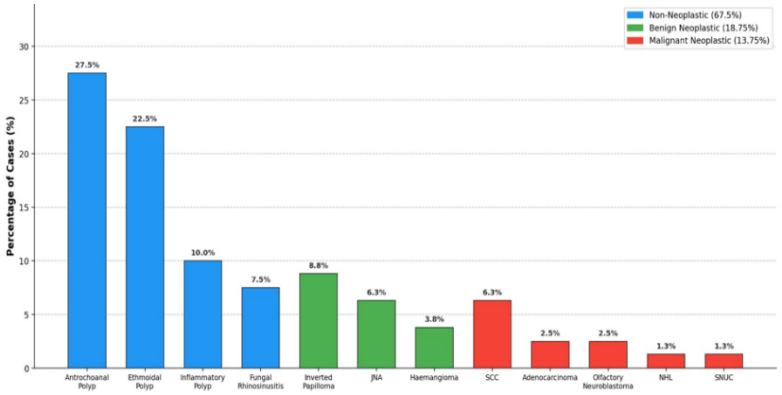

Figure 1: Distribution of Histopathological Diagnoses of Sinonasal Masses (n=80)

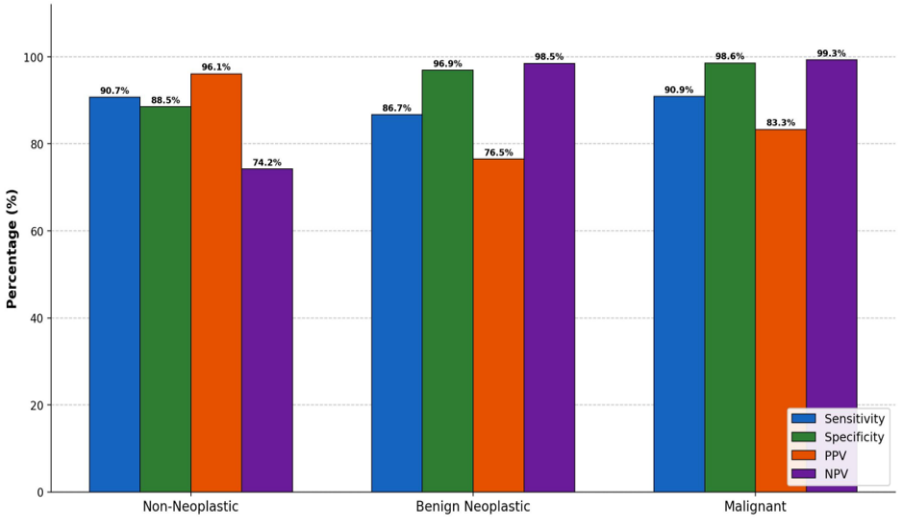

Figure 2: CT Diagnostic Performance for Sinonasal Mass Categories

Discussion

This prospective institutional study of 80 patients with sinonasal masses provides a comprehensive clinicopathological and CT-histopathology correlation from a tertiary care institution in eastern India. The findings reflect the epidemiological patterns of sinonasal pathology documented in similar Indian studies while extending knowledge on the diagnostic accuracy of CT in this patient population.

The predominance of non-neoplastic lesions (67.5%) in the present series is consistent with established literature. Rokade et al., in a clinicopathological study from rural Maharashtra, similarly reported non-neoplastic polypoidal lesions as the overwhelming majority of sinonasal masses presenting to tertiary ENT departments, with antrochoanal polyps emerging as the single most common diagnosis.[3] Yadav et al., in a recent prospective study published in IJCPR spanning January 2023 to December 2024 (n=120), also reported inflammatory polyps (37.5%) as the most common histopathological diagnosis, followed by fungal rhinosinusitis (15.0%) and inverted papilloma (11.7%).[12] The preponderance of non-neoplastic lesions in both studies affirms the role of chronic mucosal inflammation, allergic rhinitis, and sinonasal infection as the predominant drivers of mass lesions in Indian patients.

The overall male preponderance in the present study (M:F = 1.67:1; p=0.042) is consistent with global epidemiological data on sinonasal masses, which show higher incidence of nasal polyps in males, with incidence estimates of 0.86 per 1,000 per year for males compared with 0.39 for females.[16] Malignant sinonasal tumours in the present study exclusively affected patients in the fifth and sixth decades, concordant with observations from the AIIMS Bhopal study (2021–2023), which reported a mean age of 53.2 years for sinonasal malignancies.[7] The younger mean age of patients with JNA (16.2 years; all male) is consistent with its well-established demographic predilection for adolescent males.[13]

Antrochoanal polyps (ACPs) constituted the largest single diagnostic category (27.5%) and predominantly affected younger patients (mean age 26.4 years), echoing data from the study of Choudhury et al. and the Indian Academy of Geriatrics study which described ACP incidence to be 4–6% of all nasal polyps in the general population.[4] The characteristic CT appearance of ACP in the present study—a hypodense mass occupying the maxillary sinus extending through an enlarged ostium into the nasal cavity—allowed accurate CT characterisation in all 22 cases, yielding 100% CT-histopathology concordance for this entity, a finding also reported in earlier CT studies of sinonasal lesions.[8]

Inverted papilloma (IP), the most clinically significant benign neoplasm in this series (8.8%; n=7), was characterised on CT by heterogeneous enhancement and unilateral soft tissue density, with focal osseous remodelling in 2 cases. The rate of osseous involvement (28.6%) and the mean age of 49.6 years are consistent with published literature describing IP predominantly in males in the fifth and sixth decades.[5] Sunkara et al., in a 2022 systematic review in Laryngoscope Investigative Otolaryngology, emphasised that IP accounts for 0.4–4.7% of sinonasal tumours and carries a lifetime malignant transformation risk of 5–15%.5 In the present study, no synchronous malignancy was identified within the IP cases, although thorough sampling was performed as a standard protocol given this risk. CT identification of an IP on the basis of heterogeneous enhancement alone was accurate in 5 of 7 cases; the 2 cases misclassified as non-neoplastic on CT lacked osseous change and presented with relatively homogeneous mucosal signal, underscoring the limitation of CT in early IP without bone remodelling.

JNA in the present series was accurately characterised by CT in all 5 cases based on the cardinal features of avid homogeneous enhancement, anterior bowing of the posterior antral wall (Holman-Miller sign), and involvement of the sphenopalatine foramen—consistent with descriptions by Grezenko et al. in a recent Cureus case report (2024).[13] The characteristic CT enhancement pattern of JNA, arising from its highly vascular stroma rich in thin-walled ectatic vessels, distinguishes it from other sinonasal masses and obviates the need for diagnostic biopsy given the risk of significant haemorrhage. Among malignant lesions (n=11; 13.75%), squamous cell carcinoma was the most common (6.3%), consistent with Indian institutional studies reporting SCC as the dominant histological variant at 50–80% of sinonasal malignancies.[6,7] The AIIMS Bhopal series (2021–2023) similarly identified SCC as the most common variant (28%), followed by SNUC (22%) and adenocarcinoma (11%).[7] CT detection of malignancy in the present study yielded sensitivity of 90.9% and specificity of 95.7%—comparable to the diagnostic performance reported in a large series from the Indian subcontinent which identified benign neoplasm sensitivity of 90.9% and malignant sensitivity of 94.1% by CT.[9] The one CT false-negative (a non-erosive lesion) reflects the known limitation of CT in early-stage or low-grade malignancies that do not exhibit characteristic bony destruction, as previously discussed by Mallineni et al. in their evaluation of sinonasal tumour imaging at a tertiary Indian centre.[14]

Fungal rhinosinusitis (n=6; 7.5%) was responsible for 2 CT false-positives categorised as malignant, due to the presence of dense calcifications and asymmetric sinus opacification mimicking an aggressive process on CT. This pitfall of allergic fungal sinusitis and inspissated mycetoma producing bony erosion mimicking malignancy on CT has been well documented in CT evaluation studies of the sinonasal region.[9]

The superiority of MRI in delineating soft tissue extent and the convoluted cerebriform internal architecture of inverted papilloma has been highlighted by diffusion-weighted MRI studies demonstrating 90% accuracy with an ADC cutoff of 1.2×10^{-3} mm²/s.[15] However, CT was relied upon as the primary modality in the present study given its availability at the study institution and its established diagnostic accuracy in this setting.

The overall Cohen's kappa of 0.80 in the present study denotes almost perfect agreement between CT and histopathological diagnosis, closely approximating the kappa of 0.81 reported by Yadav et al.[12] and exceeding the kappa values reported by earlier studies with smaller sample sizes. This is a significant finding, reaffirming that CT of the paranasal sinuses, when interpreted by experienced radiologists with knowledge of the clinical context, can serve as a robust pre-operative diagnostic tool in the Indian public health setting. The overall diagnostic accuracy of CT for all sinonasal lesions in the present study was 90.0%, consistent with the 84% reported by a recent prospective series evaluating CT performance in sinonasal diseases.[9] Imaging of sinonasal tract neoplasms has been comprehensively reviewed in contemporary literature, including the International Consensus Statement on Sinonasal Tumours released in 2024, which provides a disease-specific framework for CT and MRI interpretation and emphasises the role of systematic imaging assessment in all sinonasal masses.[11] The present study endorses this systematic approach and provides institutional data supporting the integration of CT-guided pre-operative planning with histopathological confirmation as the standard of care for sinonasal masses in eastern Indian academic medical centres.

Conclusion

In this institutional study of 80 patients, non-neoplastic sinonasal lesions—predominantly antrochoanal and ethmoidal polyps—constituted the majority of cases, with a male preponderance and wide age distribution. CT of the paranasal sinuses demonstrated excellent diagnostic performance for sinonasal mass characterisation, with an overall sensitivity of 90.9%, specificity of 95.7% for malignant lesions, and an almost perfect agreement (Cohen's kappa = 0.80) with histopathological diagnosis. CT misclassification was encountered primarily in early inverted papilloma lacking osseous change and in fungal rhinosinusitis with dense calcification mimicking malignancy.

Squamous cell carcinoma was the dominant malignant histological subtype, presenting in the fifth and sixth decades with characteristic CT features of bony destruction. Histopathological examination remains the gold standard for definitive diagnosis and is indispensable in all sinonasal masses; CT provides the essential anatomical roadmap for pre-operative surgical planning.

Declarations

Ethical Approval: The study was approved by the Institutional Ethics Committee, Maharaja Jajati Keshari Medical College and Hospital, Jajpur, Odisha, India. All procedures were conducted in accordance with the Declaration of Helsinki.

Informed Consent: Written informed consent was obtained from all individual participants included in the study.

Conflict of Interest: The authors declare no conflict of interest.

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Data Availability: Data are available from the corresponding author on reasonable request.

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