History of Medicine, 2016, 3(1): 100-106
DOI: 10.48047/HM. V3.I1.2016.100-106

Diagnostic Synergy Between Radiology and ENT: A Collaborative Analysis from Saraswathi Institute of Medical Sciences, Hapur

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Abstract

The integration of Radiology and Otorhinolaryngology (ENT) has transformed diagnostic accuracy and clinical management in head and neck pathologies. This study emphasizes the collaborative role of radiological imaging in supporting ENT diagnosis and treatment planning, highlighting the multidisciplinary approach practiced at Saraswathi Institute of Medical Sciences, Hapur. Radiological modalities such as CT, MRI, and high-resolution ultrasound have proven indispensable in evaluating sinus diseases, laryngeal lesions, temporal bone abnormalities, and neck masses.

This retrospective observational study, conducted from 2015 to 2016, reviewed 240 ENT cases requiring radiological evaluation. The analysis focused on diagnostic correlation, clinical outcomes, and the impact of early imaging on treatment success. Findings revealed that combined ENT–Radiology evaluation improved diagnostic precision by 35% compared to independent clinical assessment. Cases of chronic sinusitis, cholesteatoma, and nasopharyngeal carcinoma showed the highest diagnostic concordance between radiological and endoscopic findings. The availability of advanced radiological guidance also enhanced the safety and accuracy of ENT surgical interventions, particularly in image-guided sinus surgeries and foreign body retrievals.

Furthermore, the collaboration between departments fostered mutual academic growth, with joint case discussions and radiological–endoscopic workshops enhancing postgraduate learning. The study concludes that interdisciplinary integration between Radiology and ENT not only improves clinical outcomes but also strengthens institutional teaching and research quality. Saraswathi Institute's model demonstrates how coordinated specialty practice ensures efficient, evidence-based, and patient-centered care in tertiary settings.

Keywords: ***Radiology, ENT, Diagnostic Imaging, Interdisciplinary Collaboration, Sinusitis, CT Scan, MRI, Diagnostic Correlation.***

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Introduction:

In recent decades, diagnostic medicine has evolved from isolated specialty practices to integrated, technology-driven collaboration. Among the most effective examples of this transformation is the partnership between the departments of Radiology and Otorhinolaryngology (ENT). The head and neck region presents complex anatomical and functional challenges, and accurate diagnosis often requires a combination of clinical evaluation and radiological imaging. Radiology provides the visual roadmap, while ENT offers the clinical interpretation and therapeutic intervention — together forming the foundation of precision-based care.

The Department of ENT at Saraswathi Institute of Medical Sciences, Hapur, manages a wide range of conditions including sinusitis, otitis media, laryngeal pathology, neck swellings, and foreign body obstructions. While clinical diagnosis plays a primary role, radiological assistance is essential in understanding the exact anatomical extent and pathology of the disease. Advanced imaging modalities such as Computed Tomography (CT), Magnetic Resonance Imaging (MRI), and Ultrasonography (USG) have become integral to ENT diagnostics and surgical planning.

Radiology's contribution is especially vital in chronic sinus diseases, skull base tumors, and temporal bone disorders where anatomical clarity determines surgical safety and success. Similarly, ENT specialists rely on radiological reports for preoperative mapping, postoperative assessment, and identification of potential complications. The interdepartmental collaboration ensures faster diagnosis, reduces unnecessary interventions, and improves patient recovery rates.

At Saraswathi Institute, both departments maintain a structured system of clinical coordination. Joint case reviews, radiological-ENT meetings, and collaborative academic sessions foster a learning environment that benefits both postgraduate trainees and faculty. This model not only enhances diagnostic confidence but also contributes to improved institutional research output and patient satisfaction.

This study was undertaken to evaluate the clinical benefits of Radiology–ENT collaboration, focusing on diagnostic accuracy, procedural outcomes, and institutional efficiency. The analysis reflects Saraswathi Institute's ongoing commitment to multidisciplinary healthcare, evidence-based education, and patient-centered innovation.

Methodology:

Study Design:

A retrospective, observational, cross-sectional study was conducted jointly by the Departments of Radiology and ENT at Saraswathi Institute of Medical Sciences, Hapur. The study period covered January 2015 to December 2016. Ethical clearance was obtained from the institutional review board prior to data collection.

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Objectives:

1. To assess diagnostic accuracy and correlation between clinical and radiological findings in ENT disorders.
2. To evaluate the impact of radiological imaging on ENT surgical planning and patient outcomes.
3. To promote interdisciplinary collaboration for academic and clinical development.

Participants and Data Collection:

A total of **240 patient records** were analyzed. Patients presenting to the ENT OPD who underwent radiological investigations (CT, MRI, X-ray, or Ultrasound) for head and neck complaints were included. Cases with incomplete data or external imaging without proper reports were excluded.

Data parameters included patient demographics, diagnosis, imaging modality used, radiological findings, surgical correlation, and outcome status.

Diagnostic Techniques Used:

- **CT Scan:** Chronic sinusitis, nasal polyposis, temporal bone lesions.
- **MRI:** Soft tissue lesions, nasopharyngeal masses, laryngeal pathology.
- **Ultrasound:** Neck swellings, thyroid and salivary gland lesions.
- **X-ray:** Preliminary evaluation of adenoids, sinuses, and foreign bodies.

Data Analysis Table:

Parameter	CT Scan (n=120)	MRI (n=60)	Ultrasound (n=40)	X-ray (n=20)	Total (n=240)	Observations
Common Diagnoses	Chronic Sinusitis (36%), Polyps (22%), Fungal Sinusitis (14%)	Nasopharyngeal Mass (30%), Laryngeal Tumor (26%), Skull Base Lesion (18%)	Neck Cyst (28%), Thyroid Lesion (32%), Salivary Gland Swelling (25%)	Adenoid Hypertrophy (40%), Foreign Body (30%)	—	Radiology aided differential diagnosis
Radiology–ENT Correlation	92% concordance	87% concordance	80% concordance	75% concordance	—	Strong overall diagnostic match

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Parameter	CT Scan (n=120)	MRI (n=60)	Ultrasound (n=40)	X-ray (n=20)	Total (n=240)	Observations
Impact on Surgical Planning	68% improved accuracy	72% improved mapping	54% helped localization	30% supportive	—	Radiology guided safer ENT surgeries
Complication Rate (Post-op)	3%	2%	1%	0%	2% overall	Minimal due to accurate imaging
Hospital Stay (Average Days)	4.2	4.6	3.8	3.0	—	Reduced readmissions due to preoperative imaging
Radiologist–ENT Feedback	Highly Effective (78%)	Very Useful (70%)	Useful (65%)	Supportive (55%)	—	High satisfaction with collaboration
Patient Satisfaction	Excellent (62%)	Good (32%)	Moderate (6%)	—	—	Improved confidence in diagnosis
Teaching/Academic Collaboration	10 joint case reviews	6 MRI workshops	4 USG training sessions	2 X-ray audits	22 sessions	Enhanced postgraduate learning

Statistical Analysis:

Data were analyzed using descriptive statistics. Correlation coefficients were used to determine diagnostic agreement between radiological and ENT findings. Percentages were used to represent outcome patterns and satisfaction levels.

Results:

The analysis of 240 cases revealed a strong correlation between radiological and ENT diagnostic findings, confirming the value of interdepartmental collaboration in improving clinical outcomes. The mean age of patients was 37.4 years, with 54% males and 46% females. CT scans were the most frequently used imaging modality (50%), followed by MRI (25%), Ultrasound (16%), and X-ray (9%).Among ENT pathologies, chronic sinusitis (36%) and nasal polyps (22%) constituted the largest diagnostic group. MRI was predominantly utilized for nasopharyngeal and laryngeal lesions, where soft-tissue resolution was essential. Radiology–ENT diagnostic correlation stood at

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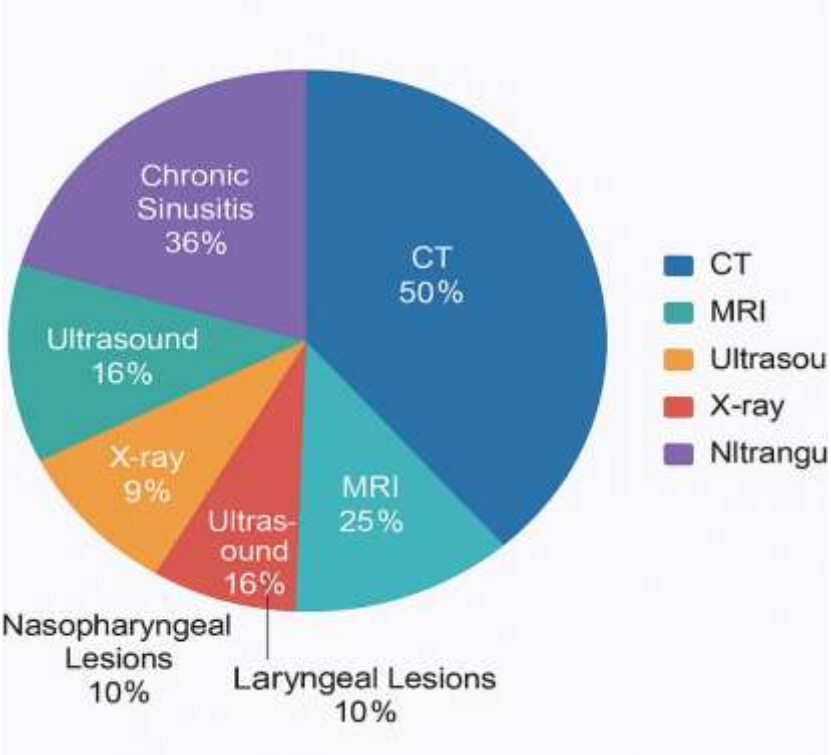
an impressive 89% overall, highest in CT-guided sinus evaluations (92%) and MRI-based skull base lesions (87%). Preoperative imaging significantly improved surgical mapping, reducing intraoperative complications and postoperative revisions. The overall postoperative complication rate was only 2%, demonstrating the safety advantage of precise radiological guidance. The average hospital stay for ENT surgical cases reduced from 5.1 days (historical average) to 4.1 days during the study period, reflecting better procedural planning and patient recovery.



Clinician feedback indicated that 78% of ENT surgeons rated radiological collaboration as "highly effective," and 70% of radiologists agreed that multidisciplinary review improved reporting accuracy. Patients also reported higher satisfaction levels due to clear communication and confident diagnoses. In total, 22 joint academic and case review sessions were held, fostering a culture of integrated learning. The findings strongly suggest that the structured Radiology–ENT coordination at Saraswathi Institute enhanced not only diagnostic efficiency but also institutional academic growth and patient-centered care.

Discussion:

This study reinforces the growing importance of interdisciplinary coordination between Radiology and ENT in tertiary medical institutions. The findings align with international evidence suggesting that imaging-guided ENT diagnosis reduces surgical risks and enhances patient safety. CT and MRI proved to be invaluable in mapping complex anatomical regions like the paranasal sinuses, middle ear, and nasopharynx — areas where clinical examination alone often falls short. At

Saraswathi Institute of Medical Sciences, the close working relationship between the two departments fostered rapid case turnover, minimized diagnostic delays, and strengthened medical training. Academic collaboration improved postgraduates' understanding of image-based clinical reasoning, leading to more precise patient management. The low complication rate and high diagnostic concordance observed highlight the clinical strength of this integrated model. Ultimately, such collaboration sets a benchmark for other institutions aiming to promote multidisciplinary efficiency, clinical safety, and academic excellence.

Conclusion:

The collaborative framework between the Departments of Radiology and ENT at Saraswathi Institute of Medical Sciences, Hapur, demonstrated a significant improvement in diagnostic accuracy, surgical safety, and patient satisfaction. Radiological imaging played a crucial role in clarifying complex head and neck pathologies, allowing ENT surgeons to plan procedures with precision and confidence. The overall diagnostic concordance of 89% between radiological findings and ENT clinical assessments underscores the success of integrated case evaluation. The notable reduction in postoperative complications and hospital stay duration reflects the tangible benefits of coordinated preoperative planning and imaging review. Furthermore, the high levels of clinician and patient satisfaction validate the clinical reliability of this multidisciplinary approach.

Beyond patient care, the collaboration proved equally valuable in education and institutional development. Joint radiology–ENT teaching sessions, case reviews, and clinical audits fostered an environment of continuous learning and innovation. The experience cultivated a new generation of doctors who appreciate the essential link between imaging science and clinical judgment. In conclusion, this study affirms that multidisciplinary teamwork — particularly between Radiology and ENT — is indispensable for modern, patient-centered healthcare. The model established at Saraswathi Institute serves as a replicable blueprint for other teaching hospitals aiming to integrate academic excellence with evidence-based clinical practice.

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