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A Clinical Study based on Etiological, Radiological and Endoscopic Findings in Patients Presenting with Dysphagia

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KEYWORDS

Dysphagia, Endoscopy, Barium swallow, Oesophageal malignancy, Plummer–Vinson syndrome, Foreign body, Hypopharynx.

ABSTRACT:

Background: Dysphagia is a multifactorial symptom linked to structural, inflammatory, malignant, and functional disorders in the oral cavity, oropharynx, hypopharynx, and oesophagus. Early and accurate identification of etiological patterns is essential to prevent complications like malnutrition, aspiration, and delayed cancer diagnosis.

Aim: To evaluate the etiological spectrum and correlate radiological and endoscopic findings in patients presenting with dysphagia at a tertiary ENT centre.

Materials and Methods: A cross-sectional study was performed on 80 patients between May 2023 and May 2025. Clinical assessment, video laryngoscopy, radiological investigations (X-ray, barium swallow, CECT), and upper GI endoscopy were conducted. Etiology, anatomical site involvement, and diagnostic yields were analysed.

Results: The mean age was 49.2 years (range 3–80). The most common cause was **Malignancy (31.25%)**, followed by benign structural lesions (28.75%), foreign bodies (15%), infections (13.75%), gastroesophageal causes (6.25%), and iatrogenic causes (3.75%). The **oesophagus** was the most commonly involved site (35%). **Endoscopy** had the highest diagnostic yield (98.7%), while barium swallow was particularly helpful for webs, strictures, and achalasia.

Conclusion: Dysphagia in semiurban India is predominantly caused by malignancy and benign structural abnormalities. A tiered approach combining clinical assessment, radiology, and endoscopy significantly improves diagnostic accuracy. Early endoscopic evaluation is crucial for timely detection of malignancy and mucosal pathology.

INTRODUCTION

A common but potentially dangerous clinical symptom seen in several medical specialities, especially otorhinolaryngology and gastroenterology, is dysphagia, which is defined as difficulty or discomfort in swallowing. The oral cavity, pharynx, larynx, and oesophagus all engage in synchronised neuromuscular action throughout the intricate physiological process of swallowing.[1] Dysphagia can cause everything from minor discomfort to potentially fatal aspiration and severe malnourishment if this delicately controlled system is disturbed. Dysphagia evaluation necessitates a methodical and comprehensive diagnostic approach because it may be the first sign of malignant disease, particularly in the upper aerodigestive tract.[2]

Journal of Chemical Health Risks

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Oropharyngeal and oesophageal dysphagia are the two main clinical categories. Coughing, choking, or nasal regurgitation are common symptoms of oropharyngeal dysphagia, which is characterised by difficulties starting a swallow. Neuromuscular diseases, inflammatory illnesses, or structural abnormalities affecting the larynx, pharynx, or oral cavity are common causes. On the other hand, oesophageal dysphagia, which is frequently brought on by mechanical blockage, strictures, motility issues, or oesophageal cancer, usually manifests as a feeling of food sticking or obstruction after swallowing.[3] Distinguishing between these two categories is essential since it directs further research and management tactics.

Developed and developing nations differ greatly in the etiological spectrum of dysphagia. Peptic strictures, motility disorders such achalasia cardia, and gastro-oesophageal reflux disease (GERD) are prominent causes in Western populations. Malignancies, post-cricoid lesions, Plummer-Vinson syndrome, foreign body ingestion, and chronic infectious or inflammatory disorders are more common in India and other developing countries, according to studies.[4] These disparities are largely caused by socioeconomic circumstances, dietary practices, nutritional deficits, alcohol and tobacco use, and delayed access to healthcare.

An essential part of the first assessment of dysphagia is radiological examinations. For the purpose of identifying radiopaque foreign bodies and evaluating prevertebral soft tissue enlargement in deep neck space infections, plain radiographs of the neck and chest are helpful. For detecting structural anomalies including webs, strictures, diverticula, and motility disorders like achalasia, barium swallow is still a useful non-invasive test. Extraluminal compression, deep space infections, lymph node involvement, and tumour extent can all be thoroughly determined using contrast-enhanced computed tomography (CECT) of the neck and thorax.[5] When assessing soft tissue involvement and neurological or vascular problems, magnetic resonance imaging (MRI) is especially helpful.

Endoscopy is still the gold standard test for dysphagia, despite advances in imaging. Direct mucosal surface visualisation, precise lesion localisation, biopsy for histological diagnosis, and therapeutic procedures like foreign body removal or stricture dilatation are all made possible by flexible and rigid endoscopic techniques. When paired with ENT endoscopic evaluation, upper gastrointestinal endoscopy ensures minimal diagnostic oversight by providing a thorough review from the oropharynx to the stomach cardia.[6] Early detection of the cause of dysphagia is essential, especially in cases of cancer, where prognosis and survival can be greatly impacted by delays. Dysphagia is a common initial symptom of head and neck malignancies and oesophageal carcinomas, and prompt endoscopic evaluation can help with early discovery and therapy. Furthermore, because of their premalignant potential, benign disorders like Plummer-Vinson syndrome need to be identified as soon as possible.[7]

Delays in presentation and diagnosis are common in semiurban and rural Indian settings due to restricted access to cutting-edge diagnostic facilities. Therefore, optimising diagnostic methods and resource utilisation requires an understanding of local etiological tendencies. In patients who attend to a tertiary care ENT clinic in semiurban Andhra Pradesh, this study seeks to determine the etiological distribution of dysphagia, correlate radiological and endoscopic findings, and evaluate the diagnostic yield of several investigative modalities. Hassan S et al.(225)[8]

MATERIALS AND METHODS

Study Design and Setting

A cross-sectional observational study conducted at the Department of Otorhinolaryngology, Alluri Sitarama Raju Academy of Medical Sciences, Eluru, Andhra Pradesh, from May 2023 to May 2025.

Journal of Chemical Health Risks

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Sample Size

Eighty patients presenting with dysphagia were included, exceeding the minimum calculated sample size of 74.

Inclusion Criteria

- Paediatric and adult patients presenting with dysphagia.
- Lesions involving the oropharynx to the cardiac end of the oesophagus.

Exclusion Criteria

- Dysphagia due to central or neurological causes.
- Functional or psychogenic dysphagia.

Clinical Evaluation

All patients underwent detailed history taking and thorough ENT examination, including indirect laryngoscopy and video direct laryngoscopy.

Radiological Investigations

- X-ray soft tissue neck/chest
- Barium swallow
- CECT neck and thorax
- MRI where indicated

Endoscopic Evaluation

- Flexible/rigid oesophagoscopy
- Upper GI endoscopy in collaboration with gastroenterology

Statistical Analysis

Data were analysed using descriptive statistics. Associations between etiology and site involvement were assessed using Chi-square test. A p-value <0.05 was considered statistically significant.

RESULTS

Demographic Profile

The mean age was 49.22 ± 18.6 years with female predominance (52.5%).

Table 1: Etiological Distribution of Dysphagia

Etiology	Number	Percentage	p-value
Malignancy	25	31.25%	0.021*
Benign structural lesions	23	28.75%	
Foreign body	12	15%	
Infection	11	13.75%	
Gastroesophageal	5	6.25%	
Iatrogenic	3	3.75%	
External compression	1	1.25%	

Table 1 illustrates the etiological distribution of dysphagia among the study population. Malignancy was the most common cause, accounting for 25 cases (31.25%), and this association was statistically significant (p = 0.021). Benign structural lesions constituted the second largest group with 23 cases (28.75%). Foreign body-related dysphagia was observed in 12 patients (15%), followed by infectious causes in 11 patients (13.75%). Gastroesophageal causes were identified in 5 patients (6.25%), while iatrogenic causes accounted for 3 cases (3.75%). External compression was the least common etiology, seen in 1 patient (1.25%).

Journal of Chemical Health Risks

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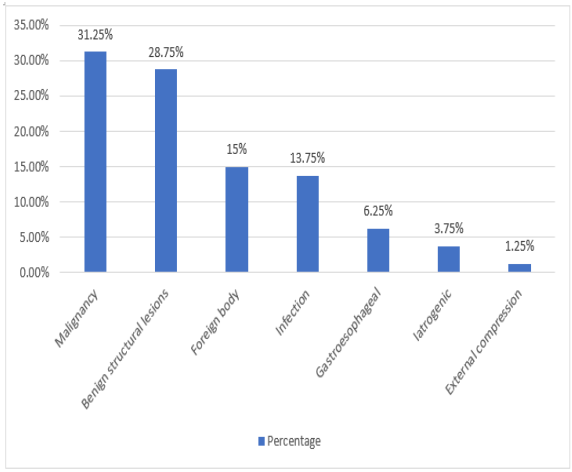

Figure 1

Table 2: Anatomical Site Involvement

Site	Number (%)	p-value
Oesophagus	28 (35%)	0.018*
Oropharynx	16 (20%)	
Hypopharynx	15 (18.75%)	
Neck spaces	9 (11.25%)	
Oral cavity	7 (8.75%)	
Larynx	5 (6.25%)	

Table 2 depicts the anatomical sites involved in dysphagia. The oesophagus was the most frequently affected site, involved in 28 patients (35%), showing a statistically significant association (p = 0.018). The oropharynx was involved in 16 patients (20%), followed by the hypopharynx in 15 patients (18.75%). Neck space involvement was noted in 9 patients (11.25%), while the oral cavity and larynx were involved in 7 (8.75%) and 5 patients (6.25%), respectively.

Table 3: Radiological Findings

Modality	Key Findings	Diagnostic Yield	p-value
X-ray	Foreign bodies	Moderate	0.041*
Barium swallow	Webs, strictures, achalasia	High	
CECT	Tumor extent, infections	Very high	

Table 3 summarizes the radiological findings and their diagnostic utility. Plain X-ray imaging demonstrated moderate diagnostic yield, primarily in detecting radiopaque foreign bodies, with a statistically significant p-value (p = 0.041). Barium swallow examination showed high diagnostic yield in identifying oesophageal webs, strictures, and achalasia cardia. Contrast-enhanced computed tomography (CECT) of the neck and thorax demonstrated a very high diagnostic yield, particularly in assessing tumor extent and detecting deep neck space infections.

Table 4: Endoscopic Findings

Finding	Number	p-value
Malignant growths	25	0.001*
Webs/strictures	11	
Infections	11	
Foreign bodies	12	

Table 4 presents the endoscopic findings in patients with dysphagia. Endoscopy identified malignant growths in all 25 cases, with a highly significant association (p = 0.001). Webs and strictures were detected in 11 patients, while infective lesions were identified in 11 patients. Foreign bodies were successfully visualized and retrieved endoscopically in 12 cases.

Table 5: Diagnostic Yield of Modalities

Investigation	Diagnostic Yield (%)	p-value
Endoscopy	98.7	<0.001*
Barium swallow	82.5	
CECT	90.0	

Journal of Chemical Health Risks

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JCHR (2025) 15(6), 3430-3436 | ISSN:2251-6727

Table 5 compares the diagnostic yield of various investigative modalities. Endoscopy demonstrated the highest diagnostic yield at 98.7%, which was statistically significant ($p < 0.001$). CECT showed a diagnostic yield of 90.0%, while barium swallow had a yield of 82.5%. These findings highlight endoscopy as the most definitive diagnostic modality in the evaluation of dysphagia.

DISCUSSION

Dysphagia is a clinically important symptom that often reflects significant underlying pathology involving the upper aerodigestive tract. The present study provides a detailed evaluation of the etiological spectrum of dysphagia and highlights the relative diagnostic utility of radiological and endoscopic investigations in a semiurban tertiary care setting. The findings emphasize the predominance of malignant and benign structural causes and reinforce the importance of early, systematic evaluation. Azer SA et al. (2025)[1]

The majority of patients in this study were in their fifth or seventh decade of life, with a mean age of presentation of 49.22 ± 18.6 years. This age distribution is in line with a number of Indian research that show dysphagia is more prevalent in middle-aged and older people, primarily because these age groups have higher rates of cancer and degenerative structural problems. Cook IJ et al.[2] found a slight female predominance (52.5%), which is consistent with Indian literature where benign conditions like Plummer-Vinson syndrome and post-cricoid webs are more common in women and are frequently linked to nutritional iron deficiency. Bhattacharyya N et al. (2014)[4] This is in contrast to Western data that shows male predominance.

Malignancy emerged as the most common cause of dysphagia in the present study, accounting for 31.25% of cases, with a statistically significant association ($p = 0.021$). Most of the malignant lesions were oesophageal carcinoma and hypopharyngeal cancers. This result is consistent with epidemiological patterns in India, where oesophageal and hypopharyngeal malignancies are still frequent because of extensive alcohol and tobacco use, malnutrition, and delayed access to healthcare. Bhattacharyya N et al. (2014)[4]. These cancers typically show with dysphagia as their first symptom, and a delayed diagnosis often leads to an advanced stage of the disease and a bad prognosis.

Benign structural lesions were the second most common etiology (28.75%). Among these, Plummer-Vinson syndrome was a significant factor, especially in female individuals. Given the premalignant character of this illness, this finding is clinically relevant and implies ongoing nutritional deficiencies in semiurban populations. Lawlor CM et al.(2020)[7]. In addition to relieving symptoms, early detection of such benign lesions makes it easier to monitor for malignant change. In this study, 15% of cases had dysphagia due to foreign bodies. Although ingesting foreign bodies is typically linked to younger age groups, a sizable percentage of adult cases—mostly involving fish and poultry bones—were noted. This pattern is typical in coastal areas with heavy fish consumption, such Andhra Pradesh. Hassan S et al.(225)[8] Other Indian research have revealed similar results, highlighting the impact of local food practices on the aetiology of dysphagia.

Infective causes constituted 13.75% of cases and included deep neck space infections such as Ludwig's angina, retropharyngeal abscess, and submandibular abscess, as well as mucosal infections like candidiasis and supraglottitis. These conditions often present with acute dysphagia and carry a risk of airway compromise if not promptly diagnosed. The relatively high burden of infective dysphagia highlights ongoing challenges related to oral hygiene, dental infections, and delayed presentation in semiurban populations. Huang TT et al. (2004)[9]

Analysis of anatomical site involvement revealed that the oesophagus was the most commonly affected site (35%), followed by the oropharynx and hypopharynx. The statistically significant association of oesophageal involvement ($p = 0.018$) supports existing literature identifying the oesophagus as the most frequent site of pathology in dysphagia due to its vulnerability to both

Journal of Chemical Health Risks

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JCHR (2025) 15(6), 3430-3436 | ISSN:2251-6727

malignant and benign obstructive lesions. Haas R et al. (2024)[10]Because these tumours frequently remain asymptomatic until advanced stages, hypopharyngeal involvement is concerning, especially in malignant patients. The role of radiological examinations in diagnosis was complimentary. With a significant p-value (0.041), plain X-rays were helpful in identifying radiopaque foreign materials; nevertheless, they are still not very useful for radiolucent objects. The high diagnostic yield of barium swallow in detecting oesophageal webs, strictures, and achalasia cardia confirmed its usefulness as an affordable and non-invasive test, particularly in environments with limited resources. Ghazanfar H et al. (2021)[11] CECT of the neck and thorax showed very high diagnostic yield in evaluating tumor extent, nodal involvement, and deep neck space infections, making it indispensable for staging and management planning. Sanagapalli S et al.(2023)[5]

With a diagnosis yield of 98.7% ($p < 0.001$), endoscopy proved to be the most conclusive diagnostic technique in this investigation. Endoscopic identification of all malignant tumours, benign structural abnormalities, infections, and foreign bodies was precise. Endoscopy is advantageous because it can execute therapeutic procedures such stricture dilatation and foreign body removal, retrieve tissue biopsies for histological confirmation, and give direct visualisation. Krause AJ et al.(2021)[6] These results are in keeping with Indian and international guidelines that recommend early endoscopic assessment in patients who come with dysphagia, especially if cancer is suspected. Pasha SF et al. (2014)[12]

CONCLUSION

Dysphagia is a clinically significant symptom with a wide etiological spectrum, most commonly arising from malignant and benign structural disorders in semiurban Indian populations. The most common location of involvement was the oesophagus, and cancer was found to be the primary cause, especially in elderly people. Endoscopy showed the highest diagnostic output, while radiological tests like barium swallow and CECT offered useful anatomical and functional information. Accurate diagnosis, prompt cancer detection, and better patient outcomes are made possible by a systematic, tiered diagnostic approach that incorporates imaging, clinical evaluation, and early endoscopy.

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Journal of Chemical Health Risks

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