APPROACH TO

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Dysphagia

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1 | QUESTION

Ms. A, a 55-year-old woman, arrives at the clinic troubled by a persistent six-month ordeal of escalating difficulty swallowing solid foods. She describes a disconcerting sensation of solid foods sticking in her throat, frequently resulting in bouts of coughing and regurgitation. While she doesn't report any painful swallowing, she notes an unintended weight loss of approximately

5 kg over the past few months. Additionally, she occasionally experiences heartburn but denies any history of smoking or alcohol consumption. Her medical history discloses hypertension and hypothyroidism, both managed with regular medications. Ms. A expresses concern and a palpable unease due to the distressing nature of her symptoms, emphasizing their persistent and progressively worsening nature.

ABSTRACT

Dysphagia, characterized by difficulty swallowing, requires a comprehensive approach to manage and treat the condition effectively. This involves collaboration among a multidisciplinary team, including speech-language therapists, nurses, physicians, occupational therapists, and physical therapists, to provide thorough evaluation and personalized interventions. The article will provide an overview of the diagnostic process, including patient history, clinical assessments, and instrumental evaluations to identify underlying causes of dysphagia. Management options such as dietary modifications, swallowing therapy, medications, and, in some cases, surgical interventions will be discussed, highlighting the importance of individualized care plans. Effective communication and mutual respect among healthcare team members are crucial for a holistic strategy to address the challenges of dysphagia.



Swallowing difficulty, Oropharyngeal dysphagia, Swallowing disorders, Dysphagia management, Swallowing therapy, Dysphagia rehabilitation MIM

Ms. A presents as a well-nourished individual; however, she expresses distress related to eating due to her dysphagia symptoms. The physical examination reveals no noticeable cervical lymphadenopathy, and her neck appears supple without evident masses or swelling. Palpation of the neck doesn't reveal any noticeable masses. Assessment of cranial nerves shows no abnormalities. and her gag reflex remains intact. Further systemic examination, including abdominal assessment, doesn't yield any remarkable findings. The examination points to a lack of overt physical signs in the cervical region or any evident systemic abnormalities that might suggest an obvious cause for the dysphagia.

Considering the patient's history of progressive dysphagia for solids with associated weight loss, what would be the next best step in the initial evaluation of this patient?

- A. Upper endoscopy (esophagogastroduodenoscopy).
- B. Barium swallow.
- C. Esophageal manometry.
- D. Computed tomography (CT) scan of the chest and abdomen.
- E. Swallowing evaluation by a speech-language pathologist.

2 **ANSWER**

A. Upper endoscopy stands as the foremost diagnostic modality for the assessment of dysphagia, especially in cases presenting with progressive symptoms or concomitant weight loss. This procedure enables direct visualization of the esophagus, stomach, and duodenum, facilitating the identification of structural anomalies, inflammatory processes, strictures, tumors, or any pathological condition contributing to dysphagia. This test can help determine the underlying etiology, thereby guiding subsequent management strategies based on the identified findings. While alternative tests such as barium swallow and esophageal manometry may provide valuable information, upper endoscopy surpasses

them by offering direct visualization and biopsy capabilities, establishing it as the preferred initial diagnostic approach in this context.

INITIAL APPROACH

Brief Overview of Dysphagia

Dysphagia, denoted by the challenge or delay in swallowing, encompasses both the objective impediment of bolus transit and the subjective experience of this delay by the patient. This dual perspective is crucial, acknowledging that some individuals may not perceive the swallowing delay despite objective test indications of dysphagia. Additionally, sensory neural dysfunction plays a role in either amplifying or diminishing a patient's sensation of swallowing difficulty. Predominantly observed among the elderly due to age-related changes in muscles and nerves involved in swallowing, as well as a higher incidence of conditions like stroke and neurodegenerative diseases. It typically emanates from two primary sources. The first category involves mechanical obstructions such as Schatzki rings, esophageal strictures, carcinoma, or conditions like eosinophilic esophagitis. The second source pertains to motility disorders of the esophagus, encompassing spasms, achalasia, and ineffective motility/scleroderma. Dysphagia may manifest as intermittent or continuous and may selectively affect solid foods (indicative of mechanical obstruction) or both solid and liquid intake (associated with motility disorders). This nuanced understanding assists healthcare professionals in discerning the varied etiologies of dysphagia, allowing targeted diagnostic and therapeutic strategies for optimal patient care. (1)

3.2 **Evaluation for Dysphagia**

Dysphagia, serving as a cardinal symptom indicative of structural or neuromuscular disorders in the oropharynx or esophagus, demands meticulous differentiation from sensations like globus and odynophagia. When confronted with the evaluation of dysphagia, otolaryngologists adhere to a comprehensive approach, involving intricate history-taking, thorough ENT physical examinations, and fiberoptic nasopharyngolaryngoscopy to assess the various phases of swallowing. Specialized investigations, such as radiography, esophageal endoscopy, ultrasonography, pH-metry, and manometry, may be requisite for arriving at a definitive diagnosis (Table 1). The collaborative synergy among otolaryngologists, radiologists, gastroenterologists, neurologists, and swallowing therapists assumes paramount significance. This interdisciplinary approach not only facilitates the identification of the underlying cause but also ensures the implementation of effective treatment strategies for the diverse spectrum of dysphagia cases encountered in clinical practice. (2)

3.3 | Diagnostic Evaluation for Dysphagia

The diagnostic assessment for dysphagia encompasses various methods to determine the underlying cause and severity of swallowing difficulties. An initial crucial step involves a comprehensive history-taking and physical examination. Effective history-taking in dysphagia aims to pinpoint the onset, duration, triggers, and associated symptoms to distinguish between true dysphagia and other sensations like globus or odynophagia, determining the anatomical site and underlying cause in most cases. Physical examination for dysphagia assesses swallowing function by evaluating the strength and symmetry of swallowing-related muscles, including the tongue, facial muscles, shoulder shrug, oral structures during swallowing, and cranial nerve function. (3) Diagnostic procedures encompass the videofluoroscopic swallow study (VFSS), a radiographic assessment wherein patients ingest diverse food and liquid textures while under the observation of a radiologist. This procedure aims to evaluate swallowing coordination and identify potential concerns, such as the risk of aspiration. The VFSS provides a dynamic visualization of the swallowing process, enabling precise assessment and aiding in the elucidation of specific issues related to the oropharyngeal and esophageal phases of deglutition. Deglutition in humans consists of three phases: oral, pharyngeal, and esophageal. The oral phase is voluntary and includes an oral preparatory and oral propulsive phase, while the pharyngeal and esophageal phases are reflexive. Each phase is defined by the location of the food bolus as it moves toward the stomach. (4)

The fiberoptic endoscopic evaluation of swallowing (FEES) involves the insertion of a flexible endoscope through the nasal passage to directly visualize the pharynx and larynx during the act of swallowing. This procedure facilitates the identification of structural and functional abnormalities (such as aspiration) within the upper aerodigestive tract. Esophagogastroduodenoscopy (EGD) employs a flexible tube equipped with a camera to meticulously examine the esophagus, stomach, and upper small intestine. The main objectives of EGD include diagnosing conditions such as severe heartburn, gastrointestinal bleeding, abdominal pain, dysphagia, and unexplained weight loss. It also serves to monitor the progression and treatment effectiveness in diseases like Crohn's disease, peptic ulcers, cirrhosis, and esophageal varices. EGD allows for tissue sampling for biopsy and can be used for therapeutic interventions such as esophageal dilation for strictures. (5)

A barium swallow involves the ingestion of a barium-containing liquid for radiographic visualization, facilitating the detection of esophageal abnormalities, such as strictures or tumors. Complementary to this, esophageal manometry assesses muscle pressure and coordination during the act of swallowing, providing valuable diagnostic insights into motor disorders, such as achalasia or esophageal spasms. These diagnostic procedures contribute to a comprehensive understanding of esophageal function and structure, aiding clinicians in the precise identification of underlying issues. (6)

3.4 | Additional Investigations for Dysphagia

A complete blood count (CBC) can be utilized as a diagnostic tool, unveiling potential indicators of infection or anemia that may impact swallowing function. Ane-

mia, defined as a decreased red blood cell count, can compromise oxygen delivery to the muscles involved in swallowing, potentially impairing their function. Infections may also lead to weakness and fatigue, disrupting the coordination of swallowing muscles. Together, these conditions can contribute to dysphagia and hinder safe swallowing. In addition to a CBC, an electrolyte panel including sodium, calcium, potassium and magnesium can be employed to assess muscle function, providing crucial insights into the physiological aspects of swallowing. Abnormal electrolyte levels can cause muscle weakness or cramping, potentially impairing the coordination and strength needed for effective swallowing. Given the intricate interplay of thyroid function with dysphagia, thyroid function tests are also pertinent in the diagnostic process. Further, inflammatory markers such as C-reactive protein (CRP) or erythrocyte sedimentation rate (ESR) play a pivotal role in identifying inflammation associated with dysphagia-causing conditions. In cases suspected to be autoimmune, specific markers, including anti-nuclear antibodies (ANA) or anti-thyroid antibodies, are examined to aid in the precise diagnosis of dysphagia etiology. (7)

It is worth noting that blood tests often provide limited information regarding the specific etiology of esophageal dysphagia. Although inflammatory or immune markers may aid in the diagnosis of certain chronic systemic conditions, their relevance to dysphagia may not be definitive. For instance, a patient may present with hypothyroidism; however, further investigations are necessary to exclude alternative etiologies before attributing dysphagia solely to hypothyroidism. Consequently, comprehensive diagnostic evaluations such as barium swallow studies, esophageal manometry, endoscopic assessment, and advanced imaging modalities should be considered to thoroughly investigate the underlying cause of dysphagia. (5,6)

Imaging techniques, such as computed tomography (CT) scans and magnetic resonance imaging (MRI), stand as indispensable imaging modalities in the comprehensive assessment of dysphagia. The CT scans deliver intricate imaging of neck structures, facilitat-

ing the identification of potential abnormalities or obstructions that may contribute to swallowing difficulties. On the other hand, MRI produces high-resolution images of soft tissues, affording an enhanced visualization of swallowing muscles and adjacent structures. (8,9) pH monitoring, commonly employed in the diagnosis of gastroesophageal reflux disease (GERD) by assessing esophageal acidity, may find relevance in individuals experiencing dysphagia with symptoms indicative of reflux-related concerns. (10) A flowchart summarizing the approach to the diagnosis of dysphagia is found on Flowchart 1.

4 | BEYOND THE INITIAL AP-PROACH

4.1 | Management of Dysphagia

The aspects of dysphagia management have been described in Table 2.

- Medications: Nifedipine appears to be a promising option for managing dysphagia. It has been shown to significantly reduce lower esophageal sphincter pressure, which can improve swallowing function in patients with esophageal motor disorders. Additionally, formulations of nifedipine have been found effective in treating pylorospasm, which may enhance gastric emptying in patients with gastroparesis. (11) Calcium channel blockers (CCBs), including drugs such as verapamil, nifedipine, diltiazem, fendiline, nitrendipine, nimodipine, and nisoldipine, can impact esophageal motility by relaxing smooth muscle tissue through the inhibition of calcium influx into cells. This relaxation can decrease lower esophageal sphincter pressure, potentially improving swallowing function in patients with esophageal motor disorders. However, careful dosing is important to avoid potential complications such as reflux. (11,12)
- Rehabilitation: The comprehensive management of dysphagia entails a multifaceted approach, incorporating compensatory strategies, direct therapeutic techniques, and indirect therapeutic techniques.



Compensatory strategies involve modifications to feeding techniques, adjustments in posture, and alterations in food consistency to alleviate symptoms, without necessarily addressing the underlying physiological issues. In contrast, direct therapeutic techniques seek to modify swallowing physiology through sensory stimulation methods, such as active neuromuscular electrical stimulation (NMES) applied with concurrent swallowing exercises. Additionally, certain cases may require surgical or medication-based interventions. Indirect therapy methods, on the other hand, focus on enhancing the neuromuscular control required for swallowing without directly inducing a swallow, such as passive NMES without EMG-guided biofeedback. (13,14)

Assessments such as video fluoroscopic studies serve a dual purpose, functioning not only as diagnostic tools but also as efficacy trials for selected therapies. Videofluoroscopic studies, such as video fluorography, are instrumental in diagnosing and evaluating swallowing disorders. These studies provide realtime imaging of swallowing function, allowing clinicians to identify pathologic findings in dysphagia and globus patients, which aids in guiding treatment decisions. Additionally, autofluorescence bronchoscopy is a diagnostic tool that can detect pre-neoplastic and neoplastic lesions, facilitating early intervention and treatment planning. The integration of a comprehensive treatment plan necessitates a thorough consideration of a patient's oropharyngeal anatomy, medical status, cognitive abilities, and behavioral characteristics. These diverse approaches highlight the intricacy of dysphagia management, underscoring the significance of tailored, holistic treatment plans for individuals with swallowing difficulties. (15)

Compensatory strategies: The management of dysphagia varies significantly across different healthcare settings. This variation is often due to disparities in resources and care practices. Many facilities lack essential support, such as dedicated speech therapists or access to specialized professionals, limiting their ability to conduct thorough assessments. Screening

methods tend to be non-standardized and limited, often using basic water swallow tests without instrumental assessments. As a result, dysphagia care often focuses on compensatory strategies such as modifying food consistency and feeding techniques rather than rehabilitative interventions like swallow exercises. While many healthcare professionals believe that the overall care quality for individuals with dysphagia is satisfactory, this perception may be influenced by limited knowledge of dysphagia symptoms, implications, and treatment options. Therefore, it is critical to improve awareness of dysphagia among healthcare professionals and expand training opportunities for screening, assessment, and management. (16)

- Dietary modifications: In the management of dysphagia, thickened liquids play a crucial role in enhancing swallowing safety by facilitating bolus control and reducing the risk of aspiration. However, their utilization introduces unintended physiological consequences. While they do not compromise water availability, the absorption of medications is affected, impeding drug release, especially in denser fluids. As viscosity increases, taste perception diminishes, and sensations of fullness, along with reduced thirst, elevate, diminishing the motivation to consume. The prescription of small volumes at frequent intervals is common but challenging due to unappealing taste and decreased intake resulting from prolonged oral processing. The modification of food and liquid textures is essential for safer swallowing. (17)
- Compensatory strategies: The management of dysphagia varies significantly across different healthcare settings. This variation is often due to disparities in resources and care practices. Many facilities lack essential support, such as dedicated speech therapists or access to specialized professionals, limiting their ability to conduct thorough assessments. Screening methods tend to be non-standardized and limited, often using basic water swallow tests without instrumental assessments. As a result, dysphagia care often focuses on compensatory strategies such as modify-

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- Surgical interventions: Surgical interventions, such as cricopharyngeal myotomy and laryngeal suspension, are directed at either restoring functionality or preventing severe aspiration. A crucial consideration in determining the most effective treatment strategies is a comprehensive understanding of the prognosis associated with the underlying causative disease. Surgical interventions, such as thyroidectomy for large goitres, can alleviate esophageal compression and improve dysphagia. Nonetheless, procedural interventions like dilation are more commonly employed for dysphagia management. Dilation is a safe and effective approach with minimal risk of complications, offering significant relief for patients with benign pharyngoesophageal strictures and improving oral food intake for most patients. For achalasiarelated dysphagia, Heller myotomy is a surgical option that provides long-term relief. (18)
- Feeding tubes: Tube feeding, encompassing naso-gastric tubes (NGT) or percutaneous endoscopic gastrostomy (PEG) tubes, serves as a prevalent method for providing nourishment and hydration to individuals experiencing dysphagia. In the acute phase of stroke or amyotrophic lateral sclerosis (ALS), short-term feeding through NGT is the preferred choice, while PEG tubes are employed for sustained nutritional support. Implementing tube feeding has demonstrated correlations with heightened survival rates and plays a crucial role in averting complications, such as malnutrition and aspiration pneumonia. This intervention becomes indispensable for ensuring

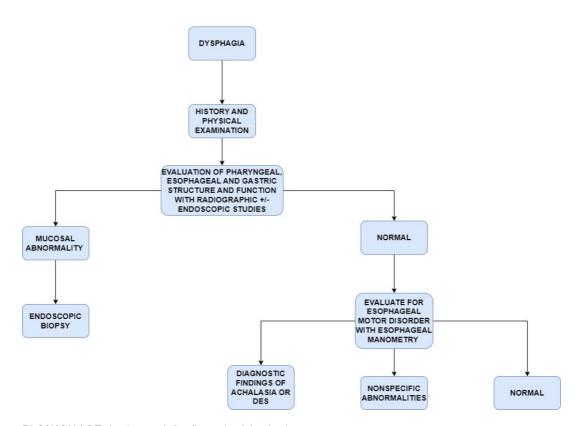
- adequate nutritional intake and mitigating associated health risks in individuals with dysphagia. (19)
- Collaborative care: Coordinated dysphagia management necessitates a collaborative, multidisciplinary team, incorporating specialists like speech-language therapists, nurses, physicians, occupational therapists, physical therapists, and others. This collective approach ensures a thorough evaluation and diverse treatment strategies tailored to address the complexities of swallowing difficulties. Successful outcomes depend on effective communication and mutual respect among team members, harnessing each professional's expertise to formulate a comprehensive dysphagia care plan. (20,21)

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FLOWCHART 1 Approach for diagnosis of dysphagia Adapted from (3-10).

5 | TABLES & FIGURES

Examination Method	Description
Detailed History-Taking	Comprehensive inquiry into the patient's dysphagia symptoms, duration, associated conditions, and aggravating/alleviating factors.
ENT Physical Examination	Thorough examination of the oropharynx, neck, and cervical lymph nodes to identify any visible masses, structural abnormalities, or signs of inflammation.
Fiberoptic Nasopharyngolaryngoscopy	A procedure involving a flexible endoscope passed through the nose to visualize the oropharyngeal and laryngeal structures during swallowing.
Radiography	Imaging studies such as barium swallow or videofluoroscopic swallow study to observe bolus movement and identify structural or functional abnormalities.
Esophageal Endoscopy	Involves inserting a flexible tube with a camera to examine the esophagus for inflammation, strictures, tumors, or other abnormalities.
Ultrasonography	Imaging technique to visualize structures in the neck and assess for any abnormalities affecting swallowing.
pH-metry and Manometry	Specialized tests measuring acidity in the esophagus and assessing esophageal muscle function during swallowing, are helpful in diagnosing motility disorders or reflux.

TABLE 1 Physical examination for dysphagia

Adapted from (2).

Aspects	Description
Medications	Nifedipine and other calcium channel blockers (CCBs) relax smooth muscle in the esophagus and lower esophageal sphincter by inhibiting calcium influx, potentially improving swallowing function. These effects can also alleviate esophageal spasms and reduce pressure.
Rehabilitation	Involves compensatory strategies, direct therapy, and assessments. Tailored plans for improved swallowing
Compensatory Strategies	Disparities in dysphagia care practices. Focus on feeding modifications over rehabilitation.
Dietary Modifications	Thickened liquids aid bolus control but impact medication absorption and taste perception.
Surgical Interventions	Multifaceted approach including medications, rehab, and surgeries. Aim to restore function or prevent severe aspiration.
Feeding Tubes	NGT for short-term use, PEG for prolonged support. Improve survival and prevent complications.
Collaborative Care	Multidisciplinary approach involving specialists. Comprehensive evaluation and treatment strategies.

TABLE 2 Management of dysphagia

Adapted from (11-21).