Dysphagia

The term dysphagia is defined as difficulty in swallowing and originates from the Greek words dys, with difficulty, and phagia, to eat. Dysphagia should be distinguished from 'odynophagia' or painful swallowing, although both may appear together. Dysphagia is a distressing symptom and can have serious effects on a patient's health. The main concern is airway obstruction and the risk of aspiration. Suspicion of a swallowing difficulty should lead to accurate assessment and patient precautions must be taken. Furthermore, the physician should always suspect a malignant cause of dysphagia.

Action of swallowing

Swallowing can be divided into three phases: oral, pharyngeal and oesophageal (Buchholz, 1987). The oral phase is voluntary and under the control of the cerebral cortex and the brainstem. The pharyngeal phase is involuntary and is controlled by the brainstem alone. The final oesophageal phase is also involuntary but is mediated by both the brainstem and the intrinsic enteric nervous system. The three stages of swallowing occur in a smooth sequential manner coordinated by the action of over 30 muscles and five cranial nerves (V, VII, IX, X, XII) synchronizing the phases.

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Causes of dysphagia

In clinical practice it is useful to divide dysphagia into two types: oropharyngeal (high) and oesophageal (low; Hurwitz et al, 1975). This classification uses the cricopharyngeus muscle as a landmark. Oropharyngeal dysphagia occurs above the level of the cricopharyngeus while oesophageal occurs below. However, many disorders overlap and they can produce both types of dysphagia.

In general terms neurological disease causes dysphagia by affecting the oral and pharyngeal phases of swallowing. Whatever oesophageal impairment occurs is less likely to contribute to the primary source of symptoms (Buchholz, 1987). Oesophageal dysphagia is usually caused by either mechanical obstruction or a motility disorder affecting peristalsis or the lower oesophageal sphincter (*Figure 1*).

Clinical history and examination

A carefully obtained medical history is crucial to assessing the type and aetiology of dysphagia (Castell and Donner, 1987). Key features to consider in the medical history are:

- Location
- Type of food – solids and/or liquid
- Constant or intermittent
- Duration of symptoms
- Weight loss.

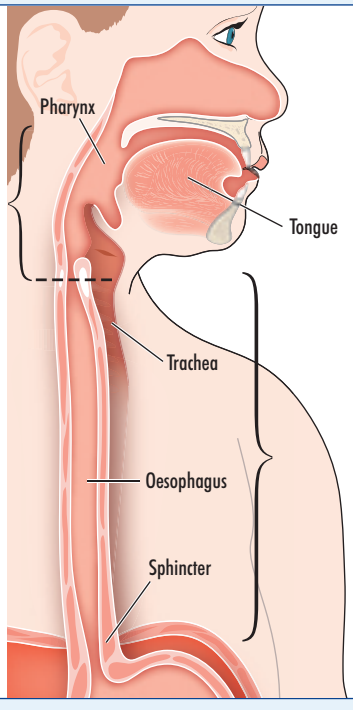
It is important to exclude odynophagia, which often occurs secondary to an infective aetiology (e.g. candidiasis), and globus hystericus which is the sensation of a lump in the throat that usually does not interfere with swallowing. The latter diagnosis should only be made after thorough investigation for other causes.

Other specific questions should be directed towards the action of swallowing itself such as difficulty in initiating a swallow, coughing or choking, drooling and aspiration of food. Other important symptoms include voice changes, the sensation of food sticking, reflux of gastric contents and heartburn. A review of past medical problems, current medications and a systems review should also be completed in all cases. Side effects of medications can

Figure 1. Aetiology of dysphagia. The division of dysphagia into oropharyngeal and oesophageal types uses the cricopharyngeus muscle (dashed line) as a landmark.

Oropharyngeal dysphagia

Neuromuscular	Stroke
	Parkinson's disease
	Multiple sclerosis
	Amyotrophic lateral sclerosis
	Peripheral neuropathies
	Myasthenia gravis
	Bulbar palsy
	Guillain–Barré syndrome
Structural	Head and neck tumours
	Congenital webs
	Plummer–Vinson syndrome
	External compression (thyroid, cervical rib, thyroid lymphadenopathy)
	Pharyngeal pouch or Zenker's diverticulum



Oesophageal dysphagia

Neuromuscular	Achalasia
	Scleroderma
	Diffuse oesophageal spasm
Structural: intrinsic	Peptic stricture secondary to gastric reflux
	Oesophageal rings and webs
	Oesophageal tumours
Structural: extrinsic	Tumours (lungs, mediastinum)
	Vascular compression
Other	Infectious oesophagitis

cause dysphagia, for example calcium-channel antagonists can lead to gastric reflux.

Physical examination should include an assessment of the movements of the tongue, palate and muscles of facial expression. The examination of patients with suspected low dysphagia is often limited but palpation of the cervical and supraclavicular lymph nodes must be performed.

Oropharyngeal dysphagia

A patient with oropharyngeal dysphagia has difficulty initiating a swallow to transfer food from the mouth into the pharynx and then the oesophagus. High dysphagia is suggested by coughing or choking at the time of swallowing leading to nasal regurgitation or aspiration of food contents. High dysphagia is more likely to cause problems with liquids rather than solids or semi-solids. Regurgitation of food a few hours after eating associated with halitosis and swelling in the neck is suggestive of a pharyngeal pouch or Zenker's diverticulum (Ryland, 1921). Other clinical features such as nasal speech (palatal weakness), dysarthria, diplopia or hemiparesis are important diagnostic clues that occur with defined neurological conditions.

Oesophageal dysphagia

Patients with low dysphagia have difficulty transporting food down the oesophagus. Normally, food is propelled down the oesophagus by peristaltic waves and this takes approximately 10 seconds to occur. Oesophageal dysphagia can be the result of a motility disorder, affecting the peristaltic contractions, or mechanical obstruction.

The presence of a motility disorder is likely when a patient reports dysphagia with solids and liquids equally. The symptoms tend to be intermittent and can be associated with chest pain. Dysphagia that occurs only with solid food but never liquids suggests a mechanical obstruction. If the symptoms are progressive then this indicates a possible carcinoma or peptic stricture. Patients with peptic strictures tend to have a longer history, no weight loss and usually complain of heartburn and regurgitation, while patients with carcinoma tend to be older men, report significant weight loss and have a shorter duration of around 3–4 months.

Assessment of swallowing

A thorough history can often lead to the right diagnosis with good certainty. However, a formal assessment of the swallow is usually also required. In clinical practice, a bedside 'swallow screen' is initially performed to identify patients at risk and in need of further specialist input, usually by a speech and language therapist. This prevents unnecessary and prolonged oral intake restrictions for patients.

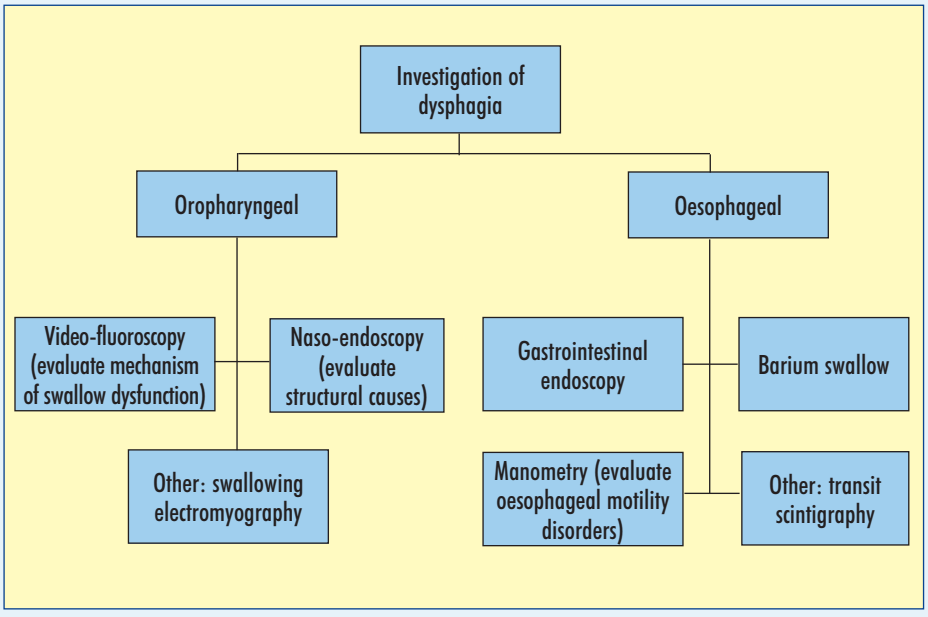
A typical swallow screen includes a general appraisal of the patient's conscious level and degree of postural control. The procedure should also include an assessment of oromotor function and oral hygiene. If satisfactory this is followed by a water-swallow test. This test entails giving a patient three teaspoons of water and noting laryngeal elevation by placing fingers on the midline above and below the larynx. Patients are also observed for a cough or delayed cough, altered voice quality and absence of swallow. If any signs are present then the patient is kept nil by mouth and referred to a speech and language therapist. If none are present then the patient is tried with other volumes of food or fluid while continuing observations. Approximately 40% of patients who are aspirating are not identified during bedside evaluation, hence the need for formal assessment (Logemann, 1983).

Other assessments include cervical auscultation (Zenner et al, 1995) and gag reflex testing. Cervical auscultation involves placing a stethoscope over the lateral aspect of the larynx and listening for airflow changes during normal breathing and swallowing. There is a lack of evidence, however, supporting the reliability of this method (Stroud et al, 2002). The gag test has also been found to be a poor indicator of a potential swallow dysfunction as studies have shown a poor correlation between the two (McCullough et al, 2001). More reliable tests for confirming dysphagia must be considered (*Figure 2*).

Currently, video-fluoroscopy (or a modified barium swallow) is considered the gold standard for assessing oropharyngeal dysphagia (Logemann, 1983; Splaingard et al, 1988). Video-fluoroscopy is designed to study the anatomy of the pharynx and cervical oesophagus and the action of swallowing itself. Fibreoptic naso-endoscopy is very useful for evaluating the structural causes of dysphagia visualizing the nasopharynx, oropharynx and laryngopharynx. To assess the oesophagus a flexible gastrointestinal endoscopy can be used.

A barium swallow is useful for detecting irregularities in the lumen and can also be helpful in the detection of oesophageal motility disorders such as achalasia providing characteristic images. Motility disorders can be further assessed with oesophageal manometry if previous tests are inconclusive. This tool consists of a catheter with pressure transducers along its length which measures the pressure levels down the oesophagus. This can be combined with oesophageal pH monitoring.

Figure 2. Investigation options available for oropharyngeal and oesophageal dysphagia.



Treatment

The management of dysphagia should be a multidisciplinary approach involving speech and language therapists, dieticians, gastroenterologists, upper gastrointestinal surgeons and various imaging specialists. The key management issues are prevention of aspiration, provision of nutrition and treatment of the cause if possible.

If oral intake is felt to be safe then various strategies are available to assist in safe swallowing. Dietary modification is essential. This includes altering the viscosity and texture of food and fluid. A greater viscosity enables a patient with delayed swallow reflex to better control the bolus of food and food also tends not to spill over into the pharynx.

Certain compensatory postural manoeuvres can be used in dysphagic patients, including head tilting in patients with a unilateral pharyngeal disorder and chin-tuck position for patients with a delayed swallow reflex (Logemann, 1995). Impaired swallowing can be improved with exercise techniques. These include exercises to improve oral strength and coordination.

A proportion of patients will be assessed as being high risk with swallowing deemed to be unsafe. In such cases alternative nutritional support will be necessary. If only short term then intravenous fluids alone are sufficient. For longer periods enteral feeding methods should be considered. This can initially be a fine-bore nasogastric tube as this can be quickly and easily inserted, but patients tend to find them uncomfortable. Patients with prolonged dysphagia should be considered for a percutaneous endoscopic gastrostomy. This is a feeding tube inserted through the anterior abdominal wall with endoscopic support. It has associated complication risks, such as peritonitis and bleeding (Schrag et al, 2007).

Medical treatment

Antireflux therapy can be used for the conservative management of peptic strictures secondary to gastric reflux and symptomatically in conditions such as scleroderma. Antibiotics have a role in infectious oesophagitis. In neuromuscular motility disorders, such as achalasia, smooth muscle relaxants can be used. These include nitrates (isosorbide nitrate) or calcium-channel blockers (nifedipine). These usually only give transient benefit and are used in the short term before definitive treatment.

Surgical treatment

Surgical treatment is aimed mainly at removing a mechanical obstruction such as a tumour or dilatation of constrictive conditions. Pneumatic balloon dilatation is used in achalasia and peptic stricturing. A laporoscopic cardiomyotomy or Heller's operation at the level of the cardia can also be used in achalasia. The risk of oesophageal perforation and gastric reflux is present with both treatment options.

Conclusions

All clinicians will at some point in their practice have to deal with a patient presenting with a swallowing difficulty. A thorough history is crucial in all cases and by applying simple principles quite often an accurate diagnosis can be reached. Depending on the facilities available the patient can be further investigated. The key issue to dealing with dysphagia is the safety of the patient. Precautions must be taken to protect the airway and management should take a multidisciplinary approach. BJHM

Conflict of interest: none.

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KEY POINTS

- Dysphagia can lead to serious clinical consequences for a patient if not managed properly.
- A careful history is crucial for assessing the type and aetiology of dysphagia.
- A bedside 'swallow screen' is a key initial step to identifying patients at risk.
- A multidisciplinary approach to managing patients is essential for ensuring good outcome.