

# Disorders of swallowing

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## Abstract

Disorders of swallowing are very common and, when looked for, occur regularly in most branches of surgery. Dysphagia is often not the patient's presenting complaint and can be easily missed. The consequences of missed or delayed diagnosis of dysphagia can be insidious but profound and, in some cases, fatal. The investigation and treatment of these patients is normally highly multidisciplinary, potentially involving gastroenterology, general surgery, otolaryngology, acute medicine, stroke medicine, paediatrics, speech and language therapy (SLT) and dietitians. While this article is aimed at surgeons and will thus concentrate mostly on those conditions seen by surgeons, it must be remembered that the most common cause of dysphagia is a neurological disturbance and is managed by physicians and SLT. That said, the incidence of these conditions rises with age, as does the incidence of many surgically treatable conditions. It is therefore common to assess a patient with a known neurological condition for the presence of a second pathology affecting their swallow. A basic knowledge of non-surgical conditions is therefore useful.

**Keywords** Dysphagia; food bolus impaction; pharyngeal pouch; reflux; squamous cell carcinoma; swallowing

## Overview of treatment

The complex physiological coordination required for a successful swallow is mirrored by the need for careful organizational coordination required for the successful treatment of dysphagia. This is a condition best managed within a multidisciplinary team (MDT) so that the diagnostic and therapeutic expertise of the different team members mentioned above can be promptly accessed.

There are a large number of possible therapeutic options, from simple head positioning during swallowing and dietary modification through gastrostomy tubes to parenteral nutrition and extensive head and neck surgery. No one professional will be an expert in all of these, so the MDT is vitally important.

## Complications

Most complications of dysphagia are not acute emergencies, but they can be fatal and are even more dangerous because of their insidious onset. The most common complications are:

- dehydration
- malnutrition
- aspiration pneumonia.

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Malnutrition is a covert problem but has a significant effect on wound healing and may delay discharge from hospital.<sup>1</sup>

Problems with swallowing will also impact on administration of medication, leading to non-compliance with tablets/capsule medication, or the requirement of more expensive liquid formulations. In the acute situation, occlusion of the upper aerodigestive tract due to, for example, a food bolus/foreign object or deep space neck infection can lead to airway obstruction.

The social impact of dysphagia is easily missed or underestimated, with some sufferers unable to or choosing not to participate in social interactions involving food due to embarrassment or anxiety.

## History

The chronicity or duration of symptoms is important – for example, a steady progression of symptoms in an elderly patient, initially involving solids then liquids, signifies malignancy until proven otherwise. In contrast, motility problems of swallowing tend to involve both solids and liquids from the start.

It is useful to determine the frequency of the problem: for example, patients with intermittent dysphagia are more likely to have a functional disorder such as diffuse oesophageal spasm or non-specific oesophageal motility disorder (NOMD).

If regurgitation is present, the volume and time delay from initiation of swallow to the onset of regurgitation may indicate the level of obstruction. For example, obstruction of the oesophagus is associated with a larger volume of regurgitation and a longer delay compared to obstruction at the level of the oropharynx or hypopharynx.

Coughing and choking associated with food or liquid intake may signify aspiration of food or drink into the trachea. A history of frequent chest infections would reinforce this. This can be a fatal complication, particularly in frail patients.

Determining the level of the dysfunction by where the patient localizes the symptoms is not reliable.<sup>2</sup> In one study, up to 59% of patients with pharynx-localized dysphagia were found to have oesophageal disease distal to the level of perceived symptoms.<sup>3</sup> Patients presenting with dysphagia with a differential diagnosis of malignancy should therefore have direct visualization of the full oesophagus and the gastro-oesophageal junction (**Box 1**).

## Examination

Physical examination should include direct visual inspection of the upper aerodigestive tract, with the use of adjuncts such as endoscopic visualization of the hypopharynx, larynx and oesophagus.

The oral cavity should be inspected to assess the state of the dentition, mucosal dryness, mucosal lesions, adequacy of lip closure, tongue fasciculations and palatal elevation. Next, the oropharynx should be visualized for lesions of the tonsil or tongue base. Cranial nerve examination is important in the evaluation of a patient with a suspected neuromuscular cause for dysphagia. The neck should also be examined for cervical lymphadenopathy, goitre or cervical borborygmi (Boyce's sign in pharyngeal pouch).

Additionally, a bedside swallow test with sip of water or swallow of solid food may help in evaluation of the actual process of swallowing. The patient should be able to hold the bolus

### Red flag symptoms suggestive of malignancy

Weight loss (>5% unintentional weight loss in 6 months)  
 Haemoptysis  
 Odynophagia with lateralizing symptoms  
 Hoarseness  
 Otalgia (referred pain)  
 Change of consistency of diet  
 Symptoms of lymphoma (fever, weight loss, night sweats)  
 Risk factors: smoking, alcohol intake, family history, previous malignancy

#### Box 1

in their mouth without dribbling and then move it smoothly to their pharynx in one go and swallow it without coughing or regurgitation. If they need multiple swallowing efforts for a small bolus, must throat-clear/cough or they bring the bolus back then further investigation is needed.

### Investigations

There are many investigations that examine the upper aerodigestive tract (UADT) in different ways.

Which investigation to order is critically dependent upon the question to be answered.

#### Clinic investigations

**Flexible nasendoscopy (FNE):** the next step up is an FNE, which is available in all ENT departments. It allows direct visualization of the nasopharynx, oropharynx and most of the hypopharynx, but crucially not the post cricoid region.

**Functional endoscopic evaluation of swallowing (FEES):** this is an extension of FNE normally performed with SLT. Various textures (commonly liquid, yogurt and cake) are given to the patient and directly observed as they pass through the oropharynx and hypopharynx. Penetration and aspiration can be clearly seen, as can the patient's response to this. The absence of a cough reflex in response to penetration or aspiration is clearly a significant risk factor for aspiration pneumonia.

#### Radiological

**Contrast swallow:** This is a commonly ordered test with limited usefulness. Its main value is in assessing for a pharyngeal pouch.

**CT/MRI:** cross-sectional imaging is the gold standard for assessment of significant anatomical derangement of the UADT but always remember that smaller mucosal lesions that may be obvious on direct inspection may be completely invisible on CT/MRI.

**Video fluoroscopy (VF)** is a fluoroscopic assessment by SLT and radiology of swallowing various textures that have been soaked in contrast medium. It gives a very thorough assessment of the passage of food/drink through the whole UADT but is relatively resource intensive.

#### pH manometry

This procedure involves the placement of a probe similar to a nasogastric tube into a patient's oesophagus. The pressure and

pH at various levels can then be recorded, allowing assessment of reflux as well as objective assessment of oesophageal dysmotility.

#### Oesophagoscopy

**Transnasal oesophagoscopy (TNO):** this is a relatively new technique that allows passage of a flexible nasendoscope down the entire oesophagus under local anaesthetic only, as a clinic procedure. It allows a limited assessment of the hypopharynx, but evidence shows that this is enough to exclude post cricoid carcinoma.<sup>4</sup> It also includes an FNE as a standard part of the procedure.

**Oesophago-gastro duodenoscopy (OGD):** this procedure examines the oesophagus very well, but the transoral passage of a large scope reduces the view in the pharynx. Large lesions can be noticed but not assessed, and small lesions may be missed altogether. It normally requires sedation and thus may not be suitable for frail patients.

**Rigid pharyngo-oesophagoscopy:** this allows excellent examination and treatment of many UADT lesions but requires a general anaesthetic. There are significant risks of dental damage and oesophageal perforation, particularly if used to visualize the lower oesophagus. It can be used to extract some sharp foreign bodies as it protects the oesophagus during their extraction (Table 1).

#### Food bolus impaction

Food bolus or foreign body impaction in the digestive tract can occur at any age and because of almost any cause of dysphagia. It is best viewed as a symptom of an underlying problem rather than a diagnosis in its own right. It usually presents with complete aphagia and resultant drooling of saliva. If not treated appropriately, dehydration happens within 24–48 hours. The nature of the foreign body is extremely important. Sharp or caustic objects (e.g. batteries) require immediate removal. Most food boluses in the UK are meat and can initially be managed conservatively with IV rehydration and muscle relaxants such as hyoscine butylbromide 20 mg iv or glucagon 1mg iv. Neither of these is clearly better than placebo and the important point is waiting to see if the bolus spontaneously clears over a few hours. This occurs in around 50% of patients. If it does not, the safest treatment is retrieval of the foreign body or pushing it more distally into the stomach with a flexible endoscope (OGD or TNO). Occasionally, rigid oesophagoscopy may be required for sharp or solidly impacted boluses. Once the bolus has been cleared, it is important to assess the need for further investigation of the patient.

#### Causes of dysphagia

There are distinct causes or associations with dysphagia depending on patient age. The causes of dysphagia in infancy, childhood and adolescence include congenital causes, acute infectious causes, injury and neurodevelopmental delay. Gastroenterological and immunological causes start to manifest in middle age, whereas neurological and oncological causes become more frequent in the elderly.<sup>5</sup> The prevalence of dysphagia in the general population has been found to range from 1.7% to 11.3%

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