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PEER REVIEWED FEATURE
POINTS: 2 CPD/2 PDP

CLINICAL INVESTIGATIONS FROM THE RACP

Investigating patients with difficulty swallowing

The importance of a thorough history

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Key points

- A brief structured history is the single most important step in evaluating patients with dysphagia because it identifies the likely patho-physiological process in 85% of cases.
- The history will generally reliably distinguish pharyngeal from oesophageal dysphagia and also a structural oesophageal disorder from dysmotility.
- A common mistake is to confuse the common, purely sensory symptom of globus with dysphagia. The swallow is completely normal in patients with globus.
- Endoscopy is almost invariably indicated in patients with dysphagia but, in some cases, a combination of endoscopy, radiography and oesophageal manometry is necessary to confirm a diagnosis.
- The finding of a normal endoscopy and normal barium swallow does not adequately rule out a structural or mucosal oesophageal cause for dysphagia.

In this series, we present authoritative advice on the investigation of a common clinical problem, especially commissioned for family doctors and written by members of the Royal Australasian College of Physicians.

Dysphagia is reported by 5 to 8% of the general population over the age of 50 years and by 16% of those over 87 years of age. Broadly speaking dysphagia can be caused by pharyngeal or oesophageal dysfunction and, in each case, the causes can be broadly subdivided into either structural or motility disorders. From the GP's perspective, evaluating the patient with a swallowing disorder is very satisfying – simply because a careful, brief and logical history will yield the likely cause in 85% of cases.

THE IMPORTANCE OF A THOROUGH HISTORY

The importance of a careful history in patients with dysphagia cannot be over emphasised. Taking a history alone gets you so close to the diagnosis that one can then target subsequent investigations precisely. There are three fundamental aims in taking the history, which are outlined below.

- First, establish whether dysphagia is actually present (i.e. is it just globus or is it true dysphagia?).
- Second, determine whether the site of the

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problem is oesophageal or pharyngeal (see the flowchart on this page).
- Third, distinguish a structural abnormality from a motor disorder (see the flowchart on page 50 for differentiating among the oesophageal disorders).

The avenues of enquiry are outlined below in an order that logically follows the most effective diagnostic algorithm.

Does the patient actually have dysphagia?

Both clinician and patient may mistake the purely sensory symptom of globus for dysphagia. Globus is an extremely common, benign, non-painful sensation of a lump or fullness in the throat of unknown aetiology. Globus is generally most apparent between meals and is usually alleviated by eating. A very useful question to ask is, 'Do you feel it right now?' A positive response is very common and clearly confirms that the symptom is neither dependent on food ingestion nor swallowing for its presence.

What is the duration of dysphagia and is it progressive or intermittent?

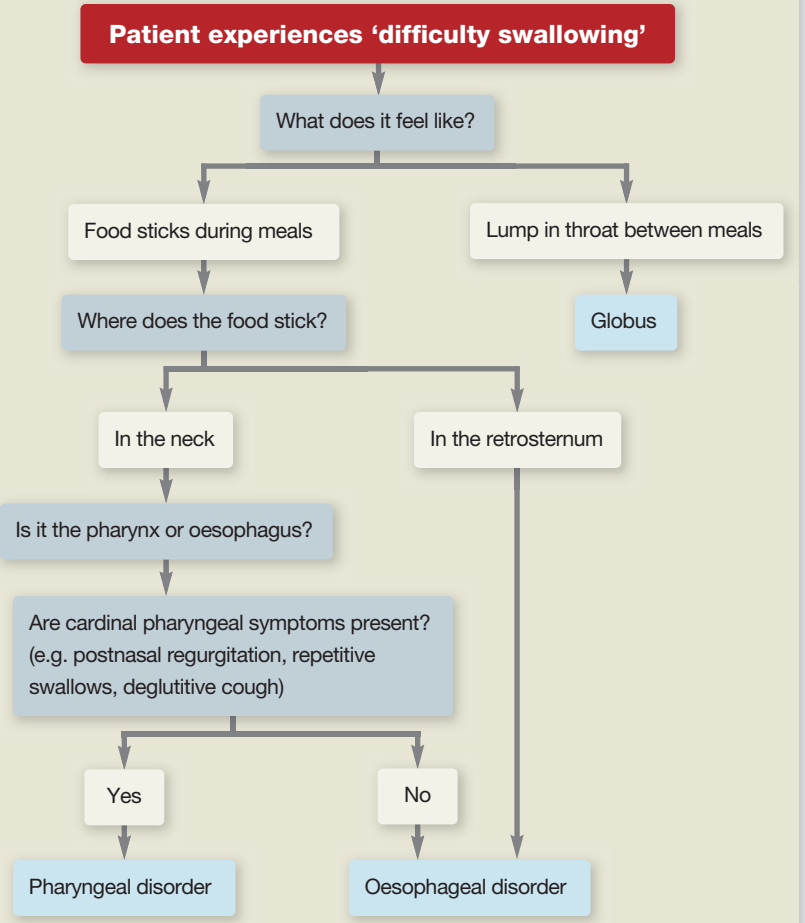
Malignant lesions usually present with a short history of rapidly progressive dysphagia, frequently associated with weight loss. A gradual onset, sometimes associated with heartburn, might suggest a peptic stricture. A long history of intermittent, non-progressive, solid bolus dysphagia is highly suggestive of an oesophageal mucosal ring (e.g. a young man with a multi-ringed oesophagus associated with eosinophilic oesophagitis).

Oropharyngeal dysphagia usually has a neurological basis. A sudden onset of dysphagia, with or without other neurological symptoms or signs, may indicate a cerebrovascular event. A more insidious onset is consistent with disorders such as inflammatory myopathy, myasthenia and motor neurone disease. Tremor or gait disturbance might indicate underlying Parkinson's disease.

Where does the food stick?

Retrosternal holdup always indicates that the disorder lies within the oesophagus.

DETERMINING THE LIKELY ANATOMICAL LOCATION OF THE PROBLEM



However, reports by the patient of apparent bolus holdup in the neck does not distinguish pharyngeal from oesophageal dysphagia. The site of perceived holdup is above the suprasternal notch in 30% of cases in whom the actual holdup is within the oesophageal body. Hence, the questions immediately following determination of perceived level of bolus holdup aim to differentiate pharyngeal from oesophageal disorders.

What symptoms suggest a pharyngeal cause?

There are four cardinal symptoms that indicate oropharyngeal dysfunction, and these are:
- delayed or absent oropharyngeal

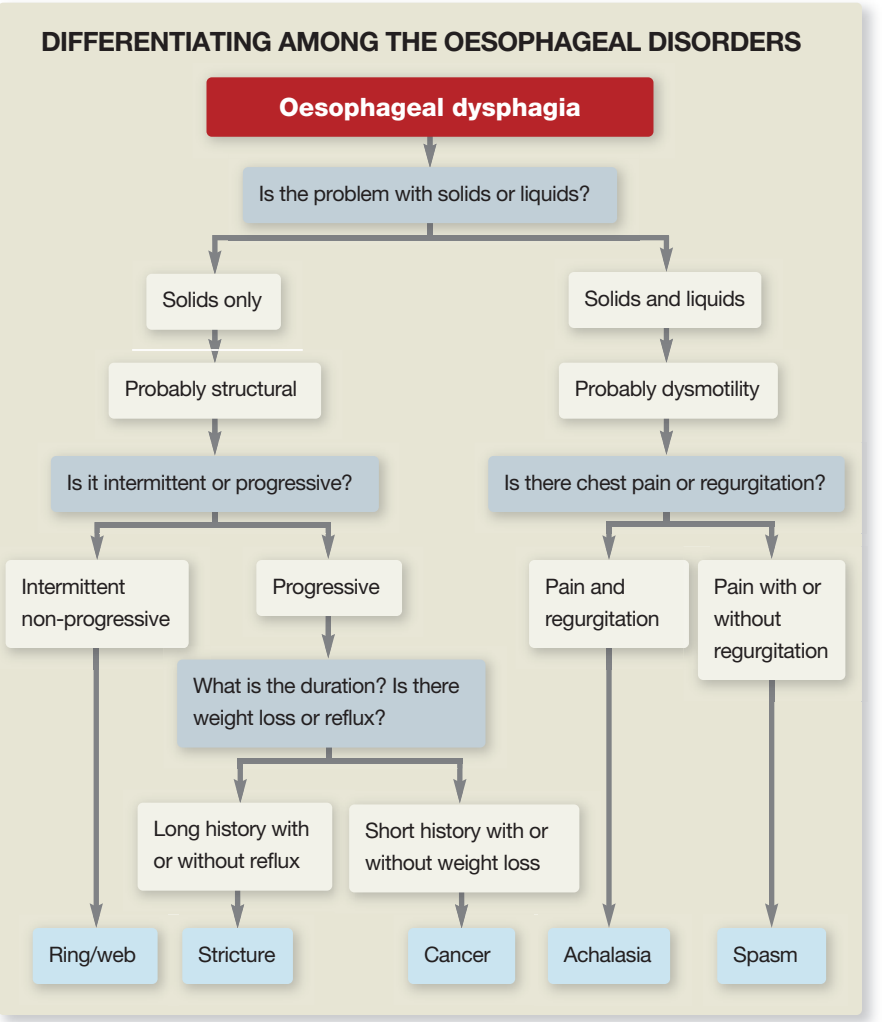
CAUSES OF OROPHARYNGEAL DYSPHAGIA

Structural disorders

- Tumour
- Stenosis
  - post-surgical
  - radiation
  - idiopathic
- Zenker's diverticulum
- Cricopharyngeal bar
- Web
- Extrinsic compression (e.g. large retrosternal goitre)

Neuromyogenic disorders

- Stroke
- Head trauma
- Parkinson's disease
- Motor neurone disease
- Myasthenia gravis
- Myopathies (inflammatory, metabolic)



swallow initiation
- deglutitive postnasal regurgitation or egress of fluid through the nose during swallowing
- deglutitive cough indicative of aspiration
- the need to swallow repetitively to achieve satisfactory clearance of swallowed material from the hypopharynx.

If one or more of these symptoms are present the cause of the dysphagia lies in the pharynx. Pain on swallowing or a persistent sore throat may indicate laryngopharyngeal malignancy. Delayed regurgitation of old food is typical of a large pharyngeal diverticulum. The box on this page lists the causes of oropharyngeal dysphagia.

How to distinguish a structural oesophageal disorder from a motility disorder?

If an oesophageal cause is suspected, a structural disorder needs to be differentiated from a motor disorder. This algorithmic approach (see the flowchart on this page and box on page 51) can be achieved by asking the patient the following:

- **Is there difficulty swallowing solids or liquids?** Typically the patient with a motor disorder (e.g. achalasia, diffuse oesophageal spasm) will have trouble with both liquids and solids whereas patients with structural disorders will have trouble with solids only. Of course once a solid bolus is impacted during a meal, the patient will report dysphagia for liquids and solids. Hence the question regarding liquids needs to be phrased unambiguously.

Suspected structural oesophageal lesion

If the problem is likely to be a structured oesophageal lesion, the following enquiry will define the likely cause:

- **How long has dysphagia been present; is it intermittent, is it progressive?** Slowly progressive, long-standing dysphagia, particularly on a background of reflux, is suggestive of a peptic stricture. A short history, particularly with rapid progression (weeks or months) and associated weight loss, is highly suggestive of oesophageal cancer. Longstanding, intermittent, nonprogressive dysphagia purely for solids is

CAUSES OF OESOPHAGEAL DYSPHAGIA

Structural disorders

- Inflammatory/fibrotic strictures
  - peptic
  - caustic
  - pill induced (e.g. tetracycline, iron tablets)
  - radiation induced
- Mucosal rings and webs
  - Schatzki's ring
  - multi-ringed oesophagus (eosinophilic oesophagitis)
- Carcinoma
  - primary (squamous, adenocarcinoma)
  - secondary (e.g. breast, melanoma)
- Related to skin diseases
  - pemphigous and pemphigoid
  - lichen planus
- Intramural lesions
  - leiomyoma
  - granular cell tumour
- Extramural lesions
  - aberrant right subclavian artery ('dysphagia lusoria')
  - mediastinal masses
  - bronchial carcinoma
- Anatomical abnormalities
  - hiatal hernia
  - oesophageal diverticulum

Motility disorders

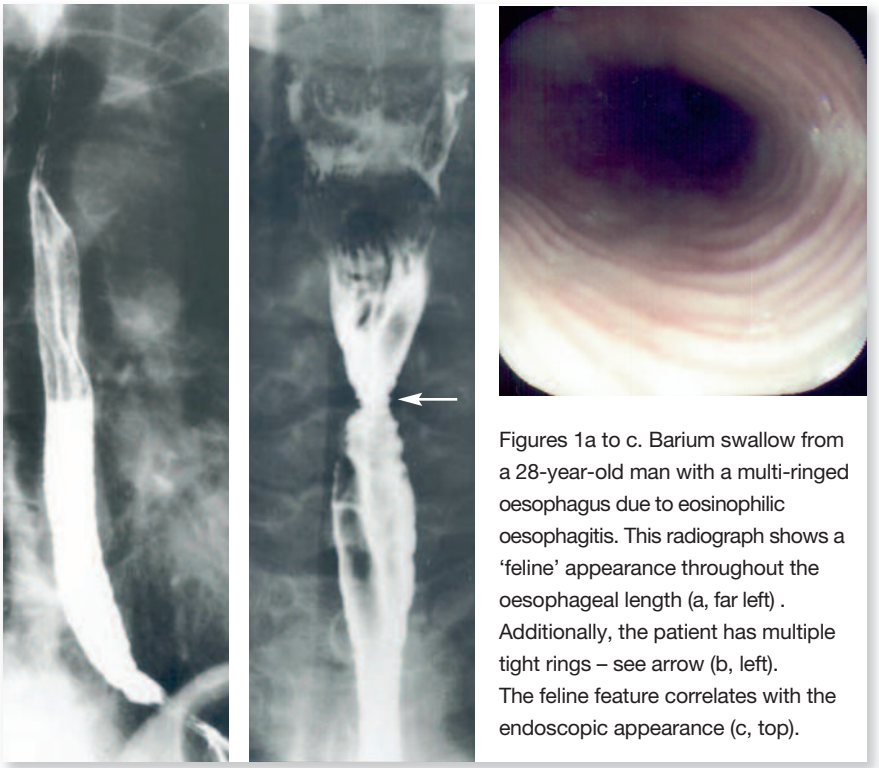
- Achalasia
- Diffuse oesophageal spasm
- Scleroderma

indicative of a fixed structural lesion, such as an oesophageal ring.

Suspected oesophageal motility disorder

The three cardinal features of oesophageal dysmotility are dysphagia (for both solids and liquids), chest pain and regurgitation. If the problem is likely to be an oesophageal motility disorder, the following enquiry will define the likely cause:

- **Do you regurgitate?** Regurgitation during the meal as well as spontaneous regurgitation between meals or at night is highly suggestive of dysmotility. Unlike regurgitation related to gastro-oesophageal reflux, the regurgitated fluid/food in the context of dysmotility is generally not noxious to taste.
- **Do you experience chest pain?** Spasm or achalasia typically causes chest pain. Although this is often described as heavy or crushing, it can be indistinguishable from the typical 'heartburn' of reflux. Most cases of achalasia are misdiagnosed as reflux in the first instance. The pain may occur during the meal but can be quite unpredictable and sporadic or nocturnal.



Figures 1a to c. Barium swallow from a 28-year-old man with a multi-ringed oesophagus due to eosinophilic oesophagitis. This radiograph shows a 'feline' appearance throughout the oesophageal length (a, far left) . Additionally, the patient has multiple tight rings – see arrow (b, left). The feline feature correlates with the endoscopic appearance (c, top).

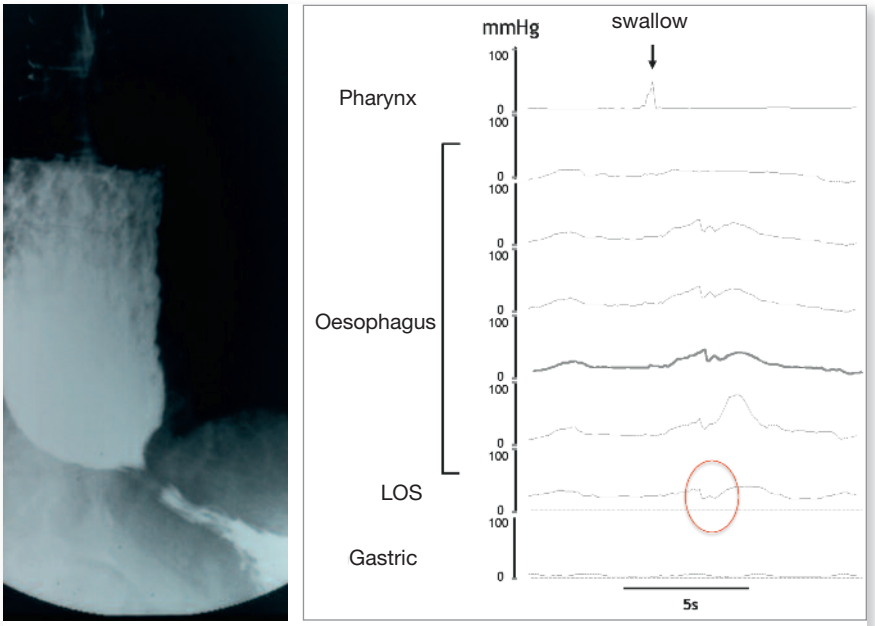
EXAMINATION AND INVESTIGATION

In the context of oesophageal dysphagia, the physical examination is generally unremarkable. However, the skin should be examined for features of connective tissue disorders, particularly scleroderma and CREST (calcinosis, Raynaud's phenomenon, oesophageal dysmotility, sclerodactyly and telangiectasia) syndrome. A careful neurological examination is important in cases of pharyngeal dysphagia. Muscle weakness or wasting might be evident in the context of pharyngeal dysphagia if myositis, myasthenia or motor neurone disease is the cause. Signs of malnutrition, weight loss and pulmonary complications from aspiration should be looked for.

Suspected oesophageal dysphagia

Endoscopy

Endoscopy will be mandatory at some point in patients with oesophageal dysphagia. However, depending on the availability of endoscopy, the GP might also achieve a diagnosis with a barium swallow (see below). A normal endoscopy



Figures 2a and b. Barium swallow (a, left) and a manometric tracing (b, right) from a patient with idiopathic achalasia. Note the dilated oesophagus contains a substantial residue of food and fluid; held up by a tightly closed sphincter demonstrating the 'bird beaked' tapered appearance. In response to the water swallow (marked at top), there is a partial relaxation of the lower oesophageal sphincter (LOS) in that the nadir pressure does not drop to gastric baseline pressure. Note the complete lack of peristalsis. The broad, synchronous pressure waves seen extending along the oesophageal length are due to a rise in pressure within the dilated, aperistaltic oesophagus.

(or indeed a normal barium swallow) does not rule out a structural abnormality. The increasingly recognised 'multi-ringed' oesophagus, characteristic of eosinophilic oesophagitis, may have an entirely normal endoscopic appearance or may have very subtle features such as longitudinal furrows or a 'feline' appearance throughout the oesophagus with typical corrugations (Figures 1a to c). In suspected cases, the endoscopist should routinely take oesophageal biopsies even if the oesophagus appears entirely normal.

Barium radiology

At times, a barium swallow is the preferred primary investigation if pharyngeal diverticulum, an oesophageal mucosal ring or oesophagal dysmotility are suspected because these conditions are frequently missed by the endoscopist. Radiographic hallmarks of achalasia are oesophageal dilatation and a tapered 'bird beak' appearance at the cardio-oesophageal junction, and the oesophagus typically supports a column of barium often containing food and mucous (Figures 2a and b).

Barium radiology will identify structural abnormalities such as diverticula, strictures, rings and webs, and tumours. If a mucosal ring is suspected, the radiologist should (but unfortunately does not) routinely perform prone-oblique views to achieve adequate oesophageal distension as well as a marshmallow swallow. If a mucosal ring is suspected, these manoeuvres must be specifically requested to be performed by the radiologist, as without them a mucosal ring is frequently impossible to appreciate.

Oesophageal manometry

Oesophageal manometry should be carried out when the patient's history is suggestive of achalasia. Manometry should be considered in patients in whom an endoscopy has failed to identify a cause, although it must be emphasised that a negative endoscopy (nor a negative barium swallow) does not exclude a structural oesophageal lesion. The characteristic manometric features of achalasia are failure of lower oesophageal sphincter relaxation and aperistalsis (Figures 2a and b).

Suspected pharyngeal dysphagia

Pharyngeal videobarium swallow

A pharyngeal videobarium swallow will be the first test in most patients with suspected pharyngeal dysphagia, and certainly if a neuromuscular cause is suspected. This is because it demonstrates dynamic dysfunction of the pharynx and, very importantly, whether the patient is aspirating during the swallow. Simple spot films are inadequate. The pharyngeal motor event is too rapid to appreciate without video sequences that can be replayed in slow motion. Again, it must be specifically requested that the radiologist performs video views of the pharynx otherwise a report focusing on the oesophagus rather than the pharynx will be received.

If a definite neurological cause is known (e.g. acute onset with recent stroke) then a modified barium swallow would be the preferred option. This is performed by a speech pathologist and uses a slightly different technique. Importantly, the purpose of the modified barium swallow is to detect aspiration if present and guide therapeutic strategies to maximise swallow efficiency and minimise aspiration.

Neurological evaluation

A neurological evaluation is necessary in patients with neuromyogenic pharyngeal

dysphagia. This may involve MRI if a central cause is suspected. It will also involve laboratory tests to exclude potentially treatable underlying conditions, such as thyrotoxic or inflammatory myopathies (thyroid function tests, creatine phosphokinase, electromyography) and myasthenia (acetylcholine receptor antibodies).

Endoscopy or nasolaryngoscopy

Endoscopy or nasolaryngoscopy will be required if a structural lesion such as a tumour is suspected.

SUMMARY

A logical history is the single most useful diagnostic tool for the GP in assessing patients with dysphagia. It provides a reliable indication of the underlying pathology in the vast majority of patients and dictates the subsequent investigative algorithm.

Endoscopy is mandatory in patients with oesophageal dysphagia and sometimes necessary in those with pharyngeal dysphagia. The power of good radiology of the oesophagus is widely underestimated but does require the practitioner to be specific about his or her intentions and needs when communicating with the radiologist. MT

FURTHER READING

Cook IJ. Difficulty swallowing and pain on swallowing. In: Talley N, ed. Clinical Gastroenterology. 3rd ed. Sydney: Churchill Livingstone; 2010: p.15-26.

COMPETING INTERESTS: None.