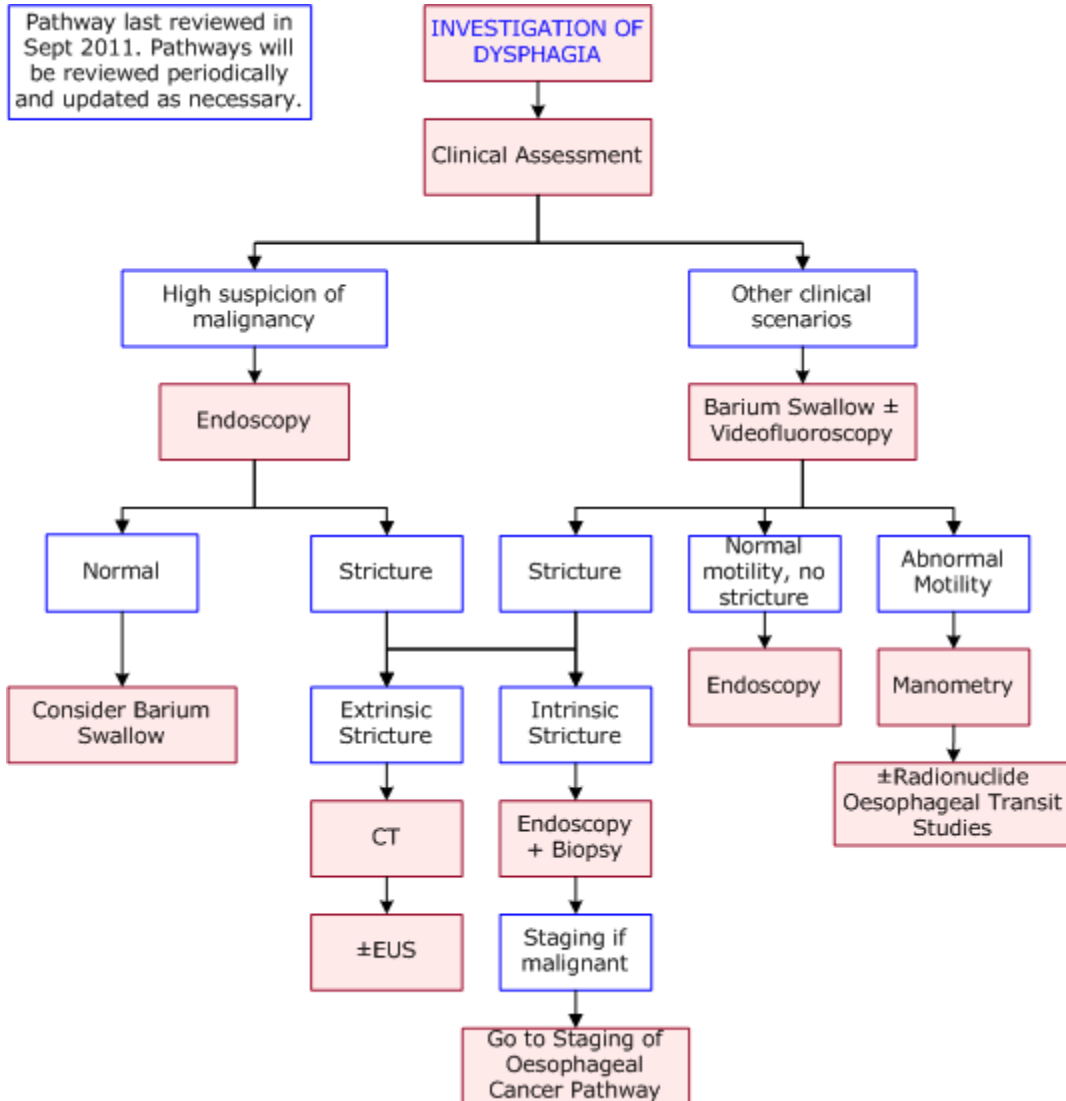




DIAGNOSTIC IMAGING PATHWAYS

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Dysphagia



CLINICAL ASSESSMENT

- Dysphagia is defined as a perception of difficulty in swallowing fluids or solids. It may be due to abnormalities of function (neuromuscular) or structure (benign or malignant strictures, etc). [1,2](#)
- The diagnostic approach to the dysphagic patient is multidisciplinary and imaging studies and endoscopy are complementary. [1,2](#)
- There is no evidence to support the use of either barium swallow or endoscopy as a preferred initial investigation for the evaluation of dysphagia. Both have different strengths and weaknesses. Clinical assessment and availability of the tests often helps direct which test to use first. [3](#)

ENDOSCOPY

- Modality of choice to detect mucosal or structural abnormalities of the oesophagus and proximal stomach. [12](#)
- In the assessment of dysphagia, one of the main roles of endoscopy is to exclude malignancy.
- A large retrospective series of 1649 patients who had undergone endoscopy as the initial investigation for dysphagia, Varadarajulu et al. found that 50% had major pathology seen on endoscopy (eg. oesophagitis 28%, stricture 21%), but the overall rate of malignancy was only 4%. [17](#) They found that the risk of malignancy was highest in males aged over 40, with a history of weight loss.
- Advantages:
 - Able to assess mucosal lesions.
 - Allows biopsy or cytology specimens to be taken.
 - Allows therapeutic intervention at same setting (eg. dilatation of strictures).
 - More sensitive than barium swallow to diagnose mild reflux oesophagitis or other subtle forms of oesophagitis. [7](#)
- Limitations:
 - More expensive and invasive than barium swallow study.
 - Inferior to barium studies for detection of lower oesophageal rings or strictures. [7,11](#)
 - Inability to evaluate oesophageal motility disorders. [7](#)

BARIUM SWALLOW STUDY ± FLUOROSCOPY

- Examination is tailored to the patient's symptoms and usually involves a combination of single and double contrast studies. [1,2](#)
 - A double contrast study is often done first and involves the oral administration of a gas-forming agent to provide maximal distension of the stomach and oesophagus, followed by the swallowing of high density barium. It is best for demonstrating mucosal abnormalities.
 - A single contrast study involves the swallowing of low density barium and is optimal for detecting subtle strictures, schatzki rings and hiatus hernias.
 - The use of solids coated in barium may also be used depending on the patient's symptoms.
- Videofluoroscopy is essential in the assessment of oropharyngeal function and oesophageal motility. [4,5](#)
- Symptoms of mid/distal oesophageal causes of dysphagia may be referred to the pharynx, but the reverse is rare. However, distal lesions may be associated with cricopharyngeal abnormalities (eg. Zenker's diverticulum and distal stricture). [1,2](#)
- Videofluoroscopy usually includes some assessment of all phases of swallowing and may require assessment with various consistencies of bolus, dependant on the patient's symptoms. Evidence

of gastro-oesophageal reflux and the rate of clearing of the refluxate from the oesophagus are also documented. [5](#)

- Overall sensitivity of 75-90% for the diagnosis of oesophageal motility disorders in comparison to oesophageal manometry. [6-9](#)
- Videofluoroscopy is the investigation of choice in stroke patients with dysphagia. [10](#)
- In many tertiary institutions, radiologists work closely with speech pathologists in a "dysphagia" clinic for the investigation of patients with oropharyngeal swallowing difficulties. Part of the assessment of such patients includes a videofluoroscopic study of swallowing to various consistencies of bolus which allows therapeutic decision making in regards to the level of consistency to use.
- Advantages:
 - More sensitive than endoscopy for detection of lower oesophageal rings and strictures. [7,11](#)
 - Allows assessment of motility.
 - Less expensive and invasive, and more readily available compared to endoscopy.
- Limitations: lack of direct visualisation of mucosa.

COMPUTED TOMOGRAPHY

- Modality of choice for assessment of extrinsic stricture due to mediastinal disease and for tumour staging prior to surgery.

MANOMETRY

- "Gold standard" for diagnosis of oesophageal motility disorders, especially achalasia. [13,14](#)
- Measures the amplitude, timing, and configuration of oesophageal contractions and evaluates lower oesophageal sphincter (LES) function. [13](#)
- Routine use is not indicated because of the low specificity of the findings and low likelihood of detecting a clinically significant motility disorder. [13](#)
- Indications include: [13,14](#)
 1. When abnormality is not identified on barium study or by endoscopy and correct diagnosis is essential and/or for which localisation of LES is important.
 2. To establish the diagnosis of suspected cases of achalasia or diffuse oesophageal spasm.
 3. To detect oesophageal motor abnormalities associated with systemic diseases (eg. connective tissue diseases) if their detection would contribute to establishing a multisystem diagnosis or to other aspects of management.
- Disadvantages: invasive, patient discomfort and limited availability.

ENDOSCOPIC ULTRASOUND

- Allows visualisation of the wall of the oesophagus and perioesophageal tissues.
- Useful in assessment of submucosal lesions (eg. leiomyoma), mediastinal disease, and in locoregional staging of the oesophageal cancer. [15](#)

RADIONUCLIDE OESOPHAGEAL TRANSIT STUDIES

- Simple, non-invasive method for assessing motility disorders and quantifying oesophageal emptying and gastro-oesophageal reflux.
- Overall sensitivity of 68% for diagnosing oesophageal motility disorders using manometry as standard. [6,16](#)
- Provides information on bolus transit through the oesophagus that can complement manometric data.
- Useful for diagnosis of oesophageal involvement in systemic diseases, such as scleroderma or autonomic neuropathy.

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