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## Oesophageal strictures, webs and rings

Narrowing of the oesophagus can be due either to stricture formation (benign or malignant), webs (mucosa and submucosa only), and rings (mucosa, submucosa and muscle), or from external compression from other structures in the neck or mediastinum.

Most oesophageal constrictions will present with dysphagia or symptoms suggestive of heartburn or indigestion, although some are found incidentally at endoscopy in patients with pathology elsewhere in the upper gastrointestinal (GI) tract.

**Dysphagia is a 'red flag' warning sign** that should be referred urgently for investigation, either by admission to hospital if severe, or as an outpatient under the two-week rule (usually for upper GI endoscopy ± barium swallow) – see the separate [Dysphagia](#) article.

In addition to webs, rings and strictures there are abnormalities of peristalsis, such as achalasia of the cardia, that may cause dysphagia.

## Symptoms of oesophageal strictures, webs and rings

### History

- Presenting features include heartburn, dysphagia, impaction of food, weight loss, and chest pain. Less common presentations are persistent cough and wheeze due to aspiration of food or acid.
- Worsening strictures may cause progressive dysphagia – from hard food, such as meat, to sloppy food like porridge, to liquids – so ask about progression of symptoms and the time span.
- The degree of dysphagia may be more related to the degree of oesophagitis than the extent of narrowing, and correlation is rather poor.

- There may be a history of gastro-oesophageal reflux disease (GORD). This does not necessarily indicate a benign peptic structure, as Barrett's oesophagus may progress to adenocarcinoma.

## Examination

Assess the nutritional status of the patient, examine the abdomen, noting any tenderness, organomegaly or lymphadenopathy (supraclavicular).

## Associated diseases

Thyroid disease, rheumatoid arthritis, graft-versus-host disease, Stevens-Johnson syndrome, psoriasis, blistering skin diseases, and pernicious anaemia.

## Investigations

### Important information

Upper GI endoscopy is the most important investigation for suspected strictures.

- FBC and ferritin - may show evidence of chronic blood loss with iron-deficiency anaemia, non-anaemic iron deficiency or even poor nutrition with iron and folate deficiency.
- Abnormal LFTs suggest metastasis to the liver.
- CXR may show a mass in the chest, impinging on the oesophagus. The gross dilatation of achalasia is characteristic. Lung disease due to inhalation may be seen.
- Endoscopy and barium swallow may both delineate the lesion but both have advantages and disadvantages:
  - Endoscopy allows the lesion to be biopsied but carries a risk of perforating the oesophagus, especially if the lesion is malignant.
  - A barium swallow may be helpful to clarify the nature, length and number of strictures; this is recommended in suspected complex strictures (eg those following radiation injury or caustic injury).<sup>[1]</sup>

- CT or endoscopic ultrasound are good ways to stage tumours and detect metastases.
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## Pathology

- **Oesophageal strictures** may be benign or malignant:
  - Benign oesophageal strictures are usually the result of scarring from acid reflux in severe and persistent GORD. It may also follow ingestion of corrosive substances.<sup>[2]</sup>
  - Postoperative strictures represent about 10% and corrosives account for fewer than 5%. Drugs that can cause strictures include alendronate, iron, non-steroidal anti-inflammatory drugs (NSAIDs), and potassium chloride. NSAIDs should be prescribed with caution in patients with known GORD.
  - Eosinophilic oesophagitis is an increasingly common condition, and responsible for a significant number of benign oesophageal strictures.<sup>[3]</sup>
  - Malignant oesophageal strictures usually result from carcinoma of the oesophagus but may ascend from carcinoma of the stomach. See the separate [Oesophageal Cancer](#) article.
- **Oesophageal webs** are often about 2 mm or 3 mm wide. These are smooth extensions of normal oesophageal tissue, containing just mucosa and submucosa. They can occur anywhere along the oesophagus but, classically, at the anterior postcricoid area of the upper oesophagus. The triad of postcricoid oesophageal web, dysphagia, and iron-deficiency anaemia is termed [Plummer-Vinson syndrome](#). There may be koilonychia (spoon nails), cheilosis and glossitis. Webs are more frequent in women and this may be related to propensity for iron deficiency. Most upper oesophageal webs are not associated with Plummer-Vinson syndrome.

- **Oesophageal rings** are concentric, smooth, thin extension of normal oesophageal tissue, usually 3–5 mm thick. They consist of mucosa, submucosa and muscle. They may be an incidental finding at barium studies or endoscopy. The true prevalence is unknown as most are asymptomatic. There is no sex difference in the incidence of rings except that multiple rings are usually found in young men. Rings are classified as A, B and C:
  - A is uncommon and is a muscular ring several centimetres proximal to the squamocolumnar junction. It may be an inconstant finding on barium swallow and there is some debate as to whether it really is an anatomical entity.
  - B ring, or Schatzki's ring, is really a web, as it involves only mucosa and submucosa. It tends to mark the proximal part of a hiatus hernia and usually presents in a patient aged over 50 years whose main complaint is intermittent dysphagia to solid food, spanning months or years, and it is non-progressive.
  - C ring is a rare X-ray finding of indentation caused by the diaphragmatic crura. It rarely causes symptoms.
- **Eosinophilic oesophagitis** is a chronic allergic disease of the oesophagus. In the last decade, there has been a relatively high incidence in the western world. [Eosinophilic oesophagitis](#) is mostly seen in children and young adults. It presents with dysphagia or food impaction. It is characteristically not responsive to proton pump inhibitors (PPIs).<sup>[4]</sup> Eosinophilic oesophagitis can cause strictures (as above), but also oedema, rings, and exudates.
- **Extrinsic lesions** may compress the oesophagus from outside. These are usually due to thoracic aortic aneurysms or carcinomas of the lung. Other possible causes are a retrosternal thyroid or enlarged hilar lymph nodes (as in bilateral hilar lymphadenopathy of sarcoidosis, tuberculosis or lymphoma).

## Differential diagnosis

Failure of peristalsis occurs in achalasia and may present with dysphagia.

# Oesophageal strictures, webs and rings treatment

## Urgent referral

### Important information

**Dysphagia is one of the features that may indicate malignancy and it requires urgent referral.** [5]

Other worrying features include rapidly progressive symptoms, unexplained weight loss, anaemia, haematemesis, and palpable upper abdominal masses. [6]

- Benign strictures or rings can be managed by oesophageal dilation at endoscopy: [7]
  - This may be achieved under local anaesthetic spray or light sedation. Usually, an inflatable balloon or bougie is passed down a guidewire.
  - Benign oesophageal strictures refractory to the conventional balloon or bougie dilatation may be treated by various adjunctive modes of therapy, including endoscopic incisional therapy. [8]
  - Long-term use of PPIs seems beneficial in reducing the frequency of repeated dilatations.
- Malignant strictures will require either surgical excision (oesophagectomy) or palliative management with an oesophageal stent.
- The symptoms of Plummer-Vinson syndrome may respond to correcting iron deficiency.
- The management of eosinophilic oesophagitis includes steroids and dilation of the oesophagus. [4]

## Complications

- [Aspiration pneumonitis](#).

- Complete obstruction of food (food bolus) can occur. Any such obstructed food can be removed at endoscopy. Barium studies must not be performed if complete obstruction is suspected.
- Severe dysphagia can lead to malnutrition.
- Dilatation can cause bleeding or perforation, although spontaneous perforation of webs or rings is rare.
- Plummer-Vinson syndrome is associated with risk of malignant change (post-cricoid carcinoma) but it seems that correction of the iron deficiency reverses both the disease and the risk. In Northern Sweden, where the risk in women has been traditionally very high, correction of deficiency has had a beneficial effect on both Plummer-Vinson syndrome and post-cricoid carcinoma.

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