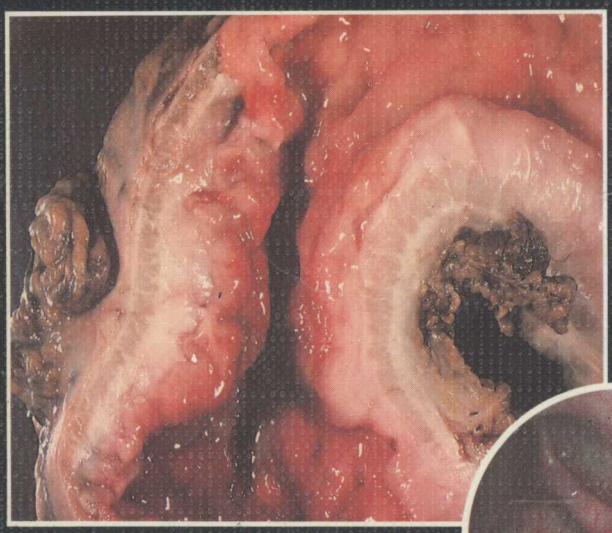
Color Atlas of the
DIGESTIVE SYSTEM

R.E.Pounder•M.C.Allison•A.P.Dhillon



Color Atlas of the
DIGESTIVE SYSTEM

Roy E. Pounder
MA, MD, FRCP
Reader in Medicine
Academic Department of Medicine
Royal Free Hospital School of Medicine
London

Miles C. Allison
MB, MRCP
Research Fellow and Honorary Lecturer in Medicine
Academic Department of Medicine
Royal Free Hospital School of Medicine
London

Amar P. Dhillon
MA, MD, MRCP, MRCPath
Senior Lecturer in Histopathology
Department of Histopathology
Royal Free Hospital School of Medicine
London

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DEDICATION

To Christine, Caroline and Gouri

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CHAPTER 1
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CHAPTER 3
Dr G. E. Griffin (**47**), Dr F. Warwick (**49**), Dr B. Dean (**58**, **59**), Dr M. J. Gallant (**61**), Dr A. Deery (**66**), Mr R. M. Kirk (**68**), Dr S. Lucas (**74**), Dr D. S. Ridley (**75**), Dr F. Warwick (**81**), Dr B. Dean (**83**), Professor K. E. F. Hobbs (**88**), Dr A. K. Burroughs (**92**, **93**).

CHAPTER 5
Dr A. B. Price (**126**), Professor Dame Sheila Sherlock (**156**), Dr A. Deery (**169**), Dr S. G. Bown (**151**, **152**, **200**), Mr R. M. Kirk (**198**, **199**), Dr R. Teague (**183**).

CHAPTER 6
Dr H. Adams (**215**), Mr R. M. Kirk (**262**. **263**).

CHAPTER 7
Dr L. K. Trejdoziewicz (**278**). Mr B. Chalk (**274**).

CHAPTER 8
Professor A. V. Hoffbrand (**281**), Dr L. K. Trejdoziewicz (**286**, **287**), Dr H. Dodd (**291**), Dr J. Crow (**300**, **301**, **302**, **303**), Dr F. Warwick (**306**), Dr L. Papadaki (**313**, **349**), Dr A. J. W. Hilson (**325**, **330**), Professor K. E. F. Hobbs (**329**), Mr R. M. Kirk (**339**).

CHAPTER 11
Dr L. K. Trejdoziewicz (**413**), Dr S. G. Bown (**420**, **421**), Dr M. J. Gallant (**437**, **438**), Dr E. Sweet (**446**), Surgeon Commander R. J. Leicester (**448**).

CHAPTER 12
Mr W. J. Dinning (**488**), Mrs Gwen Chessell (**489**), Dr S. H. Saverymuttu (**501**), Dr H. Adams (**510**).

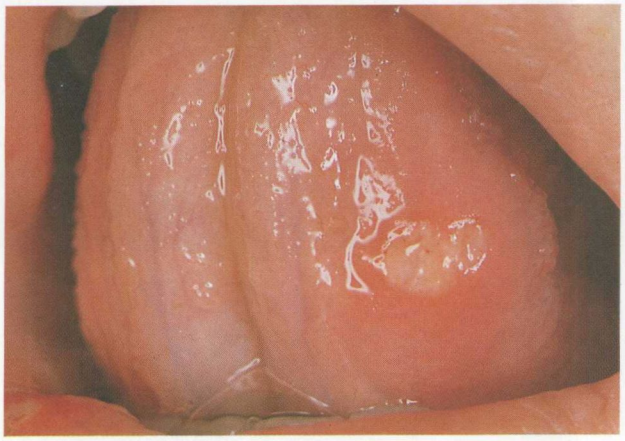
CHAPTER 15
Dr F. Warwick (**576**), Dr P. Chiodini (**584**, **589**, **599**, **634**), Mr J. E. Williams (**591**, **592**, **595**, **596**), Dr J. Crow (**594**, **598**), Dr G. C. Cook (**603**), Dr R. T. D. Emond (**607**), Dr C. Farthing (**625**, **626**), Dr G. E. Griffin (**629**).

Contents

CHAPTER 1

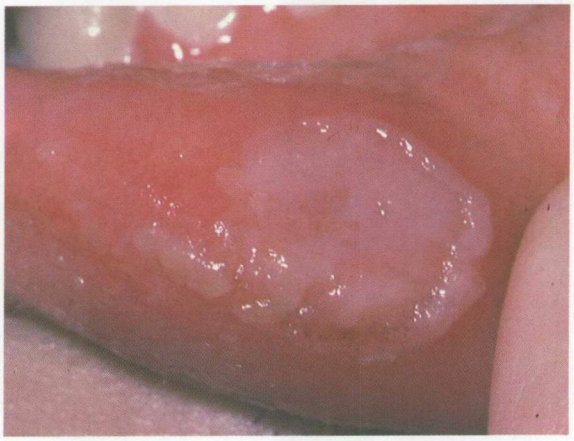
Diseases of the Mouth and Tongue

1



1 Aphthous ulcers. These can occur anywhere in the oral cavity, and are more common in women. Although they usually occur in isolation, their presence may be associated with poor dental hygiene, iron deficiency, folate and vitamin B_{12} deficiency, coeliac disease, Crohn's disease or ulcerative colitis. They also occur in healthy individuals for no apparent reason.

2

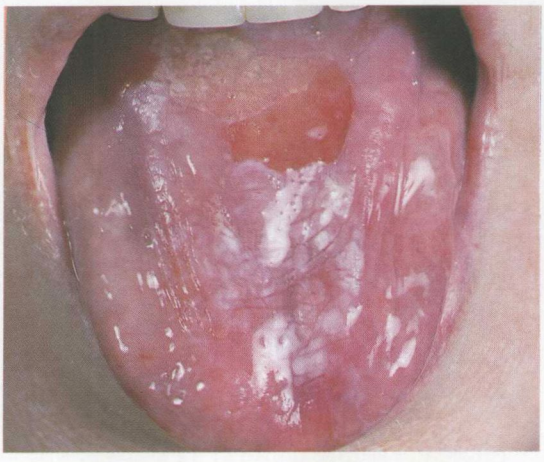


2 Large aphthous ulcer of the lower lip. Major aphthous ulcers of this kind are usually solitary rather than multiple, and they heal more slowly than minor aphthous ulcers. Both types tend to recur. The management includes treatment of nutritional deficiencies, topical analgesia and topical corticosteroids.

3

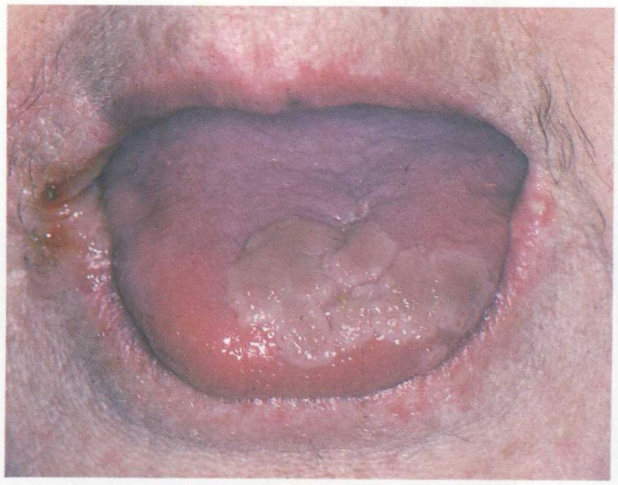
3 Behçet's syndrome. This is a rare chronic relapsing disorder with uveitis, and ulceration of the mouth and genitalia. The pathology of the ulcers is similar to that of aphthous ulceration. Occasionally the central nervous system and lower gastrointestinal tract may be involved. The oral lesions are treated in the same manner as recurrent aphthous ulcers.

4



4 Lichen planus of the tongue is often associated with violaceous papules that characteristically occur on the front of the wrists, in the lumbar region or around the ankles. Although the skin lesions usually heal after several months, mucous membrane involvement may persist for years, although it is often asymptomatic and may be noticed first by a dentist during routine examination.

5

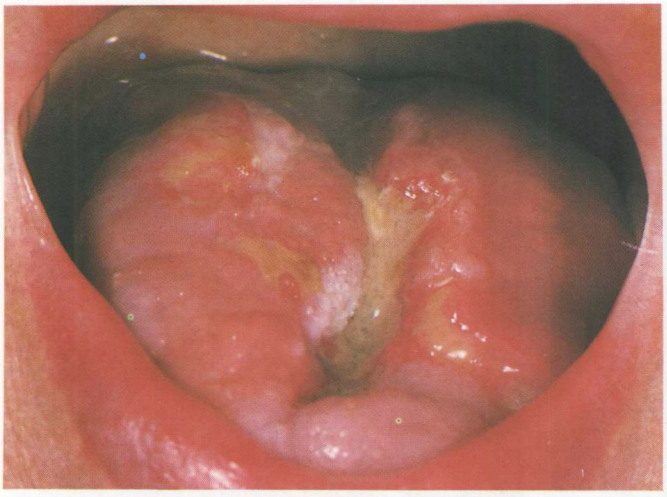


5 Condylomata acuminata of the tongue. This papillomatous growth can occur in the mouth, anogenital skin or mucous membranes. It is often the result of anogenital transmission of a papovavirus. The involved tongue may have a cauliflower-like surface, as in this example. Sessile or pedunculated condylomatous polyps may develop. Surgical excision is only rarely followed by recurrence. In addition, the patient in this photograph has angular cheilitis (see also **10** and **53**).

6

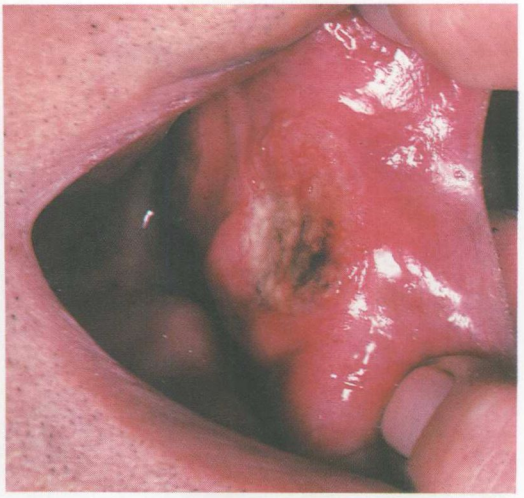
6 Leucoplakia of the tongue. Whitish patches of the tongue or buccal mucosa that cannot be removed by scraping are termed leucoplakia. Although there is usually no known cause, syphilis or candidal infections can give rise to this appearance. These lesions should be biopsied, as they may contain epithelial atypia or squamous carcinoma.

7



7 Carcinoma of the tongue may follow leucoplakia or submucous fibrosis (a condition seen in the Far East, related to eating chillies). Lesions of this kind may require wide local excision. Radiotherapy may be useful in inoperable cases.

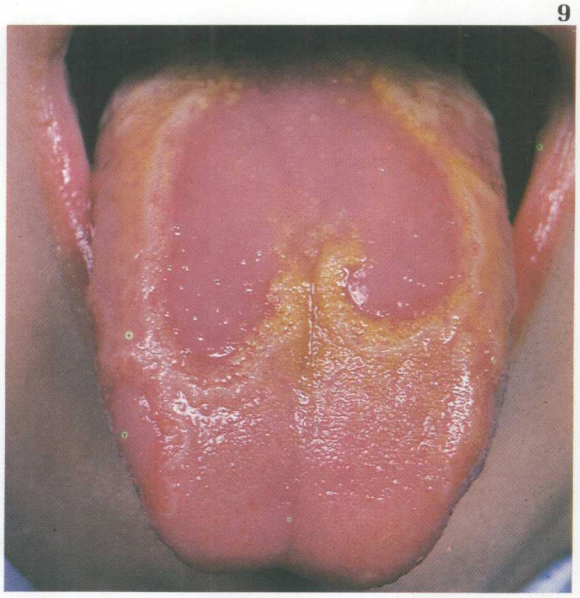
8



8 Carcinoma of the mouth is histologically a squamous carcinoma. Causative factors are the same as for carcinoma of the tongue, and include pipe smoking, tobacco chewing, alcohol consumption, and chronic dental and oral infection, as well as leucoplakia and submucous fibrosis. After establishing the diagnosis by biopsy, surgical excision with block dissection of the regional lymph nodes (with or without radiotherapy) is required. Radiotherapy is useful for inoperable tumours and as a primary treatment for lip cancer.

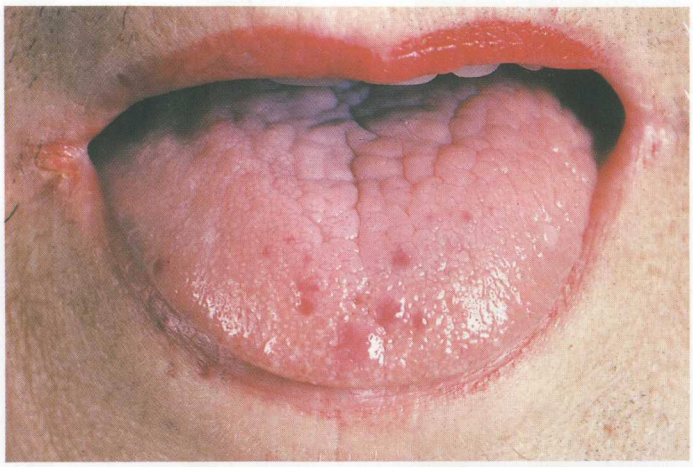
9 Geographic tongue, or erythema migrans, is usually manifested by a patch of erythema with well-defined edges affecting the dorsum of the tongue. It is often asymptomatic and requires no treatment.

9



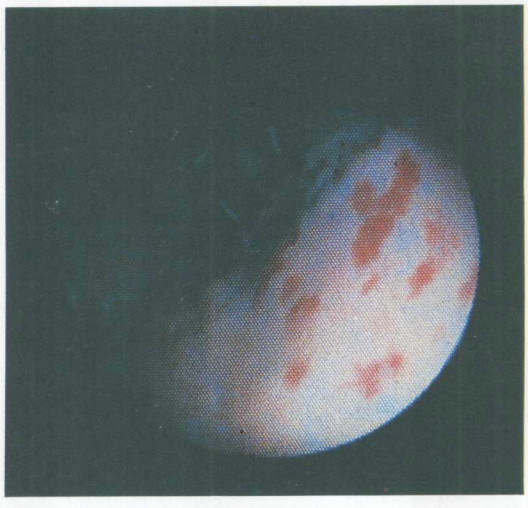
10 Hereditary haemorrhagic telangiectasia (Osler–Rendu–Weber syndrome). This condition is dominantly inherited, and usually presents in puberty or later. Multiple telangiectases occur in the skin and mucous membranes. Patients usually present with nose bleeds or iron deficiency anaemia as a result of bleeding from lesions in the gastrointestinal tract. This patient also has angular stomatitis on the right side.

10



11 Hereditary haemorrhagic telangiectasia of the stomach, seen on endoscopic inspection of the gastric fundus. The telangiectasia in the gastrointestinal tract may be asymptomatic. They may present with either acute gastrointestinal haemorrhage or iron deficiency anaemia as a result of recurrent bleeding. Surgery, laser therapy or electrocautery may be necessary to control the haemorrhage, but further lesions may develop elsewhere.

11



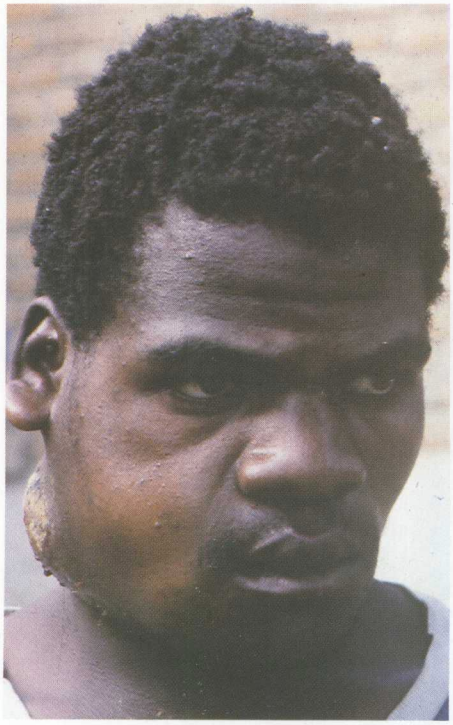
12

12 Scurvy is due to lack of vitamin C (ascorbic acid). The gums have a swollen, spongy appearance which may lead to necrosis and bleeding. The skin may show keratosis and plugging of hair follicles with capillary congestion and haemorrhage. The condition can also present with poor wound healing.

13

13 Gingivitis is usually caused by dental plaque which accumulates as a result of poor dental hygiene. The plaque is colonised by Gram-positive and Gram-negative organisms, and by anaerobic bacteria. Chronic gingival inflammation may result in breakdown of the periodontal membrane with loss of supporting bone, which may necessitate complete dental extraction.

14



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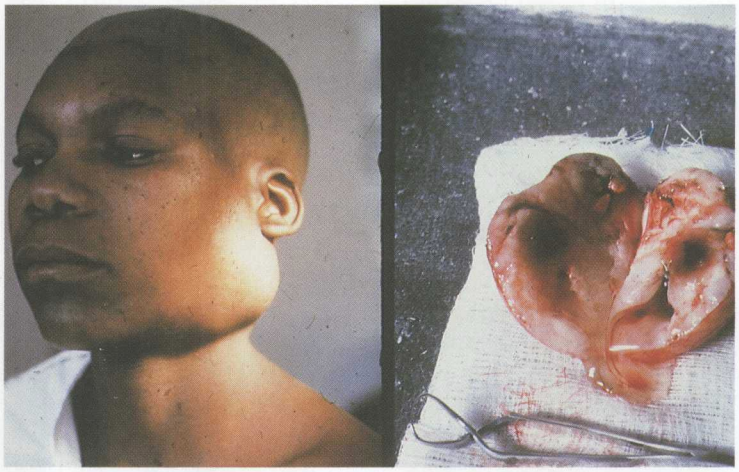


14 Parotid abscess usually results from ascending infection of the parotid gland. Treatment is by drainage of the abscess through an incision at the point of maximal tenderness under general anaesthesia. It is a rare complication of poor oral hygiene in very ill patients.

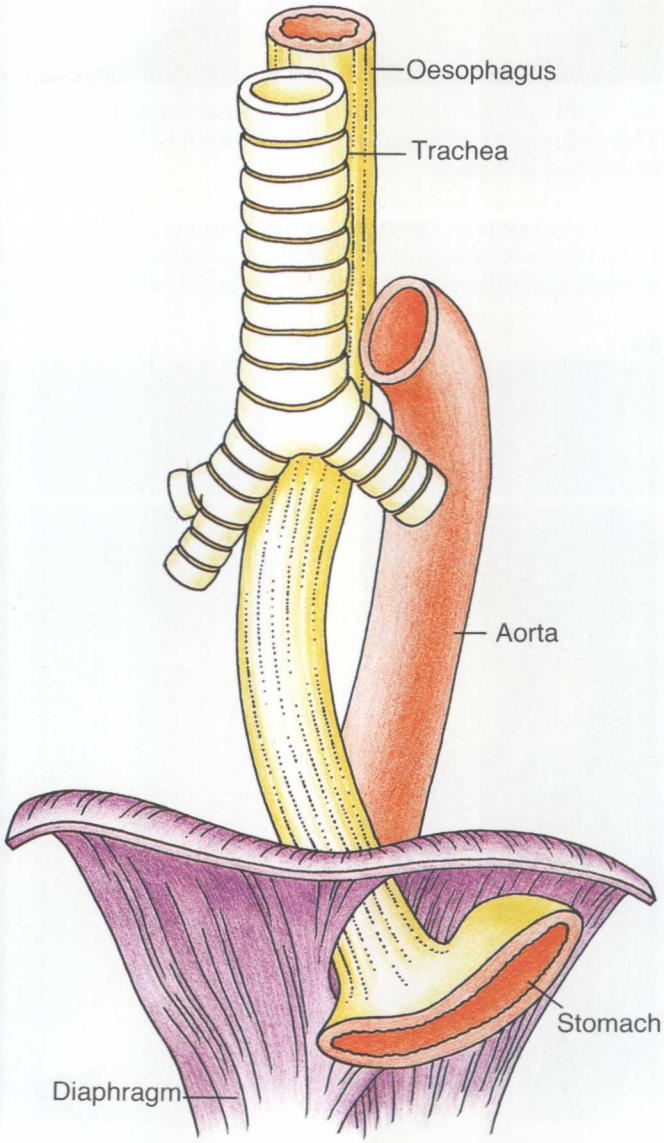
15 Salivary tumours. The most common salivary tumour is the pleomorphic salivary adenoma. These lesions require superficial parotidectomy and, although they are benign, they frequently recur as multiple nodules. Frank carcinoma of the salivary glands is uncommon, but this tumour may invade neighbouring structures such as skin, bone or facial nerve.

CHAPTER 2

The Normal Oesophagus

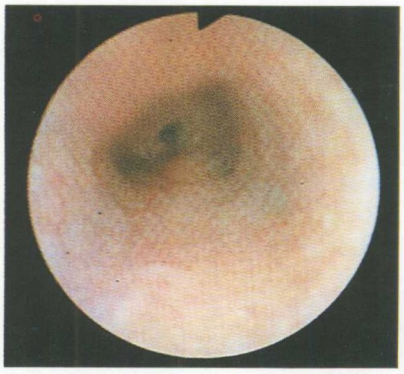
This hollow structure, about 25 cm long, is responsible for the propulsion of food boluses and liquid from the pharynx and down to the stomach. It is lined by non-keratinised, stratified squamous epithelium, to protect it from heat, cold and mechanical insult. The epithelial layer and submucosa are surrounded by longitudinal and circular smooth muscle fibres, and these are responsible for peristalsis. The oesophagus is a posterior mediastinal structure, lying anterior to the vertebral column but posterior to the trachea and the origins of the right and left main bronchi. The middle third of the oesophagus is closely related to the arch of the aorta, and the lower oesophagus lies behind the heart.

The arterial supply to the cervical oesophagus derives from the inferior thyroid arteries. The thoracic oesophagus is supplied by branches from the descending aorta, bronchial arteries and right posterior intercostal arteries. The lowest portion of the oesophagus is supplied by the left gastric and inferior phrenic arteries. Venous drainage is into the inferior thyroid, azygos and left gastric veins. The lower oesophagus forms an anastomosis between the portal venous system (via the left gastric vein) and the systemic venous system (via the azygos vein); this anastomotic link is of major clinical importance in the sequelae of portal hypertension. There is a rich lymphatic drainage. Nerve supply is from branches of the recurrent laryngeal nerves and sympathetic trunks in the neck. The thoracic oesophagus is supplied by branches of the vagus nerve, and parasympathetic and sympathetic fibres form a plexus around the oesophagus.



The lower oesophageal sphincter is a physiological barrier to reflux of gastric contents into the oesophagus. It is controlled by fibres arising from the vagus nerve and coeliac plexus.

16



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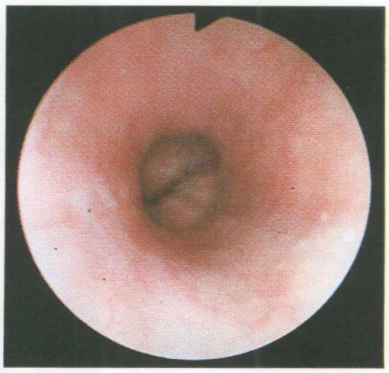

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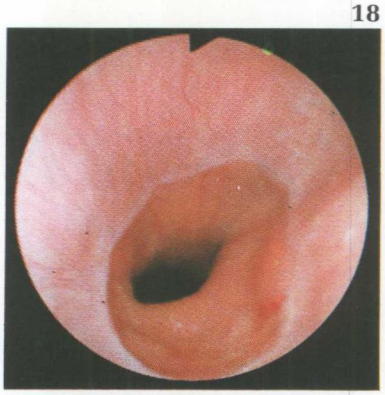
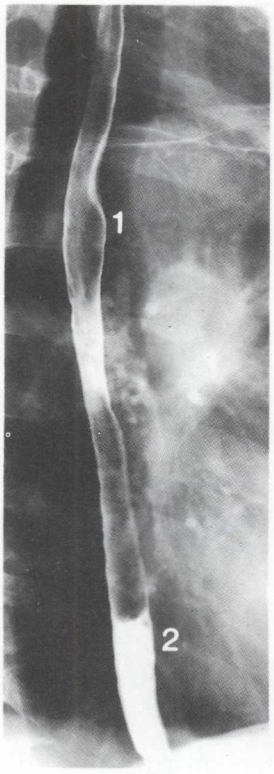


16 Endoscopic view of the middle oesophagus. The shiny pink squamous epithelium of the oesophagus is seen.

17 Peristalsis in the normal oesophagus, shown on endoscopy. Peristalsis is provoked by oesophageal distension or swallowing. The peristaltic waves pass from the pharynx to the lower oesophageal sphincter at a speed of about 3 cm/s.

18 Gastro-oesophageal junction. An endoscopic view of the junction between the pink (squamous) oesophageal epithelium and the red (columnar) gastric mucous membrane.

19



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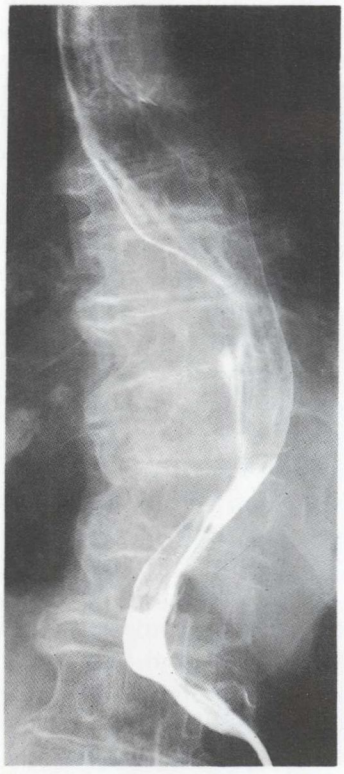
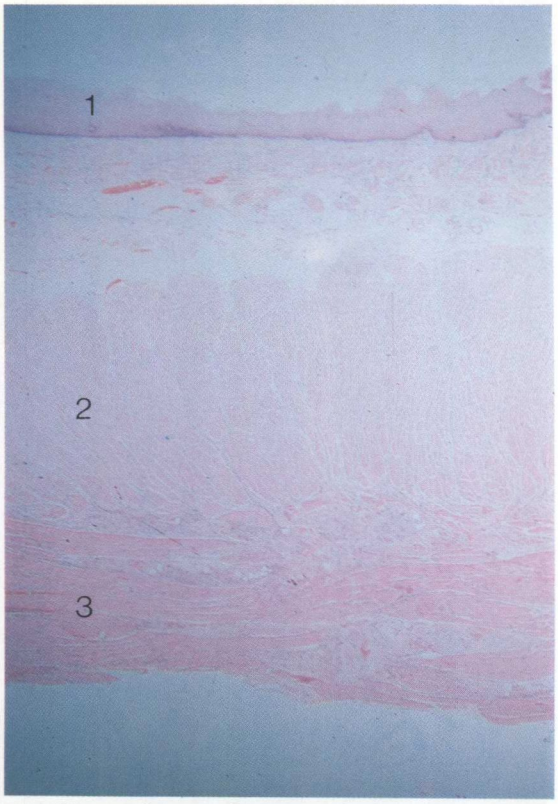


19 Normal barium swallow. This lateral view shows an empty undistended oesophagus. The upper oesophagus lies behind the trachea and left main bronchus (1). The lower oesophagus is separated from the left atrium by the pericardium (2).

20 Normal barium swallow. This oblique view shows the lower oesophagus draining barium via the gastro-oesophageal junction (1) into the stomach just below the left diaphragm (2).

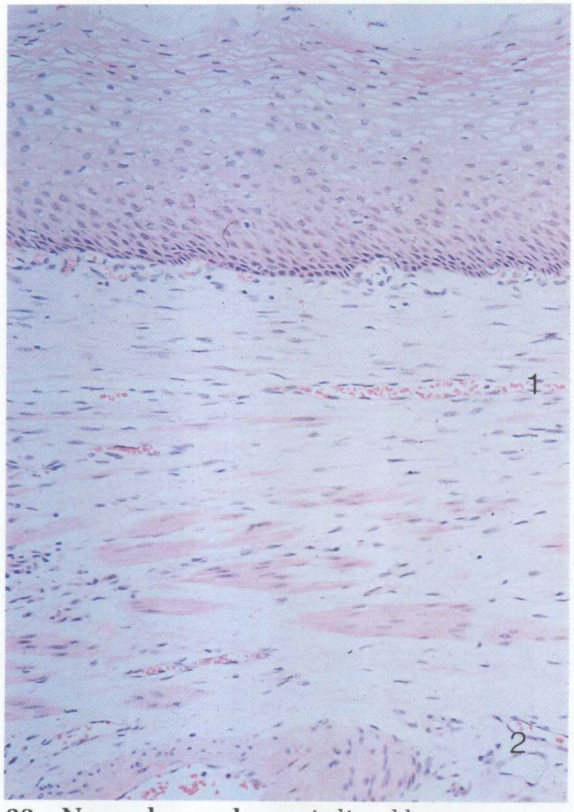
21 Displacement of the normal oesophagus by an enlarged left atrium in a patient with severe mitral stenosis. This displacement is usually asymptomatic, but ulceration may develop in patients taking slow-release potassium supplements.

22



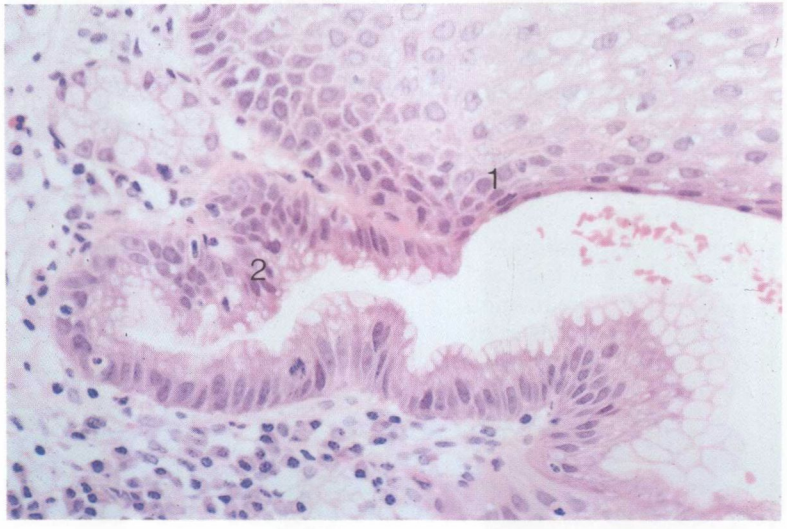
22 Normal oesophagus in longitudinal section: squamous epithelium (1) overlies the connective tissue of the submucosa and the thick circular (2) and longitudinal (3) muscle coats.

23



23 Normal oesophagus is lined by squamous epithelium and underlying connective tissue. The epithelium shows its normal orderly maturation, and the strands of smooth muscle in the connective tissue separate the lamina propria above (1) from the submucosa below (2).

24



24 Gastro-oesophageal junction. This photomicrograph shows the sudden change from the squamous epithelium of the oesophagus (1) and the glandular columnar epithelium of the gastric cardia (2). The junction shows a little chronic inflammation, but is otherwise normal.

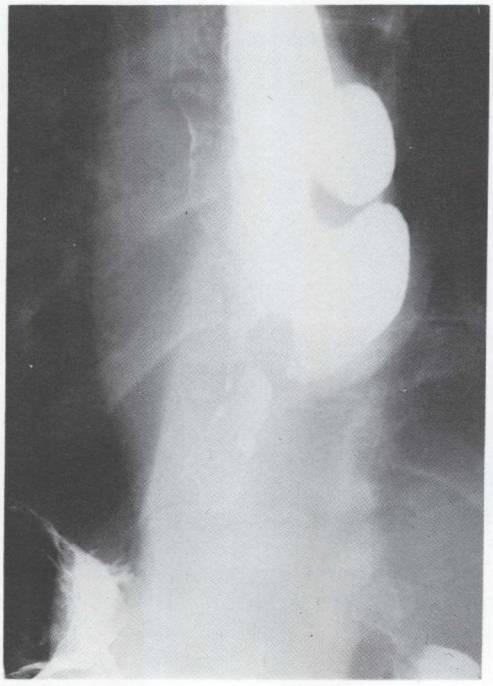
CHAPTER 3

Diseases of the Oesophagus

25

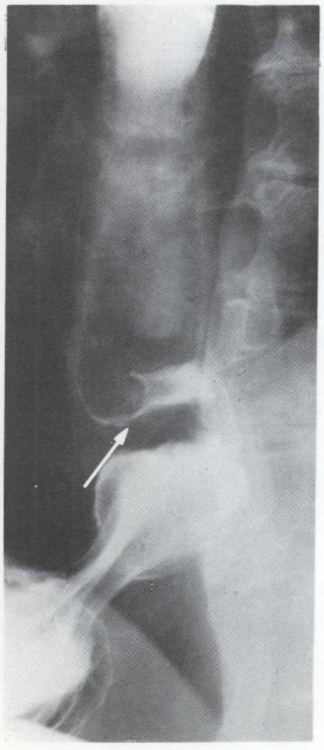
25 Pharyngeal pouch, demonstrated on barium swallow x-ray. A pouch arises between the cricopharyngeal sphincter and the inferior constrictor muscle, and it may present with intermittent dysphagia, food regurgitation or pulmonary aspiration. Endoscopic examination may be hazardous in such patients, as perforation of the diverticulum may occur.

26



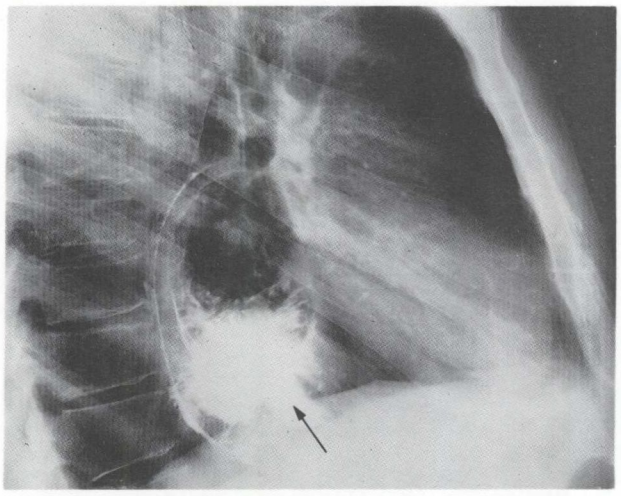
26 Oesophageal diverticula. These mid- or lower oesophageal diverticula are caused by abnormal motility. Mid-oesophageal diverticula may be due to traction by adjacent mediastinal inflammation—for example, tuberculosis involving the peribronchial lymph nodes.

27



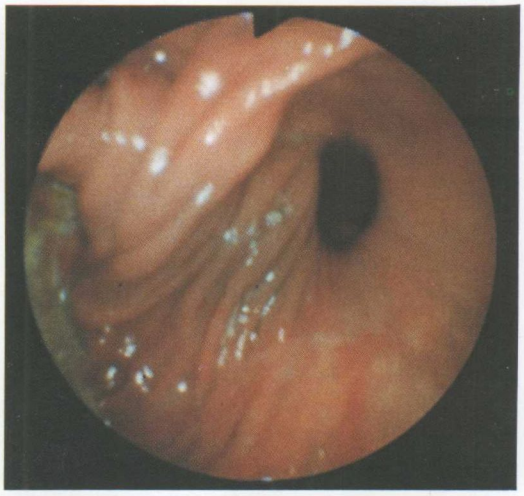
27 Schatzki's rings occur in the lower oesophagus (arrow) and are usually asymptomatic. Occasionally they present with intermittent dysphagia or bolus obstruction, and in these circumstances may require dilatation.

28



28 Sliding hiatus hernia (arrow), demonstrated on this lateral view during a barium swallow. The upper stomach lies within the thoracic cavity above the diaphragm. Hiatus hernias are usually asymptomatic, but they may be associated with symptoms of oesophageal reflux, oesophagitis or stricture formation. The treatment includes avoidance of smoking, advice on timing and size of meals, and weight reduction. Drugs which inhibit gastric acid secretion are valuable in the treatment of reflux oesophagitis in these patients. Surgical treatment is required rarely.

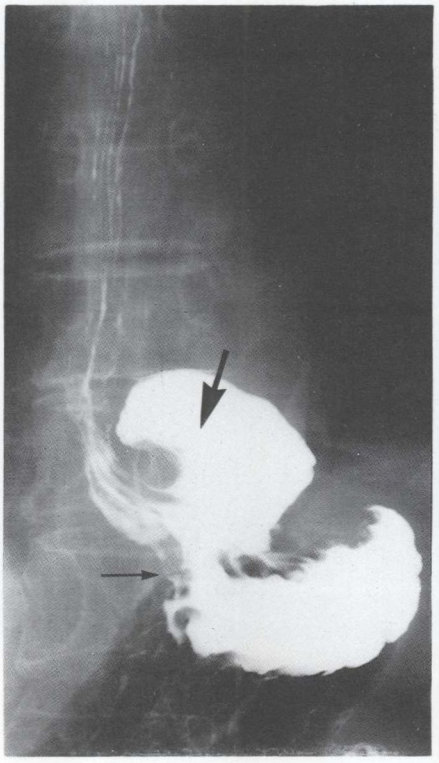
29



29 Sliding hiatus hernia. This endoscopic photograph was taken within the hiatus hernia sac. The oesophago-gastric junction lies within the thoracic cavity, above the level of the diaphragmatic hiatus.

30 Rolling hiatus hernia. In this variety of hiatus hernia the fundus of the stomach is found within the thoracic cavity, adjacent to the lower oesophagus. The barium meal shows the para-oesophageal hernia (large arrow) and the level of the diaphragmatic hiatus (small arrow).

30



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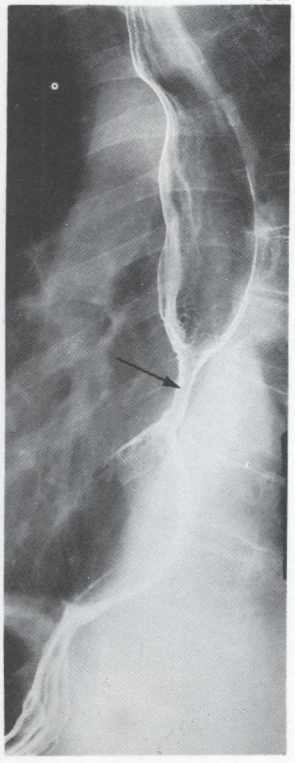
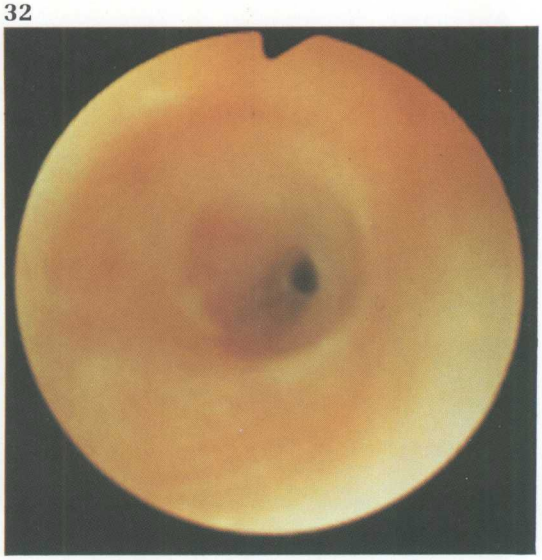


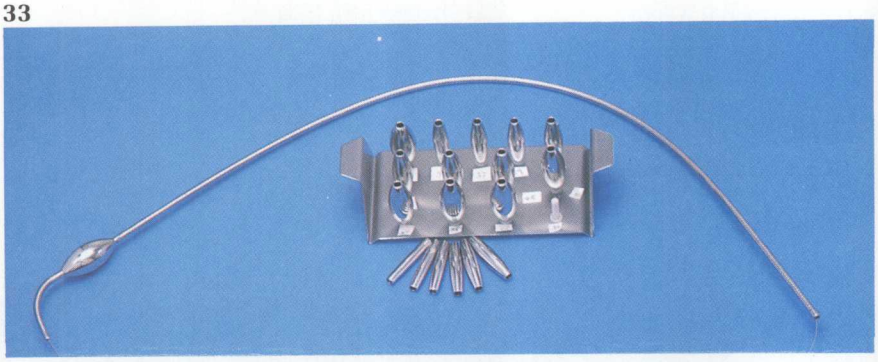
31 Benign oesophageal stricture. This double-contrast barium swallow demonstrates a smooth lower oesophageal stricture (arrow) above a hiatus hernia. These strictures probably result from oesophagitis caused by acid reflux into the lower oesophagus. They are usually seen in older patients presenting with gradually developing dysphagia associated with heartburn.

32



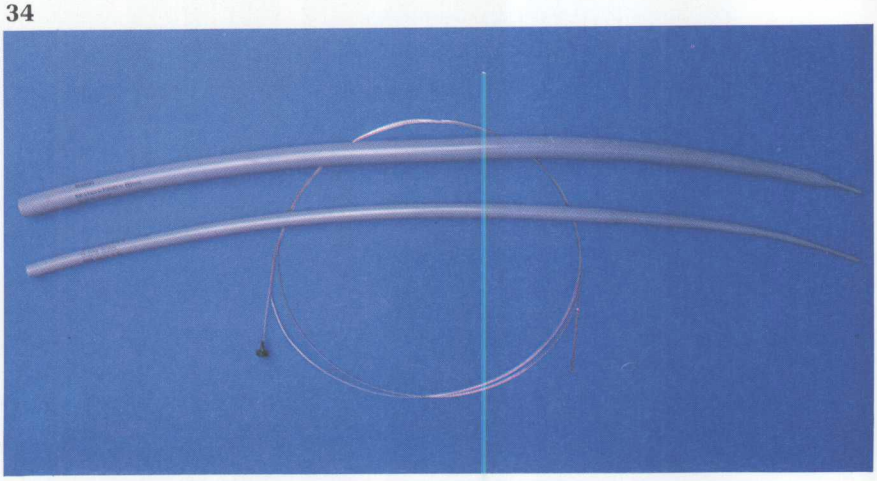
32 Endoscopic view of a benign oesophageal stricture. This very tight stricture was the result of long-standing oesophagitis. The surrounding mucosa is smooth, but reddened due to oesophagitis. Benign strictures may be dilated endoscopically using oesophageal dilators (**33** and **34**).

33



33 Eder–Peustow dilators. The dilatation of benign oesophageal strictures is carried out by passing a guide wire through the stricture into the stomach under direct endoscopic vision and using x-ray screening. The endoscope is then removed and the metal olives are passed over the guide wire and through the stricture. Olives of increasing size are used until dilatation has been achieved.

34



34 Celestin oesophageal dilators. These graduated dilators may be used as an alternative to Eder–Peustow dilators (**33**) for the management of benign oesophageal strictures. The strictures tend to recur with either technique, and symptomatic patients may require frequent dilatations.