Most specimens from the oesophagus and upper gastrointestinal tract are endoscopic biopsies taken for the diagnosis of oesophagitis, gastritis, neoplasia and coeliac disease, for screening of patients with Barrett's oesophagus, and for monitoring the effects of treatments such as Helicobacter eradication therapy or a gluten-free diet. Resection specimens are taken mainly for the treatment of oesophageal or gastric neoplasms, and rarely for gastric ulcers which have not responded to medical therapy. Emergency resections may have to be carried out for perforation, bleeding, gastric volvulus or small bowel injury after trauma.

Frozen sections of the upper gastrointestinal tract are uncommon. The most usual indication is to assess the resection margins of oesophageal and gastric malignancies. Very occasionally a frozen section may be requested during excision of gastric ulcers with atypical macroscopic features.

OESOPHAGUS

Normal histology

In the normal adult, the oesophagus is lined by stratified squamous non-keratinizing epithelium from its superior aspect to about 40 cm from the incisor teeth. The ciliated columnar epithelium of the fetal oesophagus persists in a small number of babies until birth, but is then usually replaced by stratified squamous epithelium. The basal layer of the squamous mucosa accounts for about 15% of its thickness: it consists of polygonal or cuboidal cells with darkly staining nuclei and
little cytoplasmic glycogen. The basal layer is thickest in the distal 2–3 cm of squamous mucosa, adjacent to the junction with the glandular mucosa (the Z line). This junction is usually easily recognized endoscopically and on a resection specimen. Histologically, the junction is interdigitating and irregular with the glandular epithelium lying slightly higher than the squamous mucosa.

Melanocytes and neuroendocrine cells are normal components of the basal layer of the oesophagus and mitotic figures are quite common. Above the basal layer there is progressive flattening of squamous cells and intracytoplasmic glycogen is present, but keratohyaline granules are not found. Vascular connective tissue papillae can indent the basal layer from the lamina propria as far as two-thirds into the mucosal thickness; this portion of lamina propria normally contains small numbers of lymphocytes and occasional eosinophils but no neutrophils. The muscularis mucosae is thicker in the oesophagus than in other parts of the gut, particularly in the distal portion.

In the oesophagogastric transition area, gastric type glands are branched and divided into groups by smooth muscle fibres from the muscularis mucosae. There is less branching distally where the mucosa is thinner. Parietal cells, chief cells and endocrine cells can be demonstrated within glands adjacent to the oesophagogastric junction, but most of the epithelial lining cells are mucus secreting. The mucus is mainly non-sulphated sialomucin, but there is often a mixture of sulphated and non-sulphated sialomucins. Cystically dilated glands are quite common in this area, as are lymphoid follicles. At an ultrastructural level, recent electron microscopical studies of the junctional mucosa have demonstrated a genuine transitional cell that shares characteristics of both squamous and glandular cells.

Submucosal glands can be found in the oesophagus throughout its length but are more common distally. Superficial mucous glands occasionally contain parietal cells and cells that secrete non-sulphated sialomucin. Deep mucous glands secrete sulphated sialomucin and their ducts are lined by stratified squamous epithelium.

Clinical information

- age and sex of the patient;
- clinical findings and their duration;
- clinical diagnosis or differential diagnosis;
- endoscopic findings;
- site of the biopsy (distance from the incisor teeth);
- history of previous surgery;