

## CHAPTER 6

# Therapeutic Upper Endoscopy

Today's gastroenterologists have a major role in the interventional treatment of many upper gastrointestinal problems. Established techniques include the management of dysphagia (due to benign and malignant esophageal stenoses and achalasia), polyps, gastric and duodenal stenoses, foreign bodies, acute bleeding, and nutritional support. Other innovative therapies, such as the endoscopic treatment of reflux, and of obesity, are emerging.

### Benign esophageal strictures

Gastroesophageal reflux is the commonest cause of benign esophageal strictures. Other causes include eosinophilic esophagitis, fungal and viral infections, medications, caustic ingestion, extrinsic compression, and therapeutic interventions (surgery, endoscopy, and radiation).

In general, dysphagia occurs when a stricture causes greater than 50% of the esophageal lumen to be obstructed or the esophageal lumen is less than about 13 mm. It follows that easy passage of a standard endoscope (8–10 mm diameter) does not exclude a problem, or the possible need for treatment.

### Dilation methods

Dilation is used only as part of an overall treatment plan, with due attention also to diet, lifestyle modification, and necessary medications. Surgery is needed in a few recalcitrant cases.

Even though there are many dilation techniques and varieties of equipment, they fall into two main categories: **mechanical** (push-type or bougie) or **balloon** dilators. While the exact mechanism is not clear, the mechanical dilators exert a longitudinal and radial force, dilating proximal to distal on the stricture, opposed to the purely radial force delivered simultaneously across the stricture by the balloon dilators (Fig 6.1).

To ensure correct placement, dilating balloons or graduated wire-guided bougies, under endoscopic and/or fluoroscopic control (over a guidewire), are preferred for dilation to ensure correct placement. Both methods are effective, and their relative merits are debated. Bougie techniques give a better “feel” of the stricture which may be an important safety factor. Weighted non-wire-guided dilators

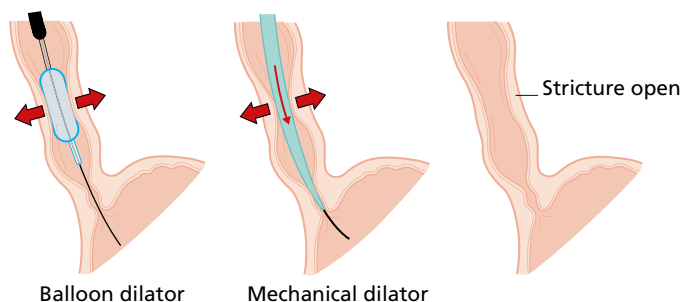
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*Cotton and Williams' Practical Gastrointestinal Endoscopy: The Fundamentals*, Eighth Edition.

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**Fig 6.1** A balloon dilator exerts a radial force delivered simultaneously across the stricture, whereas a mechanical (push-type or bougie) dilator exerts a longitudinal and radial force, dilating proximal to distal on the stricture.

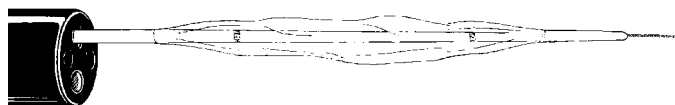
(such as tungsten-filled weighted rubber bougies) with blind insertion are seldom used now as safer dilators are available.

Certain strictures, particularly those due to irradiation or corrosive ingestion, are more difficult to dilate. Procedures may need to be repeated several times with a careful stepwise increase in dilator size (too rapid an increase can result in perforation) and endoscopic evaluation after dilation. As a general rule, no more than three dilators of progressively increasing size should be used during a single session.

Dilation is routinely performed in an outpatient setting. Anticoagulation medication should be discontinued. Routine antibiotic coverage is not recommended but dilation can provoke bacteremia, so antibiotic prophylaxis against endocarditis may be considered in patients with significant cardiac lesions (see Chapter 4).

### Balloon dilation

Balloons are designed to be passed through the endoscope channel, often with a guidewire (Fig 6.2). They range from 3 to 8 cm in length and from 6 to 40 mm in diameter (some multidiameter with increasing pressures). Most strictures are short, but medium-length balloons (about 5 cm) are convenient to use, as they are less likely to “pop out” of the stricture than shorter ones. Lubrication makes insertion easier, either applied directly to the balloon with a silicone spray or by injecting 1–2 mL silicone oil down the endoscope channel followed by 10 mL air. The stricture is examined endoscopically, and its diameter is assessed. Tight strictures should be approached initially with small balloons, typically corresponding to the diameter of the stricture. The guidewire and soft tip of an appropriately sized balloon are passed gently through the stricture under direct vision. The balloons are fairly translucent, so that it is



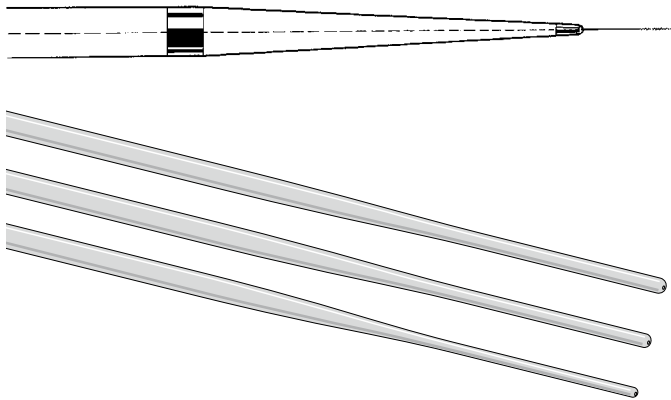
**Fig 6.2** A deflated “through-the-scope” (TTS) balloon dilator and guidewire.

usually possible to observe the “waist” endoscopically during the procedure and to judge the effect. Balloons are distended with water (or contrast medium) to the pressure(s) recommended by the manufacturer conventionally for 1–2 minutes, although as little as 30 seconds may be sufficient.

The “through-the-scope” (TTS) balloon dilation technique has several advantages. It can be performed as part of the initial endoscopy and does not normally require fluoroscopic monitoring. The results should be obvious immediately, and the endoscope can be passed through the stricture to complete the endoscopic examination.

### Bougie dilation

Dilation can be performed with graduated bougies that are passed over a guidewire. This ensures that the dilator will pass correctly through the stricture (and not into a diverticulum or necrotic tumor, or through the wall of a hiatus hernia). This security exists only if the position of the wire is checked frequently using fluoroscopy or a fixed external landmark. Fluoroscopic monitoring is essential when tight and complex strictures are being treated.

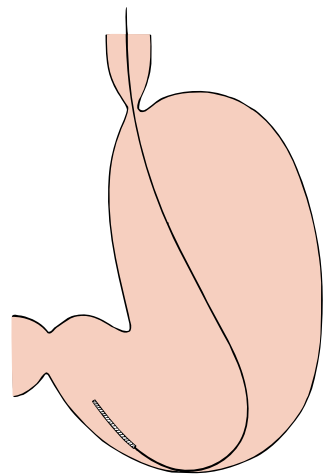


**Fig 6.3** Tips of Savary-Gilliard (above) and American Endoscopy (below) dilators for use over a guidewire.

Savary-Gilliard bougies are popular. These are simple tapering plastic wands with radio-opaque markers (Fig 6.3). Variants of this design are available from other manufacturers. Diameters range from 3 to 20 mm.

The following steps should be performed when dilating:

- 1 Place the guidewire** through the endoscope into the gastric antrum.
- 2 Remove the scope and check the wire position** (Fig 6.4). This can be done fluoroscopically, or by checking the length of wire outside the patient. If the guidewire has distance markers, keep the 60 cm mark close to the patient's teeth.
- 3 Choose a bougie** that will pass relatively easily through the stricture and slide it over the guidewire down close to the patient's mouth. Lubricate the tip of the bougie.



**Fig 6.4** A dilator guidewire positioned in the gastric antrum.