Stents in medicine

Stents in the oesophagus

G J Murphy

The great majority of oesophageal stents are placed in patients with oesophageal malignancy. The best treatment for oesophageal tumours is surgery. However, many patients are too frail or have a tumour too advanced for this to be undertaken.¹ Palliation of those unsuitable for surgery has taken a number of forms (box 1).

TREATMENT OPTIONS

With an anticipated survival of only a few months from diagnosis,² it is preferable to aim to keep the patient feeding as normally as possible. To this end radiotherapy has generally proved disappointing, mainly due to radiation oesophagitis and potential fistula formation.³ Bougienage dilatation and more recently balloon dilatation are therefore often undertaken, usually providing an effective although short-term result. The major complication is oesophageal rupture. During the 1980s palliation was often achieved with intubation using plastic stents or laser therapy or a combination of both.⁴

METAL STENTS

The advent of metal stents, the majority of which are self-expanding to a predetermined diameter, offers benefits over rigid stents and laser therapy.⁵

INSERTION OF METAL STENTS

The details of the technique and choice of stent vary from centre to centre. In cases of oesophageal malignancy the author’s preferred stents are either a gianturco-covered oesophageal stent (figure 1; Wm Cook Ltd, 9 Glebe Road, Letchworth, Herts SG6 1DF) or a partially covered wall stent (Snedier, Ash House, Fairfield Avenue, Staines, Middlesex TW18 4AN). These are easy to insert and have a good self-expanding radial force. The patient is moderately sedated with an intravenous dose of a benzodiazepine and analgesic. The exact dose can be titrated against the patient’s response. General anaesthesia is not necessary but pulse-oximetry and electrocardiographic monitoring is advised. The throat is not anaesthetised to reduce the risk of inhalation of pooled secretions frequently found in an obstructed oesophagus. A 0.35 inch wire is guided under fluoroscopic control into the oesophagus and a small quantity of nonionic contrast medium (in case of inadvertent aspiration) is instilled into the oesophagus defining the upper margin of the stricture. It is useful to place an external metal marker on the patient’s skin at this juncture. The stricture is negotiated. The most common, most successful, method is a combination of a hydrophylic guide wire, eg, Terumo and a straight teflon catheter (eg, Van Andel, Cook Ltd) or an angled hook catheter (eg, Cobra, Cook Ltd). With the wire across the stricture the catheter can then be advanced into the distal oesophagus or stomach and contrast medium injected to confirm an intraluminal position and define the distal margin of the stricture, which can also be marked on the patient’s skin. If the stricture is tough, predilatation up to approximately 10 French can be performed with a teflon catheter prior to insertion of the stent delivery system. Excessive predilation probably increases the chances of oesophageal rupture. Usually no predilation is necessary. During these manoeuvres the contrast medium marking the upper end of the oesophagus can pass distally. In this case the stent delivery device is inserted using the external markers as a guide to positioning. The length of the stricture can be measured by measurement of the distance travelled by drawing back the wire from the distal to proximal markers. As a rule of thumb a stricture of three vertical bodies in length is 10 cm long.

A stent of appropriate length for the stricture, allowing for some proximal and distal spread of tumour, is inserted. Normally only mild discomfort is experienced by the patient. The stent is released by sliding back an external

Figure 1  A covered gianturco stent

Box 1

<table>
<thead>
<tr>
<th>Palliative treatment options for oesophageal carcinoma</th>
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<tbody>
<tr>
<td>• insertion of a nasogastric tube</td>
</tr>
<tr>
<td>• balloon dilatation or bougienage of the oesophagus</td>
</tr>
<tr>
<td>• recannalisation using laser therapy</td>
</tr>
<tr>
<td>• insertion of plastic or metallic stents</td>
</tr>
<tr>
<td>• radiotherapy, external or intra-cavity</td>
</tr>
<tr>
<td>• gastrostomy</td>
</tr>
<tr>
<td>• a combination of the above techniques</td>
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A 72-year-old man presented with a three-month history of increasing dysphagia. On presentation he could only swallow small sips of fluid. A contrast swallow (figure 3) demonstrated a tight irregular stricture; biopsy confirmed malignancy. The patient was unfit for surgery and was referred to the Radiology Department for insertion of a metal stent. The stricture was traversed with a guide wire (figure 4) which was used to guide the introducer safely through the stricture (figure 5). The stent was released in position (figures 6 & 7). The patient was able to eat a virtually normal diet on the day following the procedure. He was alive and still eating a virtually normal diet at home, four months later.

POST-STENT CARE

Further expansion normally continues to occur over the following 48 hours (figures 8 and 9). During this time patients can experience mild to moderate retrosternal chest pain which usually responds to simple analgesics. The contrast swallow can be performed on the first day following the procedure and, if no complication is identified, the patient can eat and drink normally on the day following stenting. The procedure normally requires only one overnight stay.

Box 2

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**Case history**

A 72-year-old man presented with a three-month history of increasing dysphagia. On presentation he could only swallow small sips of fluid. A contrast swallow (figure 3) demonstrated a tight irregular stricture; biopsy confirmed malignancy. The patient was unfit for surgery and was referred to the Radiology Department for insertion of a metal stent. The stricture was traversed with a guide wire (figure 4) which was used to guide the introducer safely through the stricture (figure 5). The stent was released in position (figures 6 & 7). The patient was able to eat a virtually normal diet on the day following the procedure. He was alive and still eating a virtually normal diet at home, four months later.
Discussion and comment

The implantation of expandable metal stents, particularly under radiological control, can offer many advantages compared to surgical or pure endoscopic techniques.

- A passage with oesophageal stricture is safer and more often successful under radiological guidance.4,6,7
- Placement of a metal stent is more accurate under fluoroscopy because it is easier to define the distal end of the stricture.
- Expandable metal stents can be introduced with much smaller delivery systems, typically 3–12 mm. This is considered to make them safer.8
- A wide oesophageal lumen is achievable both because of the capacity of the stent to expand after insertion, thereby not limiting the size of the stent to the size of delivery system, and because of the minimal wall thickness of the stent. Thus an 18 mm metal stent offers an internal diameter of almost 18 mm. In comparison, an 18 mm plastic Atkinson stent offers an internal diameter of 12 mm.
- The self-expanding metal stents do not require general anaesthesia for insertion.
- Although metal stents are more costly than rigid stents their lower complication rate and reduced length of in-patient stay makes them cost effective.9 Several makes of metal stents are available; some have a silicone covering. This enables their use in treating tracheo-oesophageal fistulae and in the treatment of persistent oesophageal leak following cardio-oesophagectomy. Some examples of the use of expandable metal stents for benign strictures have been described previously.9,10 They appear to be useful in selected patients and the author has found them useful in the elderly frail patient requiring repeated dilatation for benign oesophageal stricture and in psychiatric patients whose mental state made repeated treatment difficult. The use of H2 blockers to prevent reflex oesophagitis (particularly with benign disease) is recommended. With the use of metal stents in oesophageal malignancy the patient can expect an improvement in dysphagia by two scale points (see box 3).11

Problems and complications

Although easier and safer to insert, once in situ metal stents share some of the complications of plastic stents. Pain in the postoperative period has been mentioned above. Migration can occur.8 Tumour in-growth through the metal
Summary/learning points

- self-expanding metal stents are a safe, effective, way of relieving dysphagia in inoperable oesophageal malignancy
- self-expanding metal stents offer a wider lumen than plastic stents
- self-expanding metal stents can be inserted without general anaesthesia
- traversing a malignant oesophageal stricture is safer and more successful under radiological control

Box 4

Stents in the oesophagus.

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