



Overview

Drainage and Bypass Procedures for Palliation of Malignant Diseases of the Upper Gastrointestinal Tract

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Abstract

Malignant diseases of the upper gastrointestinal tract are common and often diagnosed at a point when the opportunity for curative surgical resection has passed. Symptoms of luminal obstruction include nausea, vomiting, weight loss, pain, pruritis and jaundice. The median survival of patients who cannot be cured surgically is extremely short, with a duration of only a few months. Effective palliative techniques with a low morbidity and associated mortality are required. The length of hospital stay, rapid recovery and reduction in recurrent symptoms are important factors for patients and doctors to consider when planning treatment. Traditionally, surgical techniques were used, but in the last 20 years the availability of both endoscopic and interventional radiological procedures has increased. Furthermore, advances in technology such as the development of self-expanding metal stents and covered stent designs have provided more therapeutic options for the endoscopist and radiologist. Here we discuss the available treatments for the palliation of gastric outlet and biliary tract obstruction and the evidence for the respective approaches.

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Key words: Endoscopic stents; gastric outlet obstruction; gastrojejunostomy; pancreatic cancer

Statement of Search Strategies Used and Sources of Information

For the purposes of the review, a literature search was carried out using Medline and the Cochrane Library for studies between 1985 and 2010. The following search headings were used: 'palliative duodenal stenting', 'palliative biliary stenting', 'surgical palliation of gastric outlet obstruction', 'surgical palliation of malignant biliary obstruction', 'surgery versus stenting in gastric outlet obstruction', 'surgery versus stenting in malignant biliary obstruction' and 'radiological stenting for biliary obstruction'. The 'related articles' function was used to broaden the search and all abstracts, studies and citations were reviewed. No language restrictions were imposed. The references from articles were also used. The date of the most recent search was July 2010.

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Introduction

Malignant diseases of the upper gastrointestinal tract are common and often diagnosed at a point when the opportunity for curative surgical resection has passed. Because of their involvement of luminal structures, obstructive symptoms from disruption to the flow of gut contents or biliary tract secretions are frequent. As such, palliative procedures aim to improve quality of life and short-term survival when such complications occur. Over the last 20 years, options for palliation of upper gastrointestinal malignancies have increased. Whereas previously only the realm of open surgery, endoscopic, interventional radiological and laparoscopic surgical techniques have become commonplace. The development of flexible self-expanding metal stents (SEMS) has allowed accurate deployment across strictures. Advances in imaging technology have enabled better localisation and planning of palliative procedures.

However, although palliation for oesophageal cancer is now almost exclusively non-surgical, endoscopic and radiological techniques for the relief of gastric outlet and biliary obstruction are not the sole modes of palliation. Here

we review the various approaches for the palliation of malignancies causing obstruction to the gastric outlet and biliary tree, with a particular emphasis on evidence from randomised controlled trials.

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Palliation of Gastric Outlet Obstruction

Gastric outlet obstruction (GOO) from malignant disease may occur as a consequence of intraluminal obstruction, tumour ingrowth from surrounding structures or extrinsic compression. Pancreatic cancer most commonly causes GOO with an incidence of 10–20% in published studies [1]. Gastric and biliary tract cancers, as well as metastatic deposits to locoregional lymph nodes, and peritoneal disease are other, less common, causes. Traditionally, surgical bypass with gastrojejunostomy, carried out via laparotomy or laparoscopically, was the only possible therapeutic option to re-establish enteral feeding in this group of patients. In the last few years there has been rapid development in endotherapy devices, more specifically SEMS, to re-establish luminal patency.

Surgical Bypass Procedures for Gastric Outlet Obstruction

GOO is a complication of advanced malignant disease in the distal stomach, duodenum and pancreas [2]. Clinical symptoms include nausea and vomiting (11–50% of patients with pancreatic cancer) eventually resulting in malnutrition and dehydration, most patients with GOO are in a poor clinical condition with a greatly reduced quality of life [3]. The origins of the symptoms of GOO are due to tumour infiltration of the coeliac nerve plexus or mechanical obstruction of the duodenum by direct tumour ingrowth or extrinsic compression of the duodenum by tumour [4]. At presentation, about 5% of patients with pancreatic tumours have mechanical obstruction and 3–20% of patients with advanced cancer will develop GOO. In cases of gastric cancer, the disease is unresectable in up to 40% of patients and GOO is a common occurrence in these patients [3].

The standard treatment for GOO in these patients has been open gastrojejunostomy. In recent years, laparoscopic gastrojejunostomy has been introduced as an alternative to open surgery. Metallic stent placement has also been shown to provide safe, minimally invasive and effective palliation

for patients with GOO. There are, however, few randomised trials that have compared endoscopic stenting with surgical bypass in GOO and there are none that have included a large enough sample size to assess outcomes in the context of confounding factors. Many other studies have involved small numbers of patients with inconsistent outcome measures. The use of stents in GOO is discussed below.

Palliation of GOO will depend on symptoms, overall health status, estimated survival, procedure-related morbidity and mortality and local clinical and technical expertise.

Indications

Indications for palliative bypass include clinical evidence of GOO. These will include symptoms of GOO such as nausea, vomiting and an inability to have a normal food intake. The diagnosis of unresectable cancer may be made using computed tomography and endoscopy or endoluminal ultrasound and biopsy. About 10% of patients will be deemed to have unresectable disease at the time of surgical exploration (not identified on preoperative imaging) and undergo a prophylactic surgical bypass instead of resection. These patients form a subgroup who do not have symptomatic GOO at the time of surgery. A recent meta-analysis examined the role of prophylactic gastroenterostomy in patients with unresectable pancreatic cancer [2]. Three prospective studies were included that compared patients who had a prophylactic gastroenterostomy plus biliodigestive anastomosis with those who had no bypass or a biliodigestive anastomosis alone (218 patients in total). The likelihood of GOO during follow-up was significantly lower (odds ratio 0.06; 95% confidence interval 0.02–0.21; $P < 0.001$) after prophylactic gastrojejunostomy. The rates of postoperative delayed gastric emptying were similar in both groups (odds ratio 1.93; 95% confidence interval 0.57–6.53; $P = 0.290$), as were morbidity and mortality. The estimated duration of hospital stay after prophylactic gastroenterostomy was 3 days longer than for patients without bypass (weighted mean difference 3.1; 95% confidence interval 0.7–5.5; $P = 0.010$). Therefore, prophylactic gastrojejunostomy should be carried out in those patients who are found to have unresectable pancreatic cancer at the time of surgical staging.

Patient selection

The median survival for patients with unresectable pancreatic cancer is 3–6 months and for advanced gastric cancer is 6–10 months [5]. It is thus essential that palliation of symptoms is achieved quickly and there is an associated improvement in the patient's quality of life. Patients with large volume metastatic disease and consequent low survival times are more likely to undergo palliative stenting for GOO, depending on local expertise. Patients with locally advanced disease and GOO may undergo either open or laparoscopic bypass or palliative stenting [4].

Surgical procedures

Open gastrojejunostomy. The abdominal cavity is accessed through a midline or rooftop incision. A side to side antecolic or retrocolic gastrojejunostomy is fashioned using

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