

Should endoscopic stenting be the initial treatment of malignant biliary obstruction?

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Forty-two patients with biliary obstruction caused by a stricture had a diagnostic ERCP with subsequent insertion of a straight 10G endoprosthesis. These patients represented 70% of a cohort in which stent insertion had been attempted. The majority (63%) had pancreatic carcinoma, but 22% had malignant hilar obstruction.

Five patients (12%) died within a few days of stent insertion; ERCP may have contributed to two deaths. Jaundice was relieved in all survivors. Median hospital stay was 6 days (range 2–32 days). After further investigation, nine patients were thought to be potentially curable and underwent laparotomy.

Late complications after stent insertion alone included cholangitis (26%) and recurrent jaundice (28%). Only one patient developed gastric outlet obstruction and needed a gastroenterostomy. Median survival in the endoprosthesis group was 11 weeks (range 2–84 weeks). Survival was longer for patients with bile duct (14 weeks) rather than hilar strictures (6 weeks). Median survival after subsequent surgery was 40 weeks (range 4–80 weeks) with two long-term survivors.

This study confirms that ERCP and stent insertion is a useful initial treatment for obstructive jaundice due to a biliary stricture, being both diagnostic and therapeutic. Subsequent evaluation for curative surgery is not precluded and in the majority of cases worthwhile palliation may be achieved by stenting alone.

Pancreatic carcinoma accounts for approximately 6000 deaths per annum in England and Wales. The majority of patients are incurable at the time of diagnosis and a

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palliative approach to their management is appropriate (1). However, in selected cases surgery may offer the prospect of long-term survival, and care must be taken to ensure that each case is assessed adequately.

Traditionally, surgery has been offered to patients with malignant obstructive jaundice, but even in recent studies a mortality rate of 26% has been reported after operative biliary bypass (2). Endoscopic biliary drainage offers good palliation while avoiding a long convalescence which may diminish useful remaining life (3,4). The endoscopic approach is superior to percutaneous drainage or stent insertion (5). In three randomised studies, surgical biliary bypass offered no survival advantage over endoscopic stenting (6–8). However, no patient treated with a stent is ever cured.

The present study is an evaluation of the policy used for jaundiced patients in Plymouth. An attempt has been made to ensure palliation by endoscopic prosthesis for the majority of patients with malignant biliary obstruction, while not denying potentially curative surgery to the few suitable candidates.

Patients and methods

The subjects in this study were part of a cohort of 102 patients over 30 months who had ERCP as a principal investigation after an ultrasound diagnosis of obstructive jaundice. ERCP was performed under sedation using a TJF 20 Olympus® endoscope after routine antibiotic prophylaxis.

In 60 patients the diagnosis was biliary obstruction caused by a stricture, and in these an attempt was made to insert a biliary endoprosthesis to relieve the jaundice. Diagnostic biopsy and brush cytology were performed and, where possible, following a limited sphincterotomy

a 10G straight endoprosthesis was inserted. Successful insertion was achieved in 42 (70%) of the patients. These 42 patients formed the basis for the present study. They comprised an equal number of men and women with a median age of 70 years (range 40–86 years).

After stent insertion, further investigation was performed if the diagnosis was in doubt or if the patient was thought to be potentially curable. This usually included computed tomography and guided fine-needle biopsy. Suitable patients were then referred for surgery. After hospital discharge all surviving patients were followed in the surgical clinic and any complications or subsequent admissions recorded. Some patients failed to attend and their general practitioners were contacted. The date and cause of death were identified and recorded.

Results

Successful insertion of a biliary endoprosthesis was associated with relief of jaundice in all but three patients (93%). The causes of obstructive jaundice are listed in Table I. After further investigation, nine patients were thought to be potentially curable and had a laparotomy. The remaining 33 patients were treated by endoprosthesis alone. The median hospital stay of survivors after ERCP and stenting was 6 days (range 2–32 days).

Complications of endoprosthesis insertion

Five (12%) of the patients died during the same hospital admission; only two deaths were possibly related to the procedure. One man, aged 40 years, thought to have acute pancreatitis associated with pancreatic carcinoma died within 24 h of ERCP from severe haemorrhagic pancreatitis, no tumour being evident at autopsy. A patient who had an endoscopic stent inserted after preliminary percutaneous transhepatic cannulation of the common bile duct developed biliary peritonitis, but was deemed not fit for laparotomy. Three other patients with hilar strictures due to advanced malignancy had unrelieved jaundice, developed bronchopneumonia and died.

Non-fatal complications occurred in four (9%) other patients. Three developed abdominal pain, fever and

leucocytosis after endoprosthesis insertion and were thought clinically to have local perforation. None required surgery, and all settled with conservative treatment. One patient had a haematemesis after ERCP and subsequently required blood transfusion.

Late results after endoprosthesis alone

All but two of the 28 patients who left hospital have died during follow-up (Fig. 1). The survivors are an elderly patient with a villous adenoma of the ampulla (56 weeks) and a patient thought to have pancreatic carcinoma who developed recurrent jaundice and was subsequently found to have a calculus lodged at the ampulla (96 weeks).

Median survival in this group was 11 weeks (range 2–84 weeks). Survival was longer for those with strictures of the common bile duct (14 weeks, range 2–84 weeks) compared with those with hilar strictures (6 weeks, range 2–56 weeks) (Fig. 2).

Jaundice recurred in nine (28%) of the patients. Five patients had replacement of their biliary endoprosthesis with resolution of the jaundice. A single patient improved spontaneously. Stent reinsertion failed in three patients, two of whom then had surgical biliary bypasses (Table II).

Late cholangitis developed in seven (25%) of the patients—four settled with antibiotic therapy, one died,

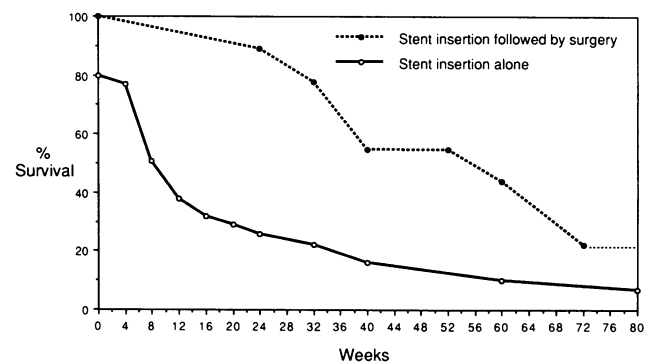


Figure 1. Comparison of survival after biliary stent insertion alone (median 11 weeks) with stent followed by surgery (40 weeks).

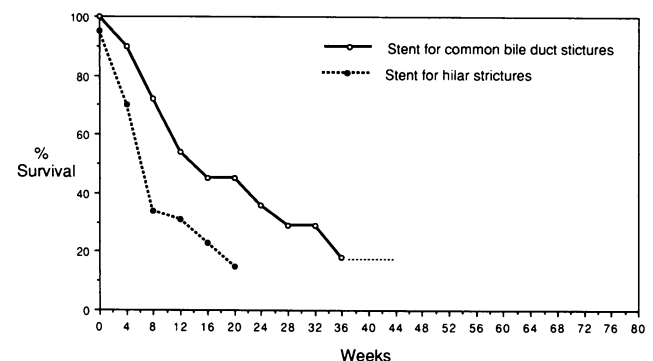


Figure 2. Comparison of survival after biliary stent insertion for common bile duct strictures (median 14 weeks) with hilar strictures (6 weeks).

Table I. Indications for stenting

Diagnosis	n
Carcinoma of pancreas	23
—with liver metastases	4
Porta hepatis obstruction	9
Gallbladder carcinoma	1
Ampullary carcinoma	1
Ampullary villous adenoma	1
Cholangiocarcinoma	1
Pancreatitis	1
Choledocholithiasis	1
Total	42

Table II. Late operations after treatment by stent alone

<i>Indication</i>	<i>Diagnosis</i>	<i>Operation</i>	<i>Outcome</i>
Recurrent jaundice, failed restent	Cholangio-carcinoma	Hepaticojejunostomy	Died 2/52 in ITU, multi-organ failure
Recurrent jaundice, failed restent	Pancreatic carcinoma	Cholecystojejunostomy and gastrojejunostomy	Died 4/52
Duodenal stenosis	Pancreatic carcinoma	Gastrojejunostomy	Died 27 days postoperatively

one had an endoprosthesis replaced and one, as previously described, was found to have choledocholithiasis.

A single patient developed vomiting due to gastric outlet obstruction and required a gastroenterostomy.

Late results after subsequent surgery

Nine patients whose jaundice was relieved initially by stenting were thought to be potentially curable after investigation. All survived surgical exploration and six had the tumour resected (Table III). There were two major and two minor complications.

Only one patient had a late complication when jaundice recurred after cholecystojejunostomy. In this patient the jaundice was again relieved successfully by insertion of a biliary endoprosthesis.

All but two patients in this group have died. Median survival was 40 weeks (range 4–80 weeks), with two late survivors (Fig. 1).

Failed endoprosthesis insertion

Technical difficulty precluded stent insertion in 18 of the original cohort of 60 patients. At least nine were subsequently found to have hilar tumours or extensive intra-

abdominal malignant disease. Five patients were not thought fit for surgery and all died within 3 weeks. Laparotomy was performed in the remaining 13 patients. One had a Whipple's operation, two had stents inserted surgically and the remaining nine had a biliary–enteric bypass, six with anastomosis proximal to the level of the cystic duct. The postoperative mortality was 38%. All but two died within 4 months, the longest survivor (who had an intraoperative stent) lived for 14 months.

Discussion

The present study has shown that initial management by ERCP with stent insertion combines the dual ideals of treatment for malignant biliary obstruction—minimally invasive treatment for the majority of patients and the possibility of radical surgery for the few who are potentially curable. Biliary decompression does not make subsequent surgery more difficult, and there is the possibility that it may reduce the operative risks (9).

For the majority of patients with malignant biliary obstruction, the short hospital stay and the low morbidity and mortality of the endoscopic procedure are

Table III. Surgery after stent insertion

<i>Indication</i>	<i>Operation</i>	<i>Complication</i>	<i>Outcome</i>
Pancreatic carcinoma	Whipple operation	Nil	Died 66/52
Pancreatic carcinoma	Whipple operation	Ascites	Died 40/52
Pancreatic carcinoma	Cholecystojejunostomy and gastrojejunostomy	Nil	Died 56/52
Pancreatic carcinoma	Cholecystojejunostomy	Recurrent jaundice, stented	Died 40/52
Common hepatic duct carcinoma	CHD excision hepaticojejunostomy	Subphrenic abscess, resolved	Died 26/52
Ampullary carcinoma	Whipple operation	Nil	A/W 60/52
Pancreatic carcinoma	Whipple operation	Wound dehiscence	Died 68/52
Hilar tumour, cervix carcinoma	Colostomy Frozen pelvis	Rectal stump disruption	Died 4/52
Gallbladder carcinoma	Hepatic lobectomy, hepaticojejunostomy	Long ileus	A/W 80/52

A/W, alive and well

advantageous. Convalescence is short and useful life maximised. Although overall median survival was short in this study (11 weeks), many patients were elderly with advanced disease and the results are comparable with other reports (6). Palliation was also achieved for patients with malignant hilar obstruction, though of shorter duration.

The results of surgery after failed stent insertion in this study are poor, with high operative mortality and short survival. Larger studies are required to determine whether, in these circumstances, further aggressive treatment is beneficial. An alternative might be percutaneous transhepatic stent insertion. Although this has been shown to be inferior to endoscopic stent insertion (5), when the latter has failed it may be useful, though dependent on local availability of the technique. In this study the clinicians chose surgery as the second choice after failed endoprosthesis insertion, though the poor results imply this decision may need re-evaluation.

As in other studies, late complications were frequent in endoprosthesis patients, but were usually managed successfully by renewing the stent. Gastric outlet obstruction has not been a major problem after stenting for carcinoma of the pancreas in this or other studies (3), only one patient in the present cohort required gastroenterostomy.

One finding in this study was that general practitioners were sometimes unaware that the stents might occlude causing recurrent jaundice or cholangitis and that exchange of the endoprosthesis was then indicated. Better education of those clinicians primarily responsible for these patients might improve the duration of palliation by endoprosthesis.

Improving endoprosthesis patency might prolong survival and reduce the need for reintervention. Large endoprostheses (12–14G) (4) and those without side holes (10) may last longer. Stainless steel self-expanding stents are another development which may prove advantageous (11). Bacterial colonisation of endoprostheses has been proposed as the main reason for stent occlusion and research into prevention of infection may be the most promising method of prolonging stent patency (12).

The present study confirms that endoscopic biliary stenting is now the treatment of choice for the majority of patients with malignant obstructive jaundice. The policy of ERCP and stenting early in their management has provided effective palliation for this majority while not denying potentially curative surgery for the remainder.

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