Controversy

Benign biliary stricture – should they be dilated or treated surgically?

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Management of benign biliary stricture remains a challenge for both surgeons and therapeutic endoscopists. Traditionally, surgery is considered the mainstay of treatment, but it is associated with significant morbidity and variable long-term outcome. With advances in endoscopic techniques and accessories, endoscopic management is emerging as an effective option. Outcome of endoscopic management depends on both the etiology and location of stricture. Current data suggest that long-term results with multiple plastic stents are superior to those with single plastic stent. Removable covered metal stents are a good alternative. The role of bio-absorbable self-expanding stents needs to be evaluated further. [Indian J Gastroenterol 2006;25:202-205]

Benign biliary strictures constitute about 25% of all biliary strictures. The aim of treatment is to relieve symptoms of biliary obstruction or cholangitis, and to prevent secondary biliary cirrhosis.1,2 Surgery, though traditionally considered as the mainstay of treatment, is associated with significant morbidity and variable long-term outcome.1

Endoscopic management, i.e., stricture dilatation and stent placement, is more appealing because it is less invasive, better tolerated, and may be safer than operative management in select patients. Over the last two decades, advances in ERCP and therapeutic accessories have made endotherapy a treatment option for even the most complicated biliary strictures. The outcome of endoscopic management depends on the etiology and location of stricture.2

Postoperative strictures

Surgical procedures involving the biliary tree, most notably cholecystectomy, are the most common cause of benign biliary strictures. The strictures may occur secondary to direct injury with clips, cautery, transection, or through indirect injury because of interruption of vascular supply to a segment of the biliary tree.1,2,3 Bismuth et al3 classified benign biliary strictures in relation to the distance of the stricture from the confluence of right and left hepatic ducts. Bergman et al4 modified this classification based on ERCP findings. We have suggested a further modification based on the associated features that impact on the outcome of endoscopy or surgical treatment, such as the presence, nature and location of obstruction, and the presence or absence of biliary leak.5

Few studies have directly compared the results of surgical and endoscopic management of benign biliary strictures. The available data come primarily from non-randomized retrospective series. Davids et al6 compared 66 patients treated endoscopically with 35 patients treated surgically. Endoscopic therapy consisted of placement of a single 10-Fr plastic stent after biliary sphincterotomy followed 6 weeks later by exchange for two 10-Fr stents. These stents were exchanged every 3 months for a period of 1 year. Early complications were more common in the surgical group (26% vs. 8%), but complications during the treatment period were more common in the endoscopic group (27% vs. 0%). The rates of recurrence of strictures were similar in the two groups (17% each) at 50 and 42 months, respectively. Tocchi et al7 reported good or excellent results in post-cholecystectomy strictures at 60 months in 17 of 22 patients treated surgically and 16 of 20 patients treated endoscopically.

A more aggressive endoscopic approach may yield better results. The protocol used by Costamagna et al8 consisted of endoscopic dilatation followed by insertion of as many 10-Fr plastic biliary stents as could be fitted into the duct. Three months later, these stents were removed and replaced by an increased number of similar stents till the stricture was obliterated on occlusion cholangiogram. Of the 42 patients who completed the protocol, 2 died of unrelated causes; of the remaining 40 patients, 39 were asymptomatic with normal liver function test and normal abdominal ultrasonography at 49 months, and one patient had developed cholangitis. Dragnov et al9 further supported the idea in their series of 29 patients who were treated with sequential insertion of multiple plastic biliary stents; 62% could be treated successfully at follow up of 48 months. Therapy failed in 38% of patients, primarily in those with hilar stricture or related to chronic pancreatitis.

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Chronic pancreatitis-related biliary strictures

Chronic pancreatitis accounts for 10% of all benign biliary strictures. Initial results of endoscopic treatment were disappointing. Later, Smits et al reported favorable long-term results of endoscopic stenting in 58% of benign biliary strictures due to chronic pancreatitis. After a 49-month follow up, 16 of 58 patients (28%) had complete regression of the stricture and could achieve permanent removal of stents. In the report by Dragenov et al, all three patients with chronic pancreatitis without evidence of calcification were treated successfully with sequential plastic stents. However, only 1 of 6 patients with pancreatic calcification had durable response to endotherapy. Catalano et al compared the results of sequential insertion of an increasing number of plastic stents (10 Fr) in 12 patients and of a single stent in 34 patients. During a follow up of 4 years, 92% of patients in the multiple-stent group remained asymptomatic, whereas in the single-stent group, 41% required surgery and another 38% required frequent stent exchange.

Biliary strictures following liver transplantation

Biliary strictures occur in 4%-13% of adult orthotopic liver transplant (OLT) recipients. Their management is evolving. Kuo et al reported better results with surgery compared to endotherapy (89% vs. 45%). However, Rijk et al treated 22 patients with endoscopic dilation and stenting. After 22 months, 73% with stricture of the donor hepatic duct (n=12) and 90% with anastomotic strictures (n=10) were stent-free. Similar results were reported by Mahajani et al in their series of 30 patients. We have successfully treated 4 of our 6 patients with post-OLT biliary strictures using endotherapy.

Primary sclerosing cholangitis (PSC)

PSC is a progressive liver disease. Orthotopic liver transplantation is the treatment of choice in patients with coexisting liver cirrhosis. Good short-term results have been reported with endoscopic therapy in PSC. However, the long-term benefits of biliary dilatation are uncertain. In patients with dominant extrahepatic strictures, dilatation should be preceded by brush cytology to exclude a neoplasm.

Portal biliopathy

A few patients with extrahepatic portal vein obstruction may present with biliary stricture. Endoscopic dilatation and stenting is a good alternative to surgery in selected patients.

Biliary tuberculosis

Biliary tuberculosis, though rare, is an important cause of benign biliary obstruction, which is caused by enlarged lymph nodes. Based on the location and nature of obstruction, we have classified tubercular biliary strictures into three types. The diagnosis can be made by endoscopic brush cytology or biopsy, or by guided needle cytology from enlarged lymph nodes. Antitubercular therapy is the mainstay of treatment, along with endoscopic sphincterotomy and stenting in patients with biliary obstruction.

AIDS-related biliary stricture

A small number of patients with AIDS develop cholangitis years after diagnosis of HIV infection. The diagnosis of AIDS cholangiopathy is based on cholangiographic findings. Cello et al described four distinct cholangiographic patterns: (a) papillary stenosis, (b) sclerosing cholangitis, (c) combined papillary stenosis and sclerosing cholangitis, and (d) extrahepatic bile duct stricture. Endoscopic sphincterotomy or stenting may relieve symptoms in patients with papillary stenosis. However, the long-term prognosis is poor.

Biliary parasitosis

Biliary parasitosis may lead to suppurative cholangitis, which requires immediate biliary decompression. Emergency surgical decompression is associated with high morbidity and mortality. Endoscopic biliary decompression using a nasobiliary catheter insertion or a stent is the preferred alternative. Once the patient is stable, definitive therapy can be planned.

Metal stents in benign biliary strictures

Rossi et al first reported the use of metal stents in patients with postoperative biliary strictures. Of 17 patients, 14 had failure of prior attempts at surgical repair and all had failure of endoscopic balloon dilatation before insertion of metal stents. At a mean follow up of 8 months, 14 had relief from jaundice and cholangitis. Similar results have been reported in other series. Deveiere et al used single 10-mm uncovered Wallstents (Boston Scientific, Natick, MA) in 20 patients with a biliary stricture secondary to chronic pancreatitis, 11 of whom had failed to respond to endotherapy with a plastic stent. At a mean follow up of 33 months, 18 patients had relief of jaundice and cholangitis.

Few reports exist on the use of uncovered metal stents for postoperative biliary strictures. The major
The drawback of metal stents in benign biliary strictures is that these stents are difficult to remove. A recent series provides evidence that covered Wallstents may be removed even months after placement. Kahaleh et al. could successfully remove metal stents in 17 of 18 patients (including 7 patients with benign biliary stricture) after a mean duration of 4.5 months. The 4 patients with uncovered Wallstents required multiple procedures for piecemeal removal of stents, but all endoscopically accessible covered Wallstents were removed in a single procedure without excessive tissue trauma. Other reports have also documented successful removal of metal stents.

The concept that continuous dilating force of an indwelling metallic stent might produce more satisfactory dilation of a fibrotic stricture than multiple plastic stents is quite appealing. However, long-term data comparing metal stents with multiple plastic stents are currently lacking. The recent development of self-expandable stents specifically designed to be removable will significantly change the current management strategies.

Bioabsorbable stents

Bioabsorbable stents may play an important role in the management of biliary strictures in the future. Evaluation of biostents in porcine biliary tract structures demonstrates that such stents can be deployed endoscopically, expand to full diameter, and retain patency up to 6 months. A preliminary study of bioabsorbable stents in patients with malignant biliary obstruction showed the feasibility of placing these stents. However, the role of these stents in benign biliary stricture remains to be established.

Conclusion

Endoscopic dilatation and stent placement for benign biliary stricture is less invasive than surgical intervention and may be safer, particularly in high-risk patients. New data emerging from more aggressive endoscopic approaches have been encouraging and have shown endotherapy to be as effective as surgery on long-term follow up. Temporary placement of covered metal stents across a benign stricture to act as a dilator, followed by removal, is a promising and appealing approach that needs further evaluation and long-term follow up. The role of bioabsorbable stents in benign biliary strictures remains to be established.

References

A 72-year-old lady presented with vague abdominal discomfort of 1-month duration. Endoscopy revealed a gastric diverticulum near the cardia, approximately 3 cm in diameter. Within it was seen a large polyp with multiple tiny polyps surrounding (Fig). Biopsies were taken from the large polyp. Laboratory investigations were normal. Histology of the polyp showed tubulo-villous adenoma with severe dysplasia and a possibility of underlying cancer. Colonoscopy showed a 5-mm sessile polyp in the rectum; histology showed adenomatous polyp with low-grade dysplasia.

At surgery, there were multiple tiny liver nodules. Biopsies from the nodules were reported as metastatic well-differentiated adenocarcinoma. The patient was referred for palliative chemotherapy.

The reported complications of gastric diverticulum include perforation, bleeding from the margin of the diverticulum, and cancer formation within a diverticulum.