Management of post-cholecystectomy bile duct strictures can be complex. Traditional treatment has been surgical reconstruction. In recent years endoscopic stenting has been successful in a selected subgroup of patients with iatrogenic bile duct strictures. Adequate information about long-term results of endoscopic stenting as definite treatment for such strictures is still awaited. Surgery is a reliable and time-tested method and results of numerous studies show its long-term success in relieving biliary obstruction with minimal morbidity. [Indian J Gastroenterol 2006;25:199-201]

Laparoscopic cholecystectomy has revolutionized the treatment of gallstone disease and has replaced open cholecystectomy as the standard procedure for symptomatic gallstones. Despite its numerous advantages the procedure is plagued by a comparatively higher incidence of bile duct injuries. This has evoked a renewed interest in the subject of bile duct strictures.

Biliary injuries sustained during laparoscopic cholecystectomy differ from those associated with open cholecystectomy, because the mechanism of injury differs in them. In a ‘classic’ bile duct injury during laparoscopic cholecystectomy, the common bile duct is mistaken to be the cystic duct and is clipped and divided. To remove the gall bladder, the common hepatic duct is also divided close to the bifurcation thinking it to be an accessory duct. This results in the loss of a segment of the bile duct. In addition, there is often an associated injury to the right hepatic artery. Post-laparoscopic cholecystectomy bile duct injuries are therefore more complex in the sense that they are often ‘higher’ injuries, present more likely with persistent bile leaks, and may involve multiple ducts. Realization of this sequence of events is necessary for proper management. These differences also prompted the formulation of a new classification for biliary injuries associated with laparoscopic cholecystectomy.2

Biliary injuries may be recognized intra-operatively, can present in the immediate post-operative period, or may manifest later. Intra-operative detection and proper management give the best results. Postoperatively, injuries present either as biliary fistulae or with obstructive jaundice. The most important investigation is obtaining a complete cholangiogram to assess the level and type of biliary injury. In patients presenting with bile leaks, endoscopic retrograde cholangiography is indicated. Magnetic resonance cholangiography has replaced percutaneous cholangiography in assessing patients who present with postoperative jaundice.3

Treatment of biliary injuries can be considered a success only if the patient has a symptom-free and intervention-free period with normal serum bilirubin and near-normal alkaline phosphatase levels for at least 5 to 7 years after the definitive procedure. Mere clinical relief of jaundice with liver function tests still being deranged is a symbolic representation of incomplete biliary decompression. Our experience has shown the duration of biliary obstruction and the trend of ALT levels to be independent predictors of hepatic fibrosis in patients with post-cholecystectomy bile duct strictures.4

Traditionally most biliary strictures have been managed surgically; recently endoscopic management is being attempted in some patients. Surgical treatment involves anastomosing an isolated loop of jejunum to the healthy, vascularized and unscarred part of the bile duct. Conventional surgical wisdom dictates avoiding the scarred and unhealthy part of the stricture for anastomosis. Roux-en-Y hepatico-jejunostomy is a one-time, proven, effective and durable method of treating biliary obstruction caused by postoperative bile duct strictures. The hospital stay for most patients ranges from 5 days to 10 days.

The risks associated with any major surgery have been the main criticism targeted against surgery for iatrogenic biliary strictures. In experienced centers the procedure has virtually no mortality and acceptable morbidity. Complications have been reported mainly in patients who have portal hypertension or ongoing biliary sepsis, and a majority of them can be managed conservatively. Though recurrent strictures have been reported in 10% to 30% of patients, there are many reports from high-volume centers with long-term success rates of over 80% to 90%.5,6

Murr et al7 report 91% success rate and 88%
5-year stricture-free survival. No study with endoscopic treatment can boast of such results. A majority of recurrences appear within two years of the primary reconstructive surgery but strictures have been reported as late as 17 years after hepaticojejunostomy, emphasizing the need for prolonged follow up before pronouncing any procedure as success.8 Surgery, even for recurrent strictures, though technically demanding, has also been shown to give good long-term results.9

Endoscopic management is ideal for patients who have bile leaks from cystic duct stump or from small lateral injuries of the bile duct. Endoscopy is also being tried in patients with major injuries like those who have complete transection of the bile duct. Initially only balloon dilatation of these strictures was attempted, but as expected it was associated with an unacceptably high recurrence rate. Pitt et al10 reported a success rate of 55% in 20 patients treated with transhepatic balloon dilatation and single stent insertion. Recent studies report experiences with single or multiple stents to keep the bile duct patent.11

These procedures need repeated admissions for change of stents as they get blocked. Data about long-term efficacy of stents is limited, with most authors reporting a short follow up. Most studies of endoscopic treatment have also not specified the grade of biliary injury, as we have evidence that endoscopic treatment is less effective for higher (Bismuth type 3 and 4) injuries.11

Huibregtse et al12 reported excellent result in 76% of patients with mean follow up of 19 months. Dumonceau et al13 placed one to three stents in 36 patients and had 81% success over a mean follow up of 44 months. Davids et al14 and Geenen et al15 achieved ‘excellent’ results in 71.7% and 78.2% of patients, respectively. Overall success rates with endotherapy for postoperative biliary strictures range between 55% and 88% in ‘acceptable selected cases’.11

Consistent long-term success with endotherapy is not possible because endoscopic stenting is conceptually flawed – the endobiliary stent forcibly dilates the scarred, unhealthy and ischemic part of the bile duct. Long-term latency in the presence of unhealthy mucosa is unlikely. As compared to surgery, endoscopic treatment has the advantage of being less ‘invasive’ but it is less effective, needs multiple hospital admissions, and is certainly not suitable for all patients. In patients with strictures affecting the region of biliary bifurcation and in those with significant loss of length of bile duct, endoscopic stenting has a high chance of failure.

There are no randomized controlled trials comparing surgical and endoscopic treatment of postoperative biliary strictures. Comparisons are difficult because of variable criteria for selecting patients, varying duration of follow up, and absence of uniform criteria for defining successful treatment. In a retrospective study of 157 patients with postoperative biliary strictures, endoscopic stenting was compared with surgery.16 Intention-to-treat analysis showed that surgery provides better long-term outcome because patients with total obstruction are not amenable to endoscopic stenting. In a case-control study of 42 patients with post-cholecystectomy stricture, as compared to endoscopic treatment surgery gave better long-term results.17 Assessment of quality of life after bile duct injury has also shown that duration of treatment is an important independent prognostic factor, with prolonged treatment, like repeated endoscopic stenting, having significant psychological impact.18

Failures of surgery are essentially failures of surgical technique whereas failures of endotherapy are because of the inherent limitation of the procedure itself. With improved experience, results of surgery can be improved, but this is not the case with biliary endotherapy. Both procedures should actually be regarded as complementary. Patients who are either unfit or unwilling to undergo surgery can be offered endoscopic stenting. In the final analysis, the best treatment is neither surgery nor endotherapy but prevention of bile duct injury during cholecystectomy.

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News and Notices

The International Association of Pathologists - Indian division 9th Annual CME on “Endoscopy Biopsy Correlation” will be held at T N Medical College, Mumbai, August 18 and 19, 2006.
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The 4th S R Naik Memorial Workshop on "Biomedical Research: Methods, Tools and Future" will be organized by the Department of Gastroenterology, SGPGI, Lucknow, September 23 and 24, 2006.

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