THERAPEUTIC BILIARY ENDOSCOPY: EXPERIENCE AT A SERVICE HOSPITAL

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ABSTRACT

Therapeutic Biliary Endoscopy (TBE) is becoming a popular mode of treatment for patients with obstructive jaundice. This paper highlights our early experience of TBE at Armed Forces Medical College and Command Hospital (SC), Pune with this mode of treatment. TBE was used as a primary therapeutic option in 46 patients with obstructive jaundice. The age of the patients ranged from 11 to 80 (mean and SD:45.5±16) years and majority 29 (63%) were males. The cause of obstructive jaundice in these patients was choledocholithiasis (n=31), benign biliary stricture (n=8), post cholecystectomy recurrent stones (n=3), carcinoma of pancreas (n=3) and papillary stenosis (n=1). Endoscopic Sphincterotomy (ES) was technically successful in all the 46 patients and brought prompt symptomatic relief in 43 patients. Sixteen patients (34.8%) required additional drainage such as stenting or nasobiliary drain. In patients with choledocholithiasis, bile duct could be cleared of stones in 29 (93.5%) patients and in two surgical removal was required. Of the remaining patients, surgery was required in 4 (50%) patients with benign biliary structure, in 1 (33.3%) of those with malignant stricture and none of the patients presenting with papillary stenosis or recurrent bile duct stones after cholecystectomy. Complications were seen in only two patients (4.4%): one had mild acute pancreatitis and another had GI bleed, which did not require blood transfusion. Both the complications were self-limiting. No procedure related deaths were noted. Endoscopic therapy, thus, a simple, effective and safe method of treatment in patients with choledocholithiasis and selected patients with malignant biliary obstruction.

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KEY WORDS : Biliary obstruction; Endoscopic sphincterotomy; Endotherapy; Gall stones; Obstructive jaundice; Therapeutic endoscopy.

INTRODUCTION

Therapeutic endoscopy is revolutionising the management of obstructive jaundice, which was treated conventionally by surgery.[1]. When obstructive jaundice is complicated by cholangitis, drug therapy is often ineffective unless drainage of biliary tract is established and patient may die of ensuing septicaemia [2]. Operative mortality varies from 2% in patients with gall stone obstruction to over 20% in patients with malignant obstruction. In comparison, endoscopic procedures can tide over the crisis in such cases with much lower morbidity and mortality. Endoscopic sphincterotomy (ES) followed by extraction of CBD stones has now become established as an effective non-surgical approach in patients with ductal stones [3]. Biliary obstruction due to benign post-operative strictures of the CBD is now managed by endoscopic/percutaneous stent placement and/or by surgery in many Armed Forces hospitals. The aim of the present paper is to highlight the significance of such treatment in the Armed Forces Hospitals.

PATIENTS AND METHODS

All patients with surgical obstructive jaundice admitted to the Armed Forces Medical College and Command Hospital (SC), Pune, between June 1993 and June 1997 were considered for the option of endoscopic therapy. The diagnosis of obstructive jaundice was based on demonstration of direct hyperbilirubinaemia in association with dilated common bile duct or intra-hepatic biliary radicals on ultrasound examination and ERCP. The patients with obstructive jaundice were selected for endoscopic therapy with the consent of treating physician or surgeon with following underlying disorders: (a) Choledocholithiasis, (b) Post-operative (post-cholecystectomy) recurrent or retained stones (c) Benign biliary strictures, (d) Malignant biliary strictures with unresectable tumors and (e) Biliary pancreatitis presenting within 24 hours of onset, even in the absence of obstructive jaundice. Patients were excluded if they had hepatic encephalopathy or uncorrectable coagulopathy.

Patients were evaluated clinically, biochemically, hematologically, microbiologically and by imaging technique to determine the cause of jaundice and its complications. Patients were also assessed in detail with full consideration given to alternative methods, including the possibility of surgical treatment. Any medical conditions, which could substantially increase the risk of surgery, were assessed. Coagulation was checked and corrected with vitamin K when necessary. If clotting was not fully corrected by vitamin K, fresh frozen plasma was given. Antibiotics were given

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prophylactically before the procedure to protect against cholecystitis and cholangitis in all. Ampicillin 1.5 gm and Gentamicin 60-80 mg was given intravenously 2 h before an attempt at endoscopic sphincterotomy/stenting or immediately before the procedure if this was not possible. A combination of diazepam plus pentazocin was used according to the patient's age, body weight and observed clinical effect. Duodenal motility was suppressed with intravenous buscopan.

The procedure was carried out with a 2.8 mm operating channel endoscope at the Gastroenterology center, Command Hospital (SC), Pune. Bile duct was cannulated using a side-viewing duodenoscope and radio-opaque contrast was injected to take x-ray films of the area of interest. A papillotome (catheter with an electro-surgical 'bowstring' wire) was then introduced into the common bile duct and a diathermy current was passed through it. [6]. The root of the papilla along with the sphincter muscle was cut about 8-10 mm to allow passage of stones. The stent, where required, was inserted using a three layer coaxial system by standard procedure.

After the procedure, the patients were closely monitored in an acute ward for complications, such as cholangitis, haemorrhage and pancreatitis. Antibiotics were continued for 24-48 h, until it was clear that the stent was draining adequately. Bilirubin levels were tested daily for initial 4 days. A falling bilirubin indicated adequate stent function. Decompression of the biliary tree and the presence of air in the ducts indicated successful drainage.

RESULTS

This report summarizes the endoscopic treatment of 46 patients during the study period. The mean age of the patients was 45.41 SD $\pm$ 16 (range 11-80) years. As expected in a service hospital, males (32,69.6%) predominated the series and had an average of 45.5 years. Choledocholithiasis was the commonest indication for ES (Table 1). Technically, the ES was feasible in all the patients where it was attempted. After sphincterotomy, stones spontaneously passed in 25 (54.3%) patients within 7-10 days. The remaining required either an additional procedure such as stenting (n=16) or nasobiliary drain (n=5). Final diagnosis in patients who underwent Endoscopic stenting procedure was Choledocholithiasis in 8(50%), Biliary stricture in 4(25%), Ca pancreas in 3 (18.7%) and Chronic pancreatitis in 1 (6.3%). Use of a nasobiliary drain and stone extraction by the Dormia basket was required in two cases each. The outcome of these patients is outlined in the Table 2. ES brought about rapid relief of symptoms in most patients with choledocholithiasis. Stones were removed in a total of 29 (93.5%) cases with or without stone extraction or stenting. Despite the endoscopic procedure, twenty patients underwent surgery. Eighteen of them had simple cholecystectomy without bile duct exploration, to prevent further attacks of cholecystitis. Two patients

TABLE 1

Final diagnosis in patients who underwent Endoscopic sphincterotomy (n=46)

Diagnosis	No. of patients	Percentage
Choledocholithiasis	31	67.4
CBD stricture (benign and malignant)	8	17.4
Ca Pancreas	3	6.5
Recurrent stones	3	6.5
Papillary stenosis	1	2.2
Total	46	100

with large stone had to be tackled surgically due to non-availability of a mechanical lithotripter. Surgery was required only in half the cases with biliary stricture while it was not required at all in patients with post cholecystectomy recurrent stones and those with papillary stenosis.

Although the cases presented here represent the learning-phase of the gastroenterologists, ES was found to be remarkably safe procedure. Complications were uncommon. Only one patient (2.2%) had mild self limiting pancreatitis as indicated by moderately severe pain in abdomen and rise in serum amylase levels and another had a minor haemorrhage, not requiring any blood transfusion. In another one case (2.2%) there was a retroperitoneal injection of the contrast during initial ERCP, which led to pain and abandonment of the procedure. ES in this case was done later in another sitting. Cholangitis was not encountered and 30 day mortality was nil.

DISCUSSION

ES is a simple, effective and remarkable safe method of treatment of choledocholithiasis, biliary strictures and papillary stenosis. In our series it was successful in removing duct stones in 93.5 per cent and in relieving the symptoms due to biliary stricture in 75 per cent and in the case of benign papillary stenosis. Stones were retained in only 2 patients in whom surgical choledochotomy was necessary to remove them from the common bile duct. However, in these cases, ES may be considered an auxiliary procedure to surgery, when it simplifies subsequent surgical procedures, avoiding an eventual duodenotomy and sphincterotomy or sphincteroplasty.

TABLE 2

Outcome of ES in 46 patients

Diagnosis	No. of patients	Outcome			
		Relief of symptoms	Required nasobiliary drain/stenting	Stone extraction done	Surgery
Choledocholithiasis	31	30 (96.8)	8 (25.8)	3 (9.7)	20* (64.5)
CBD stricture	8	6 (75)	6 (75)	—	3 (50)
Ca Pancreas	3	3 (100)	3 (100)	—	1 (33.3)
Recurrent stones	3	3 (100)	3 (100)	—	0
Papillary stenosis	1	1 (100)	1 (100)	—	0

*Only two patients required surgery due to failure of endoscopic treatment to clear bile duct, the remaining 18 patients underwent cholecystectomy to prevent future attacks of cholecystitis

TABLE 3
Comparison of present series with published reports

Authors	Patient number	Technical success	Drainage success	30 day mortality	Complication rate
Lindstrom et al	89	79	94	26	14
Regula	79	82	95	—	4
Siegel and Snady	277	89	70	18	21
Polydorou et al	190	89	82	29	22
Sugawa and Wiencek*	124	95.2	88	0	1.6
Sherman et al*	166	98.2	93	0.6	4.9
Hagenmueller et al	454	84	—	8	26
Bickerstaff et al*	283	96.1	88	0.7	9.2
Leung et al	64	89	—	16	—
Present series	46	100	100	0	4.4

*ES performed only for bile duct stones, while other series include malignant strictures

We observed complications in 2 cases (4.4 per cent): One had acute bleeding and another acute pancreatitis. Both were self-limiting and posed no threat to the patients. There was no mortality. Even though the gastroenterologists at our center may be regarded to be in their learning curve, our results are comparable to other reports [7-14]. The results indicate the important clinical role of ES. However, the indications for ES need to be more clearly defined.

Endoscopic treatment is preferable to surgery in high risk patients with choledocholithiasis, biliary strictures and/or papillary stenosis, even without a previous cholecystectomy on account of the lower incidence of morbidity and mortality following ES in comparison with surgical procedures [15-17]. ES causes satisfactory biliary drainage and elimination of stones from the common bile duct leading to remarkable improvement in general conditions. In the event that cholecystectomy is necessary it can be performed later with much less morbidity.

On the other hand, the indications for ES should be reduced in patients in good general condition, especially if they are young, since in these subjects the mortality due to surgery is comparable to that following ES [15,16,18]. Thus when the patient is fit, an operation may be preferred by some, in cases of choledocholithiasis with gallbladders *in situ* and ES could represent only an alternative to surgical sphincterotomy or sphincteroplasty. The situation is different in old patients or those with status *post-cholecystectomy*, especially with the advent of laparoscopic cholecystectomy, where ES may be the first choice of treatment. If ES alone is not sufficient, stent placement may obviate the need for surgery, which has a higher

morbidity and mortality in this situation [19-25]. Patients with a T tube and retained stone in the common bile duct after cholecystectomy need to be considered differently as there is a possibility in these patients of extracting stones through the T tube. This latter method is remarkably safe and effective.[26] If the T-tube tract is not available, Endoscopic sphincterotomy is a better alternative for retained CBD stones. Open surgery for retained CBD stones carries higher mortality and is now reserved for patients who do not have access to the above modalities of treatment.[27].

Our results with biliary obstruction due to benign post-operative strictures of the CBD were very gratifying. Endoscopic therapy can therefore be recommended as a firstline therapy in these cases.[28]. About 70-80% of patients were free of symptoms 3 years after dilatation. This compares well with 76% patency rate achieved by surgical reconstruction and/or by pass.

Malignant obstructive jaundice still presents a dismal picture. The overall 5 year survival for pancreatic cancer is 3%. Most patients (85-90%) with pancreatic growth can not be offered curative surgery[29], and need palliation to relieve itching. Very small proportion of such patients in the present series possibly represents lack of faith in this form of treatment in the Armed Forces. However, several newer innovations may change such perceptions. Endoscopic ultrasound can help localise and assess tumours and lymph node involvement. It is possible today to visualise directly the pancreatic duct by a miniature (daughter) endoscope, which also can carry an ultrasonic probe. In addition to its diagnostic role therapeutic endoscopy now offers a viable alternative to surgery in the palliative management of malignant obstructive jaundice. Endoscopic stents can relieve jaundice, reduce hospital stay and hasten recovery [30]. The survival however is not improved. The problem of stent occlusion has been overcome by the introduction of self-expanding metal stents. In patients with malignant biliary obstruction particularly those with slow growing tumours these large diameter stents may offer improved stent survival and thus avoid the need for readmission for shunt blockage [31]. The surgery was being preferred by some as it allowed one to add a gastric drainage procedure. It now appears that the addition of a 'prophylactic' gastro-enterostomy doubles mortality without any survival advantage [32].

In the treatment of biliary diseases, endoscopic approach is now becoming increasingly popular with a reduction of morbidity and mortality due to the surgery itself. Surgery is avoided in many high operative

risk patients whilst in others it may be performed later when general conditions have improved after ES. prior ES may indeed simplify the necessary surgical procedure. The low morbidity and mortality following ES, its immediate therapeutic benefits, the good results on follow-up and the easy performance of the technique itself in expert hands, together with the short duration of hospitalization, indicate that this procedure is an important step forward in the treatment of certain diseases of the biliary tract.

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