ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY AND ENDOSCOPIC SPHINCTEROTOMY - A SINGAPORE EXPERIENCE

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ABSTRACT

We performed endoscopic retrograde cholangiopancreatogram (ERCP) on 200 patients over a four and a half year period. The duct of interest was successfully cannulated in 173 cases (87%). The most common indications were obstructive jaundice, cholangitis, chronic upper abdominal pain and suspected pancreatic disease. The commonest findings were cholelithiasis and malignant strictures of the common bile duct (CBD). Forty seven patients (27%) had normal examinations. Sixty-two of 87 (71%) patients with choledocholithiasis underwent endoscopic sphincterotomy (ES). The success rate for active stone extraction was 82% (27/33) while 64% (14/22) of patients managed expectantly cleared their CBD stones spontaneously after ES. The immediate complication rate of ES was 13% and included pancreatitis, stone impaction, cholangitis and bleeding. There was no complications amongst patients who underwent ERCP alone and no mortality in this series. Twenty three patients (26%) with choledocholithiasis proceeded to surgery because the stones were considered too large to remove endoscopically. One patient had endoscopic stone removal without prior ES while another had a permanent stent inserted for drainage. We conclude that ERCP and ES are useful and safe modalities in the assessment of biliary tract diseases and the treatment of choledocholithiasis.

Keywords : Endoscopic retrograde cholangiopancreatogram, cholelithiasis, endoscopic sphincterotomy

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INTRODUCTION

The last two decades have seen major advances in the investigation and treatment of biliary tract diseases. Ultrasonography is now the preferred initial investigation in patients with suspected obstructive jaundice while percutaneous transhepatic cholangiography (PTC) or ERCP are often used to delinate the CBD. In the patient with choledocholithiasis, ES with or without endoscopic removal of CBD stones is increasingly accepted as an alternative to surgery in many clinical situations. Although ERCP and ES have been available in Singapore for several years, the value of these endoscopic procedures in our local setting has not been well studied. We have therefore analysed a consecutive series of ERCPs and ES done in our department over a four and a half year period.

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MATERIALS AND METHODS

We reviewed the case notes of all patients who had undergone ERCP and ES in the Department of Medicine of the National University of Singapore between January 1985 and June 1989. Two hundred patients underwent 231 ERCPs over this period. Sixteen patients had two ERCPs, 6 had 3 ERCPs while one patient had 4 ERCPs. There were 96 males and 104 females. Their mean age was 61 years (range 23 to 92).

RESULTS

Indications (Table I)

The most common indication was obstructive jaundice (40.5%). Cholangitis (19%), unexplained upper abdominal pain (15%) and suspected pancreatic disease (12.5%) were the other common indications. The 30 patients with upper abdominal pain were subjected to ERCP for the following reasons : Ultrasound abnormalities of the CBD (12), pancreas (4) or gallbladder (3), recurrent

unexplained upper abdominal pain with (3) or without (7) abnormalities of liver function tests, and documented Escherichi coli septicaemia (1).

Table I
Indications for ERCP

Obstructive jaundice	81	(40.5%)
Cholangitis	38	(19%)
Unexplained upper abdominal pain	30	(15%)
Suspected pancreatic disease	25	(12.5%)
Retained stone (T-tube cholangiogram)	10	(5%)
MISC (liver abscess, choledochal cyst etc)	16	(8%)

Findings

Cannulation of the duct of interest was successful in 173 patients (87%). Eighty seven patients (50%) were shown to have stones in the CBD. Two of these also had intrahepatic stones while 20 had associated stones in the gallbladder. Malignant bile duct strictures were demonstrated in 22 patients (13%), fifteen patients (9%) had gallbladder stones alone, one patient had chronic pancreatitis and another choledochal cyst. Forty seven patients (27%) had normal examinations.

Patients with choledocholithiasis (Table II)

Of the eighty-seven patients with choledochlithiasis, the stones were multiple in 47 (54%). Eighteen patients (21%) had a previous history of cholecystectomy.

Table II

a) Treatment for patients with choledocholithiasis diagnosed at ERCP

	No of patients
Endoscopic management	56 (64%)
Surgery	31 (36%)
	(stone too big 23)
	(failed ES 8)

b) Results of Endoscopic management of 56 patients with choledocholithiasis

	Successful (%)	Failed (%)	Surgery for gallstones
Active extractions : 33 (1 without ES)	27 (82)	5 (18)	6
Expectant approach : 22	14 (64)	8 (36)	3
Endoscopic stenting : 1			

ES (Fig 1) was performed in 62 patients and was successful in 54 (87%). Active stone extraction using balloons or dormia baskets (Fig 2, 3) was attempted in 32 patients and was successful in 27. The other five patients proceeded to surgery. Six patients underwent subsequent cholecystectomy for gallbladder stones following successful endoscopic extraction of CBD stones. Nineteen patients were well after 3-6 months' follow up and another died of an unrelated cause.

Fig 1
Endoscopic view of sphincterotomy. The ampullary opening (arrowed) being cut by a wired – catheter (sphincterotomy)

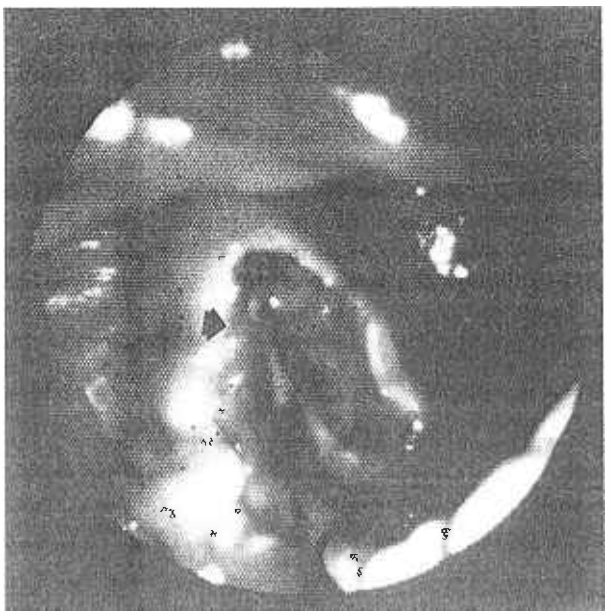

Fig 2
CBD stone being extracted by dormia basket

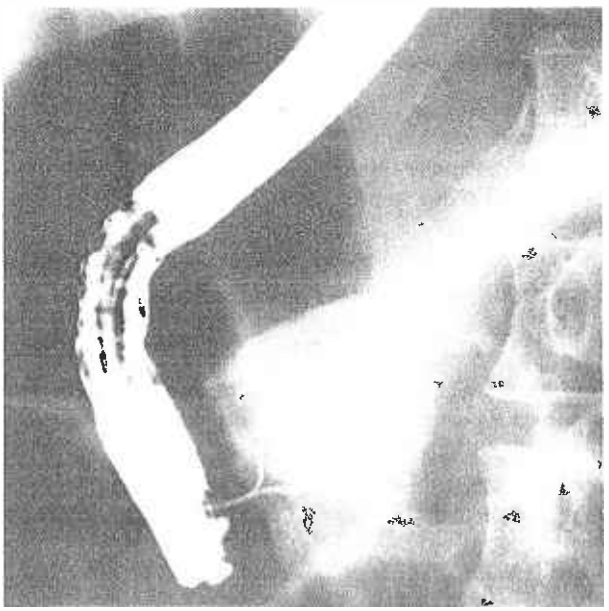

Fig 3
Endoscopic view of a stone removed by dormia basket

In 22 patients, no attempt was made to clear the CBD following ES. Of these, 14 were shown to have cleared their CBD stones on repeat ERCP. The other eight patients (seven of whom had associated gallbladder stones) underwent surgery.

Endoscopic stone extraction was performed in one patient without prior ES as her ampulla was patulous from a presumed auto-expulsion of stone.

Twenty three patients had stones that were thought to be too big for endoscopic extraction. These were removed surgically. We started using nasobiliary drainage towards the end of the study period and this was performed in three patients prior to surgery.

Endoscopic stenting was done in one 76 year old woman as a definitive therapeutic procedure as she had multiple huge CBD stones and was unfit for surgery.

Patients with malignant strictures

Malignant obstruction of the CBD was detected in 22 patients. Seventeen of them had primary biliary tract carcinoma (9 carcinoma of pancreas, 6 cholangiocarcinoma, 2 carcinoma of ampulla) while 5 had porta hepatis obstruction due to secondaries (lymphoma, lung and liver). Four patients were treated endoscopically with stent insertion (3) and nasobiliary drainage (1). The other 18 patients underwent surgical bypass.

Failure of cannulation

Cannulation of the duct of interest was not possible in 27 patients (13%). In sixteen (8%), the CBD could not be cannulated although the pancreatic duct was shown to be normal in each case. In two other patients (1%), the pancreatic duct could not be cannulated although the CBD were normal. Both ducts could not be cannulated in 9 patients (4%) (obstructive jaundice 4, pancreatitic disease 4 and cholangitis 1). Most of these patients underwent PTC or surgery.

Repeat Examinations

Twenty three patients had repeat examinations. The latter was performed in 19 patients for assessment of ductal clearance following ES.

Complication

The immediate complication rate of ES was 13% (8/62). All four patients who developed pancreatitis after the procedure settled spontaneously. The Dormia basket became impacted during endoscopic extraction in two patients necessitating semi-urgent surgery. One patient developed cholangitis and another had bleeding requiring transfusion. All eight patients settled with medical treatment. Stricture at the papillotomy site 6 weeks post-sphincterotomy was noted in one patient. Biliary flow however was adequate and no intervention was necessary. There were no complications amongst patients who underwent diagnostic ERCP.

DISCUSSION

In recent years ERCP has became increasingly popular in the management of biliary tract disorders. Advantages over PTC include avoidance of liver trauma and immediate institution of endoscopic therapy in appropriate cases (1).

The main indications for ERCP in our patients were biliary obstruction and cholangitis often due to CBD stones. Endoscopic treatment of choledocholithiasis has several advantages over surgery. It is a relatively simple procedure and general anaesthesia is not required. Especially in elderly, frail or obese patients and those with concomitant medical illness, it is the treatment of choice for retained CBD stones after post-cholecystectomy (1). ES for patients with intact gall bladders has also been suggested if the patients are medically unfit, and also as a temporary measure for cholangitis prior to subsequent elective surgery (2).

The use of ES as the initial treatment for acute cholangitis has been found to reduce mortality (3-4). Subsequent definitive surgery is indicated only in young and fit patients with intact gall bladders (5).

Complications have been reported following ES in 8-10% of patients and the overall mortality is around 1%(6). In contrast, mortality rates of 9-30% have been reported for CBD explorations in elderly and frail patients (7-8). We had no procedure - related deaths and our complication rate was comparable to those reported in the literature.

Technical expertise is obviously an important factor in the assessment of any new technique. The overall success rates for CBD stone clearance reported by Cotton was 87% (6). In the early years after ES was first described, most endoscopists adopted an expectant approach after ES, believing that most stones will pass spontaneously. More recently, endoscopists have become more aggressive and try to clear the CBD of stones immediately after ES. We started using endoscopic nasobiliary drainage towards the latter part of the study period to prevent cholangitis when CBD stones cannot be cleared immediately.

Patients who have malignant biliary tract obstruction have a limited life span. Endoscopic drainage with either an endoprotheses or nasobiliary drain have been shown to be effective in the relief of jaundice. This is associated

with a lower 30-day mortality when compared to percutaneous biliary drainage (9). We have recently begun to use this technique and have reported our experience (10).

ERCP is now an established diagnostic tool in the management of biliary tract disorders. We have found ES, endoscopic extraction of CBD stones and biliary drainage to be effective and safe treatment modalities which obviate the need for operative surgery in many instances. Large CBD stones continue to have to be treated surgically at present. However, the advent of newer techniques eg. mechanical, electrohydraulic or extracorporeal shock waves lithotripsy or stone dissolution may further reduce the need for surgery in such patients (5).

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