

Therapeutic Endoscopy of the Hepatobiliary and Pancreatic System: A Vietnamese Experience

Le Quang Quoc Anh, MD

ABSTRACT

Introduction: Therapeutic endoscopic retrograde cholangiopancreatography (ERCP) was initially utilized at Binh Dan Hospital, Viet Nam, in August 1993. From August 1993 through March 1997, 318 ERCP procedures were performed on 271 patients. It was not possible to obtain cholangiography in 32 cases of the 318 procedures of ERCP, for a success rate of diagnostic ERCP approaching 89%.

Materials and Methods: Cases treated by ERCP included: 14 cases of *Ascaris lumbricoides* in the common bile duct (CBD).

69 cases of bile duct stones.

12 cases managed by nasobiliary catheter drainage.

3 cases treated by bile duct stent.

Sphincterotomy was attempted on 108 cases.

Complications included:

5 cases of acute pancreatitis.

7 cases of purulent cholangitis, which resulted in 1 death.

2 cases of retroperitoneal duodenal perforation.

9 cases of postsphincterotomy bleeding.

Conclusions: We conclude that ERCP is a useful therapeutic modality for bile duct stones and parasitic worms in the bile ducts.

Key Words: ERCP, Retained bile duct stone, Bile duct *Ascaris*.

INTRODUCTION

Biliary tract infection due to cholelithiasis is a common surgical emergency in Viet Nam and requires, in many instances, early decompression. But decompression, as an emergency procedure, is not always a curative procedure and tends to have complications as well as mortality.^{4,5}

Biliary tract obstruction due to recurrent gallstones or previous surgical procedures for decompression often causes difficulties in localizing the biliary tract by endoscopic means.^{1,7,12}

Similarly, postoperative residual bile duct or intrahepatic stones, recurrent cholangitis and bile duct strictures, either benign or malignant, offer significant difficulties to the operating surgeon.^{9,13}

Ascaris in the bile ducts or acute pancreatitis secondary to stones are not easily managed by medical means and surgical intervention is fraught with danger and high morbidity. Also the surgical management of biliary obstruction in patients with concomitant medical diseases often has a poor prognosis.^{15,20}

Patients, especially young female patients, may be "haunted" by large abdominal scars and suffer psychological trauma.

In order to obviate some of these problems, endoscopic cholangiographic techniques were introduced into our country and have played an important role at Binh Dan Hospital.^{7,16} In 1993, therapeutic endoscopic retrograde cholangiopancreatography (ERCP) was added to the treatment options available to patients at Binh Dan Hospital.

MATERIALS

Facilities: Duodenoscope TJF 20 with side view (Olympus). Source light. Monitor system. Cauterization and aspiration devices.

Equipment: Five French catheters for cannulization of the ampulla of Vater. Papillotomy knife. Dormia basket (BML). Biopsy forceps.

Endoscopy Unit, Binh Dan Hospital, Department of Digestive Surgery, Medical Training Center, Ho Chi Minh City, Viet Nam.

Address reprint request to: Le Quang Quoc Anh, MD, Endoscopy Unit, Binh Dan Hospital, Department of Digestive Surgery, Medical Training Center, Ho Chi Minh City, Viet Nam.

X-Ray: All procedures were performed in the X-ray suite equipped as an operating theater with an image amplifier monitor.

Data: Three hundred eighteen ERCP procedures were performed on 271 patients. Diagnostic endoscopy only was performed on 141 cases. Endoscopic treatment procedures were applied on 98 cases. Thirty-two cases failed ERCP with only duodenoscopy being performed.

RESULTS

Results of Endoscopic Treatment (98 cases):

Gallstones: Gallstones were detected in 69 cases, three of which were intrahepatic and 66 of which exhibited common bile duct stones. All intrahepatic stones were successfully extracted. Of the 66 cases of common bile duct stones, 48 (74%) were extracted successfully. Of these 48 cases, 21 patients had residual stones postoperatively. Of 27 cases with common bile duct stones, 14 were managed successfully with a mechanical lithotripter (some stones being in excess of two centimeters in diameter).^{6,11}

Ascaris in the Common Bile Duct: Twenty-two patients were suggested by clinical and sonographic means to have Ascaris in the common bile duct. However, only 14 cases were found to have Ascaris by ERCP.

Nasobiliary Drainage: Twelve cases underwent nasobiliary drainage for decompression of the bile ducts.^{16,18,22}

Stent Insertion: Three cases underwent biliary stent insertion.^{4,11,13}

Special Circumstances: Two cases of ERCP were performed on patients who had undergone Billroth I gastrectomy (partial gastrectomy). One ERCP procedure (diagnostic only) was completed on a patient who had undergone a Billroth II gastrectomy procedure.

Of 324 cases performed to date, six have been on patients who have undergone laparoscopic cholecystectomy. This rate of 1.8% is low when compared to developed countries (10%).²²

DISCUSSION

Eight cases of 22 cases diagnosed as having Ascaris in the common bile duct had normal images on ERCP. However, five of the eight cases were found to have gas in the biliary tract, which might account for the colicky pain experienced by these patients.

These findings may help explain why operative procedures for Ascaris in the biliary tract, diagnosed only by clinical or sonographic means, frequently failed to demonstrate any of the worms.

In 14 cases, ERCP visualized ascarides in the common bile duct. In two of these cases, tails of the ascarides were detected outside the papilla of Vater. In most cases, only one Ascaris was present, but a few cases had up to five worms in the bile ducts which were extracted endoscopically. After ascarides extraction, a completion cholangiogram is recommended.

The experiences of Binh Dan Hospital and Viet Nam in general suggest:

A) Medical treatment: It has not been demonstrated that medical treatment can cause movement of Ascaris back into the digestive tract. Many cases managed conservatively suffered from complications such as cholangitis and liver abscess. Late complications include intrahepatic and biliary tract stone. Many cases were diagnosed to have Ascaris invading the biliary tract, but in fact, these patients had abdominal pain related to other causes.

B) Surgical treatment: Many cases are operated on for invasion of the biliary tract by Ascaris. However, a significant number of these cases don't demonstrate Ascaris. In these cases a T-tube is inserted into the common bile duct because it has been incised to provide for exploration. If Ascaris is detected, T-tube insertion post worm extraction is mandatory.

Six of the 14 cases of ERCP verified bile duct Ascaris required a sphincterotomy. Others have suggested that only a small incision is necessary as stone extraction is not being performed.^{2,3,14}

Common Bile Duct Stones:

Though this is a small series early in our experience, stone removal via endoscopy was successful in 48 of 69 cases (74%). Twenty-seven stones were greater than two centimeters in diameter, of which 14 were extracted by the basket mechanical lithotripter.

The average hospital stay for first-time operative patients at Binh Dan Hospital for hepatobiliary and pancreatic disease is 22.5 days. For patients requiring operative procedures for residual stones, the average hospital stay is 25.3 days. For patients undergoing stone removal via ERCP techniques, the average hospital stay is five days or less.

Emergency ERCP nasobiliary decompression of the biliary tract for impacted bile duct stones or pancreatitis due to

Table 1.
Comparison of the success, mortality and complication rate of endoscopic sphincterotomy.

Country	W.Germany	Japan	Italy	England	USA	Vietnam
No. of centers	9	25	8	14	21	1
Year	1978	1979	1979	1981	1981	1995-96
No. of patients	955	486	239	679	1250	108/271
Success %	92.1	96.5	81	87	89	68
Complications (%)	7.3	8.5	6.7	8.5	8.7	12.5
Mortality (%)	1.7	0.4	0.5	1.9	1.2	0

stones is an effective measure to manage these problems.^{8,10,11,21,22}

Endoscopic Sphincterotomy:

Endoscopic sphincterotomy, in cases of retained common bile duct stones is an inexpensive, effective alternative to open exploration of the common bile duct.^{14,17,19,22} In this series, 108 cases underwent attempted sphincterotomy. Seventy-four cases (68%) of endoscopic sphincterotomy were completed successfully.

A comparison of the success, mortality, and complication rate of endoscopic sphincterotomy procedures from representative countries is shown in the following (Table 1).²³⁻²⁴

From this data it is seen that in Germany 955 patients were treated at nine centers for an average of 106 patients per center. In Japan, 468 patients were treated at 24 centers for an average of 18 patients per center. In the United States, 1,250 patients were treated at 21 centers for an average of 59 patients per center. In our series, 108 patients were treated at Binh Dan Hospital during the study period.

No mortality was seen in our series as cases were carefully selected to avoid the more compromised patient. As we traverse the learning curve, more difficult cases will be included in our case load.

Special Situations:

One female patient was determined to have gallstones by sonography and was prepared for laparoscopic cholecystectomy. The operative intervention was delayed because of equipment malfunction and the patient developed icterus. ERCP was performed and common bile duct stones were extracted. One day post-ERCP, the patient experienced subcutaneous emphysema of the neck, and chest. Free air was detected in the abdominal cavity. Conservative treatment was initiated and consisted of nothing per os, parenteral feeding and antibiotic. After five days, the patient's symptoms resolved and she did not require an operative intervention.

Subcutaneous emphysema may be the result of forcefully removing common bile duct stones when the incised papilla is not patent enough to permit unrestrained removal. Gas in the abdominal cavity is an endoscopic-induced complication. In the above case, this complication was managed conservatively. However, a lacerated duodenum may require surgical intervention and requires vigilant monitoring of the patient's status during conservative treatment.

Another case involved a male patient with a common bile duct stone of 3-4 centimeters diameter. ERCP stone extraction was not successful and the patient developed subcutaneous emphysema. Open laparotomy was performed and a laceration of the posterior duodenum was found. The perforation was repaired and the patient recovered. With our current knowledge, we believe intensive conservative management could have been initiated and laparotomy possibly avoided.

Retrospective analysis has suggested that five of our cases which developed post-ERCP amylasemia and pancreatitis suffered this complication from injection of large amounts of contrast material into the pancreatic duct or due to trauma from the insertion of a catheter deep into the pancreatic duct. Our experience suggests that the endoscopist should keep the tip of the catheter at the papilla and inject only the amount of contrast necessary to define the biliary tract.

Nine of 108 cases (6%) experienced postsphincterotomy bleeding. Two of these cases were successfully controlled with local injection of 1/10000 adrenaline.^{12,17,22}

Postendoscopic biliary sepsis is a feared complication, particularly in those patients with biliary obstruction. Prophylactic antibiotic was used in all cases of ERCP performed for diagnostic or therapeutic purposes in this study. In those cases of biliary obstruction, decompression should be attempted either via a nasogastric tube insertion, stent insertion or sphincterotomy.¹⁰⁻¹² One 16-year-old female patient with cystic dilatation of the common bile duct was not decompressed during ERCP and subsequently died after open surgical biliary decompression was performed on the third day post-ERCP.

CONCLUSIONS

Surgery remains the mainstay of cholelithiasis treatment in Viet Nam. Recurrent common duct stones or bile duct stones postlaparoscopic cholecystectomy may, in most cases, be treated by ERCP techniques.

Ascaris in the bile ducts is a medical emergency that may be successfully managed by endoscopic means. As more experience is gained with ERCP, surgery may play a secondary roll in the management of bile duct Ascaris infestation.

In Viet Nam, ERCP is demonstrating its benefits of decreasing medical costs, decreasing recovery time, shortening hospital stay and decreasing morbidity in selected cases of biliary tract disease.¹⁵

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