

Early or Delayed Endoscopic Papillotomy (EPT) in Gallstone Pancreatitis

ARNE R. ROSSELAND, JAN HELGE SOLHAUG

In 29 patients with gallstone pancreatitis, endoscopic papillotomy was performed during the first period (1976–1979) as elective procedure 1–8 weeks after the clinical symptoms had subsided. From 1979, endoscopic investigations and treatment were routinely done within 48 hours after the onset of clinical symptoms. The ERCPs and EPTs were well-tolerated and were performed without serious complications. The results of these series indicate that EPT can be safely performed in the acute stage of gallstone pancreatitis. Acute EPT gives effective drainage and relief of the acute symptoms in patients with obstructive pancreatitis.

GALLSTONE DISEASE and alcohol abuse are the most common etiological factors in pancreatitis.^{1,2} Human acute pancreatitis associated with gallstones is due to obstruction of the ampulla of Vater caused by migration or impacted stones.^{3–6} As the degree and duration of obstruction probably are critical factors in the development of the pancreatitis, removal of the obstructing agents seems logical.

Endoscopic papillotomy has obtained a well-defined place in the treatment of residual common bile duct stones, whereas acute pancreatitis has been considered a strong contraindication for endoscopic retrograde cholangiopancreatography (ERCP).⁷ More recently, some authors have recommended urgent endoscopic papillotomy in patients with acute gallstone pancreatitis.^{8,9}

This study was done to assess the consequences of early papillotomy compared with delayed papillotomy in patients with gallstone pancreatitis.

Materials and Methods

During the 6-year-period from February 1976 to December 1982, 29 patients (16 women, 13 men) were treated endoscopically for gallstone pancreatitis. The mean age was 74 years (range 48–92). Fifteen patients had complicating diseases. All patients had clinical symptoms of acute pancreatitis, serum amylase was elevated 3 to 33 times the upper normal limit (mean 11.2), and in all patients ERCP showed one or more stones in the common

From the Central Hospital of Akershus, University of Oslo, Nordbyhagen, Norway and Hospital of Torsby, Torsby, Sweden

bile duct. Eight patients had previously had attacks of pancreatitis. Sixteen patients reported previous biliary colic, and in four patients cholecystectomy had previously been performed (Table 1).

During the first 3 years, 14 patients were treated conservatively and ERCP with EPT was done 1–8 weeks after the acute attack (delayed group). During the last 3 years, ERCP and EPT were done as early as possible in 15 patients, preferably in the first hours after admittance or within 48 hours after onset of symptoms (early group).

When the clinical suspicion of common bile duct stones had been confirmed by retrograde cholangiography, a papillotomy was performed with a Classen-Demling papillotome. Extraction of the stones was in most patients attempted by using a balloon catheter or a Dormia basket. In the early group, selective cannulation of the bile duct system was attempted and cannulation of the pancreatic duct system was avoided if possible.

Results

The ERCP and EPT were performed without local complications. At duodenoscopy, duodenal diverticulæ was seen in 2 of 14 patients in the delayed group and in 5 of 15 patients in the early group. The ERCP findings are given in Table 2. In six patients, one single stone could be demonstrated by the cholangiogram, 2–12 stones were found in the others. While the appearance of the papilla was normal in the group with the delayed investigation, a large oedematous papilla with submucosal bleeding or ulcerated mucosa was commonly seen in the early EPT patients. In four patients, impacted stones were found.

Delayed EPT

A successful EPT was performed in all patients, in one following a precut procedure. In one patient the Dormia basket was impacted. The basket wire was cut and the

Reprint requests: Arne R. Rosseland, Surgical Department, Central Hospital of Akershus, University of Oslo, N-1474 Nordbyhagen, Norway.
Submitted for publication: June 22, 1983.

TABLE 1. *Clinical Characteristics of 29 Patients with Acute Gallstone Pancreatitis*

	Delayed EPT	Early EPT
No. of patients	14	15
Age (years)	61-91	48-80
Sex	6 men, 8 women	9 men, 6 women
Complicating diseases	5 patients	10 patients
Onset to papillotomy	1-8 weeks	6-48 hours

endoscope removed and reinserted; the papillotomy was enlarged, and the Dormia basket could be removed. Two patients with adequate bile drainage but with residual stones at the ERCP control had a repapillotomy 1 week after the first. In one patient with a small initial papillotomy, a choledocholithotomy was performed 1 week after the EPT. At that time, no experienced endoscopist was available and, in spite of a symptom-free patient, the surgeon was reluctant to wait for a repapillotomy. The patient was operated with cholecystectomy and choledocholithotomy. Two further patients had a cholecystectomy 4 and 6 weeks after the EPT as the control ERCP had shown an impacted stone in the cystic duct.

Laboratory findings at the acute attack before EPT are given in Table 2. At the time of the EPT, serum amylase and liver function tests (with the exception of alkaline phosphatase) were normalized. The EPT was followed by a slight and transient elevation of bilirubin and transaminases in three patients.

During the follow-up period, five patients died from unrelated diseases without symptoms from their bile or pancreatic systems. The ERCP controls were performed in nine patients 1 month to 6 years after the EPT with normal biliary and pancreatic ducts. In two patients with

TABLE 2. *ERCP Findings in 29 Patients with Biliary Pancreatitis*

	Delayed EPT (n = 14)	Early EPT (n = 15)
Common bile duct		
One visible stone	4	2
Multiple stones	10	13
Impacted stone	—	4
Papilla of Vater:		
Normal	14	3
Oedematous with bleeding or necrosis	—	9
Duodenal diverticulum	2	5
Gallbladder		
Previous cholecystectomy	4	—
No/insufficient filling	3	6
Stones	6	9
No visible stone	1	—
Pancreas		
Normal findings	11	5
No/insufficient filling	2	9
Pancreatitis	1	1

TABLE 3. *Laboratory Findings in 29 Patients with Acute Gallstone Pancreatitis. The Number of Patients with Pathological Values Are Given*

	Delayed EPT (n = 14)	Early EPT (n = 15)
Leucocytes > $10 \times 10^3/\text{mm}^3$	9	11
Bilirubin/s > $20 \mu\text{mol/l}$	9	12
Alkaline phosphatase > $4.5 \mu\text{kat/l}$	10	13
ASAT > $0.70 \mu\text{kat/l}$	7	12

diagnosed gallbladder stones, no stones were detectable in spite of adequate filling of the gallbladder at the ERCP control. Stone passage had occurred without clinical symptoms. The hospital stay following EPT ranged from 2-14 days (average 5.6 days).

Early EPT

Impacted stones were found in four patients. In order to obtain a deep adequate cannulation of the common bile duct, a precut was performed in two patients. Stone extraction by balloon catheter was performed in three patients, while in the other patients the stones passed spontaneously after the papillotomy. In all patients, the papillotomy was followed by a prompt and marked improvement or relief of symptoms. No patient required repapillotomy.

A 68-year-old man who had had three previous heart infarctions with uncompensated heart disease died suddenly 5 days after the EPT because of heart failure. Autopsy showed a moderate pancreatitis and an adequate opening at the papilla without any reaction in the surrounding tissue.

Another patient with severe hemorrhagic pancreatitis and in septic shock at admittance had an uncomplicated EPT with stone passage and prompt clinical improvement. Septic complications, however, necessitated two laparotomies with excision of necrotic pancreatic tissue, cholecystectomy, and peritoneal drainage. She was kept in the intensive care unit for 3 months but eventually recovered. Three patients had a cholecystectomy 1 week to 1 year after the EPT because of acute cholecystitis. Ten patients with the gallbladder *in situ* have remained symptom-free. In two patients with gallbladder stones prior to the EPT, ERCP control 6 months and 1 year after the EPT, showed passage of the stones without any clinical symptoms. ERCP controls in 11 patients 1-36 months after the EPT have shown normal bile and pancreatic ducts.

The laboratory findings are given in Table 3. The mean elevation of serum amylase was 11.4 times the upper normal limit. Elevation of liver function tests and leucocytosis were seen in the majority of the patients. The EPT was followed by normalization of the laboratory

findings with exception of alkaline phosphatase during the first week.

The hospitalization time in 11 patients without laparotomy ranged from 2–12 days (average 6.5 days). In three patients who had a post-EPT laparotomy, the hospital stays were 24, 25, and 155 days, respectively.

Discussion

Whereas alcoholic or idiopathic pancreatitis usually respond to conservative medical management, conservative treatment for acute gallstone pancreatitis is unsuccessful in 20–30% of the patients.^{10,11} Clinical deterioration necessitating emergency surgery in these extremely ill patients has a high mortality.¹¹ Therefore, early surgical treatment with surgical sphincteroplasty has been advocated.⁶

As mechanical obstruction is the main problem, the logical treatment should be removal of these obstructive factors. Whereas acute pancreatitis has been considered as a strong contraindication for ERCP,⁷ the results of the present series show that even in the early stage ERCP is a safe procedure. Diagnostic endoscopic retrograde cholangiography should be a primary diagnostic procedure in patients with suspected gallstone pancreatitis. As we do not know the risk of pancreatography in acute pancreatitis, filling of the pancreatic duct system should be avoided or limited as much as possible.

Even endoscopic papillotomy could be performed without increased risks in the early stage of pancreatitis; this is in accordance with Safrany and Cotton⁸ and Spuy.⁹ The EPT was effective in symptom relief and drainage of the duct systems. The smaller papillotomies performed during the early period which necessitated repapillotomy in two patients probably reflect the more cautious attitude to the papillotomy procedure during this early period.

A puzzling problem may be the patient with the gallbladder still present at the time of EPT. Stone et al.¹² found concomitant acute cholecystitis present in nearly one-third of the patients operated upon during the acute stage of pancreatitis, but only in 3% treated operatively 3 months following the initial attack. In this series, two patients were operated with cholecystectomy within 1 week after the EPT because of persistent clinical symptoms. If symptoms are not revealed by the EPT, the risk of cholecystitis with perforation must be considered.

Timing of the operation has been a matter of discussion.^{6,11,12} Operative treatment during the first admission resulting in appropriate surgical relief of the symptoms seems to be a safe procedure and prevents recurrent attacks.^{13,14} The need of a further admission to the hospital for delayed surgical management is avoided. In this series, the majority of the patients remained symptom-free and did not require further surgery. In four patients with previous stones in the gallbladder before EPT, the ERCP control showed no stones in spite of adequate filling of the gallbladder, and none of these patients had any clinical symptoms.

In conclusion, this study showed that ERCP seems to be a safe diagnostic procedure in the acute stage of biliary pancreatitis as well as in the elective phase. Even so, EPT seems to be a safe treatment of obstructive pancreatitis securing an effective drainage, relief of symptoms, and normalization of the laboratory findings.

References

1. Paloyan D, Simonowitz D. Diagnostic considerations in acute alcoholic and gallstone pancreatitis. *Am J Surg* 1976; 132:329–331.
2. McMahon M, Pickford IR. Biochemical prediction of gallstones early in an attack of acute pancreatitis. *Lancet* 1979; 541–543.
3. Opie E. The etiology of acute hemorrhagic pancreatitis. *Bull John Hopkins Hosp* 1901; 12:182–188.
4. Kelly TR. Gallstone pancreatitis: pathophysiology. *Surgery* 1976; 80:488–492.
5. Acoste JM, Ledesma CL. Gallstone migration as a cause of acute pancreatitis. *N Engl J Med* 1974; 290:484–487.
6. Acosta JM, Rossi R, Galli OMP, et al. Early surgery for acute gallstone pancreatitis. Evaluation of a systematic approach. *Surgery* 1978; 83:367–370.
7. Demling L, Classen M, Frühmorgen P. *Atlas der Enteroskopie*. Springer-Verlag, Berlin-Heidelberg-New York, 1974; 40.
8. Safrany L, Cotton PB. A preliminary report: urgent duodenoscopic sphincterotomy for acute gallstone pancreatitis. *Surgery* 1981; 89:424–428.
9. Spuy VDS. Endoscopic sphincterotomy in the management of gallstone pancreatitis. *Endoscopy* 1981; 13:25–26.
10. Fuy CF. The operative treatment of pancreatitis. *Arch Surg* 1969; 98:406–417.
11. Ranson JHC. The timing of biliary surgery in acute pancreatitis. *Ann Surg* 1979; 189:654–663.
12. Stone HH, Fabian TE, Dunlop WE. Gallstone pancreatitis. Biliary tract pathology in relation to time of operation. *Ann Surg* 1981; 194:205–312.
13. Elfström J. The timing of cholecystectomy in patients with gallstone pancreatitis. *Acta Chir Scand* 1978; 144:487–490.
14. Paloyan D, Sunonowitz D, Skinner DB. The timing of biliary tract operations in patients with pancreatitis associated with gallstones. *Surg Gynecol Obstet* 1975; 141:737–739.