Duodenoscopic Sphincterotomy in a Northern Indian Hospital

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Abstract

In a 36-month period, 154 duodenoscopic sphincterotomies (DS) were performed on 120 patients in a Northern Indian hospital. The major indication for DS was choledocholithiasis (DS 8%), the rest being done for indications like papillary stenosis, periampullary carcinoma and the sump syndrome. Seven patients (5.8%) had significant associated medical illnesses. An adequate sphincterotomy was achieved in 91.6% of patients, with successful stone extraction in 93.5% of them. Overall clearance of the common bile duct (CBD) was thus achieved in 87.5% of the patients subjected to DS. Two patients (1.7%) died after undergoing DS, and six (5%) experienced early complications that necessitated emergency operation in two of them (1.7%). DS appears to be the treatment of choice for the management of choledocholithiasis in the postcholecystectomy patient as well as in the patient with gallbladder in situ who has cholangitis or jaundice or associated medical illness that may constitute a high risk for surgery.

Key words: Gallstones, choledocholithiasis, duodenoscopic sphincterotomy, cholangitis, postcholecystectomy.

Introduction

Duodenoscopic sphincterotomy (DS) is well established in the West and Japan as an efficient means of removing common bile duct (CBD) stones. Its utility in India and other Oriential countries has, however, not been evaluated. It has been suspected that the procedure may have a limited role in these countries because of the belief that gallstones are not very common there and because the procedure demands sophisticated equipment and technical expertise and a rather high cost of establishment.

We were, however, impressed by the high cholecystectomy rate as well as the frequent occurrence of obstructive jaundice due to CBD stones in hospitals in Northern India and felt that a large number of our patients would benefit from DS. We therefore report here our experience of performing DS in 120 patients, 115 of whom had CBD stones, during the 36-month period June 1, 1985—May 31, 1988.

Material and Methods

During the study period, 431 endoscopic retrograde cholangio-pancreatographies (ERCP) were performed by a single endoscopist (RTx); of these 154 were accompanied by attempted sphincterotomies. Duodenoscopic sphincterotomy was performed as an outpatient procedure, with overnight observation if required, except in 25 patients who were admitted to hospital when the decision was made to do the DS. Before undertaking DS, it was ensured that the prothrombin time as well as bleeding and clotting times were normal. All jaundiced patients received prophylactic antibiotics, usually cephalixin 500 mg 6 hourly, from 24 hours prior to the procedure. A combination of intravenous penicillin and dianepin was used for sedation. Duodenal relaxation was obtained with intravenous hyoscine hydrobromide (Buscanept®). An Olympus JF-17 10 duodenoscope was used with an Erlanger-type sphincterotomy and an electrosurgical unit, model UE-2 supplied by Olympus Optical Co., Japan for electrosurgery. Sphincterotomy of the desired length that clearly exposed the CBD opening, usually about 1.5 cm long, was achieved with a bended current. Precutting was not routinely employed. An expectant policy was followed for the passage of common duct stones; extraction of the stones by a Dormia basket was done only in those patients who did not spontaneously clear their bile ducts. Bile duct clearance was ascertained in them by T-tube cholangiograms (24 patients) or repeat ERCPs (81 patients) 3 days to 2 weeks after the DS. The sphincterotomy was extended, if necessary, when repeat cholangiography showed failed clearance of the ducts. The clinical presentation, liver function tests and ultrasonographic findings were prospectively recorded for all patients as were the early complications and outcome of the procedure.

Results

One hundred and fifty-four DS were attempted in 120 patients (42 males, 78 females; age range 8-65 years, mean 47.5 years). The major indication for DS was CBD stones in 115 (95.8%) patients. Other indications included sump syndrome in two patients, papillary stenosis in two patients, and periampullary carcinoma in one patient. Of patients with CBD stones, 66 (57.4%) had earlier undergone cholecystectomy while 49 (42.6%) had their gallbladders in situ.

Postcholecystectomy patients either had recurrent abdominal pain or were referred with a T-tube in situ (Table). Jaundice was present in 16 (24.2%) patients at the time of the procedure. Of the patients with gallbladder in situ on the other hand, 44 (89.8%) were jaundiced; 14 (28.6%) of these had acute cholangitis while 23 (46.9%) others gave a history of recurrent or recent episodes of cholangitis. Five patients with acute cholangitis had sepsicaemia and hypotension. One of them had altered sensorium and hepatoportal syndrome. Seven patients, two after cholecystectomy and
five with their gallbladders in situ, had major associated medical illnesses.

Table: Clinical profile of patients with choledocholithiasis undergoing DS (n = 115)

<table>
<thead>
<tr>
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<th>Post choledectomy (n = 66)</th>
<th>Gallbladder in situ (n = 49)</th>
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</thead>
<tbody>
<tr>
<td>Pain</td>
<td>34 (51.5%)</td>
<td>27 (55.1%)</td>
</tr>
<tr>
<td>Jaundice</td>
<td>16 (24.2%)</td>
<td>44 (89.8%)</td>
</tr>
<tr>
<td>Acute cholangitis</td>
<td>4 (6.1%)</td>
<td>14 (28.6%)</td>
</tr>
<tr>
<td>History of cholangitis</td>
<td>6 (9.1%)</td>
<td>23 (46.9%)</td>
</tr>
<tr>
<td>Major associated medical illness</td>
<td>2 (3.0%)</td>
<td>5 (10.2%)</td>
</tr>
<tr>
<td>T-tube in situ</td>
<td>25 (37.9%)</td>
<td></td>
</tr>
</tbody>
</table>

Success and Failures
DS was achieved in 144 (93.5%) of 154 attempts and in 110 (91.6%) of 120 patients. DS was unsuccessful in ten patients—in five because of large juxtapapillary diverticulae and in the remaining five because of failure to cannulate the CBD, possibly owing to a stone impacted at its lower end. Clearance of bile ducts was finally achieved in 105 (87.5%) patients—all five with non-calculus bile duct obstructions and 100 of 115 patients with choledocholithiasis. Eighty one (73.6%) of the 112 patients who had a successful sphincterotomy cleared their bile ducts spontaneously. Thirty two patients (29.1%) including some of the latter, had however required a second (30 patients) or a third (2 patients) session to extend the cut. This was followed by a successful stone extraction with a Dormia basket in 12 patients. Six additional patients in whom basketing had failed were also subsequently documented to have spontaneously passed their stones.

DS failed to clear the bile ducts in five patients. Three of them had large, single stones (15, 20, 20 mm respectively) while the other two had one large and multiple small calculi. Three of them underwent surgery—one electively and the other two urgently. Emergency surgery was undertaken for bleeding after the third session of sphincterotomy in one and for severe supplicative cholangitis in the other. The fourth patient with failed clearance of CBD despite a large sphincterotomy was asymptomatic eight weeks after the third DS. This patient is presently being treated with oral bile acids. The fifth patient died, possibly due to an unrelated cause.

The patients with papilloscopy stenosis, diagnosed on the basis of clinical symptoms after choledocystectomy, dilated bile ducts (> 10 mm) and delayed emptying of contrast (> 45 min), were successfully undergone sphincterotomy and were asymptomatic on follow-up at 5 months and 15 months respectively.

One patient with suspected periampullary carcinoma on side viewing endoscopy and ERCB but with negative biopsies underwent diagnostic sphincterotomy and repeat biopsy. This confirmed the presence of periampullary adenocarcinoma.

Two patients with the sump syndrome, who had episodic jaundice, fever and pain following cholecystectomy and choledochoduodenostomy, underwent a successful sphincterotomy and have remained asymptomatic on follow-up for the last 18 months.

Complications
Early complications were recorded in 5% of cases and were apparent within 48 hours after performing the procedure. Two patients had hemorrhage after sphincterotomy; one of them recovered on conservative treatment without blood transfusion and the other required two units of transfusion and underwent emergency surgery for control of bleeding. Bleeding occurred in both cases when large sphincterotomies (> 15 mm) were performed with the intent of extracting big stones. Two other patients developed cholangitis, both had had prior episodes of cholangitis. In one of them cholangitis was successfully controlled with broad-spectrum antibiotics. The other patient, however, had to undergo emergency surgery to remove a large stone that could not be extracted despite a large cut and repeated basketing. One other patient developed acute pancreatitis, but responded well to conservative treatment.

There were two deaths in the present series. The first was a patient who presented with acute supplicative cholangitis due to choledocholithiasis that was complicated by sepsis and encephalopathy and acute renal failure. A large sphincterotomy followed by basketing succeeded in removing several calculi. A nasobiliary drain was inserted. However, it drained bile for only 24 hours. The patient's condition continued to deteriorate and he died on the 4th day after DS. A second patient, who had cleared bile ducts after an adequate DS, suddenly collapsed and died at home 3 days after the procedure.

Discussion
In the present series of 120 patients, we performed DS successfully in 110 (91.6%) patients—105 with CBD stones and five with non-calculus bile duct obstruction. Bile duct clearance was achieved in 87.5% of them. These results compare favourably with those reported from other centres. In 5 of the 105 CBD stone patients with successful DS, ductal stones could not be retrieved despite adequate sphincterotomy. Extraction of the stones was unsuccessful in them because of the large size of their stones (15-20 mm diameter), although occasional stones of much larger size (20-25 mm) were successfully extracted. All the ten patients in whom DS could not be done were patients with CBD stones.

A second or third session of sphincterotomy was required to extend the cut in 28.4% of patients to achieve bile duct clearance; this is similar to the figure of 20% reported elsewhere. While 81% of the patients passed their stones spontaneously, 19% underwent successful stone extraction with Dormia basket. Similar results (73-83% successful passage, 21-52% successful extraction by basketing) have been noted by other workers.
The single most common indication for DS is common bile duct calculi, accounting for 77-92% of the patients in different series. In the present series, 95% of the patients had DS for common duct calculi. While the role of DS is well established in the high risk post-cholecystectomy patients with retained calculi,1,7,8 there is an increasing trend favoring sphincterotomy foracular stones in the high risk elderly patients with gallbladders in situ.1,9 Even in the latter setting, DS has been shown to be a safe procedure and has been accompanied by a low incidence of subsequent gallbladder symptoms.10-12 Sphincterotomy is also being performed prior to elective surgery for the otherwise fit patient who has an added risk for surgery, such as jaundice, ascending cholangitis or associated medical diseases, in the hope of performing a lesser procedure by avoiding CBD exploration.13-17

In keeping with this trend, the percentage of patients undergoing DS has been going up from the figure of 10-20% in earlier series to 58% in recent series.9 As many as 42-56% of our CBD stone patients undergoing DS had their gallbladders in situ.

Another small group of our CBD stone patients (25 patients) were those who had recently had cholecystectomy and CBD exploration and had a T-tube in situ at the time of DS. We did not encounter any special problems in doing the procedure in them and found the results as gratifying as in other groups of patients with CBD stones. In fact, DS appears to be the most expedient way of treating CBD stones in postoperative patients with T-tube in situ.13 This is so because dissolution of the stones by chemicals perfused through the T-tube has yielded poor results and it is difficult and expensive to procure these chemicals in India.14-17

Our experience with sphincterotomy for indications other than CBD stones such as papillary stenosis, periampullary carcinoma and stump syndrome, has been good although limited. In all five such patients CBD clearance was achieved; this is in conformity with the reported results.13-15

Immediate complications were noted in 5% of our patients and DS 7% required emergency surgery. Others have reported complications in 7-10% of patients,1,7,9,16 requiring emergency operations in 1-2% of them, with an overall mortality of 1%-5%. The main complications were hemorrhage and cholangitis. A mortality of 1-6% occurred in the present series. One patient died of acute suppurative cholangitis, sepsis and renal failure despite an apparently adequate biliary drainage. We believe that he had already far advanced disease and that the therapeutic intervention was too late to prevent death.17 The cause of sudden death in the other patient was perhaps unrelated to his CBD stones or the DS done for them.

In conclusion, DS is a safe procedure and is the treatment of choice for common bile duct stones in post-cholecystectomy patients as well as in the high risk or acutely ill patients with gallbladder in situ. It may however be useful in other groups of patients with CBD stones as also in patients with noncalcified bile duct obstruction. The procedure needs to be set up in several centres in the country, particularly in Northern India where gallstone disease is most prevalent.2 The present report and two earlier reports of DS from the country indicate the trend which should be supported further.

References