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Sphincterotomy for Biliary and Pancreatic Disease

Indications and Technique.

Jorge Puig La Calle, MD* and Francisco Badosa, MD

Sphincterotomy has a definite role in biliopancreatic surgery and must be included in the armamentarium of every abdominal surgeon. In recent years there has been some controversy about the effectiveness of the procedure as compared to choledochoduodenostomy in correcting distal common duct obstruction and in preventing recurrent disease.1-3 We are not going to enter in this discussion for we believe that each procedure has its own indications and, sometimes, they may even be complementary.

We group the indications for sphincterotomy in three different categories: It may be of Necessity, Utility, or Security.

**Sphincterotomy of Necessity.** The procedure is planned to cure the underlying disease and therefore is a real therapeutic measure. We include in this group:

A) Diseases of the sphincter (ampullary stenosis, "Odditis," sclerosis of the sphincter of Oddi) that can be primary (Del Valle-Donovan) or secondary functional, metabolic, biliary or pancreatic).
The diagnosis of "Odditis" on clinical grounds is difficult and often uncertain because the symptoms are vague and the laboratory tests inconclusive. We rely mostly on operative findings, especially on the results of cholangiomanometry. A dilated common duct (more than 12 mm) and an opening pressure of more than 15 cm of water (in the absence of an impacted common duct stone) associated to the typical x-ray appearance of the terminal bile duct (Figures 1, 2 and 3) is sufficient evidence of a diseased sphincter. Further evidence is the inability to pass a number 3 Bakes' dilator through the ampulla at the time of operation by the method described by Cattell and Warren. This criterion is followed by many others. We believe that attempts to pass a rigid instrument through a diseased sphincter may be dangerous and we try to avoid this.

B) Hydatid cysts of the liver. When there is communication with a major bile duct and treatment is other than by Roux-Y cystojejunostomy, it is advisable to add sphincterotomy to the primary treatment to prevent the development of an external biliary fistula. We also perform sphincterotomy if we find small hydatid cysts inside the common bile duct.

Sphincterotomy of Utility. There are cases when sphincterotomy becomes mandatory to obtain adequate exposure of the terminal common duct to deal with specific problems such as an impacted stone or multiple stones in the lower duct. Also, the cannulation of the duct of Wirsung for a pancreatogram requires a preliminary sphincterotomy in most instances.
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Figure 3
Cholangiogram in a case of proven “Odditis” shows retention of contrast material and dilatation of the common duct and duct of Wirsung.

Sphincterotomy of Security. We perform sphincterotomy as a prophylactic measure when there is a reasonable risk of recurrent disease and we are not absolutely certain of the complete removal of intraductal stones. Such is the case with intrahepatic stones, multiple common duct stones, the presence of biliary sludge, cholesterosis, etc. By relieving biliary stasis, sphincterotomy will prevent the formation of recurrent stones and will allow the passage into the duodenum of any retained stone, missed at the time of surgical exploration. In some cases of pancreatic pseudocyst, it is wise to perform sphincterotomy to prevent retention of pancreatic juice and to facilitate the discovery of any communicating smaller cysts.

Technique
Many techniques have been described²⁸ and we do not pretend that ours is original, but we like to emphasize a few important points.

We always explore first the bile ducts through a longitudinal choledochotomy. When we decide to do a sphincterotomy, the duodenum is “Kocherized” and a filiform bougie (Figure 4) is introduced through the choledochotomy into the duodenum. The tip of the filiform can be seen pushing against the anterior duodenal wall. A 5 mm incision is made at this point and the filiform is exteriorized through it. The follower is now attached to the filiform bougie and it is pulled down. As the funnel-shaped tail of the follower becomes engaged at the lower end of the duct, the ampulla protrudes through the anterior wall of the duodenum like a nipple (Figure 5). Two number 4-0 silk stay sutures are applied to the edge of the papilla at the 3 and 9 o’clock positions. The sphincter is now divided in its entire thickness at 11 o’clock by incising it with the knife, having the follower as stent. The length of the sphincterotomy varies between 10 and 20 mm, the average size being 15 mm. As the sphincter has been incised, the whole follower passes through and the divided papilla is held by the two stay sutures. We do not suture the cut edges of the papilla unless there is undue bleeding, a rare eventuality. Next we catheterize the duct of Wirsung with a polyethylene catheter and usually we obtain pancreatograms. In a few cases the sphincter of Wirsung itself must be divided a couple of millimeters because of stenosis at that point. This stenosis can be demonstrated anatomically or in the pancreatogram.

The stay sutures are removed and the duodenotomy is closed with a single layer of number 4-0 silk, interrupted seromuscular sutures. A thin T-tube is inserted in the bile duct and the choledochotomy is closed with interrupted number 5-0 silk sutures. A cigarette drain is placed in Morrison’s pouch.
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Figure 4
Filiforms and follower used for identifying and exposing the papilla of Vater, for sphincterotomy.

Figure 5
Steps in the technique of sphincterotomy. See text.
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Discussion

In the last 15 years more than 400 sphincterotomies have been performed at our Department of Surgery. To determine frequency, mortality and morbidity of this procedure, we reviewed the first 100 sphincterotomies and compared them to the last 100.

The first 100 sphincterotomies were performed between 1958 and 1962 and represented 29.3% of 341 operations for biliary and pancreatic diseases done during this period of time. There were two postoperative deaths (2%). One was directly related to a technical error and the other was due to postoperative hepatic coma. We had no major complications.

The last 100 sphincterotomies represented 16% of 622 operations for biliary and pancreatic diseases performed at our service between 1970 and 1974. Three patients died within 30 days of the operation, giving a postoperative mortality of 3%. One patient had acute pancreatitis followed by a pancreatic abscess that was drained on the seventh postoperative day. His condition deteriorated progressively and he died on the fourteenth day. Another patient had a vagotomy, pyloroplasty and suture-ligation of a bleeding duodenal ulcer. At routine exploration of the peritoneal cavity, common duct stones were found. They were removed and a sphincterotomy was carried out. He died on the third postoperative day of a recurrent massive hemorrhage. The third patient died in a state of shock on the second postoperative day. The autopsy failed to reveal the cause of death. In this group, two patients developed melenas postoperatively but these subsided spontaneously. Another had a bile peritonitis following the removal of the T-tube.

Comparing these two series of patients, we see that the frequency of sphincterotomy has decreased to almost half. We think there are two principal reasons for this: 1) Stricter indications and 2) Patients are seen earlier before they develop the complications of choledolithiasis.

The reported mortality of sphincterotomy varies from 0 to 13% — with a mean of 4.6%. Our mortality rate of 2-3% has not changed significantly in the two series.

Finally, we want to emphasize that we do not like to call this procedure papilotomy because that means only the divisions of the little pylorus of Westphal. It is not sufficient to relieve the stenosis of the papilla. We never do a sphincteroplasty because we think that is unnecessary and may even be dangerous.

References


