

PERSISTENCE OF SYMPTOMS FOLLOWING CHOLECYSTECTOMY WITH SPECIAL REFERENCE TO ANOMALIES OF THE AMPULLA OF VATER

WARREN H. COLE, M.D. AND WILLIAM J. GROVE, M.D.

CHICAGO, ILL.

FROM THE DEPARTMENT OF SURGERY, UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE,
AND ILLINOIS RESEARCH HOSPITALS, CHICAGO

ALTHOUGH GALLBLADDER DISEASE is a very common lesion, and a great deal of study has been devoted to the subject in the past decades, we are still confronted with the fact that often, indeed, cholecystectomy fails to relieve symptoms. Summary of numerous reports indicates that we may expect good results following cholecystectomy in 80 to 85 per cent of cases. This figure will be as low as 60 per cent when cholecystectomy is performed for cholecystitis without stone and in the absence of pain. Good results will be as high as 95 per cent in patients having typical gallbladder colic and stones in the gallbladder. Persistence of symptoms following cholecystectomy is often referred to as post-cholecystectomy syndrome.

In this presentation the authors wish to call attention particularly to anomalies of the ampulla of Vater and duodenal papilla as a cause of persistent symptoms. As discussed later, it is urged that when exploratory celiotomy reveals no obvious cause for the persistent symptoms, the duodenum should be opened and the ampulla of Vater inspected.

CAUSES OF PERSISTENT SYMPTOMS FOLLOWING CHOLECYSTECTOMY

At times it will be extremely difficult to determine the cause of recurrent or persistent symptoms following cholecystectomy. Cholecystography will be of great

value in differential diagnosis before operation, but obviously will be of no value afterwards. It must be borne in mind, however, that on a few occasions (2 to 3 per cent of cases), patients will have gallbladder attacks relieved by cholecystectomy even though cholecystography reveals a normal shadow. Likewise, it must be emphasized strongly that even though absence of shadow is almost a 100 per cent assurance that gallbladder disease is present, it does not necessarily mean that the symptoms are being caused by gallbladder disease.

1. *Erroneous Diagnosis (Symptoms Caused by Lesions Outside Biliary Tract)*. Quite certainly, erroneous diagnosis is the most common cause of persistence of symptoms following cholecystectomy. Chronic constipation, arthritis of the spine, renal disease and peptic ulcer are common lesions producing symptoms similar to those of gallbladder disease; for this reason it is essential that a thorough examination be made in all patients with known gallbladder disease, lest a cholecystectomy be performed for symptoms actually caused by some other lesions.

2. *Stones in the Common Duct*. When intermittent jaundice and acholic stools are present, a preoperative diagnosis of stones in the common duct can be made with a high degree of accuracy. However, we must always bear in mind the fact that not all patients with stones in the common duct are

jaundiced. For example, McKittrick and Wilson⁸ have reported that only 55 per cent of their patients with stones in the common duct were jaundiced. This point emphasizes the necessity of careful palpation of the common duct in all patients upon whom cholecystectomy is being performed. Obviously, when stones are palpable the common duct must be opened and the stones removed. Other indications are dilatation of the duct, thickening of the wall and history of jaundice. However, the authors emphasize strongly the fact that the most common cause of jaundice is not surgical but is medical, *i.e.*, virus hepatitis. Therefore, the clinician must be aware of this possibility and in doubtful cases must carry out liver function tests and other procedures as indicated.

All surgeons having considerable experience with gallbladder surgery have had more than one patient return with symptoms caused by stones left in the common duct at a previous operation. Quite certainly, a vast majority of stones found in the common duct after cholecystectomy represents those not discovered and removed at the operating table. However, the authors are convinced that stones can form in the intrahepatic ducts or in the common duct.

3. *Chronic Pancreatitis.* This lesion mimics gallbladder disease, but typically the pain is located in the epigastrium in a transverse location radiating frequently to the back. However, variability in type of pain is just as common in chronic pancreatitis as it is in gallbladder disease. On many occasions, jaundice is produced by pancreatitis. Very commonly, the jaundice encountered in pancreatitis is produced by localized pancreatitis in the head of the pancreas; this lesion feels like a carcinoma and may be extremely difficult to differentiate from it on the operating table. In addition to localized pancreatitis in the head of the pancreas, jaundice may be produced by chronic sclerosing pancreatitis which may produce compression of the pancreatic portion of the

common duct or its destruction. Cole and associates¹ found that chronic pancreatitis was the cause of benign stricture of the common duct in 8.6 per cent of 92 patients with stricture reported by them.

There is a definite relationship between gallbladder disease and pancreatitis. Usually, pancreatitis is relieved by cholecystectomy; on the other hand, pancreatitis occasionally develops following removal of the gallbladder. Cholecystectomy could be the causative factor in pancreatitis if cholecystectomy produced a spasm of the sphincter of Oddi instead of the usual relaxation; spasm might give rise to obstruction with consequent reflux of bile into the pancreatic duct. On the other hand, relief of pancreatitis by cholecystectomy might be caused by the relaxation of the sphincter so commonly produced by removal of the gallbladder; relaxation of the sphincter would obviously lessen the tendency for reflux of bile into the pancreatic duct. In a study of patients with pancreatitis. Siler and Wulsin¹³ reported that gallbladder disease was present in 34.2 per cent of 111 cases of acute pancreatitis; however, in the authors' experience, the incidence of gallbladder disease in pancreatitis is much larger than that.

4. *Enlarged Cystic Duct Stump.* Enlargement of the cystic duct stump has been reported by many authors as being a common cause of persistence of symptoms following cholecystectomy, although the authors have encountered it on only one or two occasions. Peterson¹¹ has reported 42 such cases, 14 of which were previously reported by Beye. More recently, Garlock and Hurlitt⁶ have reported 30 cases. In their series, symptoms began three to 27 months after cholecystectomy and were approximately the same as before cholecystectomy. Jaundice was present in 22 of these cases; stones were found in the stump of the cystic duct in six patients and in the common duct in 13. With stones in the common duct it would of course be difficult to determine what part of symptoms

could be ascribed to an enlarged or persistent duct stump. In Garlock and Hurlitt's series, 16 per cent of the patients were those having cholecystectomy for acute cholecystitis, indicating that perhaps the surgeon had left all or a large portion of the cystic duct at time of operation, perhaps because the existing inflammation made closer amputation dangerous. The authors warn that if effort is made in every case to amputate the cystic duct flush with the common duct, damage will be inflicted on the common duct in many instances; this damage may give rise to stricture formation. Most surgeons would agree it is better to have three or four patients with recurring symptoms because of a cystic duct stump rather than have one stricture result from pinching of the common duct by ligature on the cystic duct.

5. *Anomalies.* Anomalies of the sphincter of Oddi and ampulla of Vater have not been emphasized as a significant cause of symptoms following cholecystectomy. The authors are reporting two cases which illustrate this complication. In both these patients (see protocols) symptoms recurred following cholecystectomy. At operation one patient had a stenosis of the sphincter of Oddi and the other had an anomaly consisting of junction of the common duct with the pancreatic duct by way of an opening no larger than 1 mm. in diameter. In the first patient, in whom the stenosis of the sphincter of Oddi was found, symptoms were completely relieved by section of the sphincter of Oddi (see Fig. 1). In the second case, the pain complained of before the operation was abolished but the patient developed pain in another quadrant of the abdomen. This patient was an inmate of a mental institution and it is obvious that we cannot assay the results accurately. We report her largely to illustrate the striking anomaly as shown in Figure 2.

Case 1.—Patient No. 367,345 was a female age 55, who entered Illinois Research Hospital Novem-

ber, 1950, complaining of pain in the R.U.Q. History revealed cholecystectomy 26 years ago for pain in the R.U.Q. Shortly after the operation the symptoms returned with identical characteristics; along with the pain there was eructation and flatulence with intolerance to fatty food. The attacks of pain occurred 2 or 3 times a month and were associated with vomiting. The attacks usually lasted several hours. The patient stated that in April or May, 1950, she had a yellow skin, which we might interpret as jaundice, but with no certainty. Examination upon admission to our hospital revealed moderate tenderness in the R.U.Q. with an area of maximum tenderness along the right costal margin. After study during the next few days, operation was advised.

On November 24, 1950, operation was performed. The common duct was about of average size, and its wall thin. A probe was passed downward but did not appear to enter the duodenum. No stones were found in the common duct. In view of the rather severe symptoms which were typical of biliary tract disease, we opened the duodenum to inspect the papilla of Vater. The lumen of the sphincter of Oddi was distinctly smaller than normal, barely admitting a tiny probe. We cut the sphincter, thus creating an opening slightly less than 1 cm. in diameter from the common duct into the duodenum. The longitudinal incision in the duodenum was then closed transversely, and a T-tube placed in the common duct. The wound was closed around the T-tube.

Convalescence was uneventful. No pain was present during convalescence in the hospital. When last seen 12 months after operation, the patient stated that she had had no pain whatever since the operation.

Case 2.—Patient No. 295,139 was a female age 42, who entered Illinois Research Hospital January 30, 1951, with a complaint of sharp, cutting pain in the R.U.Q., of one year's duration. Patient had a cholecystectomy in 1948. For about 6 months following cholecystectomy she had relief from pain. At that time the pain began to recur, and during the past year has been fairly constant. The pain was located in the R.U.Q. radiating to the back. The pain was severe, coming on in attacks with relief between attacks. No vomiting was present with the attacks.

Examination on admission revealed moderate tenderness in the R.U.Q. with slight muscle spasm. No masses were felt. There had been no history of jaundice and no evidence of icterus at the present time. After thorough study for a few days, celiotomy appeared justifiable even though the patient had a history of mental instability.

Abdominal operation was performed on February 16, 1951. Numerous adhesions were present in the R.U.Q. No stones were palpable in the common duct, which was surrounded by a lot of adhesions. We opened the duodenum over the papilla and found clear fluid, suggestive of pancreatic juice, draining from it. We searched for 10 or 15 minutes for an additional opening for the common bile duct but did not find it. However,

granted that the patient's mental instability makes a correct assay of results of the operation difficult.

The two anomalies just presented probably represent only a portion of the anomalies existing. For example, all surgeons doing biliary surgery have noted on numerous occasions that it is difficult or even

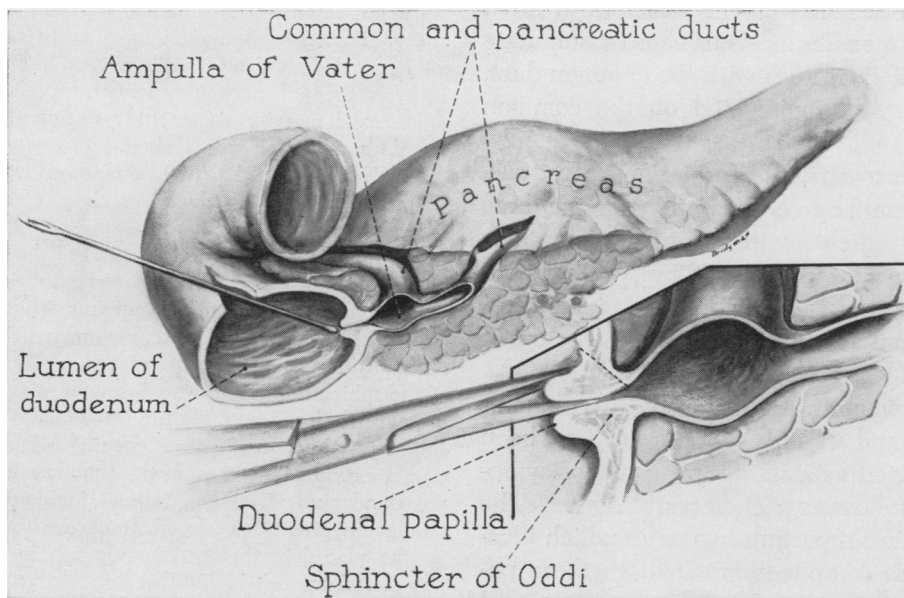


FIG. 1.—This patient had a cholecystectomy 26 years ago for pain in the right upper quadrant of the abdomen, but the pain recurred a few weeks later. The pain was characteristic of that produced by gallbladder disease. At operation one year ago, a stenosed sphincter of Oddi was sectioned through a transduodenal approach, as illustrated. Since this operation she has had complete relief of pain (see protocol).

at that moment we noted a drop of bile-stained fluid coming from the papilla. We then cut through the sphincter of Oddi and discovered that the duct we had exposed was the pancreatic duct, since a probe inserted entered the body of the pancreas. We finally found a tiny opening 1 or 2 mm. in diameter in the posterior portion of the pancreatic duct about 1½ cm. from the duodenal mucosa. When this was opened, an ounce or more of bile escaped rapidly, indicating that the bile was held under pressure. A gallbladder scoop inserted up into the common duct revealed no stones. We cut the bridge between the pancreatic and common bile duct so that we had an opening in the bile duct about 1½ cm. in length. The wound in the duodenum was then closed transversely. Recovery was uneventful and when the patient left the hospital there was no recurrence of pain. A few months later the patient developed pain in the L.L.Q. It is

impossible to pass a lead probe through the common duct into the duodenum when the common duct is being explored. On most occasions this difficulty appears to be related to tortuosity of the common duct when a stone or tumor is not the cause. Frequently, by manipulation of the probe or bending its tip in certain directions, it may be passed through the sphincter of Oddi and thus enter the duodenum. However, as already discussed, a true obstruction due to an anomaly may be present.

6. *Biliary Dyskinesia.* There is great controversy as to whether or not a true dyskinesia or spasm of the sphincter of Oddi exists. The authors are convinced that dyskinesia

probably exists, but frankly have not seen any patients which could definitely be so diagnosed. The existence of biliary dyskinesia is strongly supported by Mirrizi¹⁰ who has for years been advocating and performing cholangiography at the operating table. The authors have considered that in biliary dyskinesia, spasm alone would not be sufficient to produce jaundice, and have used this as a mechanism of differential diagnosis. However, Mirrizi reports jaundice as being present in some of the patients so diagnosed by him.

7. *Neuromata.* Womack and Crider¹⁵ have described denervation (technic described later) of the common duct and stump of the cystic duct as a mechanism of relieving symptoms developing after cholecystectomy. In their studies of this condition, they have called attention to the presence of a network of nerve fibers surrounding the common duct, and particularly at the junction of the cystic duct with the common. In some patients studied by Womack and Crider, the nerve filaments removed at operation were large, resembling neuromata. They report six patients with recurrent symptoms following cholecystectomy who were relieved by excising nerve containing scar tissue. They actually suggest that removal of the stump of cystic duct is not the primary explanation of relief of symptoms when a persistent stump of cystic duct is excised, and conclude that relief of symptoms by such a procedure is brought about by excision of the nerve elements. They contend that the development of pain several months after cholecystectomy (as is commonly noted), instead of immediately after cholecystectomy, supports their view that scar tissue envelops the nerve fibers and gives rise to pain. In support of their hypothesis, Womack and Crider agree with Zollinger,¹⁶ who found that in conscious patients distention of the gallbladder (by experimentation at the operating table) caused only moderate dis-

comfort with no pain; likewise, distention of the cystic or common duct caused epigastric distress with occasional vomiting, but no pain. Zollinger agrees with Morley that a true visceral pain mediated through the sympathetics does exist and that inflammation of the peritoneum causes referred pain over a peritoneocutaneous reflex.

8. *Psychoneurosis.* This is one of the most difficult conditions to identify or exclude when a patient with recurrent or persistent symptoms following cholecystectomy is being studied. The difficulty lies in the fact that we have no specific manifestations which are positive proof of the presence of psychoneurosis. Furthermore, even though the clinician may be convinced that a psychoneurosis is present, it may be quite difficult or impossible to exclude the possibility of an organic lesion which may give rise to or increase the symptoms of psychoneurosis. The fact remains that psychoneurosis is a dangerous diagnosis to make, and all clinicians should emphasize that thorough search for organic lesions must be made before this diagnosis can be designated as the cause of symptoms.

PROCEDURES INDICATED WHEN SYMPTOMS PERSIST FOLLOWING CHOLECYSTECTOMY

A very important aid in identifying the cause of persistent symptoms following cholecystectomy is a careful history. One should always inquire specifically for the presence of attacks of jaundice, acholic stools and dark urine. The latter two manifestations are frequently more accurate than jaundice itself, because patients often speak of their skin being yellow when true jaundice does not exist. Often it may develop that symptoms began shortly after an emotional strain was inflicted upon the patient. A complete physical examination is just as important, and should include roentgen ray examination of the back and various bony structures looking for arthritis of the spine and metastatic lesions of the bone. Occa-

sionally, gastro-intestinal studies with barium may be helpful by revealing the presence of peptic ulcer or a deformity of the duodenum caused by tumor of the ampulla of Vater or head of the pancreas. Frequent amylase determinations should be made, paying particular attention to blood during or immediately after an attack of pain. Examination of the stools may be extremely revealing if pancreatic disease is the cause of symptoms; in severe fibrosing pancreatitis there may be sufficient destruction of the pancreas to give rise to steatorrheic stools.

As previously stated, a diagnosis of psychoneurosis should be reserved for last consideration. A patient studied a few years ago by the senior author will never be forgotten, because an erroneous diagnosis of psychoneurosis was made. We had studied this patient carefully, presumably eliminating all organic disease. She was a neurotic individual, with many complaints, and obviously was exaggerating all symptoms. Psychiatric consultants agreed with us that functional elements were probably the cause of the patient's symptoms. However, after considerable study over several additional weeks we became uncertain as to the diagnosis of psychoneurosis and submitted the patient to celiotomy. At operation two or three small stones were found in the common duct and the patient has remained well since their removal. This case is cited to emphasize the danger of error in making the diagnosis of psychoneurosis for the explanation of abdominal pain. Accordingly, we wish to emphasize that it may be desirable indeed to resort to exploratory celiotomy in many patients in whom the diagnosis of psychoneurosis seems probable but uncertain. This statement is supported by the fact that in patients who have slight emotional instability, development of minor symptoms may give rise to psychoneurotic tendencies.

Stones in the Common Duct. The indications for choledochostomy and removal of stones are, of course, very clear cut when stones are present in the common duct. When cholecystectomy is being performed in patients with a history suggesting common duct obstruction, one must open the common duct, and attempt to pass a probe into the duodenum. If the probe does not pass into the duodenum, there will not be a very strong indication for opening the duodenum unless jaundice is present or a mass suggestive of a stone is palpable in the region of the ampulla of Vater. At times it may be very difficult to determine whether or not the probe has passed the sphincter of Oddi. A very helpful point is the fact that the gray color of the metallic probe can actually be seen through one wall of the duodenum (when pressed against it,) but cannot be seen through both walls of the intestine.

Chronic Pancreatitis. When diffuse sclerosing pancreatitis is present without production of jaundice, the authors agree with Doubilet and Mulholland⁵ that the sphincter of Oddi should be cut, but we prefer opening the duodenum to do this instead of by means of a sphinctertome. If jaundice is produced by diffuse pancreatitis, some type of transplantation of the common duct into the intestine must be performed; the authors prefer use of a Roux Y arm, although transplantation into the duodenum may be satisfactory. If jaundice is produced by localized pancreatitis of the head of the pancreas, some sort of shunt is indicated. Since this type of pancreatitis usually subsides in a few weeks following a shunt, an anastomosis between the gallbladder and duodenum is acceptable and perhaps preferable to anastomosis of the gallbladder to a defunctionalized loop or arm of jejunum, because the former procedure is simpler. If the patient is not jaundiced, and a small mass is felt in the region of the ampulla of Vater, the mass may be punctured with a hypodermic

needle to find out whether or not it is a stone. If the mass is a stone and cannot be removed by choledochostomy, it will be necessary to open the duodenum. If the mass is not a stone, it may be a localized pancreatitis, a tumor of the ampulla of Vater, or an early carcinoma of the head of the pancreas. It may be necessary to open the duodenum before a differentiation between these three lesions can be made.

Stump of Cystic Duct. When exploratory celiotomy is performed for persistent

Biliary Dyskinesia and Anomalies of the Sphincter of Oddi. Several methods of treatment of these conditions have been recommended, perhaps because no single one has been entirely satisfactory.

1. *Section of the Sphincter of Oddi.* If exploratory celiotomy in patients with recurrent symptoms reveals no stones in the common duct, no stump of cystic duct and no obvious lesion in the head of the pancreas, the authors are now convinced that inspection of the papilla of Vater is advis-

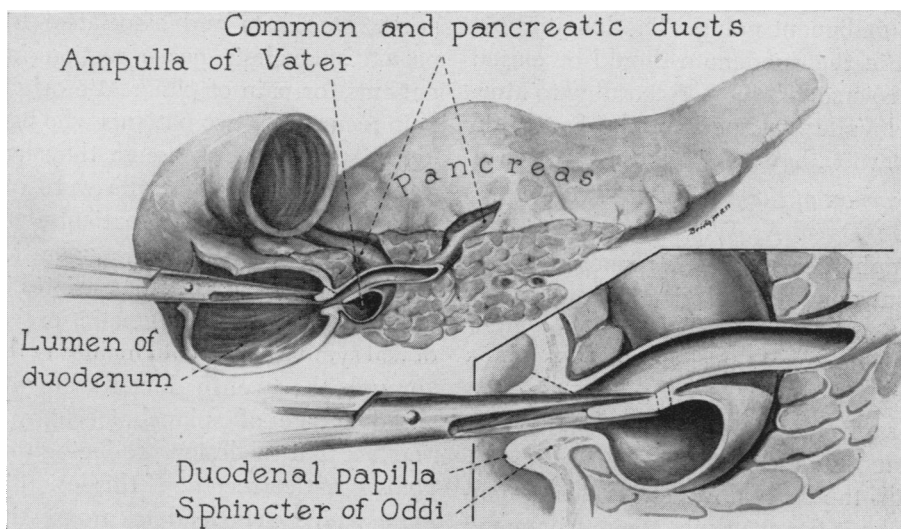


FIG. 2.—This patient had a cholecystectomy three years ago for pain in the right upper quadrant. The pain recurred a few weeks later and was of the same type as that experienced before cholecystectomy. At operation last year an anomaly, as illustrated above, consisting of a stenosed junction (congenital?) of the common duct with the pancreatic was found. The sphincter of Oddi as well as the diaphragm between the two ducts was cut. She had relief from pain for three months but at the end of that time developed pain in the left lower quadrant of the abdomen. The patient is an inmate of an institution and a proper evaluation of results cannot be made.

symptoms following cholecystectomy, a stump of cystic duct should be searched for and excised if found. However, the authors strongly recommend that other possible causes be searched for, because they are of the opinion that on many occasions indeed the persistent stump produces no symptoms. When excised, it should be removed close to the common duct, but with extreme care lest the wall of the common duct be pinched by the ligature on the cystic duct.

able. This inspection can be achieved properly only by opening the duodenum and having the papilla under direct vision. It is desirable, of course, to open the common duct and explore it before exposing the papilla, which is usually located farther distally than expected. It is practically always about one inch distal to the midportion of the duodenal curve. A grooved director can be inserted through the sphincter of Oddi and into the pancreatic or common

bile duct and the sphincter cut with a knife. The opening should enter the ampulla of Vater and expose the junction of the two ducts unless some anomaly exists as occurred in Case 2 (see Fig. 2). We have not found it necessary to suture the mucosa of the duodenum to the mucosa of the ducts, but this should obviously be done if there appears to be a wide gap between them and if the incision appears to extend through the wall of the duodenum. Obviously, the ampulla of Vater should be inspected for the possible presence of a benign or malignant polyp. The longitudinal incision in the duodenum should be closed in a transverse direction. According to Morrizi, Del Valle³ was perhaps the first to do this operation, having done it in 1925.

2. *Excision of the Nerve Fibers about the Common Duct.* As Womack and Crider¹⁵ have emphasized, there are numerous nerve fibers surrounding the common duct; they are particularly numerous at the junction of the cystic duct and the common. The above authors have emphasized the removal of nerve trunks medial to the common duct, at the same time cleaning areolar and fibrous tissue off the common duct. If this is dangerous, as it frequently is, they recommend stripping the cystic duct and the cystic artery to prevent ligature of nerve fibers. The cystic duct is removed close to the common duct. Any scar tissue on the surface of the common duct is excised. They advise this procedure for persistent or recurrent pain following cholecystectomy, but also are of the opinion that if it is followed during a routine cholecystectomy, fewer patients will have recurrence of pain. Shafiroff and Hinton¹³ report utilizing this procedure in five patients with good results. They suggest cutting the fibers of the anterior and posterior hepatic nerve branches. The former are cut by severing the periarterial fibers around the hepatic artery and the gastroduodenal artery. They expose the branches of the posterior hepatic trunk between the

portal vein and the common duct by retracting the duct laterally. These nerves may also be denervated by stripping all nerves on the posterior and anterior aspects of the common duct. Additional data on nerve distribution about the common duct has been presented by Royster and associates.¹²

3. *Sympathectomy Including Splanchnicectomy.* Sympathectomy, including section of the splanchnic nerves, has been performed for abdominal pain, but largely for that caused by chronic recurring pancreatitis. DeTakats and associates⁴ have reported splanchnic nerve section in seven patients for pain of pancreatic origin. The pain recurred in two patients who had inoperable carcinoma, although they had temporary relief. Good results were obtained with the remaining five patients, who had calcified pancreatitis. The operation performed by DeTakats and associates is retropleural and subdiaphragmatic, excising the dorsal sympathetic chain including the ninth through the twelfth dorsal segments. The disadvantage of splanchnicectomy lies in the fact that the lesion producing the symptoms is not corrected. If this lesion is of the type which may lead to progressive difficulty, it is obvious that a nerve section is a poor choice of operation. In other words, such an operation should be reserved for last resort after all efforts, including visual inspection of the sphincter of Oddi, have been made to find an obstructive cause.

4. *Subdiaphragmatic vagotomy.* Crile² has reported relief from subdiaphragmatic vagotomy in two patients complaining of recurrence of pain following cholecystectomy. After making a thorough study of the nerve supply around the common duct, Royster and associates¹² agree that if section of the vagus nerves is done for this condition, it must be performed at the diaphragmatic level.

5. *Choledochoduodenostomy.* This is a relatively old operation for obstructive le-

sions in the terminal end of the common duct, and has been made with variable but not entirely satisfactory results. In the first place, the authors are of the opinion that such an anastomosis will usually close within a year or two unless the obstruction at the sphincter of Oddi is relatively complete. The simplicity of the operation is in its favor, but the procedure has not completely eliminated the possibility of reflux of bile up into the pancreatic duct, or of duodenal contents up into the liver.

6. *Transplantation of the common duct into the intestine.* Greenfield⁷ has suggested section of the common duct with transplantation by an end-to-side procedure into the jejunum in patients with recurrent pancreatitis. This procedure, if utilized for biliary dyskinesia or equivalent lesion, would completely deflect bile from the ampulla of Vater and thus eliminate any possibility of reflux of bile up into the pancreatic duct. However, if true obstruction at the sphincter of Oddi is present, it would do nothing to alleviate the obstruction to the pancreatic duct. This procedure likewise has the disadvantage of not correcting the causative lesion.

COMMENT

Although good results may be obtained by cholecystectomy in 95 per cent of patients with cholelithiasis and severe pain in the right upper quadrant, they are as low as 60 per cent in patients with dyspepsia or mild pain and no gallstones. The majority of these failures is due to erroneous diagnosis, *i.e.*, the causative factor of symptoms is located outside the biliary tract. However, overlooked stones in the common duct appear to be the most common cause in certain clinics. Of 34 patients reoperated for persistent symptoms following cholecystectomy, Millbourn⁹ reported finding stones in the common duct in 22 patients; in four it appeared stones may have passed into the duodenum just before operation; dyskinesia

was suspected in two; traumatic stricture was found in one and malignant disease outside the biliary tract in two. Chronic pancreatitis and enlarged stump of the cystic duct are less common; in the past 15 years the present authors have seen 15 or 20 patients with chronic pancreatitis causing persistent symptoms following cholecystectomy, but only two with an enlarged cystic duct stump.

We have no information as to the possibility of reformation of stricture following section of the sphincter of Oddi. More experience with prolonged clinical observation will be necessary for an answer to this question.

SUMMARY

In this presentation the authors wish to call particular attention to anomalies of the ampulla of Vater as a cause of persistent symptoms. Only two cases are reported, but as a possible cause of such symptoms this lesion has come to our attention only a short time ago. In one patient there was a stenosis of the sphincter of Oddi which did not appear inflammatory, but was presumably a congenital narrowing which might be called biliary dyskinesia. In the other patient, the common duct opened into the pancreatic duct through a tiny opening no larger than 1 mm. in diameter. Section of the sphincter (through transduodenal exposure) resulted in complete relief of symptoms up to date, namely, one year after operation. In the other patient the sphincter was cut, but in addition, it was necessary to cut the diaphragm between the common and pancreatic ducts. When this diaphragm was cut, almost 1 oz. of bile escaped. The patient was relieved of her pain, but three months later developed pain in her left lower quadrant. She is an inmate of an institution, and a true assay of results cannot be made. Nevertheless, we wish to report the anomaly, particularly since it appeared without question to be producing a partial obstruction of bile.

Excision of nerve fibers and neuromata, as described by Womack and Crider, represents a method which would be effective when symptoms are produced by effects of chronic inflammation on the nerve fibers. It would presumably also be effective in patients having lesions distal to the supraduodenal portion of the common duct, but in such instances would not be removing the cause. Other operative procedures, such as supradiaphragmatic vagotomy, splanchnicectomy, and sympathectomy, have been reported as being effective, but the disadvantage of these procedures is that the primary cause of the persistent symptoms is not removed unless it is contended that these procedures would eliminate spasm of the sphincter; up to date there is no concrete evidence that this effect is produced.

The existence of a true spasm of the sphincter of Oddi (biliary dyskinesia) has not been generally accepted. The authors are of the opinion that the lesion exists but is quite uncommon. Much more common among lesions in the biliary tract causing persistent symptoms following cholecystectomy, will be conditions such as stones in the common duct and chronic pancreatitis.

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