Surgical Considerations of Cholelithiasis

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SURGICAL EXPLoration of the common bile duct has increased in frequency during the past ten years. There are several reasons for this. First, patients with cholelithiasis and without jaundice may have stones in the common duct (1). Such calculi may be first observed at operation. Second, there is a lower morbidity today in patients operated upon for common duct obstruction (2). This is due almost entirely to improved preparation of each patient and the realization by the gastroenterologist that cholelithiasis requires surgical therapy. Third, technical advance has placed tumors of the pancreas and in the region of the papilla of the bile duct within the scope of surgical attack (3).

DIAGNOSIS

Early diagnosis of common duct disease is a most important aspect in surgical therapy. It may be difficult to differentiate intra- from extra-hepatic jaundice, particularly if the icterus is of several weeks duration (1). It is of significance that jaundice may be found in fifty per cent of patients with common duct stone. On the other hand, exploration of the common duct reveals that fifty per cent of jaundiced patients have a stone as the cause for the jaundice (4).

In addition, a tumor less than one centimeter in diameter which is located near the termination of
the common duct may produce massive metastases before it obstructs the common bile duct (5).

Damage to the liver or pancreas may be the first indication of biliary tract disease. In this regard a doubtful diagnosis may be clarified by laboratory studies of the duodenal drainage to indicate the character of bile and pancreatic secretions and of the feces to determine the efficiency of the pancreatic enzymes. In the absence of a clear clinical picture, radiographic study of the stomach and duodenum as well as the cholecystogram becomes a most reliable diagnostic aid.

In clinical diagnosis of common bile duct disease, calculi are to be differentiated from carcinoma of the pancreas and biliary passages, from cholangitis, and from disease which is extrinsic to the bile ducts. In cases with neoplasm, a mass is frequently palpable, although jaundice following a previous resection for carcinoma of the bowel can be due to choledocholithiasis as well as to metastatic lymphadenopathy. When cholangitis alone is present, pain is usually absent. The usual course of cholangitis, however, is that it ordinarily occurs in the event of an obstruction to the biliary flow which is complicated by a chronic infection. The obstruction, per se, may be painful. When extrinsic pressure is exerted on the bile ducts and when the gall bladder is not the primary site of disease, distention of the bile ducts and gall bladder may be enormous, and under those conditions the gall bladder may be easily palpable. Extrinsic pressure on the bile passages may be of malignant origin, but is also associated with the contraction from scarring associated with a chronic duodenal ulcer, or by pressure from a diverticulum of the duodenum, or secondary to a chronic sclerosing pancreatitis (6).

The common duct presents a difficult problem at the time of operation. In approximately two-thirds of cases, the pancreatic portion of the common bile duct is not directly palpable. A probe which is passed into the common duct may slip by a calculus. A catheter can be placed into the duct and may appear to enter the duodenum, whereas it is only pushing the papillary portion of the common bile duct into the lumen of the duodenal canal. Fluid may be washed into a catheter or directly into the duct and pass into the duodenum in spite of organic disease existing in the common duct. Under some circumstances, the technical disadvantages of direct cholangiography at the time of operation, outweigh its usefulness.

**Pathological Considerations**

The primary function of the biliary tract is to act as a carrier. Its most critical area is at its termination within the duodenum. The anatomical and pathological characteristics of the papilla are, hence, of great importance. However, our standard texts in anatomy, medicine and surgery retain the basic observations made forty years ago and before (7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17). More recent observations providing an improved understanding of the anatomy and physiology of the ducts have appeared in literature but are not generally known (18, 19, 20, 21, 22).

For example, the termination of the common bile duct appears to present a dilatation in its transduodenal segment which is called the “ampulla” of Vater (23) (Fig. 1). This dilatation, however, is not a space, which is implied by the term “ampulla.” It is a mass, wherein the wall of the common duct increases in size due to fibrous and muscular tissues which aggregate to form a so-called “sphincter of Oddi” (24) (Fig. 2). This can be demonstrated on any cholangiogram wherein the lumen of the common bile duct decreases in diameter. The apparent enlargement in the tissues of the common duct is not a space, but represents a mass of musculo-fibrous tissue.