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AN ANALYSIS OF 76 GALLBLADDER CASES

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This paper is presented as an analysis of a consecutive series of 76 biliary cases. I operated on and managed 70 of these patients; the remaining 6 did not undergo operation. The patients were drawn from private and benefit-society sources. The series is probably representative of biliary surgery as it confronts most general surgeons. Only common-duct pathology caused by calculous disease has been included in the series.

Age and Sex Incidence

Sixty patients were females with an average age of 39 years, and 16 were males whose average age was 46 years. Eleven, including 2 males, were under 25 years of age.

Some Aspects of History

The length of history ranged from 3 days to 30 years. Those with the longest histories were mainly rural people and often presented the more difficult operative problems. Many with long histories showed varying degrees of biliary cirrhosis; one of these had a large spleen as well. Particular attention was paid to antecedent jaundice, epigastric pain, and rigors with pain, any of which might give a clue to possible bile-duct calculi. Pure gallbladder colic was felt by some in the mid-epigastrium, but common-duct pain was frequently referred to this area and to the interscapular region. Patients more frequently notice a tinge of jaundice than either transient pale stools or dark urine.

Seventeen patients gave a history of jaundice, and all but one of these underwent operation. Two had obstructive jaundice at the time of operation. Of the 17 patients with a history of jaundice who were operated on, 10 had explorations of the common duct. In 7 of these, stones, chips or sludge or a combination of the three were found in the common duct.

Choice of Incision

A right paramedian incision was employed as a routine; very occasionally a Kocher's incision. With 2 assistants, the vertical approach gives adequate exposure.

RADIOLOGY

Oral and Intravenous Cholecystography

Sixty-six of the 70 patients operated on had pre-operative oral and/or intravenous cholecystography. Opaque calculi were observed in 6 cases. Of 64 oral cholecystograms, 31 showed calculi in the gallbladder and 33 showed non-functioning gallbladders. Intravenous cholangiography was conducted on 34 cases, mainly on those which showed lack of function with the oral method. Stones were demonstrated with this method in 5 further cases.

Operation was undertaken in 21 patients on the basis of their clinical findings, together with non-visualization of the gallbladder on cholecystography. Of these, 19 had gallstones, one had a normal biliary tract, and one had hepatic cirrhosis unassociated with stones.

The value of intravenous cholangiography was demonstrated in the following ways in this series: (*a*) in cases of non-concentration by the gallbladder with the oral method, where calculi were outlined in a further few by the intravenous method; (*b*) when the gallbladder was not visualized by either method, good excretion of the dye favoured gallbladder rather than hepatic pathology; and (*c*) a pre-operative assessment of the common duct was obtained, though this was frequently vague.

Operative Cholangiography

This was used as a routine in the last 28 cases in the series. There were 4 initial failures, mainly for technical reasons. This procedure adds 5 - 8 minutes to the operation, but has been found to be a valuable adjunct to biliary surgery, mainly in the following circumstances:

1. In difficult operative cases where the whole duct is displayed on X-ray.
2. In suspected bile-duct problems where calculi, distortions or strictures may be demonstrated.
3. In cases where doubt exists whether the bile ducts should be explored; a negative X-ray being a point against exploration.
4. In the occasional case where a calculus is demonstrated when otherwise unsuspected.
5. After exploration of the bile duct, a cholangiogram may demonstrate residual filling defects and confirm patency of the ampulla.

The following history illustrates the value of the procedure:

A woman of 35 years had a cholecystectomy 8 years previously, after which she remained well until 2 years ago when she began to experience recurrent episodes of epigastric pain radiating to her back. She was thoroughly investigated by a physician who found consistently raised ESR (45 mins. in 1 hour) and alkaline-phosphatase (45 K-A units) values. He referred her for laparotomy. At exploration a cyst of the cystic-duct stump, ½ an inch in diameter, was found exerting doubtful compression of the bile duct, which was otherwise palpably clear. This was removed. Operative chologram then showed a stone in the right hepatic duct which was also removed. No further attacks of pain occurred and the sedimentation rate and alkaline phosphatase levels fell to normal over the next 3 months.

EXPLORATION OF THE COMMON DUCT

In 11 cases the bile duct was explored, with positive findings in 7. In calculous obstructions, varying degrees of

dilatation of the bile ducts are encountered, together with thickening of the duct wall and its surrounding tissues. The gallbladder will usually be similarly affected, containing calculi or sludge. When a thin-walled, dilated bile duct is found, with a gallbladder free from stones or sludge, the obstruction is almost certainly non-calculous.

In each case the exploration of the bile duct was supraduodenal, but in 3 cases the transduodenal route was employed as well. After mobilization of the duodenum, a vertical incision and a vertical closure was made to allow easy apposition without tension of tissues. This would be expected to minimize risk of leakage.

In each case T-tube drainage was instituted, and a cholangiogram undertaken on the 8th - 10th day. The cholangiograms were shown to be clear except in one case where, in a woman of 49 years of age, the common duct at operation was 1¼" in diameter and contained a solid cast of calculous material from the ampulla to the dilated intrahepatic portions of the hepatic ducts. Some residual chips were demonstrated in the common duct, which were removed at re-exploration later.

Dissection of the Cystic Duct and Artery

Needless to say, the cystic duct and its junction with the bile duct and gallbladder must be clearly displayed. Unless the cystic artery presents first, it is easier to deal with the duct first. Major abnormalities of anatomy are not often encountered. In this series there were 2. In one case the hepatic artery lay in front of the bile duct, the cystic artery arising low down from the common trunk. In the other a wide cystic duct crossed the common duct and joined it low in its pancreatic portion. This was demonstrated on cholangiogram. Oddly enough, these 2 female patients both have the same surname, live in the same town, and were referred from the same practice, but are not related.

Wound Drainage

All patients had the gallbladder bed drained, and drains were removed on the 3rd or 4th day, unless frank sepsis was encountered or an excess of bile drainage occurred. In 2 cases an excessive amount of bile drained; this gradually dried up within a week. The first patient had a 30-year history of gallbladder attacks, and had a markedly pathological gallbladder embedded in the liver. Drainage here was probably from the raw liver cavity. The other was a straightforward and easy case where drainage probably took place either from a small unrecognized accessory cystic duct (which abnormality I have never seen) or from a slipped cystic-duct ligature. Because in occasional patients bile drains unpredictably, routine drainage should be employed.

Infection or Stones, which Comes First?

Obvious infection is common in the presence of calculi, particularly with obstruction. In this series there were 6 empyemas and 4 mucoceles. I have not seen frank infection without stones — it must be rare. My impression is that bacterial cholecystitis follows cholelithiasis, not *vice versa*.

ASSOCIATED PANCREATITIS

Four cases were associated with undoubted pancreatitis. In 2 of these, common-duct calculi were found in addition to gallbladder stones, while in the other 2, stones in the gallbladder only were found. In each case cholecystectomy was carried out. In 3 of the 4 cases exploration of the common duct and T-tube drainage was instituted. In 1 of these, where the common duct was explored, a further definite attack of pancreatitis occurred about 2 months after operation. In this case dozens of small stones were removed from the common duct.

MORTALITY AND MORBIDITY

There were no deaths in the series. Two patients developed hernias, one in a Kocher incision with wound sepsis following cholecystectomy for empyema, and the other in a clean paramedian incision. Three patients reported with post-cholecystectomy pain some months later. One of these had a cholecystectomy for empyema of the gallbladder. On further investigation some dilatation of the bile duct was seen on an intravenous chologram together with raised serum-amylase levels, suggesting pancreatitis with possible common-duct calculi. Owing to pregnancy, she was treated conservatively, but she did not report again. The second patient reported minor episodes of pain which settled down. The third patient, who had a narrow, clear, common duct on palpation and operative chologram, is at present being re-investigated.

CONCLUSION

In no field of general surgery are the results of operation so gratifying to both surgeon and patient alike, as in calculous disease of the biliary tract. Surgery of this area is safe, provided adequate exposure and display is made and a relatively bloodless field is maintained. Failure in these respects has often proved disastrous. Correct pre-operative evaluation, modern anaesthetics, intravenous fluids, and blood transfusion all contribute to the patients' safety, and the use of intravenous and perhaps also operative cholangiography increases the accuracy of pre-operative and operative diagnosis.

SUMMARY

A review is presented of 76 patients with gallbladder disease, of whom 70 underwent operation. Particular attention has been paid to certain aspects of history, together with the radiological findings, in order to obtain as full a pre-operative evaluation of the case as possible. The value of operative cholangiography as a useful accessory to biliary surgery is stressed, and certain technical aspects of gallbladder and common-duct operations are mentioned.

I wish to thank my general practitioner and specialist colleagues in this area, who have referred these patients and who in many cases have assisted as well at the operations. I also thank the Sisters and staff of the Klerksdorp Hospital for their nursing care of the patients.