The Efficacy of Biliary Diversion for Benign Disease: Long-Term Follow-up

Farouq Samhouri
Carlos Grodsinsky
Hubert Allen

Follow this and additional works at: https://scholarlycommons.henryford.com/hfhmedjournal

Part of the Life Sciences Commons, Medical Specialties Commons, and the Public Health Commons

Recommended Citation
Samhouri, Farouq; Grodsinsky, Carlos; and Allen, Hubert (1980) "The Efficacy of Biliary Diversion for Benign Disease: Long-Term Follow-up," Henry Ford Hospital Medical Journal : Vol. 28 : No. 1 , 27-30. Available at: https://scholarlycommons.henryford.com/hfhmedjournal/vol28/iss1/5

This Article is brought to you for free and open access by Henry Ford Health System Scholarly Commons. It has been accepted for inclusion in Henry Ford Hospital Medical Journal by an authorized editor of Henry Ford Health System Scholarly Commons.
The Efficacy of Biliary Diversion for Benign Disease: Long-Term Follow-up

Farouq Samhouri, MD,* Carlos Grodsinsky, MD,* and Hubert Allen, MD*

Retrospective analysis of 70 patients who underwent biliary bypass operations for benign disease over an eight-year period was undertaken to evaluate long-term complications. Operative procedures included choledochoduodenostomy in 60 patients, choledochojejunostomy in four, and cholecystoduodenostomy, cholecystojejunostomy and hepaticojejunostomy in two patients each. The most common indication for surgery was choledocholithiasis, with or without hepatic stones, viscid bile, and ampullary stenosis (61 to 70 patients). Other indications included chronic pancreatitis, choledochal cyst, and sclerosing cholangitis. One patient died postoperatively from hemorrhage, and two others died from causes unrelated to surgery. Two patients developed cholangitis without reflux and demonstrated anastomotic stenosis at re-operation. Sixty-four patients in the series had reflux but remained asymptomatic. Our study supports the concept that cholangitis results from relative obstruction of the anastomosis rather than from reflux.

Clinical Material

From January 1968 until January 1977, 70 patients (48 men and 22 women) underwent biliary drainage operations for benign biliary disease at Henry Ford Hospital (Table I). The average age for the whole group was 60 years; the youngest was 5 months old and the oldest 87. Sixty-four patients were followed for at least five years, and six were lost to follow-up.

<table>
<thead>
<tr>
<th>Age Distribution of Subjects</th>
<th>Undergoing Biliary Drainage at Henry Ford Hospital: 1968-1976</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Number of Patients</td>
</tr>
<tr>
<td>0-9</td>
<td>1</td>
</tr>
<tr>
<td>10-19</td>
<td>0</td>
</tr>
<tr>
<td>20-29</td>
<td>4</td>
</tr>
<tr>
<td>30-39</td>
<td>4</td>
</tr>
<tr>
<td>40-49</td>
<td>9</td>
</tr>
<tr>
<td>50-59</td>
<td>13</td>
</tr>
<tr>
<td>60-69</td>
<td>17</td>
</tr>
<tr>
<td>70-79</td>
<td>18</td>
</tr>
<tr>
<td>80-89</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
</tr>
</tbody>
</table>

There were several reasons for these operations. Most patients who have an exploratory common bile duct operation can be treated satisfactorily by removal of their stones and progressive, graduated dilatation of the sphincter of Oddi. However, dilatation may not be enough for patients whose common bile duct stones are accompanied by viscid bile or muddy bile in a thick-walled, dilated duct. In others it may be hazardous to dislodge a firmly impacted stone.
stone in the lower common bile duct. Transduodenal sphincterotomy, used by many surgeons, may be effective in those cases, although we have been concerned about occasional postoperative pancreatitis. Other indications were strictures of common bile duct, stenosis of papilla and recurrent cholangitis, chronic pancreatitis, and choledochal cyst. The reasons for choosing biliary drainage are tabulated in Table II. Some patients had more than one indication; 35 had a previous history of biliary surgery.

<table>
<thead>
<tr>
<th>Indications For Biliary Drainage Procedures</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cholelithiasis and Choledocolithiasis with viscid bile, thick walled CBD, and/or ampullary stenosis</td>
<td>26</td>
</tr>
<tr>
<td>Choledocholithiasis (recurrent) (3 patients also had hepatic duct stones)</td>
<td>35</td>
</tr>
<tr>
<td>Choledochal cyst</td>
<td>4</td>
</tr>
<tr>
<td>Chronic pancreatitis</td>
<td>4</td>
</tr>
<tr>
<td>Schlerosing cholangitis</td>
<td>1</td>
</tr>
</tbody>
</table>

Sixty patients underwent choledochoduodenostomy (side-to-side), four patients had choledochojejunostomy (Roux-en-Y), and two each had cholecystoduodenostomy, cholecystojejunostomy, and hepaticojejunostomy. Two of the 70 developed cholangitis, but neither showed reflux during the barium upper GI x-rays. One had undergone a choledochoduodenostomy elsewhere, and one had a hepaticojejunostomy performed by one of us to bypass a segmental type of sclerosing cholangitis (8). Stenosis of the anastomosis was found in both patients during surgery. One underwent a newly created hepaticojejunostomy and the other a revision of the same. Both have been well for over five years. One of the 70 patients, a 60-year-old man with leukemia who had presented with acute suppurative cholangitis, died from bleeding on the second postoperative day. Two other patients died from unrelated cases during the study period.

**Operative Technique**

We prefer to make a transverse incision in the most distal portion of the supraduodenal common bile duct and a parallel incision at or just distal to the junction of the first and second portion of the duodenum. After the Kocher maneuver has taken the tension out of the suture line, a side-to-side anastomosis is performed with #4-0 chronic catgut for the inner row and 4-0 silk for the outer row. A T-tube is used as an internal splint for the anastomosis, which is placed via a choledochotomy (Fig. 1). We also believe it is important in the postoperative period to drain the bile away from the anastomosis, since even minor leaks may cause enough inflammatory changes to make the anastomosis stenotic.

**Discussion**

Choledochoduodenostomy has never enjoyed much popularity for several reasons. A former objection was that it predisposed to ascending cholangitis, due to reflux of intestinal contents into the biliary tree. Our findings were different. In our patients, 42 demonstrated reflux of barium in the biliary tree by upper gastrointestinal examination, without attending cholangitis. Our radiologist also noted that the common duct was smaller postoperatively in 29 patients, which suggests that the operation effectively reduces pressure in the biliary tree. All patients who demonstrated reflux remained asymptomatic. On the other hand, as described earlier, two patients who developed cholangitis, six months and two years postoperatively, showed no reflux but at surgery proved to have stenosis of the anastomotic site.

Another objection to choledochoduodenostomy is that it creates a blind pouch between the site of anastomosis and the papilla of Vater, with the so-called sump syndrome.

---

**Fig. 1**

T-tube provides internal splint of the anastomosis and diverts the bile from it.
acting as a nidus for food, infection, stone formation, and possible secondary pancreatitis. None of our patients, however, suffered from this syndrome.

Theoretically, a third objection to biliary drainage operations is that calculi may become lodged in the lower end of the common bile duct and initiate pancreatitis by blocking the pancreatic duct after surgery. This complication has not occurred in our series, not even in three patients in whom impacted stones could not be removed from the lower common bile duct (Fig. 2). Removing these stones may cause potentially serious problems, such as false passage or injury to the portal vein (9).

We prefer choledochoduodenostomy because it is simple, safe, and involves only one intestinal anastomosis. However, we believe that this procedure should be performed only when a dilated common bile duct is present, that the stoma should be at least 2 cm in diameter, and that the anastomosis should be decompressed to divert the bile away from it. Otherwise, leaks may bring about possible stenosis. Intraoperative cholangiography, instrumental duct exploration, and even choledochoscopy have not completely eliminated the problem of overlooked stones (10). While there may be a question whether bile acid is altered by these operations, unpublished data from our laboratory show that bile acid pool is unchanged in fed animals after a biliary bypass. On the other hand, it was diminished in cholecystectomized animals. It may be that choledochoduodenostomy should be considered for all patients with choledocholithiasis.

Summary

We have reviewed our experience with biliary bypass procedures for benign tract disease. Choledochoduodenostomy was used for 60 of our 70 patients. During the follow-up period, two patients developed cholangitis; neither showed reflux into the biliary tree, and both were found at surgery to have stenosis of anastomosis. Choledochoduodenostomy should be performed only when a dilated common bile duct is present, and the stoma should be at least 2 cm in diameter. A T-tube seems beneficial as an internal splint and to divert bile away from the anastomosis. Our study supports the concept that ascending cholangitis following choledochoduodenostomy is due to a stricture of anastomosis rather than to reflux.

Fig. 2
Two stones impacted in the distal common bile duct; instrumentation failed to free them.

Fig. 3
Upper GI x-rays visualize the biliary tree in the presence of patent anastomosis, thus providing easy follow-up.
References


