Audit

Post-cholecystectomy benign biliary stricture with portal hypertension: is a portosystemic shunt before hepaticojejunostomy necessary?

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Background: Portal hypertension develops in 15–20% of patients with benign bile duct stricture. Hepaticojejunostomy in such patients is associated with considerable morbidity and mortality. Preliminary portosystemic shunting has been suggested to reduce intra-operative bleeding. We present our experience without preliminary shunting in such patients.

Patients and Methods: Fourteen consecutive cases of biliary stricture with portal hypertension over a 13-year period (1989–2001) were retrospectively analysed.

Results: Thirteen patients were operated upon. One patient had a preliminary portosystemic shunt. In another patient, shunt was attempted. One stage hepaticojejunostomy was possible in 11 patients. There were no intra-operative deaths. Nine of the 13 survived and were available for follow-up. One patient had cholangitis. Another had jaundice related both to chronic liver disease and a strictured hepaticojejunostomy. The remaining 7 patients are asymptomatic and anicteric although alkaline phosphatase levels remain elevated in 5 of them.

Conclusions: Hepaticojejunostomy without preliminary portosystemic shunting is possible in patients with portal hypertension and benign biliary stricture with acceptable morbidity and mortality rates.

Key words: Biliary tract surgical procedures – Portal hypertension – Portosystemic shunt

Portal hypertension develops in 15–20% of patients with benign bile duct stricture.¹ Patients with benign post-cholecystectomy biliary strictures occasionally develop portal hypertension secondary to biliary cirrhosis. Such patients are a difficult clinical problem. The paucity of English language literature available on the management and outcome of these patients could be explained by the fact that few of them in the West would be allowed to progress to this stage without treatment. Portosystemic shunting has

been recommended (before hepaticojejunostomy) to reduce intra-operative bleeding.² We present our experience in managing these patients without a preliminary shunt.

Patients and Methods

Case records of all patients admitted to a single surgical unit with benign biliary stricture and documented portal hypertension between 1989 and 2001 were reviewed. A

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Figure 1 Analysis of the 14 patients studied.

Careful history was recorded and a detailed physical examination was carried out in all patients. Investigations included coagulation profile and liver function tests. The level of the stricture was assessed by percutaneous transhepatic cholangiogram or magnetic resonance cholangiogram. Oesophagogastroduodenoscopy was done to document indirect evidence of portal hypertension in all patients. The nature and duration of operation, intra-operative blood usage, outcome and follow-up were studied.

Results

Fourteen case records were available for review (Fig. 1). These constituted 6.9% of patients with benign biliary stricture treated in this unit during the above period. All patients had developed biliary stricture after cholecystectomy or attempted cholecystectomy and all had evidence of portal hypertension at oesophagogastroduodenoscopy. Median duration of symptoms before presentation to our institution was 40 months (range, 1–132 months). Of the 13 patients, 10 had a history

of recurrent cholangitis. One patient had had a previous attempt at repair (Table 1).

One patient had advanced liver disease and was advised only supportive treatment; there is no follow-up available for this patient. Thirteen patients were operated upon. There were 4 Bismuth type II, 8 type III strictures and one type IV stricture. One patient had preliminary interposition mesocaval shunt, which took 8 h and required one unit of blood. Three months later, this patient had hepaticojejunostomy, which took 14 h and required 7 units of blood. She died of progressive liver failure after discharge from hospital. In another patient, an interposition mesocaval shunt was attempted, but abandoned owing to poor quality of the superior mesenteric vein. It was, however, possible to perform hepaticojejunostomy (Roux-en-Y) at the same sitting. The operation took 11 h and required 8 units of blood. This patient is lost to follow-up.

Eleven patients had successful hepaticojejunostomy in a single stage (Table 1). Mean duration of operation was 9.5 h. Mean number of blood units transfused intra-operatively was 5.5 (range, 1–19 units). In 8 patients, a gastric access loop was created.³ One patient died on the

Table 1 Patient summary

Patient	Age (years)	Sex	Symptom duration before operation (months)	Cholangitis	Bismuth stricture type	Duration of operation (h)	Blood used (units)	Follow-up
1	23	F	14	+	II [†]	11	8	Nil
2	46	F	132	+	III [†]	8	1	Died of progressive liver failure
3	41	M	15	+	III [§] §	14 16	7 19	Well at 17 months; SAP 155 U/l
4	40	F	18	+	II	5	2	Well at 69 months; postoperative haematemesis; SAP increased (326 U/l); HIDA scan normal
5	17	M	1	–	II	7	6	Well at 82 months; SAP 183 U/l; advised cholecystectomy
6	41	M	36	+	II	9.5	3	Well at 35 months; SAP 208 U/l; HIDA scan and access loop study normal
7	58	F	4	+	III	9	1	Well at 26 months; melaena
8	17	M	60	+	III	5	3	Well at 22 months; hepatitis B liver disease; dilated twice via access loop; SAP 592 U/l
9	36	M	99	+	III	13	14	Well at 8 months; SAP normal; HIDA scan normal
10	31	F	32	+	III	8	6	Died postoperatively; haemobilia
11	47	F	60	–	III	6	1	Cholangitis at 10 months; dilated via access loop; SAP 403 U/l
12	26	M	24	–	III	8.5	5	Adhesive obstruction; died liver failure
13	33	F	24	+	IV	4	1	Well at 7 months; access loop study normal; SAP 183 U/l; HIDA scan normal

§ Attempts at repair = Choledochoduodenostomy

† Portosystemic shunt = Attempted interposition mesocaval shunt done

SAP, serum alkaline phosphatase (normal value up to 125 U/l).

twelfth postoperative day from massive haemobilia. Another patient died 6 weeks after operation from adhesive intestinal obstruction and progressive hepatic failure.

Follow-up is available in all 9 survivors. Median duration of follow-up is 22 months (range, 7–82 months). One patient has jaundice and elevated alkaline phosphatase levels caused by hepatitis B related chronic liver disease as well as a strictured hepaticojejunostomy. His anastomosis needed to be dilated twice via the gastric access loop. Another patient with cholangitis needed dilatation of the hepaticojejunostomy via the gastric access loop. The other 7 patients are free of jaundice and cholangitis. Five of these have persistently elevated alkaline phosphatase levels (range, 155–592 U/l; normal, 125 U/l). HIDA scans were done in 4 of these patients, and all showed adequate clearance of tracer. One patient had a variceal bleed in the immediate postoperative period. This patient underwent sclerotherapy. Another has melaena. This patient has not returned for intervention. In one patient, the gall bladder was not

excised. He developed a gallstone and is symptomatic. He has been advised intervention.

Discussion

Portal hypertension supervenes in 15–20% of patients with benign bile duct stricture. This is initially caused by hepatic fibrosis and later by secondary biliary cirrhosis.¹ Long duration before repair, repeated attacks of cholangitis and repeated attempts at repair are associated with its development. More recently, the activation of hepatic stellate cells secondary to ischaemia and vascular injury to the liver resulting in the development of portal hypertension has been described, though the exact role of biliary ischaemia is unclear.⁴ Operative mortality in such patients ranges from 26–36%.^{5,6} Several authors have recommended portosystemic shunting prior to repair of biliary strictures in this difficult group.² The use of venovenous bypass during repair has also been described.¹ More recently, dilatation and stenting of these strictures has been found to be an effective alternative to

surgery.¹ Preliminary TIPSS in such patients is contraindicated as bile contamination of the shunt has been shown to result in shunt stenosis.⁷

Our experience with preliminary portosystemic shunting in one patient was disappointing. In spite of a shunt that resulted in adequate drop in portal pressure, the dissection was difficult and time consuming. There was no decrease in blood loss or operative time. Our experience with hepaticojejunostomy in the patient in whom a shunt was not possible encouraged us to attempt one stage hepaticojejunostomy in the next 11 patients. In these patients, in spite of the presence of collaterals and vascular adhesions, it was possible to locate the common hepatic duct by creating a 'window' in the right upper quadrant, dissecting towards the hepatic hilum. Once adhesions to the previous scar(s) are divided, the dissection is directed directly to the base of the quadrate lobe without much peripheral dissection. We have not found it necessary to begin the dissection in the right iliac fossa and work upwards. The technique, however, requires meticulous dissection and ligation of collaterals. We found intra-operative ultrasound useful in one patient where the bile duct was rotated and obscured by collaterals. We have no experience with removal of segment 4b to access the biliary tree above a high stricture. Our experience has been that the amount of blood used and time taken is perhaps the same as when a shunt is done first.

Conclusions

Portosystemic shunting is perhaps unnecessary before repair of benign biliary strictures in patients with portal hypertension. It is possible to perform satisfactory repair

with acceptable morbidity and mortality provided adequate time and blood is available. We recommend creating a 'window' directly towards the base of the quadrate lobe of the liver. Intra-operative ultrasound is useful to locate the bile duct in difficult cases.

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