Surgeon at work

Choledochoduodenostomy: simple side-to-side anastomosis

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Abstract Choledochoduodenostomy, using a simple side-to-side anastomosis technique, was performed in a 74 year-old woman with common bile duct stones. She had chronic heart failure and chronic obstructive lung disease. The choledochoduodenostomy was performed with a cholecystectomy. A 2-cm-longitudinal incision was made in the common bile duct, and an adjacent longitudinal incision was made in the first portion of the duodenum. The first sutures to be placed were the two corner sutures of the posterior anastomotic wall. Then the two sides were sutured, one from the hepatic side corner of the common duct to the anal side corner of the duodenum, and the other from the duodenal side corner of the common duct to the oral side corner of the duodenum. This anastomosis was performed with one layer of interrupted 4-0 absorbable sutures. The anterior wall of the anastomosis was constructed in a similar manner. The patient recovered uneventfully, and had no complaints of abdominal pain or fever. This procedure, our original method, is technically simple and safe, and results in minimal tension of the anastomosis.

Key words Choledochoduodenostomy · Common bile duct stone · Obstructive jaundice

Introduction

The main indications for a biliary bypass operation are benign biliary strictures and malignant obstruction of the biliary system caused by pancreatic or biliary ductal carcinomas. Among the techniques for dealing with common bile stones, choledochoduodenostomy represents a useful alternative. This operation is indicated mainly in patients with recurrent stones, giant stones, or concomitant common bile stricture and duct stones. This procedure is also useful for preventing cholangitis caused by recurrent stones in patients with chronic disease, such as chronic heart failure, chronic respiratory failure, and diabetes.

The standard operative procedure for the biliary bypass operation is choledochojejunostomy with Roux-en-Y reconstruction using a jejunal loop. Choledochoduodenostomy has not been generally used in simple biliary bypass operation because of the risk of cholangitis; however, recent studies in Japan have reported minimization of this risk. This case report describes a simple and useful choledochoduodenostomy technique for biliary bypass operation.

Patient

A 74-year-old woman presented with right upper quadrant abdominal pain and jaundice on September 1997. She had chronic heart failure and chronic obstructive lung disease. Ultrasonography, computed tomography, and endoscopic retrograde cholangiopancreatography demonstrated multiple large stones (1.5–2.0 cm) in the common duct, and the size of the common duct was 2.3 cm in diameter.

Technique

A cholecystectomy with choledochoduodenostomy was performed approximately 7 weeks later. With the patient under general anesthesia, and in the supine position, a right subcostal incision was made; the adhesion was released, and the area of the hepatoduodenal ligament was dissected. The cholecystectomy was performed in the usual manner. Two traction sutures (3-0 silk) were passed through the common duct, and a 2-cm-longitudinal incision was made in the duct. Multiple stones were removed through the incision. A longitudinal incision was made in the adjacent first portion of the
duodenum. The anastomosis was performed with one layer of interrupted 4-0 synthetic absorbable sutures. The first sutures to be placed were the two corner sutures of the posterior anastomotic wall (Fig. 1a). Each such interrupted suture was tied and used as a holding suture. The posterior wall was completed with sutures placed every 3 mm, care being taken to include the full thickness of both the duodenum and the common bile duct. The anterior wall was sewn with interrupted outside-inside-inside-outside sutures. b Conventional side-to-side choledochoduodenostomy. Two anchor sutures are placed, one from the center of the right side of the common bile duct to the anal side corner of the duodenum ($CC'$), and the other from the center of the left side of the common bile duct to the oral side corner of the duodenum ($DD'$). c Schema. With our procedure, the anastomosis of the anal end has less tension than with the conventional procedure. In practice, the advantage of the decrease in tension on the anal end of the anastomosis overcomes the disadvantage caused by the increased tension on the oral end.

**Results**

Operation time was 2 h and 40 min, and the estimated blood loss was 110 g. Stomal patency is the most important factor for preventing classic complications such as cholangitis and sump syndrome. Recovery was uneventful; the patient had no complaints of abdominal pain or high fever for up to 9 months after surgery.

**Discussion**

A side-to-side choledochoduodenostomy was first performed by Riedel in 1888. The patient died 9 h after surgery, and autopsy disclosed leakage of the anastomosis. The first successful side-to-side choledochoduodenostomy was performed by Sprengel in 1891. Sasse encouraged use of the operation, and it became well accepted in Europe. Side-to-side choledochoduodenostomy for the relief of distal duct obstruction has numerous advantages. It is technically simpler than sphincteroplasty or choledochojejunostomy. It can be performed rapidly, making it of real value in the aged and infirm. Side-to-side choledochoduodenostomy is useful as a rapid and effective method of bypassing malignant disease obstructing the distal end of the common duct, and it is also useful in treating benign distal ductal structures. Side-to-side choledochoduodenostomy has been recommended for the prophylaxis or treatment of residual common duct stones, as well as for the management of papillary stenosis.

Usually, in conventional side-to-side choledochoduodenostomy, the adjacent longitudinal incisions in the common duct and duodenum are converted by placing two anchor sutures (one from the center of the right side of the common duct to the anal side corner of the duodenum, and the other from the center of the left side of the common duct to the oral side corner of the duodenum) into the incision (Fig. 1b). With our method, the anal end of the anastomosis has less tension than with the conventional method. The diagram in Fig. 1c may help to explain the lower tension exerted on the anal end of the anastomosis.