Percutaneous cholecystostomy: Case report and literature review

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The performance of a percutaneous cholecystostomy in a community hospital setting to relieve obstructive jaundice in an 87-year-old patient with pancreatic head tumor is described. The procedure relieved the patient's obstructive symptoms and allowed him to be discharged to home care. Since first reported in 1878, percutaneous cholecystostomy primarily has been a surgical procedure. With the evolution of interventional radiology, an increasing number of percutaneous procedures are being used. In the unstable patient, biliary decompression via percutaneous cholecystostomy is advocated until definitive surgery can be performed. Percutaneous cholecystostomy, under proper guidance, can be of beneficial use in the relief of obstructive jaundice.

The benefits versus the risks of percutaneous cholecystostomy has been a controversial topic in the radiologic and surgical literature. Complications such as severe vasovagal reactions, cholangitis peritonitis, sepsis, and death are well documented since the first planned cholecystostomy was performed by Sims in 1878.¹⁻³ The indications for cholecystostomy are varied: (1) drainage of benign or malignant obstruction; (2) decompression of hydrops; (3) chemodissolution of cholelithiasis, and (4) preoperative stabilization or palliation in the unstable patient. Yet, there is no clear consensus as to the indications or contraindications for this procedure.⁵⁻⁷

Our case demonstrates the practicality of direct puncture and drainage of the gallbladder in a community hospital setting.

Report of case

An 87-year-old white man presented to our emergency department with a complaint of painless jaundice. The patient had acholic stools and dark urine. Histories of alcohol or drug abuse were denied. Physical examination revealed a right upper quadrant mass. A recent, outpatient ultrasound revealed a single cholelith and dilatation of the common bile duct. The total direct and indirect bilirubins as well as liver function parameters suggested obstructive jaundice.

Shortly after admission, the patient became encephalopathic and his condition deteriorated. A percutaneous cholangiogram was performed. Using a Medi-Tech one-stick system, a percutaneous cholangiography was performed. It revealed a complete obstruction of the distal common bile duct. The inner surface of the obstruction was concave, suggesting a tumor (Fig. 1). The tract was then dilated, a 7Fr Cobra catheter, C-2 curve was inserted over 0.035 Lunderquist exchange guidewire, and the guidewire removed. Manipulation past the obstruction was not possible. Over a guidewire, the Cobra catheter was then replaced by a modified 10.2Fr Cope biliary drainage catheter. A later computed tomography scan of the pancreas demonstrated a tumor obstructing the common bile duct (Figs. 2 and 3).

The patient was doing well and his total bilirubin level was decreasing when he traumatically removed the catheter five days later. Reinsertion of a catheter was attempted. It was unsuccessful due to the decompressed biliary system. With a 10.2F hole in the liver and bile ducts and a common bile duct obstruction, bile peritonitis became a growing concern. A percutaneous cholecystostomy was then performed on the same day as the traumatic catheter removal.

Technique

The skin and subcutaneous tissue overlying the right midaxillary line were infiltrated with Lidocaine (Fig. 4). Under fluoroscopic control a 19-gauge Lunderquist PTC sheath needle was introduced into the gallbladder fundus through the liver-gallbladder bed. After removing the needle stylus, a 0.035 Lunderquist exchange guidewire was inserted. An 8.3Fr Ring Biliary Drain-

Fig. 1. Percutaneous cholangiogram demonstrates (A) obstructed and dilated common bile duct, (B) contrast-filled gallbladder, and (C) catheter. The metallic disk overlying the spine is a marker.

Figs. 2 and 3. Computed tomographic scans performed demonstrate a mass after percutaneous cholangiography in the head of the pancreas. Note the contrast-filled common bile duct.

age Catheter was placed over the wire, the tip was manipulated into the cystic duct. The wire was then removed. Injection of 43% water-soluble iodinated contrast medium through the biliary catheter revealed opacification of the gallbladder, cystic duct, common bile duct, and intrahepatic radicles (Fig. 5). No extravasation of contrast medium was seen.

Clinical course

The patient became septic after traumatic removal of the initial drainage catheter. Blood cultures grew group D streptococcus. The patient was treated with antibiotic therapy and fluids. Repeat blood cultures were negative.

After treatment of the sepsis and insertion of the percutaneous cholecystostomy catheter, the patient's condition stabilized and then improved. The total bilirubin decreased from 39 mg/dL (normal 0.3-1.2 mg/dL) on admission to 5.4 mg/dL four days prior to discharge. By that time the patient was ambulating, performing self-

care functions, and tolerating a regular diet. The patient was discharged to home care on the eighth postoperative day. Follow up was arranged through the department of surgery.

Discussion

The prevalence of biliary tract disease places operations on the biliary system among the most frequently performed intra-abdominal procedures.^{8,9} In the unstable patient, percutaneous cholecystostomy can be used for biliary decompression of bile and pus and/or contrast cholangiography.¹⁰

Many authors have advocated direct percutaneous gallbladder puncture, either under fluoroscopic or ultrasonic guidance.¹¹⁻¹³ The most common complication of direct gallbladder puncture, intraperitoneal bile leakage, can be potentially serious. The severity of this complication can be diminished if

Fig. 4. Percutaneous cholecystostomy.

the bile is sterile, hardware manipulation is kept to a minimum, and the size of the puncture is kept as small as possible. The route of puncture is also important. Puncturing the gallbladder through the liver uses the liver parenchyma as an anchor for the catheter and a seal for the gallbladder puncture site.¹⁴⁻¹⁶

Percutaneous cholecystostomy does appear to have value in palliation of biliary obstruction in severely debilitated patients. Under careful guidance, the procedure is relatively simple to perform, especially if the gallbladder is large and situated near the abdominal wall. Ultrasonic guidance can increase the convenience of performing this procedure by conceivably limiting the number of punctures. It also suggests the possibility of performing a percutaneous cholecystostomy outside of the special procedures suite.¹⁷⁻²⁰

Allen and associates⁶ have reported on chemodissolution of gallstones by methyltertbutyl ether via percutaneous cholecystostomy. Monooctanoin, another solubilizing agent, is also being used.

Fig. 5. Contrast cholangiogram depicts (A) the cholecystostomy catheter and opacification of (B) the gallbladder and (C) the common bile duct.

Comment

Although our patient was in poor condition, the procedure appeared to be safe and helpful in relieving the obstructive symptoms. Sepsis was the only complication—the result of the patient's trau-

matic removal of the initial biliary drainage catheter. The patient's jaundice and mentation improved within 48 hours of insertion of the cholecystostomy catheter.

We are encouraged by our initial experience in a community hospital. Continuous improvements made in techniques and on equipment should decrease the morbidity and mortality of this procedure, and expand our scope in biliary interventional radiology.

Summary

Under proper radiologic guidance, percutaneous cholecystostomy is a simple palliative procedure to relieve obstructive jaundice in the critically ill patient. This case report illustrates the potential benefits and risks of this procedure and reviews the pertinent literature and opinions on its utility.

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**“Deafness is something
you put beside you
not in front of you.”**

LINDA BOVE / ACTRESS

PHOTO: HELEN NESTOR

Linda Bove performed with The National Theatre of the Deaf for nine years. She has also starred in the Tony Award winning show, *Children of a Lesser God*.

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