

Where there is no t-tube: operative management of 2 patients with choledocholithiasis

D. O. Irabor, I.O. Oyegbile, J. K. Ladipo and P. A. Adegoke

Gastrointestinal Surgical Unit, University College Hospital, Ibadan, Nigeria.

Reprint requests to: Dr. D.O. Irabor, Department of Surgery, University College Hospital, P.M.B. 5116, Ibadan, Oyo State, Nigeria. E – mail: uchmed@skannet.com.ng

ABSTRACT

The T – tube is invaluable following choledochotomy. Unavailability has prompted improvisation using size 18 nasogastric tube as a T – tube in 2 patients. The improvised tube was effective. In the absence of a conventional T – tube, the nasogastric tube could serve as a useful alternative.

Keywords: Nasogastric Tube, T-Tube

Introduction

Choledochotomy for stone extraction usually is completed by insertion of a T-tube. This is useful in draining bile to the exterior until normal passage into the duodenum is re-established, acting as a common bile duct (CBD) stent and in the event of retained stones can be used as the means by which these stones can be extracted. In developed countries the availability of this appliance is taken for granted, however in many centres in Ibadan, Nigeria, the commodity is not easily obtained and is not routinely stocked in the commercial medical equipment stores in town.

This report presents an alternative to T-tubes namely simple Nasogastric tubes

which are much more available than T-Tubes.

Case reports

Case 1. A 32 year-old female Jehovah's Witness presented with a 5month history of right hypochondrial pain, fever with chills and deepening jaundice. She had a previous episode 4 months earlier, which subsided on antibiotic treatment at a Private Hospital. An ultrasound scan performed showed multifaceted stones in her Gall Bladder.

On examination she was not acutely ill looking, she was jaundiced, not pale, not febrile. Her temperature was 37.4°C, pulse was 80/minute regular, and BP was 110/70 mmHg. The main findings were

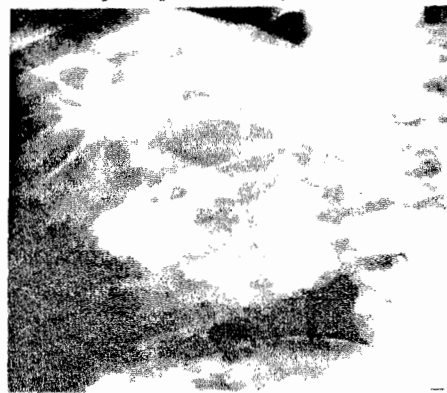
on abdominal examination, which revealed mild right hypochondrial tenderness, no organomegaly, and Murphy's sign was weakly positive. An impression of calculous cholecystitis with choledocholithiasis was made. This was confirmed by a fresh ultrasound scan which showed a shrunken gall bladder with 3 stones of 8mm size and a dilated supraduodenal common bile duct (CBD) of 15mm diameter. Other investigation results showed a PCV of 35%, Prothrombin Time (PT) ratio of 1.1 and a total serum bilirubin of 8.6mg% with the direct fraction at 5.5mg%. Preoperative preparations included hydration with normal saline infusion, empirical parenteral vitamin K 10mg daily, high carbohydrate, no fat diet, daily soap and water enemas. Broad-spectrum antibiotics (Zinacef and Flagyl), and mannitol infusion were administered in theatre at induction of anaesthesia.

At surgery, a shrunken fibrosed gall bladder with a short cystic duct was found. The Calot's triangle was obliterated by fibrosis thus an anterograde (Fundus-first) cholecystectomy was performed. The CBD was explored by extending the cystic duct opening inferiorly about 1cm. The stones were extracted with Desjardin's forceps and the CBD and the other extrahepatic ducts were irrigated with warm normal saline via a 14F feeding tube connected to a 20cc syringe. The 14F feeding tube was then well lubricated and passed inferiorly into the CBD through the sphincter of Oddi until it was palpable within the duodenum.

In the absence of a T-Tube, a size 18NG tube was inserted into the CBD with the tip directed superiorly. The opening into the CBD was closed snugly around the NG tube superiorly with

interrupted 3-0 polyglycolic acid stitches. The NG tube itself was anchored to the CBD wall with a 3-0 plain catgut stitch. The distal end emerging through the anterior abdominal wall via a separate stab wound and was anchored. The laparotomy incision was closed in 2 layers with 1-nylon suture. Post operatively, drainage of bile averaged about 200 to 300mls daily. The jaundice cleared gradually. Tube cholangiography performed on the 10th day postoperatively showed the entire extrahepatic biliary tree with no filling defects and spillage of dye into the duodenum (Figure 1). The tube was removed easily after severing the anchoring stitch on the anterior abdominal wall. She was discharged home and has been seen on follow-up visit at the outpatient clinic 2 weeks and 4 weeks respectively and has remained well.

Figure 1: Tube cholangiography of case 1 on 10th postoperative day



Case 2: A 62 year-old woman, presented with a 1-month history of deepening jaundice. She had a history of recurrent right hypochondrial pain, which was 6 months before the present episode. There was no history of exposure to a jaun-

diced person or of previous blood transfusion or parenteral injections.

On examination she was not acutely ill looking, she was however jaundiced. She was afebrile. Her temperature was 36.4°C, pulse 76/minute regular, BP 140/90mmHg. There were no significant findings on examination of the chest and abdomen. An ultrasound scan revealed multiple 4-7mm calculi in the gall bladder and a dilated CBD of 14mm diameter. Total serum bilirubin was 13.2mg% with the conjugated fraction being 11.4mg%, her PCV was 37% and PT ratio was 1.3. She was prepared for surgery in the same mode as the first case.

At Surgery she had a floating gall bladder with the fundus at the left side of the porta hepatis due to adhesions attached to the Hartmann's pouch.

A cholecystectomy was performed, then a choledochotomy was made in between 2 stay sutures of 3-0 silk. The CBD stones were removed with Desjardin forceps, irrigation done with warm normal saline, feeding tube passed inferiorly through sphincter of Oddi to ensure patency, then a 18F NG tube was passed into the CBD with the tip directed inferiorly. The stay sutures were removed and the CBD opening closed with interrupted 3-0 polyglycolic acid stitches. The NG tube was anchored to the CBD with a 3-0 plain catgut stitch like the first case.

The post-operative period was uneventful. Drainage of bile from the tube averaged 150ml to 300mls daily. The jaundice cleared gradually. Tube cholangiography performed on the 10th postoperative day was satisfactory. The tube was removed, the patient was discharged. She has been seen twice at the outpatients' clinics for follow-up and has remained well.

Discussion

Obstructive jaundice due to stones in the common bile duct (CBD) is an indication for CBD exploration and equipment recommended for this include Desjardin forceps and a T-Tube.¹⁻³ T-Tubes are required for completion of CBD exploration as their use allows unfettered drainage of the CBD (in the event of spasm of the sphincter of Oddi), also a T-Tube cholangiogram can be done to detect or exclude retained stones and such stones if present may be retrieved through the T-tube tract or if possible, agents for dissolution may be instilled through the T-Tube.⁴

Medical consumable items like T-Tubes should be taken for granted as being always available when required however this is not the case in a country in which all items required for surgical operations have to be imported. Thus it is imperative that alternatives to T-tube insertion should be sought in patients with choledocholithiasis who have been booked for operation in Ibadan, Nigeria. One option, after CBD exploration and stone extraction is bilio-enteric anastomosis employing either side-to-side choledochoduodenotomy or a choledochojejunostomy^{2,7}. The prerequisite for any of these procedures include a markedly dilated CBD greater than 14mm diameter and an assurance that the stoma size will be at least 2.5cm.^{2,3,7} The disadvantage of these biliary-enteric drainage procedures is that they significantly increase the operation time, there may be a risk of anastomotic leak with biliary peritonitis and one may not always encounter a CBD dilated up to 14mm. With these in mind, a simpler way of draining an explored CBD in the absence of a T-tube was tried with a size

18F plastic Nasogastric (NG) tube. In the first patient, the tip of the tube was directed superiorly whilst in the second patient it was directed inferiorly. The tube cholangiogram of the first patient showed a clearer and better outlining of the entire extrahepatic biliary tree with spillage of contrast into the duodenum (Figure 1), whilst that of the second patient outlined more of the CBD and duodenum only. It would appear that better contrast imaging would be achieved by directing the tube-tip upwards. We preferred to anchor the tube to the CBD with 3-0 plain catgut so that by the 10th day, there would be no hindrance to removal, as the plain catgut would have dissolved. Other workers have recorded that in the absence of a T-tube, a 14G urethral catheter could be inserted in the CBD directed superiorly for about 4cm and sutured to the upper end of the incision in the duct with 3-0 chromic catgut.¹

The other end of the spectrum shows some operators who believe that the CBD can be closed primarily without drainage after exploration and retrieval of stones.⁵ However, they noted some provisos before primary closure may be safely performed. First, the wall of the CBD had to be capable of holding sutures, second, the calibre of the duct had to be large enough to permit suture closure without obstruction, third there had to be reasonable confidence that the duct had been emptied of stones when these were present and fourth there had to be free passage of irrigating fluid and a Moynihan gall stone probe into the duodenum.⁵ The third proviso may be problematic in our centre in Ibadan because ensuring that there are no retained stones in the biliary tree after exploration of the CBD requires an on-

table intra-operative cholangiography and this is not available. Thus we depend on finger-tip sensation, alone which is not objective or scientific.

The problem about hepatobiliary surgery in the third world is the lack of appropriate peri-operative imaging techniques.⁶ This is why the authors feel safer inserting some type of drain in the explored CBD. If one should however attempt to close the CBD without a T-tube, other authors feel it is most necessary to provide drainage placed in apposition to the common bile duct.³ T-tubes are made of latex or rubber and stimulate a fibrous reaction to form a safe tract from CBD to the exterior and are not hardened by bile thus are easy to remove. A point not in favour of plastic NG tubes is that there is little fibrous reaction stimulated by them and they are supposedly "hardened" by bile thus making them difficult to remove.³ We did not encounter any problem with our use of plastic NG tubes as they were not hardened by the bile and none of the patients had any symptoms attributable to biliary peritonitis from a CBD leak. In conclusion, in the absence of T-tubes, the CBD can be drained safely and effectively with the use of an NG tube.

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