

# Role of Intraoperative Cholangiography in Detecting Rare Bile Duct Anomalies

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## ABSTRACT

A case of an anomalous extrahepatic biliary system is reported in which the right hepatic duct was found to enter the infundibulum of the gallbladder. In this case, a selective intraoperative cholangiography has prevented a possible major iatrogenic injury.

**Key Words:** Cholangiography, Bile ducts, Anomalies.

## INTRODUCTION

In the era of laparoscopic cholecystectomy, many authors have reported that bile duct injuries are secondary to difficulties in delineating biliary anatomy,<sup>1</sup> especially with the added hazard of traction of the gallbladder.<sup>2</sup> We report herein a case of a rare anatomical variation of the right hepatic duct discovered during laparoscopic cholecystectomy.

## CASE REPORT

A 45-year-old female patient was admitted to our hospital in August 1998 with the diagnosis of breast carcinoma. The metastatic workup included ultrasound of the liver. Incidentally, the gallbladder was found to be contracted with multiple stones, the biliary tree being reported as normal. The patient remained asymptomatic regarding her gallbladder stones until July 1999 when she started complaining of right upper abdominal pain, mainly after heavy meals. Repeat ultrasound did not reveal any changes from August 1998. Liver function tests were all within normal limits. The patient was scheduled for an elective laparoscopic cholecystectomy.

The procedure commenced with a standard 4-port technique. After applying traction to the gallbladder, blunt dissection revealed a ductal structure that was thought to be in continuity with the neck of the gallbladder.

A proximal clip was applied; a transverse partial cut was made distally, through which an intraoperative cholangiography was performed. No filling of the proximal biliary system could be demonstrated, and free flow in the duodenum was achieved. At this stage, the surgeon converted to open cholecystectomy. Careful dissection was carried on revealing a very short (2 mm) cystic duct connecting to what had previously been thought to be a cystic duct. Dissection of the gallbladder neck revealed another duct draining directly into it. At this stage, it was evident that we were dealing with a rare anomaly in which the main right hepatic duct was draining into the neck of the gallbladder, and the latter joined the main left hepatic duct with a very short cystic duct. A subtotal cholecystectomy was performed lateral to the confluence with the right hepatic duct. The clip was removed from

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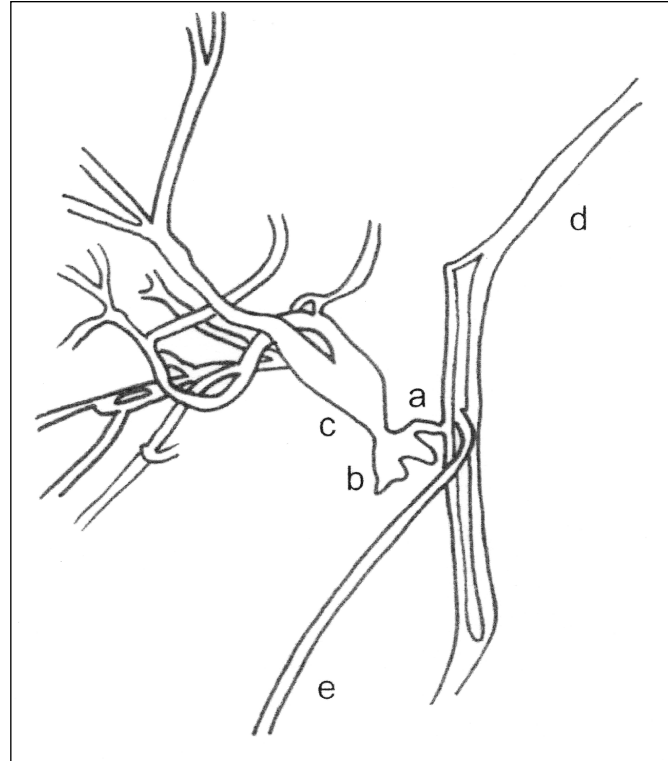
**Figure 1.** Intraoperative T-tube cholangiogram.

the left hepatic duct, and a T-tube was placed via the previously made opening into the duct system. A T-tube intraoperative cholangiogram was performed (**Figures 1 and 2**) and documented the above-described anomaly.

The postoperative course was smooth. A T-tube cholangiography was repeated on the 13th postoperative day and showed free flow into the duodenum. The tube was clamped on the 14th postoperative day and removed after 24 hours. The patient was seen in the outpatient clinic after 1 month. She was in good health, and her liver function tests were within normal limits.

## DISCUSSION

Iatrogenic injuries to the biliary tract after cholecystectomy seem to be increasing regardless of the learning curve and often have a poor outcome if not recognized and repaired immediately.<sup>3,4</sup> Nowadays, the overall incidence of laparoscopic bile duct injury is 0.6% (range 0.1 to 2.9).<sup>5</sup> Therefore, it is of great importance during biliary surgery to know the ductal anatomy, and knowledge of its embryological development is necessary to recognize unusually located structures.<sup>1</sup> Hepatocystic ducts are usually considered normal variants draining segments of the liver, but because of an embryological sliding between the fourth and sixth week of gestation they may end up branching into the gallbladder or cystic duct.<sup>6</sup> Cases of main right hepatic duct joining the cystic duct have been reported.<sup>7</sup> Although the possibility of branching into the



**Figure 2.** Artistic drawing of the t-tube cholangiogram: a. cystic duct, b. infundibulum, c. right hepatic duct, d. left hepatic duct, e. T-tube.

gallbladder has been mentioned in many reviews,<sup>8,9</sup> only 2 cases have been reported until now.<sup>9,10</sup> Therefore, we believe that our case is the third one.

It has been clearly reported in the literature<sup>11,12</sup> that cholangiography does not decrease the incidence of bile duct injuries but increases the rate of recognition and repair. It may also prevent further damage as in our case. Despite the controversy in surgical opinions regarding routine use of intraoperative cholangiography, it is still the best method for delineating biliary anatomy.

## CONCLUSION

We believe that the same criteria for cholangiography that used to be applied to open cholecystectomy should be applied to the laparoscopic technique and that selective cholangiography should be performed whenever the surgeon is in doubt about the anatomy. This rare case can be considered an example.

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