

가

: 1998 1 2003 12
가 14 (12 , 2 , : 56)
가 5 , T - tube 5 ,
1 ,
1 , 가 1 2 1 ,
21 G Chiba
Chiba 8.5 F
: 14 . 14 12 2
1
가 . 14 7
. 14 10
, T - tube 4 , (cystic duct stump)
2 , 1 , 1 , 1
. 14 1
32.1 (11 - 87)
:
가
T - tube
2 - 3 (1, 2).
(Percutaneous Transhepatic Biliary Drainage, 가 PTBD)
PTBD)
(3 - 5). Ernst (6) PTBD

1
2
3

(26 - 77) .

T - tube 5 , 10 11

(biloma)

1 , 8.5 F (Fig. 1C).

1 , 8.5 F

가 1 .

2

PTBD 14 6 2 - 3 PTBD

(computed tomography,

CT) , 6 CT , 2 PTBD

CT (fluid collection) (Figs. 1A, 2A).

Diisopropyl iminodiacetic acid (DISIDA) scan (7).

14 PTBD . 14 12

2

1 - 2 mm , 4 - 5 mm , PTBD 1

6 - 7 mm CT 가

3 - 5 mm 1

CT 40% 가 . 13 , 1

2 mm, 1.8 mm . 14

3 - 6 mm, 7 - 8 mm 7

가 , , , . 14 10

(8).

PTBD 2 CT T - tube 4 , (cystic duct stump)

(midaxillary line) 21 G Chiba (Solco Intermed, Seoul, Korea) 50% 1 , 1 (Fig. 2B), 1 (Fig. 1C) .

14

(Fig. 1B).

PTBD 32.1 (11 - 87)

. 14 9

PTBD

C - arm 90 (perihepatic), (subhepatic) (subphrenic),

. C - arm (perisplenic), (paracolic gutter), 3 2 , 1

1 - 2 mm (Douglas pouch)

Chiba 8.5 3

F (Dawson - Mueller Drainage Catheter, Cook, Bloomington, IN, U.S.A.) (Fig. 1C).

18.5 (3 - 41)

PTBD

5 1

가 4 14 (11 - 17) T - tube

가 5 35.2 (17 - 72) ,

가

chiba

2 28 (27 - 29) ,

1 31 ,
1 87

(3-5).

(16).

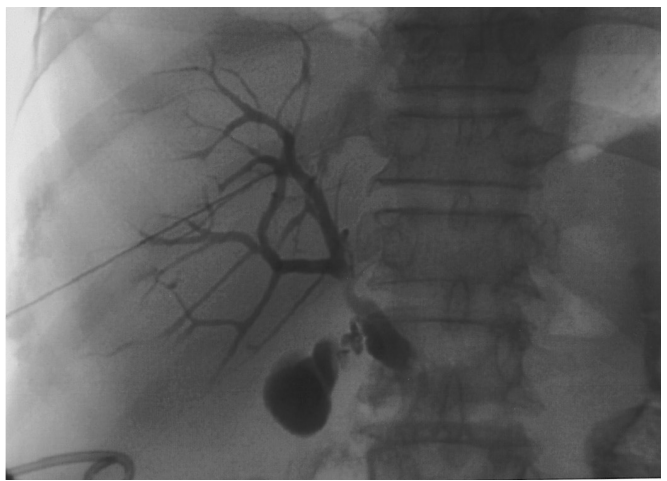
(9-15).
(fluid replacement),

가

(Endoscopic Retrograde
Cholangiopancreatography, ERCP)



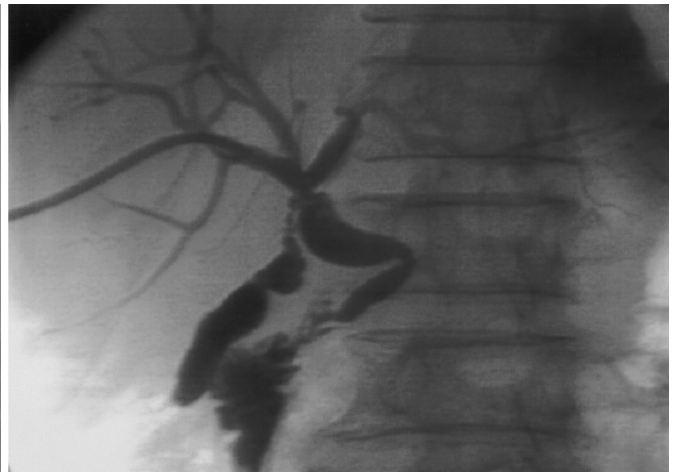
A



B



C



D

Fig. 1. A 67-year-old man with biliary leak after subtotal gastrectomy.

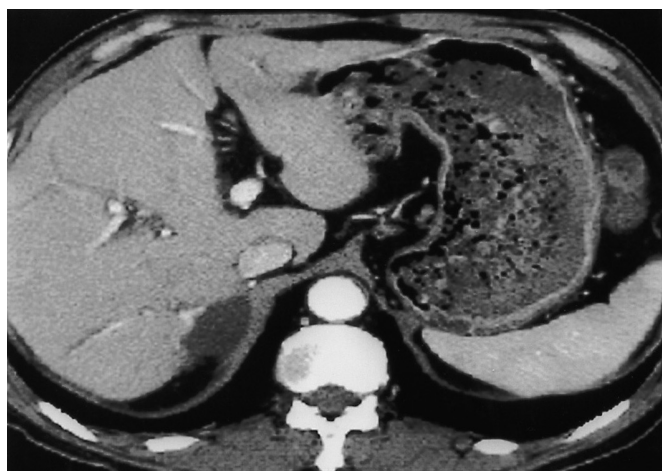
A. Computed tomography shows large amount of fluid collection in the perihepatic and subhepatic space.

B. Central bile duct was cannulated using a 21-G Chiba needle to map the intrahepatic biliary tree, and percutaneous transhepatic cholangiogram was obtained.

C. An 8.5-F drainage catheter tip was positioned at the CBD after puncturing peripheral bile duct with an additional Chiba needle. Cholangiogram shows contrast leakage at the GB fundus (arrowhead). An additional drainage catheter was placed in Morrison pouch to drain intraabdominal fluid collection (arrow).

D. Cholangiogram obtained 31 days after PTBD reveals no demonstrable contrast leakage at the GB.

,
 (5)
 75%
 Goldin (17) Sauerbruch (18)
 (nasobiliary tube)
 100%
 ERCP
 PTBD가 (5, 11, 13). Kaufman (13)
 PTBD 6 12 5
 . Vaccaro (11) 3
 PTBD Liguory (5)
 7 PTBD
 . Chen (4) 57
 2 PTBD
 Ernst (6)
 가 16 14
 . Liguory 2 PTBD 13
 4
 가 14
 PTBD 13
 . 13 3
 PTBD 가
 가
 PTBD 가
 가 (vascular
 complication)
 7 - 19%
 (19 - 21). PTBD
 가
 PTBD



A



B



C

Fig. 2. A 62-year-old man with bile leakage after post-laparoscopic adrenalectomy due to right adrenal adenoma.
A. Computed tomography shows loculated fluid collection in the bare area (arrow).
B. Percutaneous transhepatic cholangiogram shows contrast leakage at the caudate lobe of the liver (arrow).
C. Cholangiogram obtained 27 days after PTBD reveals no demonstrable contrast leakage at the caudate lobe of the liver.

tions)			(endobiliary manipula -	
			(11, 13).	
가	PTBD			
PTBD				
	PTBD			
	PTBD		Tamada	
(22)	PTBD		PTBD	
	Harris	(23)	가	6
			PTBD	가
	PTBD			
				21 G 가
				2
	(19 - 21)			
7	32.1	Ernst	(6)	78
가	14			
가				
PTBD				
			PTBD	
가	가			
가		PTBD		
		가 가		

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J Korean Radiol Soc 2004;51:427 - 432

Percutaneous Transhepatic Biliary Drainage Through the Normal Duct in Patients with Post-Operative Bile Leakage¹

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Purpose: To evaluate the technical feasibility and clinical efficacy of percutaneous transhepatic biliary drainage (PTBD) through the normal duct in patients with post-operative bile leakage.

Materials and Methods: From January 1998 to December 2003, fourteen patients (male: 12, female: 2, mean age: 56) with biliary leak after laparoscopic cholecystectomy ($n=5$), T-tube removal ($n=5$), choledochojejunostomy due to small bowel perforation ($n=1$), right lobectomy ($n=1$), laparoscopic adrenalectomy ($n=1$), and subtotal gastrectomy ($n=1$) were treated by means of PTBD; this was performed with the two-step approach. The central bile duct was cannulated using a 21-G Chiba needle to map the intrahepatic biliary tree. An 8.5-F drainage catheter tip was positioned at the CBD after puncturing peripheral bile duct with an additional Chiba needle. We evaluated the technical feasibility, the procedure-related complications, clinical efficacy and the duration of catheter placement.

Results: PTBD of the normal duct with the two-step approach was successful in all but two cases. In these two cases, the two-step approach was failed due to the rapid disappearance of the targeted peripheral duct, and this was the result caused by biloport fistula. PTBD was performed through the central bile duct in one patient, and through the remnant cystic duct in one patient. There were no procedure-related complications except for mild abdominal pain in seven patients. Bile leakage was demonstrated on cholangiogram in 10 of 14 patients; this occurred at the T-tube exit site ($n=4$), cystic duct stump ($n=2$), choledochojejunostomy site ($n=1$), resection margin of liver ($n=1$), caudate lobe ($n=1$), and GB bed ($n=1$). In 13 patients, the biliary leak stopped after drainage (mean duration: 32.1 days). In one patient, surgical management was performed one day after PTBD due to the excessive amount of bile leakage.

Conclusion: PTBD is a technically feasible and clinically efficacious treatment for post-operative bile leakage, and it can replace the more invasive surgical or endoscopic management procedures.

Index words : Bile ducts, injuries
Bile ducts, leakage
Bile ducts, interventional procedure

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