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Digestive and Liver Disease

journal homepage: www.elsevier.com/locate/dld



Digestive Endoscopy

Endoscopic rendez-vous reconstruction of complete biliary obstruction

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ARTICLE INFO

Article history:

Received 15 September 2016

Received in revised form 15 January 2017

Accepted 19 January 2017

Available online xxx

Keywords:

Biliary tract diseases

Cholestasis

Endoscopy

ERCP

PTBD

Rendez-vous

ABSTRACT

Background and study aims: Complete biliary strictures normally require surgical intervention. We describe an alternative, minimally invasive endoscopic/percutaneous rendez-vous technique for the reconstruction of complete benign biliary strictures.

Patients and methods: Complete biliary strictures were reconstructed in four patients using a rendez-vous percutaneous-endoscopic or percutaneous-percutaneous route guided by fluoroscopic and visual (transillumination) control.

Results: All four patients were treated successfully and safely with the rendez-vous technique. Complications were caused by the preliminary creation, dilatation and maturation of the percutaneous tract.

Conclusion: This technique may offer a good alternative to surgical bilio-enteric anastomosis in experienced hands. The long term course of the patients treated remains to be seen.

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1. Introduction

Benign biliary strictures are commonly consequences of surgical interventions like cholecystectomy or bilio-enteric anastomosis (BEA) caused by primary injury of the bile ducts, vascular injury, surgical clips or formation of granulation tissue [1,2]. For the management of these strictures an approach via ERC or in altered anatomical conditions (e.g. Roux-en-Y) via PTBD is possible [3,4]. In complete biliary strictures, when there is no possibility to pass a wire through the stricture or a visualization of the proximal parts of the biliary system with contrast medium cannot be achieved, a new BEA often needs to be created. We report four patients with complete iatrogenic biliary strictures treated with a combined endoscopic-percutaneous or percutaneous-percutaneous rendez-vous technique resulting in successful treatment of biliary obstruction.

2. Material and methods

Data of four patients admitted to our hospital between October 2013 and January 2015 with complete obstruction of the common bile duct (CBD) were collected retrospectively.

Creation of the percutaneous tract of at least 16 Charrière (Ch;=French) was performed in standard technique [5]. For percutaneous transhepatic cholangioscopy (PTCS) a transnasal gastroscop (Olympus GIF-N180, Olympus medical systems corp., Tokyo, Japan) was used.

Endoscopic intervention was performed using a standard duodenoscope (KARL STORZ GmbH & Co. KG, Tuttlingen, Germany) in 2 patients. In these patients peroral cholangioscopy (POCS) was conducted using the SAMBA system (KARL STORZ GmbH & Co. KG, Tuttlingen, Germany) [6]. In the other 2 patients a single-balloon-endoscope (Olympus SIF-Q180, Olympus medical systems corp., Tokyo, Japan) was used to gain access to the CBD.

In order to reopen the obstructed CBD, a mucosectomy-snare (Olympus Snare Master™, 1.8 mm, Olympus Corp., Tokyo, Japan) was inserted over the percutaneous cholangioscope. Under diaphanoscopy (=transillumination by BE or POCS) and fluoroscopic control the obstructed CBD was cut open (Erbe Vio200D, Endocut

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Table 1
Summary of the patients treated with the rendezvous procedure.

Patient	1	2	3	4
Age	66	69	80	40
Gender	Female	Male	Female	Female
Reason for complete biliary obstruction	BEA-stricture (after Whipple-surgery due to pancreatic cancer)	BEA-stricture (after benign biliary stricture due to recurrent choledocholithiasis)	Complete ligature/transection of the CBD in the hilus region	Ischemic subhilar CBD-stricture after cholecystectomy
Time between initial surgery and resulting biliary stricture	16 months	24 years	1 day	5 months
Symptoms	Fever, cholangitis	Right abdominal pain, fever	Cholestasis	Icterus, Pruritus
Start of symptoms	04/2014	10/2014	01/2015	09/2013
Laboratory findings at baseline				
- Bilirubine (mg/dl)	3.5	1.4	3.8	2.4
- Alkaline phosphatase (U/l)	577	644	148	265
- Gamma-GT (U/l)	1499	1665	309	627
- GOT (U/l)	100	79	59	69
- GPT (U/l)	82	122	60	210
- Leukocytes (g/l)	10.5	6.5	8.5	6.8
- CRP (mg/dl)	6.2	7.6	14.1	1.0
Interventions before treatment in our clinic	ERC	none	none	ERC, PTBD Post-ERC
Time between first symptoms and first treatment in our clinic	17 days	28 days	2 days	30 days
Total number of interventions in our clinic	11	10	15	20
- Interventions until rendez-vous (dilatations)	5 (4)	5 (4)	12 (4)	6 (5)
- Interventions after rendez-vous (dilatations)	6 (4)	4 (3)	2 (2)	13 (2)
Follow-up after first intervention in our clinic (until June 2016)	2.3 years	1.7 years	1.5 year	2.8 years
Complications after first intervention in our clinic	Minor: 1 × bleeding after PTBD 3 × cholangitis in one case due to occlusion of PTBD	Major: 1 × cholangiosepsis with acute renal failure, ICU-treatment	Minor: 3 × dislocation of the PTBD 1 × bilio-portal fistula Major: ICU-treatment after respiratory insufficiency during PTBD-intervention	Minor: 1 × occlusion of PTBD
Time from first intervention to rendez-vous	23 days	26 days	57 days	17 days
Time from rendez-vous intervention to removal of biliary drainage	10 months	8 months, 24 days	62 days	24 months
Status June 2016	No further drainage therapy	No further drainage therapy	No further percutaneous biliary drainage, after BEA	No further drainage therapy

Q, effect 2, Erbe Elektromedizin GmbH, Tübingen, Germany) and the snare was passed into the reconnected CBD/jejunal loop. Next, a guidewire (Jagewire, 0.035, 450 cm, Boston Scientific, Marlborough, MA, USA) was inserted via the endoscopic route, grasped by closing the snare and pulled out over the percutaneous tract. Thereafter, dilatations were conducted over this guidewire using 6–12 Ch bougies (Dilatator, Pflugbeil, Zorneding, Germany; Dilator, Cook Medical, Limerick, Ireland).

As standard we performed PTBD and ERC under conscious sedation with propofol and midazolam. In one patient two interventions were performed under general anesthesia in order to ensure stable conditions.

All procedures were executed by highly experienced endoscopists with the expert-knowledge of over 1000 ERC and PTBD-procedures.

3. Results

Data of all patients are summarized in [Table 1](#). The additionally provided video illustrates the cases and interventions.

3.1. Patient 1

Because of a complete BEA-stricture in this 66-year old female, we established a PTBD from the left, which was complicated by minor bleeding. After dilatation up to 16 Ch, a percutaneous cholangioscopic trial of passing the stricture failed. The distal part of the strictured BEA was finally reached by single-balloon endoscopy and the scarred closure was cut with the mucosectomy snare in direction to the diaphanous light emitted by the single balloon enteroscope. The new tract was dilated up to 21 Ch and a 20 Ch

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