Post Laparoscopic Cholecystectomy CBD Diathermy Injury in Patient with RYGB

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Disclousure

- GT Metaboic: Stock hoder

An Update on Iatrogenic Biliary Injuries

Identification, Classification, and Management

Joshua T. Cohen, MD, Kevin P. Charpentier, MD,
Rachel E. Beard, MD*

- The incidence BDI injury (0.4-0.6%)
- PTC, MRCP, and/or ERCP can be used to define the anatomy

Classification System

Bisthmuth Classification

Table 2
Bismuth classification system

Type	Criteria
I	Transection ≥2 cm from the confluence of the hepatic ducts
II	Transection <2 cm from the confluence of the hepatic ducts
III	Transection involving the confluence of the hepatic ducts with continued right and left ductal communication
IV	Transection resulting in the destruction of the hepatic confluence (disruption of the confluence ceiling)
V	Aberrant right hepatic duct stricture ± CHD stricture

Classification System
Stewart-Way Classification

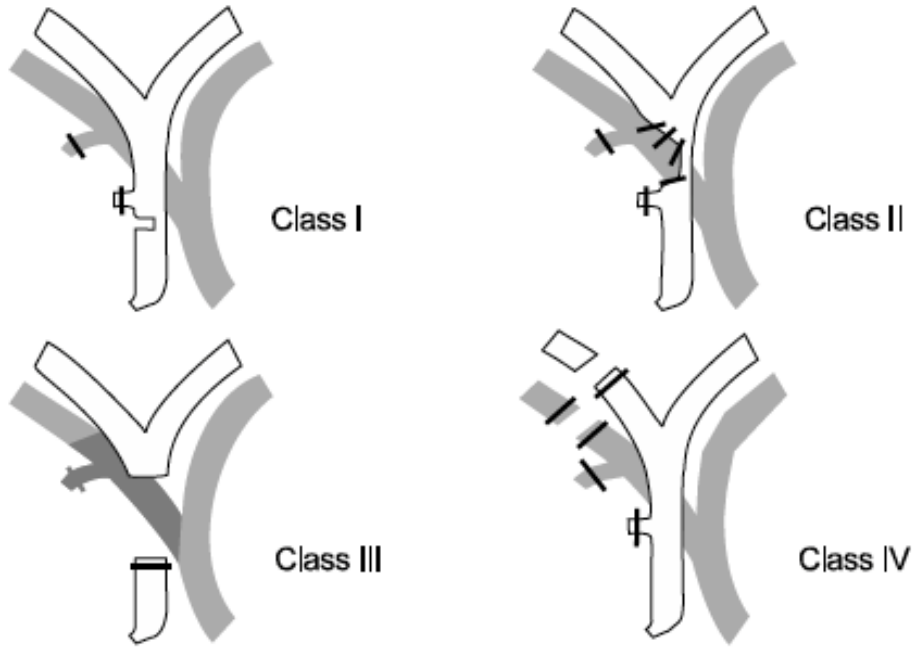

Fig. 2. Stewart-Way classification.[15]

Classification System
Strasberg Classification

Table 3
Strasberg classification system

Type	Criteria
A	Leakage from the cystic duct or minor duct in gallbladder fossa
B	Occlusion of aberrant hepatic duct
C	Transection of aberrant hepatic duct (without concomitant occlusion)
D	Injury to the common hepatic or CBD lateral wall without transection
E1	Transection ≥2 cm from the confluence of the hepatic ducts
E2	Transection <2 cm from the confluence of the hepatic ducts
E3	Transection involving the confluence of the hepatic ducts with continued right and left ductal communication
E4	Transection resulting in the destruction of the hepatic confluence (and no communication between left and right hepatic ducts)
E5	Aberrant right hepatic duct injury and CHD injury

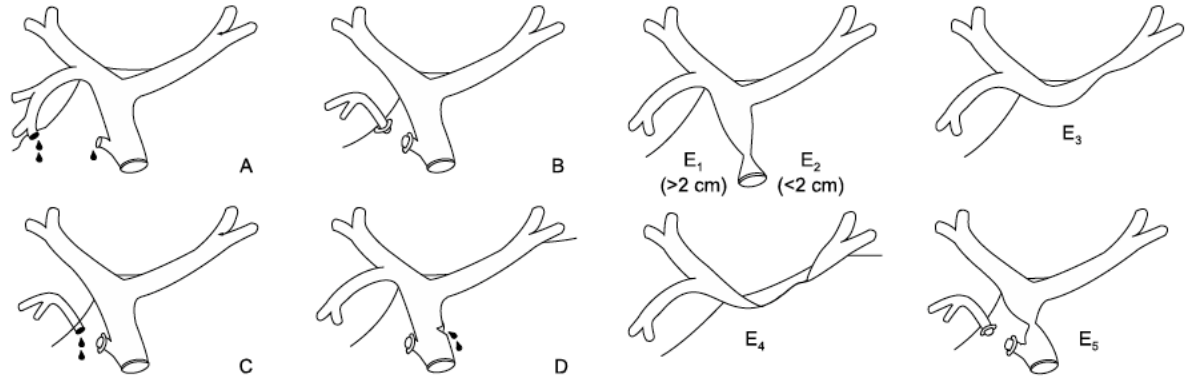

Fig. 1. Strasberg classification.[3,22] (A) Bile leak from cystic duct stump or minor biliary radical in gallbladder fossa. (B) Occluded right posterior sectoral duct. (C) Bile leak from divided right posterior sectoral duct. (D) Bile leak from main bile duct without major tissue loss. (E_1) Transected main bile duct with a stricture more than 2 cm from the hilus. (E_2) Transected main bile duct with a stricture less than 2 cm from the hilus. (E_3) Stricture of the hilus with right and left ducts in communication. (E_4) Stricture of the hilus with separation of right and left ducts. (E_5) Stricture of the main bile duct and the right posterior sectoral duct.

Classification System
Hanover Classification

Table 5
Hanover classification system

Type	Description	Subtype	Description
A	Peripheral bile leak in continuity with the main system	1	Cystic duct leak
		2	Leak in the gallbladder fossa
B	Main bile duct occlusion[a] without injury	1	Incomplete occlusion
		2	Complete occlusion
C[b]	Injury is tangential to CBD	1	<5-mm injury
		2	>5-mm injury below hepatic duct confluence
		3	>5-mm injury at the level of the hepatic duct confluence
		4	>5-mm injury above hepatic duct confluence
D[b]	Bile duct transection	1	Below confluence of hepatic duct
		2	Below confluence of hepatic duct with ductal defect
		3	At confluence of hepatic duct
		4	Above confluence of hepatic duct (±defect))
E	Main bile duct stricture	1	Short stricture <5 mm
		2	Longitudinal stricture >5 mm
		3	Stricture at hepatic duct confluence
		4	Stricture at segmental bile duct

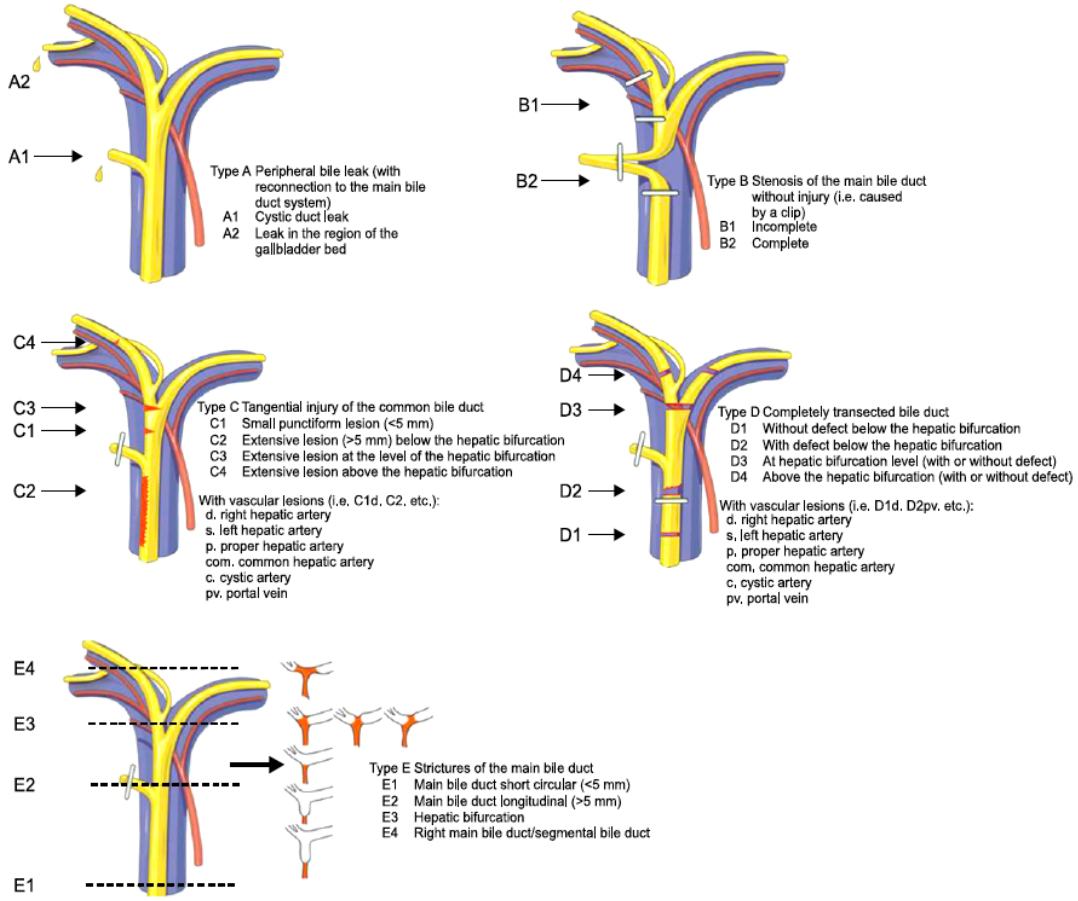

Fig. 3. Hannover classification.[16]

RESIDENT'S FORUM

SECTION EDITORS: EDWARD E. CORNWELL III, MD, FCCM; PAMELA A. LIPSETT, MD; RICHARD D. SCHULICK, MD

The Pedicle Effect and Direct Coupling

Delayed Thermal Injuries to the Bile Duct After Laparoscopic Cholecystectomy

David J. Humes, MRCS; Irfan Ahmed, MD, FRCS; Dileep N. Lobo, DM, FRCS

- Monopolar diathermy is the most commonly used device in LC can result from unrecognized transfer of energy in the operating area
- 3 patients who underwent uneventful LC but were readmitted 4 to 5 days later with pinhole leaks from the CBD as a result of coagulative necrosis caused by unrecognized energy transfer.

ORIGINAL ARTICLE

Annals of Gastroenterology (2011) **24,** 200-205

Eleven-year experience on the endoscopic treatment of post-cholecystectomy bile leaks

Kostas Fasoulas[a], Christos Zavos[b], Grigoris Chatzimavroudis[a], Christina Trakateli[a], Themistoklis Vasiliadis[a], Aristidis Ioannidis[a], Jannis Kountouras[b], Panagiotis Katsinelos[a]

[a]G. Gennimatas General Hospital, Thessaloniki, Greece, [b]Ippokration Hospital, Thessaloniki, Greece

- ERCP can be used as a definitive treatment for injuries that do not result in CBD occlusion or complete transection.
- However, ERCP is more challenging to perform in patients after RYGB.

ERCP POST RYGB Techniques

- Three techniques were described to treat bile leak following LC in patients after RYGB

Bile leak from the duct of Luschka treated with double-balloon enteroscopy ERCP in a patient with Roux-en-Y gastric bypass

- 1. Balloon-Assisted Enteroscopy-Endoscopic Retrograde Cholangio-Pancreatography (BAE-ERCP)

Balloon enteroscopy–assisted ERCP in patients with Roux-en-Y gastrectomy and intact papillae (with videos)

Kentaro Ishii, MD,[1] Takao Itoi, MD, FASGE,[1] Ryosuke Tonozuka, MD,[1] Fumihide Itokawa, MD,[1] Atsushi Sofuni, MD,[1] Takayoshi Tsuchiya, MD,[1] Shujiro Tsuji, MD,[1] Nobuhito Ikeuchi, MD,[1] Kentaro Kamada, MD,[1] Junko Umeda, MD,[1] Reina Tanaka, MD,[1] Mitsuyoshi Honjo, MD,[1] Shuntaro Mukai, MD,[1] Mitsuru Fujita, MD,[1] Fuminori Moriyasu, MD,[1] Todd H. Baron, MD, FASGE,[2] Takuji Gotoda, MD, FASGE[1]

Tokyo, Japan

Original article

Thieme

Double balloon enteroscopy-assisted endoscopic retrograde cholangiopancreatography in Roux-en-Y gastric bypass anatomy: expert vs. novice experience

OPEN ACCESS

Authors

Amir Kashani[1,*], Gebran Abboud[2,*], Simon K. Lo[1], Laith H. Jamil[1]

Feasibility of short double-balloon enteroscopy-assisted endoscopic retrograde cholangiopancreatography in patients with surgically altered gastrointestinal anatomy: experience in a regional centre

SW Cheung[1] *, MRCP, FHKCP, KS Cheng[1], MRCP, FHKCP, WM Yip[2], MRCP, FHKCP, KK Li[1], MBBS, FRCP

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Available online at ScienceDirect www.sciencedirect.com
Elsevier Masson France EM|consulte www.em-consulte.com/en

ORIGINAL ARTICLE

Laparoscopy-assisted transgastric endoscopic retrograde cholangiopancreatography: Preliminary experience and technique description

S. Tzedakis[a,d], R. Memeo[a,b,c,*], M. Nedelcu[a,d], M. Rodriguez[d], M. Delvaux[a,d], J. Huppertz[a,d], H. Jeddou[a,d], D. Mutter[a,b,d], J. Marescaux[a,b], P. Pessaux[a,b,d]

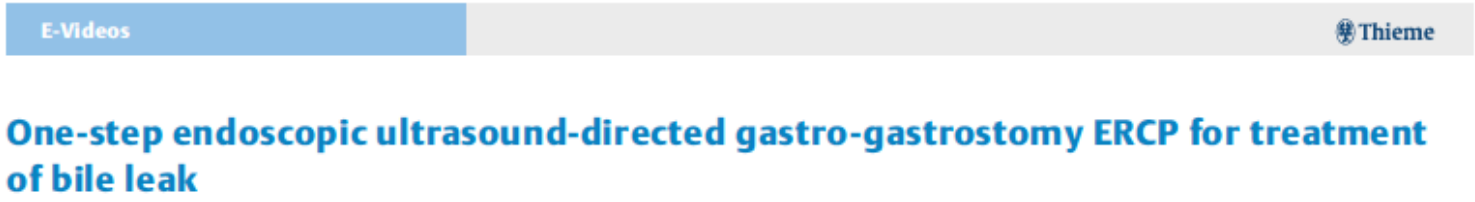
- 2. Laparoscopy-Assisted Transgastric ERCP (LA-ERCP)

Obesity Surgery
https://doi.org/10.1007/s11695-018-3258-0

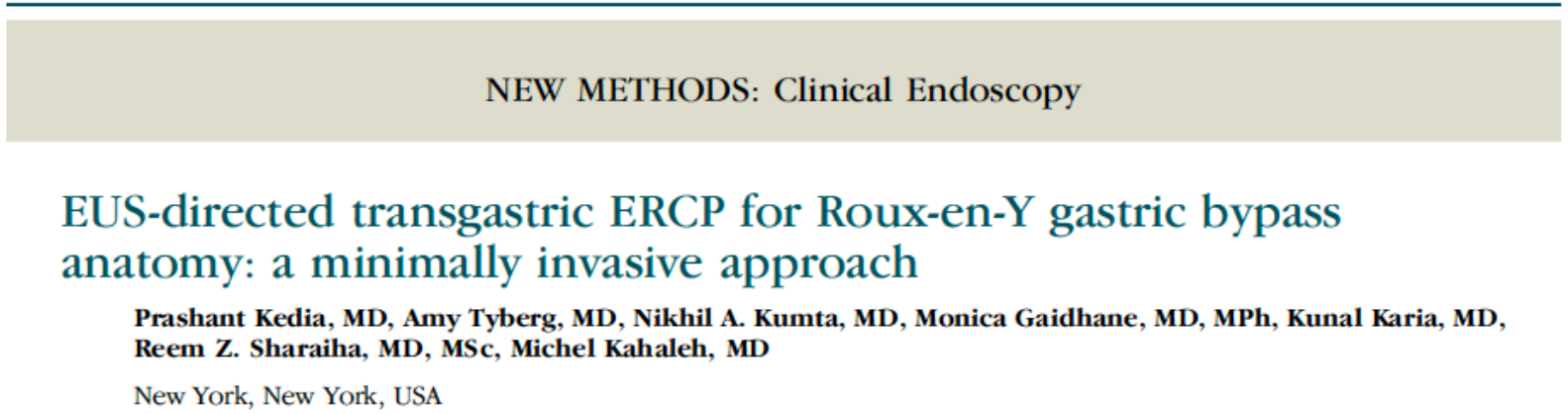
ORIGINAL CONTRIBUTIONS

Trans-Gastric ERCP After Roux-en-Y Gastric Bypass: Systematic Review and Meta-Analysis

Alberto Aiolfi[1] · Emanuele Asti[1] · Emanuele Rausa[1] · Daniele Bernardi[1] · Gianluca Bonitta[1] · Luigi Bonavina[1]



- 3. Endoscopic Ultrasound (EUS) Directed Transgastric ERCP (EDGE)



Clinical Presentation

- 58 years old lady
- Hypertension. Stroke (protein S was on warfarin).
- RYGB 2009 (weight 94 kg, height 150 cm BMI 41)
- Presented with 4 days epigastric pain
- Gastroscopy normal
- 17/2/2019 US abdomen: Gallstones

Clinical Presentation

- LC 5/3/3019
- 8/3/2019 post LC abdominal pain low grade fever.
- Managed conservatively in ER.
- 10/3/2019 severe pain to the RUQ with severe tenderness

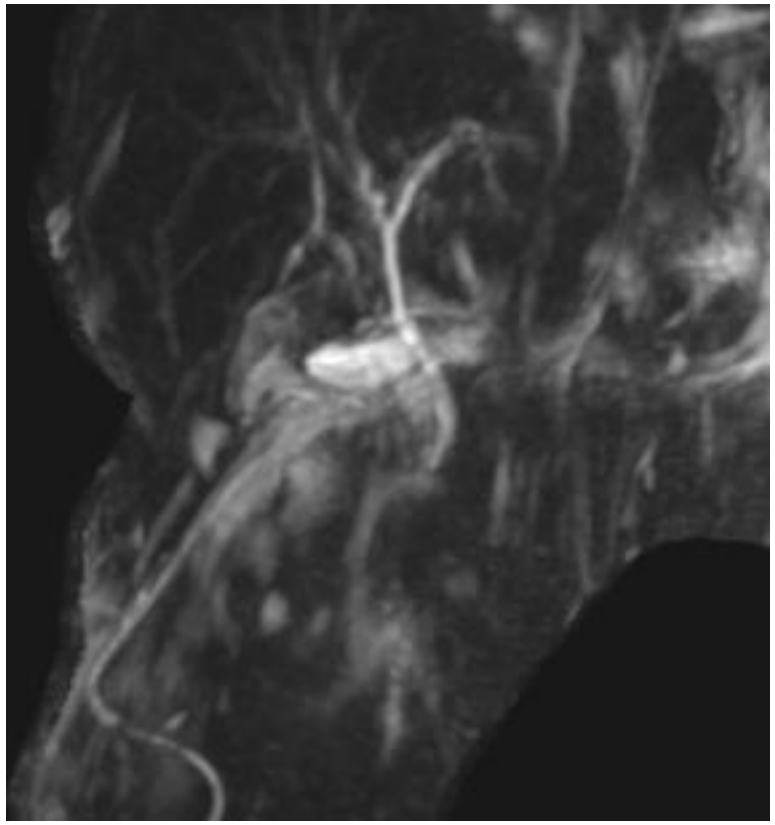
Clinical Presentation

- CT scan 10/3/2019
  - Marked dilatation of small bowel. Pelvic and subhepatic fluid collection.
  - Diffuse SC stranding surgical emphysema and large SC seroma at the right side of umbilicus
- Diagnostic laparoscopy converted to Laparotomy 11/3/2019.
- Pinhole diathermy injury.
- Primary suturing and drain.

CBD Diathermy Injury Post LC in Post RYGB

Postoperative MRCP

- On the third postoperative day, the drain started bringing bile and MRCP confirmed bile leak from the same place.
- MRCP 12/3/2019 :
  - small trace of fluid adjacent to CBD at level of cystic duct with minimal free fluid.
  - No dilated extra or intrahepatic ducts
- HIDA scan was not available in our hospital.
- Drainage was decreasing from 480 cc per day to 100 cc per day for two weeks.



Postoperative MRCP

- US 27/3/2019:
  - Minimal free fluid collection
- Drain diminishing from 480, 155, 100, till < 20 cc
- MRCP 5/4/2019:
  - minimal fluid signal intensity in the GB bed. Otherwise, normal
- The drain was removed on the fourth week
  - When there was no biliary output and a repeat MRCP confirmed closure of the leak from the CBD.