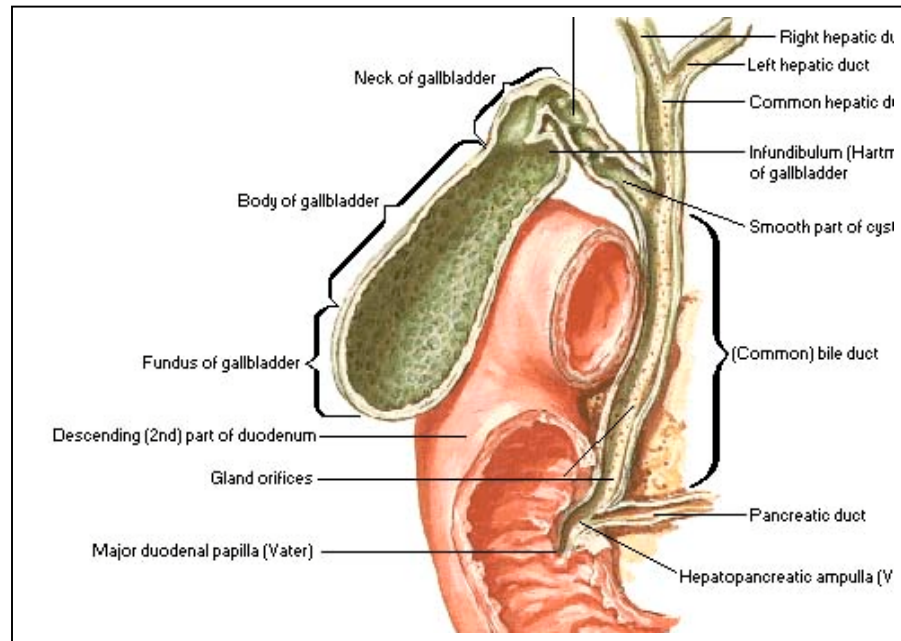


# COMMON BILE DUCT INJURIES FOLLOWING LAPAROSCOPIC CHOLECYSTECTOMY



### Classification of injuries :

Siewert [96]	Neuhaus [85]		McMahon [113]	Strasberg [73]
I	A		Minor	A, B
III	C		Minor	C, D
IV	D		Major	E1, E2, E3, E5
II	B1-2 E1-4		Major	E4

**First line:** minor lesions such as cystic duct insufficiency, or partial/tangential opening of peripheral ducts (Luschka), partial CBD lesion <25% of diameter, leakage from the liver bed.

**Second line:** tangential lesion of the CBD (with or without arterial component) divided right segmental duct, lateral injury common hepatic duct.

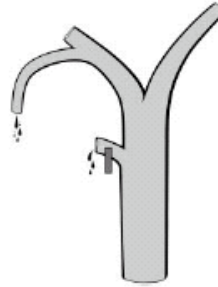
**Third line:** defect lesion of the CBD (with or without arterial component), CBD lesion >25% of diameter, common hepatic duct division less than or more than 2 cm from bifurcation, division at bifurcation.

**Fourth line:** late postoperative stricture, isolated left or right hepatic duct stricture, lesion of the CBD, occlusion of the CBD

## Klassifikation der Gallengangsverletzungen

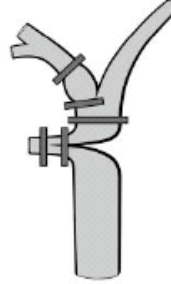
**Typ A Periphere Galleckage**  
(mit Verbindung zum Hauptgallengangssystem)

- A1: Cysticusleckage
- A2: Leckage im Gallenblasenbett



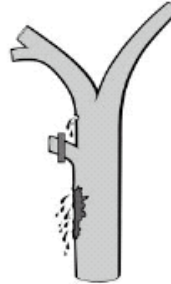
**Typ B Occlusion des DHC ohne Verletzung** (z.B. Clip)

- B1: Inkomplett
- B2: Komplett



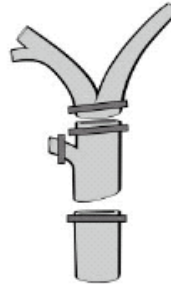
**Typ C Tangentiale Verletzung des DHC** (Kontinuität erhalten)

- C1: Kleine, punktförmige Läsion (< 5 mm)
- C2: Ausgedehnte Läsion (> 5 mm)



**Typ D Komplette Durchtrennung des DHC** (oder eines rechten Gallenganges ohne Anschluß an das Hauptgallengangssystem)

- D1: Ohne Defekt
- D2: Mit Defekt



**Typ E Stenosen des DHC**

- E1: DHC kurz, ringförmig (< 5 mm)
- E2: DHC langstreckig (> 5 mm)
- E3: Hepaticusgabel
- E4: Rechter Hauptgallengang / Segmentgallengang

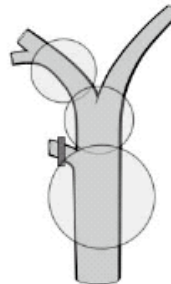


Abb. 1. Klassifikation der iatrogenen Gallengangsverletzungen

**Epidemiology:**

- Open cholecystectomy – common bile duct injury rate of 0.1-0.2%
- Laparoscopic cholecystectomy – 0.4-0.6% (was initially >3%, but has shown learning curve).
- These injuries tend to be higher, and frequently involve concomitant vascular injury – up to 40%

**Diagnosis:**

- Patients present with either a bile leak (abdominal pain, bilious output from drain, bile peritonitis) or biliary obstruction (but high pressure soon leads to leak)
- ERCP – identifies location of injury and presence of retained stones
- If <100cc bilious drainage / day, usually resolves with bowel rest in 2-3 days (likely Type I / A)
- Percutaneous transhepatic placement of biliary stents – serves for identification of both major ductal systems, may also demonstrate unsuspected injuries

**Treatment:**

- Roux-en-Y Hepaticojejunostomy (hepatic lobectomy if concomitant vascular injury)



**Outcome:**

- 90% of patients s/p reconstruction have good results, do not require re-intervention
- At 5 years post-op, quality of life after biliary reconstruction surgery is not significantly different from those who underwent uneventful laparoscopic cholecystectomy

**Prevention:**

- Many guidelines for prevention of injury, technical tips, etc. (e.g. never assume your patient has a variant anatomy, avoid excessive traction on gall bladder, etc)
- “The primary cause of error in 97% of cases was a visual perceptual illusion. Faults in technical skill were present in only 3% of injuries”
- If in doubt, obtain cholangiogram and/or convert to open.

**References:**

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