Prevention and Management of ERCP-related Complications

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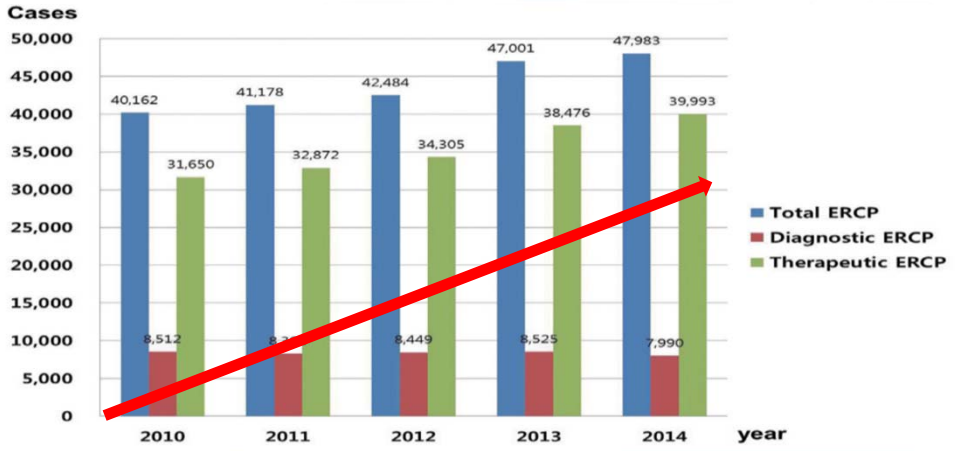
IYEA 2022 International Young Endoscopist Awards 2022

Milestones

- **Background**
- **Post ERCP pancreatitis**
- Perforation
- Post-sphincterotomy bleeding
- Cholangitis
- Conclusions

Background (ERCP)

- Gold standard for various pancreatobiliary diseases (gallstones & malignancy)
- Relatively invasive procedure with radiation hazards and complications
- Special settings and instruments for safe and effective procedure
- Various medical personnel for ***team practice***
- Knowledge and experiences (secondary)

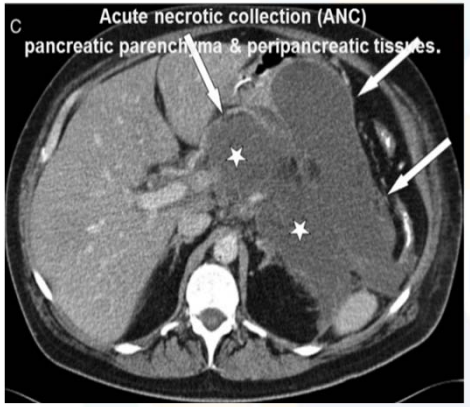


Ahn DW et al. KPBA 2019

Post ERCP pancreatitis

- ERCP, the most predictable provocateur of acute pancreatitis
- Incidence over 15% in high-risk patients
- Leads to extended hospitalization & substantial burden for both patients and physicians

Wang AY, et al. Prevention of Post-Endoscopic Retrograde Cholangiopancreatography Pancreatitis: Medications and Techniques. Clin Gastroenterol Hepatol 2016.



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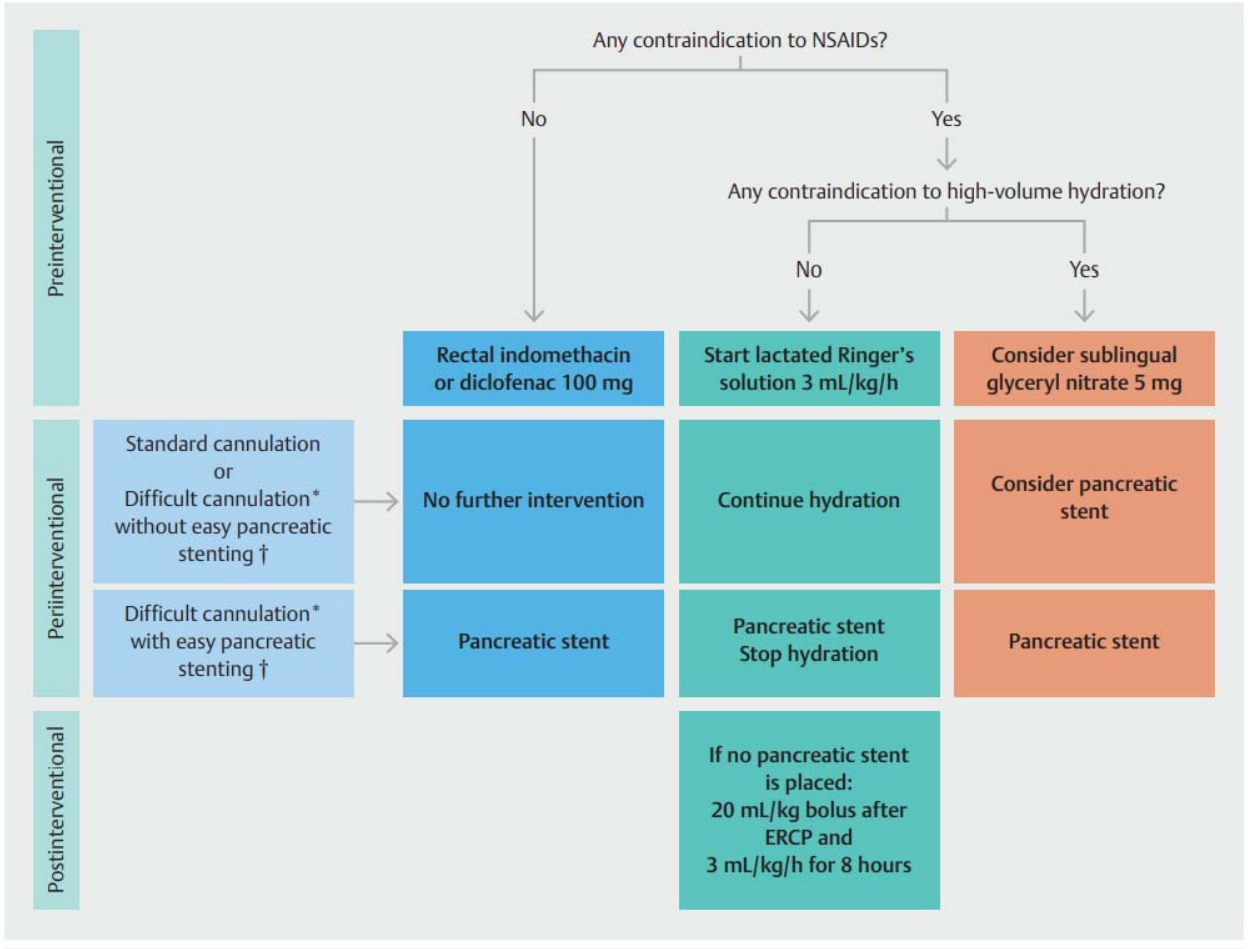
Prevention algorism from post ERCP pancreatitis by ESGE

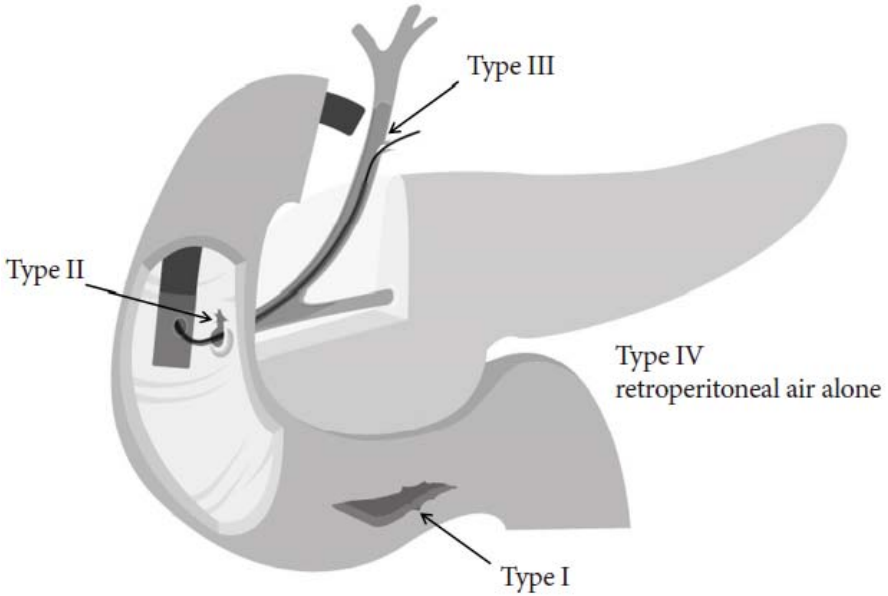


Perforation

- **Incidence of ERCP-related perforation: 0.08%~0.6%**
- **Perforation related mortality: 9.9%**
- **Type of perforation and frequency (Stapfer)**

Am J Gastroenterol 2001: 96:417-23

Gastrointest En1dosc 2009;70:80-8



Clin Endosc 2016;49:376-382

Type	Description	Frequency
I	Duodenal wall perforation (by the endoscope)	18%
II	Periampullary perforation (by sphincterotomy/precut)	58%
III	Biliary or pancreatic duct perforation (by intraductal instrumentation)	13%
IV	Retroperitoneal gas alone	11%

Surgeon 2017; 15: 379–387

Risk Factors for Perforation

Type II - IV

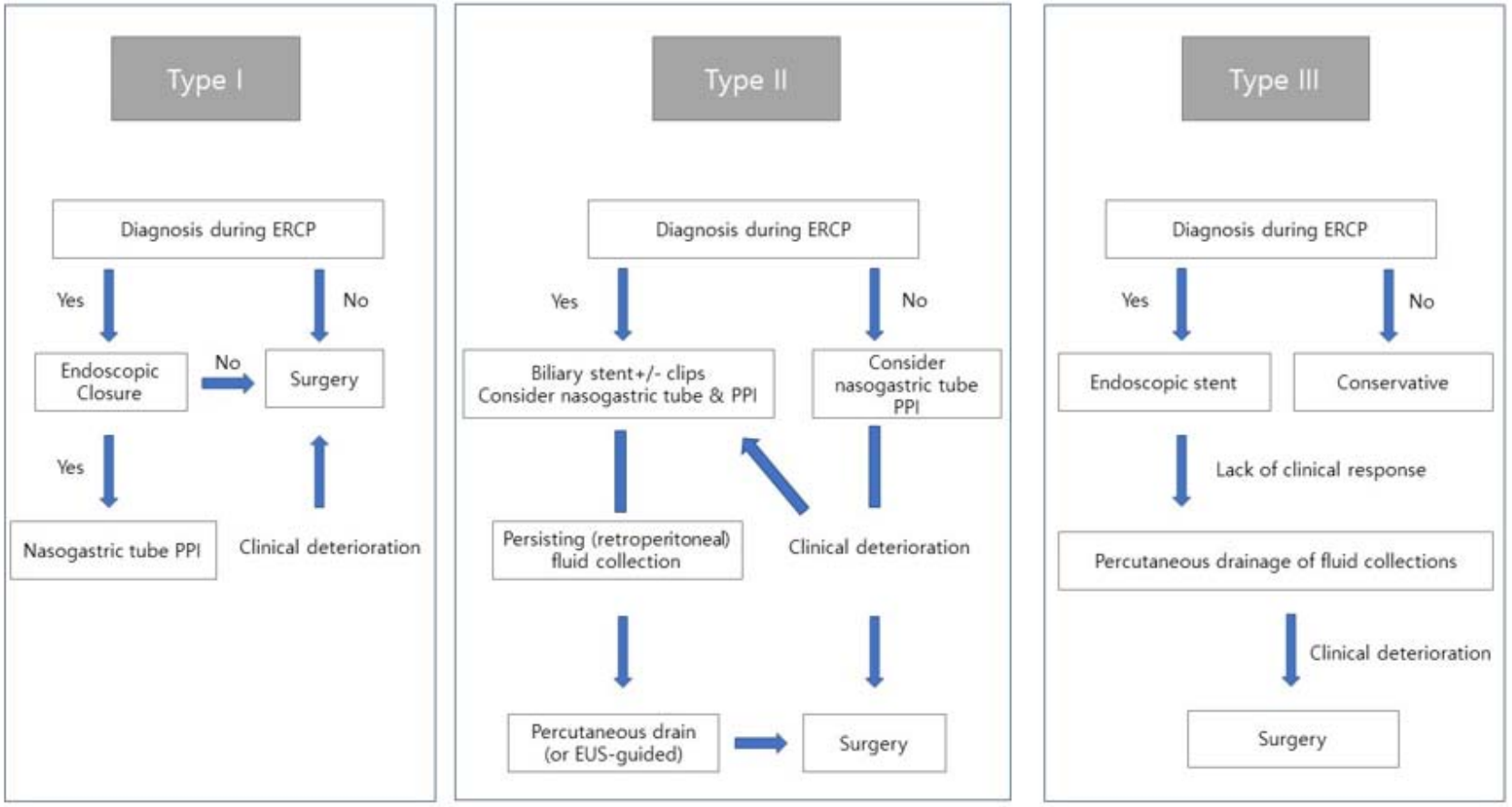
- Sphincter of Oddi dysfunction (OR, 3.8)
- CBD dilatation (OR, 4.1)
- Presence of papillary lesion (OR, 18.0)
- Sphincterotomy (OR, 9.0)
- Stricture dilatation (OR, 7.2)
- Precut sphincterotomy (OR, 3.0)
- Prolonged procedure (OR, 1.02)

Type I

- Billroth II/REY: looping by a side-view duodenoscope

Endoscopy 2002;34:293-298.
Gastrointest Endosc 2015;82:618-628
HPB (Oxford) 2006;8:393-399

Proposed Algorithm for the Management of Stapfer's Types I-III ERCP-related Perforations



Risk factors for post sphincterotomy bleeding (ESGE 2019)

- **Anti-coagulant intake**
- **Platelet count < 50,000/mm^3**
- **Cirrhosis**
- **Dialysis for end-stage renal disease**
- Low endoscopist experience
- Intraprocedural bleeding
- Long extent of sphincterotomy

Management of post-sphincterotomy bleeding (ESGE 2019)

- Local injection of epinephrine (1:10 000), possibly combined with thermal or mechanical therapy when injection alone fails.
- Mechanical or thermal therapies: not applied in the close vicinity of the pancreatic orifice
- Insertion of a nasobiliary drain following hemostasis of PSB, to prevent bile duct obstruction from intrabiliary clots.
- Temporary placement of a biliary fully covered self-expandable metal stent for refractory bleeding to standard hemostatic modalities

Risk factors for post ERCP cholangitis (ESGE 2019)

- Incomplete biliary drainage
  - Hilar obstruction
  - Primary sclerosing cholangitis
- Old age (≥ 60 years)
- History of previous ERCP
- Cholangioscopy
- Biopsy sampling and stricture

Antibiotic prophylaxis (ESGE 2019)

- Anticipated incomplete biliary drainage
  - Hilar obstruction
  - Primary sclerosing cholangitis
- Severely immunocompromised patients
- Performing cholangioscopy

*"ESGE recommends **against the routine use of antibiotic prophylaxis before ERCP**."*

*Antibiotic prophylaxis for ERCP may increase the proportion of bacteria isolated from bile that are **resistant to antibiotics** (**29.3 % vs. 5.7** %) in a retrospective study of 93 patients who respectively had or had not received antibiotic prophylaxis*