Prevention of Post-ERCP Pancreatitis

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Outline

• Definition and Background
• Mechanism of PEP
• Risk factors for PEP
• Procedural Techniques
• Pancreatic Stents
• Rectal Indomethacin
• Strategies
Definition and Background

- New or increased abdominal pain (consistent with pancreatitis)
- Pancreatic enzyme elevation >3 ULN 24 hours after procedure
- Hospitalization of at least 2 nights
- Occurs 2-15% of ERCPs

Cotton PB et al. GIE 1991
Mechanisms of PEP

- Mechanical papillary/PD injury
  - Prolonged papillary manipulation
  - Repeated PD instrumentation
  - PD injection
- Thermal injury (PD Sphincterotomy)
- Hydrostatic Injury (overinjection of PD)
- Intraluminal activation of proteolytic enzymes
- Chemical or allergic injury to contrast
Risk Factors for PEP

Patient Related
• Suspected SOD
• Prior PEP
• Normal bilirubin
• Young age
• Female
• Recurrent pancreatitis

Procedure Related
• Difficult cannulation
• Precut Sphincterotomy
• Ampullectomy
• Repeated/Aggressive pancreatography
• Dilation of intact biliary sphincter

Procedural Techniques

• Minimize PD injection and papillary trauma
• Guidewire-assisted cannulation over contrast-assisted cannulation (50% reduction in PEP)
• For difficult cannulations, **switch to alternative techniques early!**
  – Double-wire
  – Cannulate over PD stent
  – Needle knife “precut” sphincterotomy
  – Fistulotomy
Pancreatic Stents

• Papillary trauma causes edema of PD orifice
  – Impaired pancreatic ductal drainage
  – Increased ductal pressures

• PD hypertension may lead to pancreatitis

• PD Stents may reduce PD pressures
Pancreatic Stents

• PD stents may reduce PEP by 60%
  – Marked reduction in necrotizing pancreatitis
• Attempted PD stent placement with subsequent failure may increase risk
• Risks of stent migration and perforation
• Increased costs related to AXR and 5-10% rate of EGD + stent removal
• Possible PD changes related to PD stent

Mazaki T et al. J Gastroenterol 2014
Rectal Indomethacin

• NSAIDs are potent inhibitors of cyclooxygenase, phospholipase A₂, and neutrophil-endothelial interactions

• Large multicenter RCT showed 46% reduction in PEP in high risk patients

• Findings confirmed in multiple RCTs

Elmunzer BJ et al. NEJM 2012
Who needs rectal indomethacin?
And When? And How?

• Everyone?
  – Trials suggest there is benefit in both high risk and low risk patients
  – Low risk intervention
• After ERCP? Before ERCP?
  – Trials suggest timing not critical!
• Rectal only?
  – Unknown, but rectal is easy and safe.
  – Needs to be either diclofenac or indomethacin!
• Combined with PD Stents reasonable option

Sun HL et al. Surgeon 2013
Elmunzer BJ. Gastrointest Endoscopy Clin N Am 2015
Strategies

• Reduce risk of papillary and PD trauma
  – Guidewire cannulation
  – Alternative methods in difficult cannulation

• PD Stents are effective in reducing PEP
  – Performed by experience physicians!
  – Can increase PEP risk if done incorrectly
  – Most important in cases with PD manipulation

• Rectal indomethacin
  – Also very effective at reducing PEP
  – Consider use in all ERCPs, timing unimportant