Aim

• Understand the role and timing of ERCP in the management of various pancreatoco-biliary diseases
Agenda

• Biliary
  – Ascending Cholangitis
  – Malignant Biliary Obstruction
  – Bile Duct Leaks

• Pancreatic
  – Pancreatitis
  – Pancreatic Duct Leaks

• Bleeding

Timing of Endoscopy

• Emergent
  – As soon as possible
  – Within 12-24 hours

• Urgent
  – 24-48 hours
  – Hemodynamic stability
Ascending Cholangitis

- Etiology
  - Stones
  - Occluded stents
  - Strictures (PSC, AIC)
  - Neoplasm

- Management
  - IVF
  - Broad-spectrum IV ABX
  - Endoscopic biliary drainage

- Imaging
  - u/s, MRCP, CT, EUS

- Timing of ERCP
  - Sepsis/unstable = EMERGENT
  - Otherwise, within 24-48 hours

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Choledocholithiasis

- Endoscopic options
  - Biliary sphincterotomy + stone extraction
  - Stent placement
  - Balloon sphincteroplasty + stone extraction

- Bil obstruct + cholangitis = ↑ risk of bleed
  - Sepsis-associated coagulopathy
  - Liver dysfx, Vit K def, thrombocyto

Ascending Cholangitis

- Risk of bleeding
  - BS + NBD (12%) vs NBD alone (2%)\(^1\)
  - BS + Stent (10.8%) vs Stent alone (2.7%)\(^2\)

“Stent & Run”

Balloon Sphincteroplasty

Meta-analysis
- 8 prospective, randomized trials
- 1,106 pts

<table>
<thead>
<tr>
<th></th>
<th>Balloon Dilation</th>
<th>Sphincterotomy</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Success</td>
<td>94.3%</td>
<td>96.5%</td>
<td>NS</td>
</tr>
<tr>
<td>Need for</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mechanical Litho</td>
<td>20.9%</td>
<td>14.8%</td>
<td>0.014</td>
</tr>
<tr>
<td>Overall Compl</td>
<td>10.5%</td>
<td>10.3%</td>
<td>NS</td>
</tr>
<tr>
<td>Bleeding</td>
<td>0%</td>
<td>2.0%</td>
<td>0.001</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>7.4%</td>
<td>4.3%</td>
<td>0.05</td>
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</table>


Choledocholithias & Cholangitis

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Advantages</th>
<th>Disadvantages</th>
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<tbody>
<tr>
<td>Biliary Sphincterotomy</td>
<td>- Stone extraction</td>
<td>- Increased risk of bleeding</td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic Stent</td>
<td>- Achieve drainage</td>
<td>- Requires repeat ERCP</td>
</tr>
<tr>
<td></td>
<td>- Low complication rate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- No need for BS</td>
<td></td>
</tr>
<tr>
<td>Balloon Sphincteroplasty</td>
<td>- Stone extraction</td>
<td>- May need mechanical lithotripsy</td>
</tr>
<tr>
<td></td>
<td>- Low risk bleeding</td>
<td>- Increased risk of pancreatitis</td>
</tr>
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</table>
ERCP Emergencies

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Malignant Biliary Obstruction

- 72 YO M
  - New onset painless jaundice
  - Afebrile

  - Labs
    - AST 168, ALT 197
    - T.bili 19, D. bili 11
    - Alk phos 387

  - CT
The Case Against Urgent ERCP…

- **Risk of spontaneous cholangitis is LOW**\(^1,2\)
  - Exception: prior biliary intervention

- Pre-operative biliary drainage associated with **HIGHER** post-op complications\(^3-5\)

- Low diagnostic yield on ERCP brushings
- Indwelling stent may hamper EUS-FNA

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Malignant Biliary Obstruction

- **Indications for biliary drainage in MBO:**
  - Cholangitis
  - Pruritis
  - Significant delay of surgery
  - Neoadjuvant chemotherapy
  - Palliative chemotherapy

- **Contraindications**
  - Significant tumor burden in the liver
  - Moribund patient

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Malignant Biliary Obstruction

• **Caveats**

  – Imaging is key
    • Resectability?
    • Distal vs Hilar obstruction
    • Rule out liver mets as cause of jaundice

  – Multi-disciplinary approach
    • Surgical eval ---- ? Straight to OR for resection

  – Favor single endoscopic session
    • EUS-FNA + ERCP/stent

ERCP Emergencies

• Biliary
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  – Malignant Biliary Obstruction
  – **Bile Duct Leaks**

• Pancreatic
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• Bleeding
Bile Duct Leaks

- Incidence ~ 1% (0.6-2.2%)

- Most common sites:
  - Cystic duct stump
  - Duct of Lushcka
  - T-tube insertion site

- Clinical
  - Abd pain, fever
  - Bile peritonitis
  - Sepsis

Bile Duct Leaks

- Diagnosis
  - Persistent bilairy drainage from JP
  - Imaging (u/s, CT, MR) = collection
  - Nuclear scintigraphy
  - Cholangiogram

- Management
  - IVF
  - Pain control
  - Broad-spectrum IV ABX
  - Percutaneous drainage biloma
  - ERCP
**Bile Duct Leaks**

- **Role of ERCP**
  - Reduce trans-papillary pressure gradient
  - Facilitate trans-papillary flow of bile

- **Interventions**
  - Plastic stent\(^1,2\)
    - Superior & safer compared to biliary sphincterotomy or combo
    - Don’t necessarily have to traverse the leak
  - Leave in place 4-6 weeks

- **Timing**
  - Early intervention (24 hours)
  - Bile peritonitis
  - Avoid sepsis

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**ERCP Emergencies**

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  - Bile Duct Leaks

- **Pancreatic**
  - **Pancreatitis**
  - Pancreatic Duct Leaks

- **Bleeding**

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Gallstone Pancreatitis

- **ERCP indications**…
  - Removal of biliary stone
    - Presence on imaging (Ultrasound, MRCP)
    - Persistently abnormal LFT’s
  - Ascending cholangitis
  - Severe pancreatitis (clinical deterioration/MOF)

- **Avoid ERCP**…
  - LFT’s improving
  - “routine” pre-operative ERCP to “clear the duct”

### Gallstone Pancreatitis

<table>
<thead>
<tr>
<th>Study</th>
<th>n ERCP + ES</th>
<th>n Control</th>
<th>Morbidity ERCP vs Control</th>
<th>Mortality ERCP vs Control</th>
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</thead>
<tbody>
<tr>
<td>Neoptolmos ’88</td>
<td>59</td>
<td>62</td>
<td>24% vs 61% * (p&lt; 0.01)</td>
<td>NS</td>
</tr>
<tr>
<td>Fan ’93</td>
<td>97</td>
<td>98</td>
<td>16% vs 33% * (p = 0.03)</td>
<td>2% vs 8% (p = 0.09)</td>
</tr>
<tr>
<td>Folsch ’97</td>
<td>126</td>
<td>112</td>
<td>46% vs 51% (p = 0.10)</td>
<td>11% vs 6% (p = 0.10)</td>
</tr>
<tr>
<td>Nowak ’98†</td>
<td>178</td>
<td>102</td>
<td>17% vs 36% (p &lt; 0.001)</td>
<td>2% vs 13% (p &lt; 0.001)</td>
</tr>
</tbody>
</table>

* Predicted severe GP only
† Published in abstract form only

- **Urgent ERCP reduces morbidity in predicted severe GS pancreatitis**
- **One study demonstrates reduction in mortality as well**
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Pancreatic Duct Disruption/Leak

- Peri-pancreatic fluid collections/pseudocysts
- Pancreatic ascites
- Internal fistulae
- External fistulae
- Smoldering pancreatitis
- Necrotizing pancreatitis
Pancreatic Duct Disruption/Leak

• Role of ERCP/PS/PD stent
  – Reduce trans-papillary pressure gradient
  – Facilitate trans-papillary flow of panc juice
  – Facilitate resolution of collection

• Main risk = infecting the collection
  – Results in need for endo/surg/IR drainage

Pancreatic Duct Disruption/Leak

• Do all leaks require ERCP?
  – Is it enlarging?
  – Symptomatic?
  – Infected?
  – Persistence of external fistulae?
  – Inability to re-feed due to AP or pain?
  – Failed medical management?
Pancreatic Duct Disruption/Leak

- **Caveats**
  - Multi-disciplinary approach (surgery, IR)
  - Pancreatic rest
    - Enteral feeds vs TPN
  - Octreotide
  - Disconnected tail???

- If ERCP performed…
  - Stent should go beyond site of ductal disruption\(^1,2\)
  - **Risks**
    - PEP
    - Infection of collection
    - Stent-related complications (stent occlusion, PD injury/stricture)


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ERCP Emergencies

- **Biliary**
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- **Pancreatic**
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  - Pancreatic Duct Leaks
- **Bleeding**
Bleeding

- Post-sphincterotomy bleed
- Hemobilia
- Hemosuccus pancreaticus

Summary

- **Emergency ERCP (12-24 hours)**
  - Unstable ascending cholangitis

- **Urgent ERCP (24-48 hours)**
  - Stable ascending cholangitis
  - Gallstone pancreatitis
    - (Predicted) severe attack
    - Associated cholangitis
  - Bile duct leak

- **Non-Urgent ERCP**
  - Mild/moderate gallstone pancreatitis
  - Malignant biliary obstruction
  - Pancreatic duct leak/disruption