What’s New in Complicated Biliary Diseases?

Chris E. Forsmark, MD, FACG

Some “Complicated” Biliary Diseases

- Indeterminate strictures
  - Cholangiocarcinoma
  - PSC
  - Autoimmune
  - Extrinsic compression
- Difficult access
  - Roux en Y gastric bypass
  - Difficult cannulation
- Postoperative biliary strictures
- Large stones
New tools

- Cholangioscopy
  - Mother-baby
  - Direct
- EUS
  - Intraductal EUS
  - Rendezvous procedures
- Tissue and fluid biomarkers
- Evolving therapies

Cholangioscopy Equipment

Mother-baby system
New Cholangioscopy Technologies

- Karl Storz – side port mother baby
- Direct peroral cholangioscopy
- Olympus – video mother baby
- Boston Scientific – video SpyGlass
Direct cholangioscopy

Indications for Cholangioscopy

- Evaluation of indeterminate strictures
- Treatment of difficult to remove stones
Biliary stricture

Tissue Diagnosis of Pancreaticobiliary Cancer

- Standard ERCP sampling of CBD strictures in pancreatic Ca
  - Brush cytology: 20-30% yield
  - Brush and Biopsy: 40-50% yield
- Similar or worse in cholangiocarcinoma
- Standard biopsy forceps difficult to use and provide small, distorted samples
FISH: Fluorescence in-situ hybridization

Cholangioscopy
## Cholangioscopy for Indeterminate Strictures

<table>
<thead>
<tr>
<th></th>
<th>Cholangioscopy</th>
<th>Brush</th>
<th>Biopsy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>76%</td>
<td>6%</td>
<td>29%</td>
</tr>
<tr>
<td>Accuracy</td>
<td>84%</td>
<td>38%</td>
<td>54%</td>
</tr>
<tr>
<td>NPV</td>
<td>70%</td>
<td>36%</td>
<td>43%</td>
</tr>
</tbody>
</table>

\[(p<0.0001)\] \[(p=0.02)\]  

GIE 2012;75:347-53
Large Bile Duct Stone

Treatment of stones
Large Bile Duct Stone

Cholangioscopy for Difficult Stones

- Prospective cohort study
- 26 patients with difficult bile duct stones
- Mean of 3.3 prior ERCP attempts for stone removal
- 42% had attempted and failed mechanical lithotripsy

Cholangioscopy guided lithotripsy
- Complete stone clearance: 92% (84% at first attempt)
- Only 4% required mechanical lithotripsy in addition to cholangioscopy guided lithotripsy

GIE 2011;73(5):971
Single operator (Spyglass) cholangioscopy

<table>
<thead>
<tr>
<th>Author/year</th>
<th>N</th>
<th>Successful completion</th>
<th>Sensitivity for cancer</th>
<th>Stone clearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draganov 2012</td>
<td>26</td>
<td>100%</td>
<td>76%</td>
<td>-</td>
</tr>
<tr>
<td>Maydeo 2011</td>
<td>64</td>
<td>100%</td>
<td>-</td>
<td>83%</td>
</tr>
<tr>
<td>Ramchandani 2011</td>
<td>36</td>
<td>83%</td>
<td>82%</td>
<td>-</td>
</tr>
<tr>
<td>Draganov 2011</td>
<td>83</td>
<td>93%</td>
<td>-</td>
<td>92%</td>
</tr>
<tr>
<td>Chen 2011</td>
<td>297</td>
<td>89%</td>
<td>49%</td>
<td>71%</td>
</tr>
</tbody>
</table>

New Cholangioscopy Technologies

- Karl Storz – side port mother baby
- Direct peroral cholangioscopy
- Olympus – video mother baby
- Boston Scientific – video SpyGlass
Direct cholangioscopy

Olympus: Video Cholangioscope with NBI
Olympus Video Cholangioscope with NBI
Type Ib Choledochal Cyst

Intestinal Metaplasia

Mapping of cholangiocarcinoma
Treatments for cholangiocarcinoma

- Resection or liver transplantation
  - Dramatic increase in IHC, decrease in EHC
- Stent palliation
  - Metal or plastic?
  - Unilateral or bilateral?
- Brachytherapy
- Photodynamic therapy
  - 2 very small randomized trials show benefit
- Radiofrequency ablation
Potential Use for Cholangioscopy

- Unexplained bile duct strictures
- Biliary stones
- Cholangio Ca - tissue, extent
- Ampullary mass
- PSC
- Biliary nodule/mass
- Unexplained dilation of the bile duct
- Access selected duct (cystic duct, segmental duct)

Large Ampullary Adenoma
Large Ampullary Adenoma

Small Ampullary Adenoma
Postoperative strictures
Multiple stent approach
Postoperative Strictures
Covered metal stent approach

- Postoperative strictures
- Chronic pancreatitis
- UF protocol
  - Place 10 mm fully covered stent
  - Remove and re-assess at 6 months
  - Replace for 6 months if not resolved
EUS Rendezvous

New tools

- Cholangioscopy
  - Mother-baby
  - Direct
- EUS
  - Intraductal EUS
  - Rendezvous procedures
- Tissue and fluid biomarkers
- Evolving therapies
Thank you