Malignant Biliary Obstruction
A Practical Approach

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Approach to Patients with Suspected Cancer

DIAGNOSIS
STAGING
CURATIVE ← THERAPY → PALLIATIVE
Malignant Biliary Obstruction

- **Distal**
  - Pancreatic Cancer
  - Cholangiocarcinoma
  - Gallbladder cancer
  - Ampullary cancer
  - Metastatic cancer
- **Proximal**
  - Cholangiocarcinoma
  - Gallbladder cancer
  - Metastatic cancer

**Diagnosis:**
- CT/MRI
- EUS/FNA
- ERCP
- Serologic markers

**Staging:**
- CT/MRI
- EUS/FNA
Endoscopic Ultrasound
Malignant Biliary Obstruction

Tissue Sampling During ERCP

- Salvage cytology
- Brush cytology
- Biopsy forceps
- Needle aspiration
- Cholangioscopy
- Optical biopsy
### Tissue Sampling During ERCP

<table>
<thead>
<tr>
<th>Method</th>
<th>Sensitivity (%)</th>
<th>Specificity (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salvage</td>
<td>38</td>
<td>100</td>
</tr>
<tr>
<td>Brush</td>
<td>42</td>
<td>98</td>
</tr>
<tr>
<td>Biopsy</td>
<td>56</td>
<td>98</td>
</tr>
<tr>
<td>Combined</td>
<td>64-71</td>
<td>96-100</td>
</tr>
</tbody>
</table>
Fluorescence in Situ Hybridization (FISH)

Lazaridis KN, Gores GJ. Gastroenterology 2005;128:1655-7

Cholangioscopy
Cholangioscopy

Probe Based Confocal Laser Endomicroscopy (pCLE)
Endoscopic Stents in Distal Malignant Biliary Obstruction

- **Issues:**
  - Initial Stent: Plastic vs SEMS
  - Covered vs Uncovered SEMS
  - Preoperative Drainage
  - Gastric Outlet Obstruction
Endoscopic Stent vs Surgical Bypass in Distal Malignant Obstruction

Smith et al 1994

Endoscopic Stent vs Surgical Bypass in Distal Malignant Obstruction

Smith et al 1994

Virginia Mason Clinic
Duodenal Obstruction

Plastic Stent Occlusion

Expandable Metal Stents
Distal Malignant Obstruction

SEMS

Plastic vs SEMS Stents

Siegel et al. Endoscopy 1988
Comparative costs of metal versus plastic biliary stent strategies for malignant obstructive jaundice by decision analysis
Yeo et al. Gastrointest Endosc 1999;49:466-71

Meta-analysis of Randomized Trials Comparing Covered and Uncovered SEMS in Distal Malignant Biliary Obstruction

CSEMS:
- Migration: RR 8.11
- Tumor Overgrowth: RR 2
- Sludge formation: RR 2.89
- Pancreatitis/cholecystitis

Saleem A et al. GIE 2011
Endoscopic Biliary Drainage
Pancreas Cancer

- SEMS are more effective than plastic stents / less need for re-intervention
- Covered SEMS have longer patency
- SEMS do not appear to interfere with surgical resection

Most patients with pancreas cancer are unresectable or have locally advanced disease

Pancreas Cancer

- Resectable: 8%
- Locally Advanced: 25%
- Metastatic: 67%
- Neoadjuvant RX
Malignant Distal Biliary Obstruction
Role of PS during Neoadjuvant Therapy

- 49 patients/PS
- All received neoadjuvant therapy
- Time to surg: 150 d(m)
- **Repeat ERCP: 27(55%)**
  - Cholangitis: 13
  - Hosp admission: 17(m 3 days)

Boulay B. et al J Clin Gastroenterol 2010

Malignant Biliary Obstruction
Role of SEMS During Neoadjuvant Therapy

- 55 patients/SEMS
- All patients received neoadjuvant therapy
- Surgery: 27 (49%)
- Stent patency:
  - 88% at 104 days
  - 15% stent dysfunction at 260 days
  - Migration: 2%
  - Occlusion: 13%
- No issues with surgery

Aadam AA et al. GIE 2012
SEMS in Distal Malignant biliary Obstruction Irrespective of Surgical Resectability

- 241 patients/174 resectable
- All had SEMS
- 144(82%) underwent Whipple resection
- 67 had neoadjuvant therapy
  - 32% resected
- Overall survival 49% at 27 months
- Stent Occlusion:
  - 5.8% at 6.6m

- 29 Resectable
- 18 PS/11 SEMS
- Stent Dysfunction:
  - SEMS:1/11(9%)
  - PS: 7/18(39%)
- SEMS did not interfere with EUS or surgery

Decker et al. Surg Endosc 2011

Distal Malignant Biliary Obstruction Pancreas Cancer

Unresectable

Locally Advanced

Potentially Resectable

USEMS/CSEMS

CSEMS

?Plastic vs CSEMS

Conclusions:
- Use SEMS in patients with planned neoadjuvant therapy
- Use of SEMS in all patients needs further study
Preoperative Endoscopic Biliary Drainage

**Pro:**
- Improved:
  - Immune function
  - Nutrition
- Reduced risk for perioperative complications

**Con:**
- Increased risk:
  - Cholangitis
  - Bile leakage
  - Wound infection
- Increased Mortality

Meta-analysis of published studies*

*Saleh et al. GIE 2002

Preoperative Biliary Drainage for Cancer of HOP*

- ERCP success: 75%!
- Cholangitis: 26 vs 2%
- Pancreatitis: 7 vs 0%
- Perforation: 2 vs 0%

Van der Gaag NA et al. NEJM 2010

* Plastic stents
Pre-operative Biliary Drainage
Cancer of HOP

• Current recommendations:
  – Cholangitis
  – Severe jaundice/pruritus
  – Planned neo-adjuvant therapy
  – Delayed surgery

Malignant Distal Biliary Obstruction
MGUH Approach

- Review/Repeat CT
- EUS
- ERCP/Cytology/bx/PS or FCSEMS
  Oncology
  Surgery
Gastric Outlet Obstruction in patients with Distal Malignant Biliary Obstruction

SEMS for Palliation of Duodenal Obstruction
SEMS for Palliation of Duodenal Obstruction

SEMS:
- Effective Clinically
- Cost Effective
Malignant Biliary Obstruction

- **Distal**
  - Pancreatic Cancer
  - Cholangiocarcinoma
  - Gallbladder cancer
  - Ampullary cancer
  - Metastatic cancer
- **Proximal**
  - Cholangiocarcinoma
  - Gallbladder cancer
  - Metastatic cancer
  - Lymphoma

Cholangiocarcinoma
Cholangiocarcinoma

Hilar CA

Bismuth Classification

Hilar Cholangiocarcinoma Management

• Questions:
  – MRCP findings
  – Resectable?
    • <20%
  – Available expertise
Cholangiocarcinoma

- ERCP:
  - Diagnosis:
    - Tissue sampling
    - pCLE
    - Cholangioscopy
  - Palliation:
    - Drainage
    - PDT/RFA

- PTC
- Combined

Hilar Cancer

- **Principles of Management:**
  - MRCP for mapping
  - Pre-procedure antibiotics
  - Access ducts with wires before filling
  - Use selective filling/drainage
  - Success rate is lower compared to distal tumors
  - Increased risk of post procedure complications
  - PTC salvage
Cholangiocarcinoma
Cholangiocarcinoma
Hilar Tumors: Double Stent

Cholangiocarcinoma
Dual SEMS
Cholangiocarcinoma
Dual SEMS

Cholangiocarcinoma
Dual SEMS
Unilateral SEMS in Hilar Cancer
De Palma GD et al. GIE 2003

- Bismuth II, III, IV
- 61 patients
- Hepatic drainage (Right/left: 36/25)
- Success:
  - Implantation: 96.7%
  - Drainage: 96.7%
- Complications:
  - Early: 8.2%
  - Late: 22.9%
- 30 day mortality: 0%
- Stent patency (m): 169 days
- Survival (m): 140 days

SEMS vs Plastic Stent in Malignant Hilar Strictures

Liberato MJA et al. BMC Gastroenterol 2012
Sangchan A et al. GIE 2012
Liver and Biliary Volume Distribution

Vienne A et al. GIE 2010

Impact of Endoscopic Drainage on Survival in Hilar Cancer

Vienne A et al. GIE 2010
Stents in Unresectable Hilar Cancer

• **SEMS vs Plastic Stents:**
  – Better response rate
  – Less initial complications
  – Longer patency
  – Better survival
  – Cost: SEMS > Plastic

Hilar Tumors
Endoscopic Management

• MRCP mapping
• Pre ERCP antibiotics
• Stents:
  – SEMS are preferable
  – Bismuth I: one stent
    • covered or uncovered
  – Bismuth II&III:
    • Drain the duct you enter!
    • Unilateral vs bilateral
    • Uncovered stent
    • Drain >50% of liver volume
  – Bismuth IV
    • Bi/multilateral
    • Percutaneous
Cholangiocarcinoma

Biliary Strictures

- Malignant
  - Pancreas Cancer
  - Cholangiocarcinoma
  - Metastatic Cancer
  - Lymphoma
- Benign
  - Chronic pancreatitis
  - Autoimmune
  - Mirizzi
  - Sarcoid
  - Other
Beware!

Beware!
Autoimmune Cholangiopathy/Pancreatitis

Cytology FNA: Negative
CEA, CA 19-9: normal
Prednisone started
Autoimmune Cholangiopathy / Pancreatitis

Approach to Patients with Suspected Malignant Biliary Obstruction

Confirm Diagnosis

Operable
- Surgery
- Chemo/Radiation

In-operable
- ERCP/Sampling SEMS placement
- ? PDT/RFA

Operable
- Jaundice/Pruritus Delayed Surgery

STAGING
Approach to Patients with Suspected Malignant Biliary Obstruction

Confirm Diagnosis

Operable

Jaundice/Pruritus
Delayed Surgery
ERCP/Sampling
SEMS placement

? PDT/RFA*

Surgery

BILIARY-PANCREATIC TEAM
ENDOSCOPY TEAM
SURGEON
RADIOLOGIST
ONCOLOGIST
RADIATION THERAPIST

Inoperable

Chemo/Radiation

ACG Regional Postgraduate Course - Washington, DC
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