Advanced Endoscopic Management Techniques for Pancreatic Malignancy

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Endoscopic Management of Pancreas Cancer

- Palliation of duodenal obstruction
  - Stenting, GJ
- Celiac neurolysis
- Fiducial placement
- Fine needle Injection of anti-tumor agents
- Etoh ablation of pancreas cysts
- Etoh ablation of insulinoma
- RFA tumor ablation
Duodenal Obstruction: 15-20% pts
Endoscopic duodenal stent vs surgery?
Endoscopic stents (SEMS) vs. Lap or Open Surgical Gastrojejunostomy (GJ)

<table>
<thead>
<tr>
<th>STRATEGY</th>
<th>Success*</th>
<th>Immediate Complication</th>
<th>1-Month Complication</th>
<th>Mortality</th>
<th>Cost (incremental)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEMS</td>
<td>72%</td>
<td>6%</td>
<td>23%</td>
<td>2.1%</td>
<td>$8,213</td>
</tr>
<tr>
<td>LGJ</td>
<td>69%</td>
<td>15%</td>
<td>18%</td>
<td>2.5%</td>
<td>$10,340</td>
</tr>
<tr>
<td>OGJ</td>
<td>62%</td>
<td>28%</td>
<td>13%</td>
<td>4.5%</td>
<td>$12,191</td>
</tr>
</tbody>
</table>

**Conclusion:** SEMS had the highest success rate, the fewest negative outcomes in terms of mortality and was the most cost-effective of the 3 treatment options evaluated

1Siddiqui, Dig Dis Sci, 2007

*Success defined as no major procedure related complication or long term complication for 1 month period
Duodenal stent vs Surgical GJ

- 39 pts: Randomized Trial
- Quicker food intake with stents (5 vs 8 days)
- Long term relief better with GJ (72 vs 50 days)
- More re-interventions with stent (10 vs 2)
  - Tissue hyperplasia obstructs stent lumen

Jeurnink Gastrointest Endosc 2010
EUS imaging of the pancreas via duodenum and stomach
LAMS: Lumen Apposing Metal Stent

- Electrocautery at the catheter tip traverses wall
- Appose, non-adherent adjacent structures
- Allows EUS guided intervention in new areas

Itoi & Binmoeller, GIE 2012;75
EUS guided gastrojejunostomy

Itoi  GIE 2014
LAMS: Gastrojejunostomy
EUS Guided GJ vs Lap GJ:
Perez-Miranda DDW 2017

- 29 Lap vs 25 EUS guided
  - Clinical success: 90% surgery
  - 84% EUS
  - 36% of EUS cases needed 2\textsuperscript{nd} salvage stent
    - LAMS or FCSEMS
  - 7% Surgery- Converted to open
  - LOS Same (9.4 vs 8.9 days)
  - Comp’s: 41% Surgery- leus, Anast leak, PNA
    - 12% EUS- Bleeding, Peritonitis
Afferent limb obstruction sp Whipple
Afferent limb obstruction sp Whipple
Therapeutic Role of EUS in Pancreatic Cancer
EUS-guided CPN

- Successful in advanced pancreatic cancer
  - Decreased pain scores in (78%) at 2 and 24 weeks (45/58 pts)
  - No major complications
    - 9%-20% transient pain, hypotension
  - May also Inject directly into ganglia
    - Levy, Am J Gastro 2008

Gunaratnam et al., *Gastrointest Endosc* 2001
EUS-guided Fiducial Marker Placement used in Image Guided Radiation Therapy

50 pts with advanced panc cancer
19G needles
Sterilized gold fiducials
- 2.5mm long
- 0.8mm diameter
- 4 to 6 per tumor

Park WG, et al. Gastrointest Endosc March 2010
EUS-guided Fine Needle Injection (FNI): Anti-tumor Agents

Small trials in locally advanced pancreatic cancer
- clinical efficacy uncertain
- **Cytoimplant**\(^1\) = allogenic mixed lymphocyte culture
- **ONYX-015**\(^2\) = attenuated adenovirus causes replication dependent killing of cancer cells with loss of p53 function
- **TNFerade**\(^3\) = replication deficient adenovirus vector carrying TNF alpha gene and regulated by radiation induced promoter
- **Gemcitabine**\(^4\) - intratumoral injection prior to systemic tx

2. Hecht et al., Clin Can Res 2003
3. Posner et al., ASCO AB 2007
4. Levy, DDW 2011
EUS Guided Chemoablation of Mucinous Pancreatic Cysts

Etoh and/or Paclitaxel
Systematic review: Response
  53% Complete resolution
  27% Partial

  Complications: 7% abdominal pain
  4% pancreatitis

Kandula Indian J Gastro 2015
EUS guided ethanol ablation of symptomatic insulinoma

- 6 pts, severe hypoglycemia
- 16 mm mean tumor size
- EUS guided injection of 0.75 ml etoh
  - Mean of 2 treatments
- All pts had sx improvement
- 1 pt abd pain, 1 self limited fluid

Levy M, GIE 2012
EUS guided RFA pancreas tumor ablation

- Review of 42 cases
  - 28 ACA, 7 NET, 7 cysts
  - Technical success in 36
    - Could not penetrate tumor in 6 (14 G needle)
  - Complications: Minor in 20%
    - Self limited abdominal pain, bleeding

Alvarez-Sanchez World J Gastro 2016
EUS guided pancreas tumor ablation: next steps

- Which patients may benefit from local therapy
  - Downstage locally advanced tumors
- Survival benefit
- Technique optimization
  - Etoh, brachytherapy, RFA, cryotherapy
- Safety: pancreatitis, vascular injury