Building a Career in Pediatric Endoscopy Research

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From a Whale Bone to PerOral Endoscopic Myotomy (POEM)

Achalasia Treatment through Centuries

Peroral endoscopic myotomy video
History of Endoscopy

• Adolf Kussmaul- the first GI endoscopist
• Intubated professional sword swallower in 1868

History of Endoscopy

• Basil Hirschowitz in 1957 introduced first fiberoptic endoscope at the University of Michigan

3D Endoscope (Photometric stereo Endoscopy)
OBJECTIVES

• Discuss pediatric endoscopy research career pathway(s)

• Discuss the impact of endoscopy research on every day clinical practice

• Discuss pediatric endoscopy research agenda

I have no financial relationships to disclose

NASP GHAN Training Guidelines

• Recommended minimal number of procedures to achieve competence

• Methods to augment training

• Competency assessment
NASPGHAN Training Guidelines

TABLE 1. Guidelines for endoscopic training in procedures: recommended minimum procedural numbers for achieving competence

<table>
<thead>
<tr>
<th>Level</th>
<th>Special endoscopic procedures</th>
<th>Recommended no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1: novice procedures</td>
<td>Upper endoscopy (EGD)</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>EGD diagnostic</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>EGD with foreign body removal</td>
<td>10</td>
</tr>
<tr>
<td>Lower endoscopy</td>
<td>Colonoscopy</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>Colonoscopy with snare polypectomy</td>
<td>10</td>
</tr>
<tr>
<td>Therapeutic endoscopy</td>
<td>EGD with control of bleeding variceal or non-variceal—various methods</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Colonoscopy with control of bleeding—various methods</td>
<td>10</td>
</tr>
</tbody>
</table>

ENDO CAREER TIP 1. Complete additional endoscopy training

- Advanced endoscopy fellowship
- Endoscopy rotation at an adult GI program
- Hands-on courses
- Simulator training
- Reorganize fellowship training (18 months clinical + 18 months research)

Challenges in Meeting Fellowship Procedural Guidelines in Pediatric Therapeutic Endoscopy and Liver Biopsy

- Aim: to assess the opportunities for therapeutic endoscopy during a 3-year GI fellowship training
- Data from 12 training programs from 2009-2011 comprising 27% of trainees
- Conclusion: Most programs do not have volume for trainees to meet training guidelines
TIP 2. Choose mentors and collaborators wisely

- Search thoroughly including outside your immediate environment
- Once you choose a path make sure you have sufficient amount of protected time and apply for funding early
- Join or establish a special interest group/consortium

Self-assessment accuracy of pediatric endoscopists: A prospective cross sectional study

- Aim: to establish if pediatric endoscopists can reliably self-assess their ability to perform clinical colonoscopies using the Gastrointestinal Endoscopy Competency Assessment Tool for pediatric colonoscopy (GiECATkids)
- Included:
  - novices (<50 colonoscopies), intermediate (50-250), and advanced (>500) endoscopists
  - 3 North American centers
  - 56 endoscopists participated
Self-assessment accuracy of pediatric endoscopists: A prospective cross sectional study: Results

- Pediatric endoscopists’ self-assessment accuracy using the GiECATkids was moderate
  - Novices: overestimated performance compared to external assessment
  - Intermediate and expert endoscopists did not consistently under or overrate their performance

- Conclusion: GiECATkids promising tool to help support pediatric endoscopists’ self-assessment

Walsh et al. JPGN. 2015.

TIP 3. Know endoscopy literature well

- Medline literature search for articles with keyword “endoscopy” from 2010 until now returned 300 articles
- Consider advanced degree
- Endoscopy conferences/Courses/Master Classes
- Write a chapter or even consider editing a book

Hsu et al, GIE 2013.
Sahn et al. JPGN 2015.

Endoscopy Research Impact in Every Day Practice

Complications of pediatric EGD: a 4-year experience in PEDS-CORI

Complications of Pediatric Colonoscopy: A Five-Year Multicenter Experience

Incidence of perforation in pediatric GI endoscopy and colonoscopy: an 11-year experience

Duodenal Hematoma Following ECD: Comparison With Blunt Abdominal Trauma–Induced Duodenal Hematoma

Saha et al. JPOG 2015.
Aim: to assess the level of agreement between endoscopic and microscopic findings in pediatric colonoscopy

Retrospective analysis of 390 colonoscopies

Results:
- Predictor of positive histology- IBD
- Predictor of negative histology- abdominal pain

Endoscopy had sensitivity of 90% and specificity of 78%

<table>
<thead>
<tr>
<th>Pathologist findings</th>
<th>Endoscopist findings (%)</th>
</tr>
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<tbody>
<tr>
<td>+</td>
<td>172 (45)</td>
</tr>
<tr>
<td>-</td>
<td>43 (11)</td>
</tr>
<tr>
<td>+</td>
<td>157 (40)</td>
</tr>
<tr>
<td>-</td>
<td>152 (39)</td>
</tr>
</tbody>
</table>
TIP 4. Volunteer

- Serve on a committee
- Join ASGE (Technology and Standards of Practice Committees)
- Join a task force/working group
- Write a review article

TIP 5. Engage industry/payers/government

- Lack of approved pediatric products and accessories
- Consider attending AGA Tech Summit
- Innovate

NDO Plicator® (NDO Surg Inc. Mansfield, MA)

Endoscopic fundoplication video
NASPGHAN Research Agenda

Current research priorities in pediatric pancreatic disorders are as follows:
• Determine the burden and natural history of acute and chronic pancreatitis
• Establish and validate diagnostic criteria for acute and chronic pancreatitis
• Develop better endoscopic and non-invasive tests to assess for pancreatic insufficiency in children
• Develop better experimental models for acute and chronic pancreatitis
• Develop targeted therapies for acute, recurrent, and chronic pancreatitis

Research ideas/topics

• Series of Clinical reports and Guidelines by the Endoscopy Committee (Indications for pediatric endoscopy and colonoscopy)
• We need to move from single-center and retrospective studies to multi-center, prospective trials
• Focus on how endoscopy research can improve diagnosis and treatment of specific GI conditions
Pediatric ERCP in the Setting of Acute Pancreatitis: A report from the Multicenter Pediatric ERCP Database Initiative

- Prospective multicenter endoscopic database designed to evaluate indications and technical outcomes after ERCP in pediatrics
- Patient and procedural characteristics, success rates and AEs compared in patients with and without acute pancreatitis in the week prior
- 178 ERCPs from 6 centers over 13 months

Presence of acute pancreatitis did not have effect on procedure success, length of stay, or AEs

<table>
<thead>
<tr>
<th>Procedure considered a success</th>
<th>24 (92.3%)</th>
<th>141 (92.7%)</th>
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<tbody>
<tr>
<td>Length of stay after procedure, days (50% CI)</td>
<td>6.5 (4.2-8.7)</td>
<td>4.3 (3.7-5.8)</td>
</tr>
<tr>
<td>Adverse events</td>
<td>1 (3.8%)</td>
<td>13 (8.8%)</td>
</tr>
<tr>
<td>Pancreatitis</td>
<td>0</td>
<td>7 (5 mild, 1 severe)</td>
</tr>
</tbody>
</table>

SUMMARY

TIP 1. Complete additional endoscopy training
TIP 2. Choose mentors and collaborators wisely
TIP 3. Know endoscopy literature well
TIP 4. Volunteer
TIP 5. Engage industry/payers/government
SUMMARY

• We have to recognize that pediatric endoscopy research is a legitimate research career choice

• Provide opportunities and support for additional training and high quality research

• Better define endoscopy research agenda which will result in studies with larger impact on every day practice and field advancement

Thank you