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

Willis T. Pharmaceutice rationalis sive diatriba de medicamentorum operationibus in humano corpore. London: Hagae Comitis, 1674.

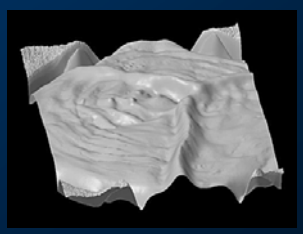
History of Endoscopy

- 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)



Durr et al. J Biomed Optics.2013.

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

NASPGHAN Training Guidelines

- Recommended minimal number of procedures to achieve competence
- Methods to augment training
- Competency assessment

Leichtner et al. JPGN. 2013.

NASPGHAN Training Guidelines

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

	Recommended no.*
Level 1: routine procedures	
Upper endoscopy (EGD)	
EGD diagnostic	100
EGD with foreign body removal†	10
Lower endoscopy	
Colonoscopy†	120
Colonoscopy with snare polypectomy†	10
Therapeutic endoscopy	
EGD with control of bleeding variceal or nonvariceal—various methods and/or colonoscopy with control of bleeding—various methods‡,§	15

Leichtner et al. JPGN. 2013.

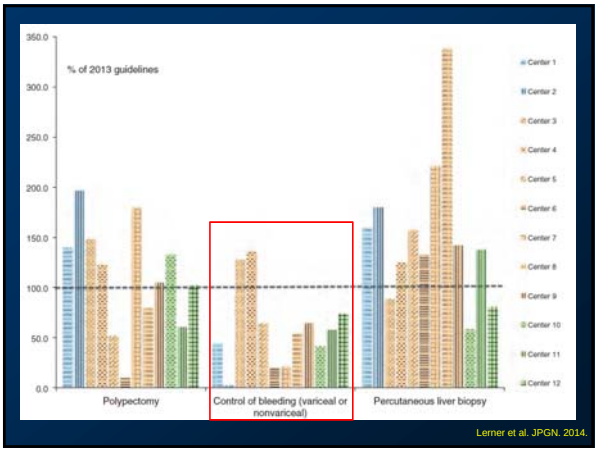
ENDO CAREER TIP 1. Complete additional endoscopy training

- 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

Lerner et al. JPGN. 2014.



Lerner et al. JPGN. 2014.

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

Walsh et al. JPGN. 2015.

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

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

Thakkar et al. GIE 2007 and Clinical Gastro Hep 2008.

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

Hsu et al, GIE 2013.

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

Sahn et al. JPGN 2015.

Endoscopy Research Impact in Every Day Practice

Safety of intravenous midazolam and fentanyl for pediatric GI endoscopy: prospective study of 1578 endoscopies (CME)

Mamula et al. GIE 2007

Endoscopic Retrograde Cholangiopancreatography in the Pediatric Population Is Safe and Efficacious

Enestvedt et al, JPGN 2013.

Management of Ingested Foreign Bodies in Children: A Clinical Report of the NASPGHAN Endoscopy Committee

Bowel Preparation for Pediatric Colonoscopy: Report of the NASPGHAN Endoscopy and Procedures Committee

Good Agreement Between Endoscopic Findings and Biopsy Reports Supports Limited Tissue Sampling During Pediatric Colonoscopy

- 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

Manfredi et al. JPGN. 2014.

Good Agreement Between Endoscopic Findings and Biopsy Reports Supports Limited Tissue Sampling During Pediatric Colonoscopy

- Endoscopy had sensitivity of 90% and specificity of 78%

TABLE 3. Agreement between endoscopist and pathologist regarding procedural findings

		Pathologist findings	
		+	−
Endoscopist findings (%)	+	175 (45)	43 (11)
	−	20 (5)	152 (39)

Manfredi et al. JPGN. 2014.

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

ThimbleCam® (Stryker GI Ltd., Cesarea, Israel)

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 retro-spective 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

Troendle et al. JPGN. 2015.

Pediatric ERCP in the Setting of Acute Pancreatitis: A report from the Multicenter Pediatric ERCP Database Initiative

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

Procedure considered a success	24 (92.3%)	141 (92.7%)
Length of stay after procedure, days (95% CI)	6.5 (4.2-8.7)	4.3 (2.7-5.8)
Adverse events	1 (3.8%)	13 (8.6%)
Pancreatitis	0	7 (6 mild, 1 severe)

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