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ESTABLISHING A SURGICAL ESOPHAGEAL FUNCTION TESTING LAB IN AN UNDERSERVED AREA

ABSTRACT:

Background:
Esophageal function testing (EFT) offers objective data crucial for diagnosing and planning treatment in patients with gastrointestinal symptoms suggestive of foregut disease. Typically, EFT is conducted at large tertiary centers, overseen by gastroenterologists. However, access to this specialized testing is often limited for patients in community settings, particularly those facing geographic or socioeconomic barriers. This study aimed to assess the initial outcomes of patients who underwent Bravo pH probe analysis and high-resolution esophageal motility (HREM) testing at a surgical center within a small community program.

Study design:
This retrospective review analyzed patients who underwent high-resolution esophageal motility (HREM) and/or Bravo pH probe testing for foregut symptoms at a community-based gastrointestinal (GI) surgery program between 2022 and 2024. Data on patient demographics, referring specialty, presenting symptoms, test results, and outcomes were gathered from the electronic medical record (EMR).

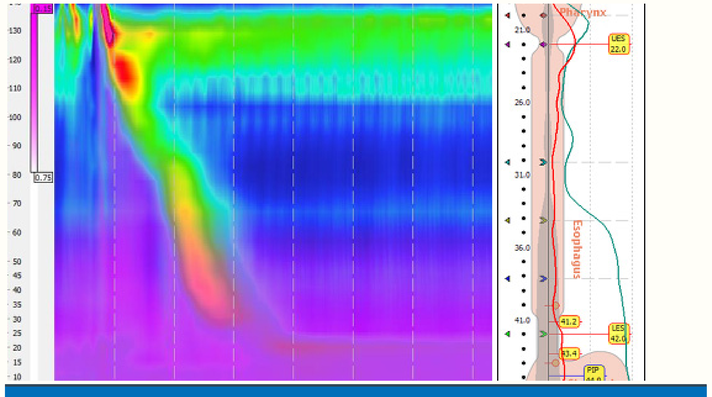
Results:
Between 2022 and 2024, 59 patients underwent esophageal function testing: 57.6% had both HREM and Bravo pH testing, 32.2% had only HREM, and 10.2% had only Bravo. Presenting symptoms were heartburn (71.1%), dysphagia (59.3%), nausea/vomiting (30.5%), regurgitation (25.4%), and atypical chest pain (11.8%).

The group consisted of 42 females (71.2%) and 17 males (28.8%), with an average age of 51.9 and a BMI of 30.8. Most patients (69.5%) were referred by primary care providers, with others referred by gastroenterologists (20.3%), general surgeons (6.8%), pulmonologists (1.7%), and otolaryngologists (1.7%). Acid-reducing medications were already in use by 81.3% of the patients.

Bravo pH testing showed pathological acid exposure (DeMeester score >14.7) in 35.6% of patients. HREM results included normal esophagus (27%), hiatal hernia (18.2%), esophagogastric junction (EGJ) outflow obstruction (16.4%), and other motility disorders such as ineffective motility (9.1%), distal esophageal spasm (5.5%), and achalasia (3.6%).

Out of the 52 patients with documented follow-up, 30.7% underwent surgical or endoscopic intervention, which included laparoscopic Nissen fundoplication, laparoscopic paraesophageal hernia repair with partial fundoplication, endoscopic botox injection, revision of jejunojejunostomy with small bowel resection, Heller myotomy with anterior fundoplication, revision of gastrojejunostomy anastomosis with vagotomy, and Toupet fundoplication.

Conclusion:
Surgeons at community-based centers can establish comprehensive EFT programs that facilitate the management of patients locally without the barriers associated with referral to tertiary centers.



COMPOSITE SWALLOW OF MEAN OF 10 SWALLOWS
Manometry findings consistent with distal esophageal spasm with frequent premature contractions.

Purpose

Although esophageal manometric and pH studies are gaining traction in clinical practice, their utility is increasingly scrutinized due to a perceived lack of substantial evidence linking them to improved outcomes relative to cost.

Esophageal function testing (EFT) (i.e., high-resolution esophageal motility testing and Bravo pH probe) is primarily conducted at tertiary care centers, limiting access for community patients, particularly those facing geographic or socioeconomic barriers. In Niagara Falls, its scarcity necessitates regional referrals, often leading to prolonged wait times and delays in diagnosis and treatment.

Study aims:

- (1) examine the influence of EFT on clinical diagnoses and subsequent surgical interventions and,
- (2) evaluate the economic feasibility of establishing an in-house EFT surgical center within a community hospital.

Methods

Testing breakdown	HREM only	Bravo-pH only	Both
n/Total	19	6	34
%n/total	32.2%	10.2%	57.6%

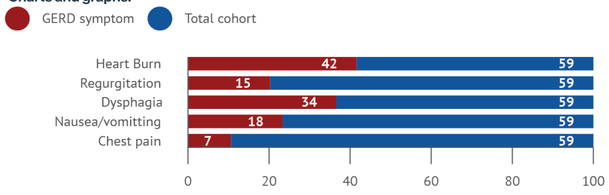
Study procedure:

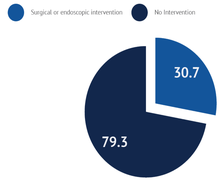
- A retrospective review analyzed patients who underwent high-resolution esophageal motility (HREM) and/or Bravo pH probe testing for foregut symptoms .
- 59 total patients underwent foregut testing over the span of two years.
- Data on patient demographics, referring specialty, presenting symptoms, test results, and outcomes were gathered from the electronic medical record (EMR).
- GERD symptoms sites were either esophageal (e.g., heartburn, regurgitation, dysphagia) or extraesophageal (e.g., cough and hoarseness).
- All patients were required to discontinue proton pump inhibitors (PPIs) and H2 blockers for two weeks prior to testing.

Results & Outcomes

Almost one third of patients underwent surgical or endoscopic intervention after esophageal studies, which included:
(1) Laparoscopic Nissen fundoplication
(2) Laparoscopic paraesophageal hernia repair with partial fundoplication
(3) Endoscopic botox injection
(4) Revision of jejunojejunostomy with small bowel resection
(5)Heller myotomy with anterior fundoplication
(6) Revision of gastrojejunostomy anastomosis with vagotomy
(7) Toupet fundoplication.

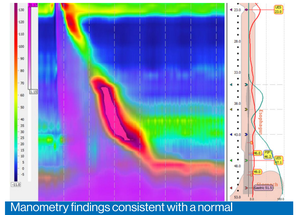
Charts and graphs:





79%
of studied patients
failed PPI therapy

Discussion


Manometry findings consistent with a normal esophageal study.

Gastroesophageal Reflux Disease (GERD) affects up to 20-30% of the US population and costs an estimated $12 billion to $20 billion in healthcare expenditure.

Patients in rural communities may face even longer delays because EFT are primarily conducted at tertiary care centers

EFT are crucial as many patients on acid-reducing medications may have other disorders that are better identified by physiologic testing.

Within our study, 35.6% of patients had DeMeester scores consistent with a diagnosis of GERD. P atients who had non-diagnostic scores or did not meet criteria underwent HRM, aided diagnose of additional foregut disease including hiatal hernia, esophagogastric junction outflow obstruction, and other motility disorders.

Thus, establishing a comprehensive EFT program can facilitate the management of patients locally and help mitigate delays in care.

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References

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