Retrospective Review of Patients Receiving Gastric Pacemaker for Medically Refractory Gastroparesis

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Introduction

Gastroparesis is a GI Disease characterized by impaired gastric motility. Symptoms typically include early satiety, nausea, and vomiting but more severe presentations include malnutrition and dehydration[1]. The primary etiologies are diabetic or idiopathic. Gastric pacemakers are meant to improve symptoms of gastroparesis refractory to medical management and lifestyle interventions. Approved in the United States as a Humanitarian Use Device, placement is restricted to medical centers with an Institutional Review Board. Texas Tech University Health Sciences Center is one of limited facilities nationwide that offer surgical gastric pacemaker placement (IRB #L07-099). Device placement necessitates surgical battery replacement as well as the risk of surgical revision or removal of the pacemaker in the event of complications.

Objective

- To identify common characteristics within the population of patients requiring gastric pacemaker placement due to refractory medical treatment.
- To analyze long term outcomes and complication rates of gastric pacemakers for patients with gastroparesis.

Methods

Retrospective chart review was performed for 125 patients within the TTUHSC institution to record:

- Demographics: age at pacemaker placement, sex, race/ethnicity
- Pacemaker surgical information: year, approach, etiology of gastroparesis
- Additional surgeries required: battery replacement(s), revision(s), and removal
- Comorbidities: chronic medical conditions and psychiatric conditions
- Vital signs at time of procedure: weight, BMI, HbA1C

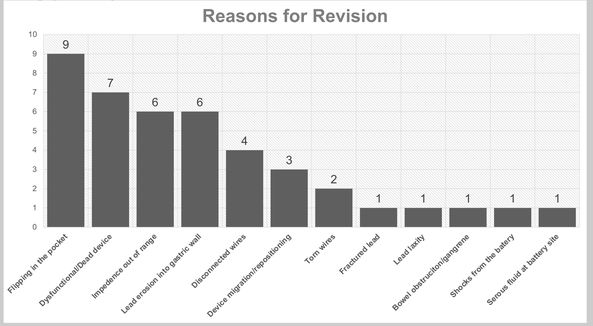
FINDINGS

Of the 125 patients, the population was predominantly female (84%). The population was largely white (61%). Surgical approach for placement of the gastric pacemakers included open (46%), robotic (39%), laparoscopic (11%), or not in EMR (3%).

Patient Characteristics		
Age	46.8	(18-80)
BMI	28.6	(15.66-51.9)
Etiology		
Diabetic	56	45%
Idiopathic	69	55%
Demographics		
Male	20	16%
Female	105	84%
Ethnicity		
Hispanic	35	28%
Black	9	7%
White	76	61%
Other	3	2%
No Reply	2	2%
Comorbidities		
Hypothyroidism	35	28%
Anxiety	50	40%
Depression	60	48%
At least one psychiatric diagnosis	73	58%
Surgical Approach		
Open	58	46%
Robotic	49	39%
Laparoscopic	14	11%
Not in EMR	4	3%

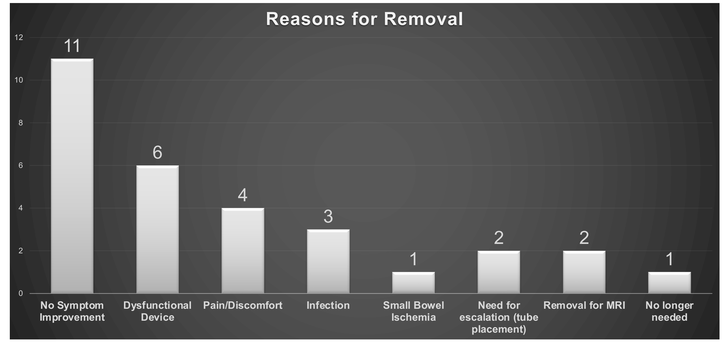
In terms of pacemaker-related procedures:

- 34 patients required revisions totaling 43 total procedures. (27% of patients)
- 30 patients had their device removed. (24% total: 42% Diabetic / 58% Idiopathic)
- 23% of patients had at least one pacemaker related procedure.
- One serious complication of small bowel ischemia was observed.
- Time gap between battery replacement: 4.4 years (<1 year to 9 years)
- Time gap between battery placement and revision: 2.9 years (<1 years to 6 years)
- 42% patients required additional procedures: 10% pyloroplasty, 12% g or j tube, 5% gastric bypass)



Conclusion

Gastroparesis is a complex disorder that is poorly understood. Although typically associated with diabetes, this study showed higher idiopathic incidence which may provide insight to why patients are often refractory to medical management. Additionally, the average BMI was overweight despite gastroparesis-associated weight loss. Further analysis is warranted to explore the high incidence of psychiatric comorbidities as well as the relatively high incidence of revision and removal.



References

1. Pasricha PJ, Parkman HP. Gastroparesis: definitions and diagnosis. Gastroenterol Clin North Am. 2015 Mar;44(1):1-7. doi: 10.1016/j.gtc.2014.11.001. Epub 2014 Dec 24. PMID: 25667018.

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