A Uncommon Cardiac Complication after Endoscopic Dilation of a Gastric Sleeve Stricture in an Obese Woman

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Research Article

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Abstract

Endoscopic balloon dilation is a widely accepted non-surgical therapeutic approach for managing gastrointestinal luminal strictures. While complication rates vary depending on endoscopist experience, patient clinical status, and the nature of the stricture, complication rates are generally low. We present a case of a rare, but serious, complication of marked bradycardia after an elective endoscopic dilation of gastrectomy sleeve anastomotic stricture.

Introduction

An estimated 42% of Americans are currently obese.[1] Bariatric surgery has gained prominence over the past 20 years amidst the obesity epidemic as a weight management strategy in patients who have otherwise failed to lose sufficient excess body weight with lifestyle modifications.[2] One of the most commonly performed bariatric procedure worldwide is sleeve gastrectomy, an irreversible, restrictive procedure that removes 85% of the stomach.[3] The most common complications after laparoscopic sleeve gastrectomy are bleeding (3%), stricture formation (0.1%), and staple line leak (0.1%).[4] Patients with symptomatic post-sleeve gastrectomy strictures can experience dysphagia, nausea, vomiting, and weight loss.[5] Endoscopic balloon dilation has been used as a non-surgical intervention to treat symptomatic strictures with a success rate of up to 88% and a complication rate of less than 6%.[5] While serious complications are rare after endoscopic dilation of anastomotic strictures, we report a case of marked bradycardia after an elective endoscopic dilation procedure in a 45-year-old obese woman with a previous sleeve gastrectomy complicated by the formation of a persistent and refractory gastric stricture.

Case Report

A 45-year-old female with class II obesity (BMI >35), asthma with multiple exacerbations, history of Nissen fundoplication (25 years prior), and laparoscopic sleeve gastrectomy (2 years prior). In the year following the bariatric sleeve gastrectomy, she experienced dysphagia secondary to formation of an early symptomatic, benign anastomotic stricture. This was treated by placement of two fully covered lumen-apposing metal stents. Both stents migrated several months later, resulting in recurrence of dysphagia. The stents were endoscopically removed. She underwent balloon dilation with short-term good effect but experienced recurrence of dysphagia to solids a year.

At present, she reported dysphagia to solids and liquids that had been progressive for the past three months. An outpatient diagnostic upper endoscopy was performed and an anastomotic stricture was seen. Endoscopic dilation was performed with a 30-mm balloon under fluoroscopic guidance. The patient tolerated the balloon dilation procedure with no immediate complications and was discharged home.

Six hours later, she presented to the emergency department with a new onset of epigastric pain, nausea, and burping that started 1-2 hours after the procedure. She did not endorse lightheadedness, changes in vision, shortness of breath, or chest pain. Her vital signs were notable for new-onset bradycardia, with a

heart rate of 45 beats per minute (bpm; baseline was 60-75 bpm). Otherwise, she was normotensive, afebrile, and had normal oxygen saturation on room air. An electrocardiogram (ECG) showed sinus bradycardia. An upright chest X-ray was negative for pneumoperitoneum. A computed tomography (CT) scan without the contrast of the abdomen and pelvis showed no evidence of perforation or hematoma around the gastric sleeve (**Figure 1**). The patient was admitted to the general internal medicine service with continuous telemetry monitoring. She was managed conservatively with bowel rest; acetaminophen, oxycodone, and fentanyl for pain; and metoclopramide and prochlorperazine for nausea.

The following day, an upper gastrointestinal gastrografin study was performed and it did not show any extraluminal contrast leakage that would suggest esophageal perforation. The patient's pain had improved significantly, and she was initiated on a full liquid diet. She remained bradycardic (heart rate 42 bpm) on hospital day 2, without any associated symptoms. She was discharged home later that day with outpatient follow-up. One week post-discharge, she tolerated a soft diet. Repeat ECG demonstrated normal sinus rhythm with a heart rate of 84 bpm.

Discussion

We present a case of new-onset transient marked bradycardia following endoscopic balloon dilation for treatment of symptomatic post-gastrectomy stricture in a 42-year-old woman with obesity. Although intraoperative bradycardia during bariatric surgery has been reported to occur in a quarter (24.6%) of patients undergoing gastrectomy and 18% postoperatively,[6,7] the phenomenon of bradycardia following endoscopic balloon dilation procedures has never been reported. There has only been one published case report of bradycardia after endoscopic placement of an intragastric BioEnterics balloon in an obese patient with obstructive sleep apnea (OSA), which resulted in cardiac arrest requiring cardiopulmonary resuscitation – the patient had a return of spontaneous circulation but had poor neurological outcome thereafter.[8]

Vagal-mediated reflex bradycardia is postulated to result from stretching of the gastric wall.[6,8] On review of the CT scan (**Figure 1**), suture material was seen at the proximal stomach where there are two main vagal pathways (anterior and posterior). Previous studies have shown that gastric manipulation can cause stretching of the peritoneum and movement of the abdominal visceral organs with resultant stimulation of the efferent cardiac vagus nerve by the afferent vagal fibers.[9,10] This patient's history of Nissen fundoplication might have resulted in altered anatomy of the vagus nerve and placed her at higher risk for subsequent procedural complications.

In summary, marked bradycardia after endoscopic gastric sleeve dilation is a potential complication, particularly in patients with altered anatomy (such as prior Nissen fundoplication). In this case, the patient was asymptomatic from the transient bradycardia, which subsequently resolved spontaneously within one week of onset.

Declarations

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Ethics approval:

Consent to participate: The patient has consented to the submission of the case report for submission to the journal.

Consent for publication: The participant has consented to the submission of the case report to the journal.

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Code availability: Not applicable.

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Figures

Figure 1

Post procedural CT Abdomen and Pelvis

Surgical suture material (yellow arrow) about the proximal stomach could disrupt the two main vagal pathways of the stomach. Afferent vagal fibers arise from the visceral peritoneum and act on the efferent cardiac vagus nerve.