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## CLINICAL VIGNETTE

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# Pseudo-Achalasia Following Laparoscopic Adjustable Gastric Band (Lap-band®)

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Laparoscopic adjustable gastric band (Lap-band®) a popular procedure five to ten years ago has fallen out of favor. However, there are still many patients with laparoscopic adjustable gastric bands in place. According to the American Society for Metabolic and Bariatric Surgery,<sup>1</sup> 158,000 bariatric surgeries were performed in 2011. The most popular surgeries were the laparoscopic adjustable gastric band (34.4%) and Roux-en-Y gastric bypass (36.7%). 2015 data reported 196,000 bariatric surgeries and with gastric sleeve 53.8% with Roux en Y gastric bypass (23.1%). Laparoscopic adjustable gastric band (5.7%) had decreased significantly.

Long term complications from laparoscopic adjustable gastric band has likely contributed to the decline. These complications include band erosion, band slippage and gastric prolapse, port malfunction, esophagitis, and esophageal dilation.<sup>2</sup> We report the rare complication of pseudo-achalasia that has developed from a laparoscopic adjustable gastric band procedure.

### Case Presentation

A 55-year-old male was admitted for epigastric pain. The pain was sharp and 8 out of 10 in intensity. He had a bout of hematemesis at home. He was unable to tolerate any food and even small amounts of clear liquids caused excruciating abdominal pain.

His past medical history revealed that he had a laparoscopic adjustable gastric band 5 years prior. He initially lost 150 pounds but subsequently re-gained 50 pounds back. He had never followed up with his bariatric surgeon, and his laparoscopic adjustable gastric band was never adjusted (balloon never inflated or deflated). Esophagogastroduodenoscopy (EGD) approximately 2 years prior showed evidence of gastritis per the patient's history. He also has a history hypertension and benign prostatic hypertrophy.

Physical exam revealed an obese male. His vital signs showed a blood pressure 148/49, pulse 57, respiration 17, temperature 98.8°. His BMI was 49.2. HEENT revealed anicteric sclera, extraocular muscles intact, oral showed dry mucosa and neck was supple. Heart exam with regular rate and rhythm. Lungs were clear. Abdomen exam was soft with moderate epigastric tenderness but no rebound tenderness. There was no hepatosplenomegaly. Extremity showed no edema. Neurologic exam was non-focal. Rectal exam showed brown stool with negative fecal occult blood test.

Admitting labs showed a white blood count 6.1 hemoglobin 12.7 hematocrit 39.1 MCV 86.1 platelet count 197000 sodium 142 potassium 3.7 chloride 104 bicarbonate 25 BUN 9 creatinine 0.7 glucose 95 calcium 8.5 bilirubin 0.5 AST 16 ALT 13 alkaline phosphatase 59 total protein 6.7 albumin 3.8 globulin 2.8 INR 1.1.

Computed tomography (CT) scan of the abdomen and pelvis showed the laparoscopic adjustable gastric band device in the medial left upper quadrant in the expected oblique orientation. Oral contrast was seen in the small bowel and throughout the entire colon. There was no evidence of bowel obstruction. There was diffuse mild colonic fecal loading noted.

Right upper quadrant ultrasound showed evidence of fatty liver, without gallstones, gallbladder wall thickening, or biliary dilation

EGD demonstrated irregular Z-line, a small hiatal hernia and no retained food. There was mild erythema in the antrum with biopsy showing chronic minimal active gastritis and no *Helicobacter pylori*. The duodenum was normal.

Gastric emptying study was attempted after ingesting the scrambled egg mixed with technetium, he had a large bout of emesis. The patient voiced his frustration that a source of his symptoms had yet to be identified. He was especially upset because he could still not tolerate any oral intake.

After further discussion, he agreed to additional evaluation. Upper gastrointestinal (UGI) X-ray series showed stenosis near the gastroesophageal (GE) junction at the level of the gastric band with proximal esophageal dilation. This was not appreciated on the EGD the day before. The findings were consistent with pseudo-achalasia due to the laparoscopic adjustable gastric band.

The patient was taken to surgery and the laparoscopic adjustable gastric band was removed. The operative report noted a lot of scar tissue in the area of the GE junction. Post removal, patient was able to eat a regular diet and his symptoms of epigastric pain, nausea, and vomiting had completely resolved.

### Discussion

The laparoscopic adjustable gastric band (Lap-band®) device and procedure was 1st described in September 1993.<sup>3</sup> The goal

of the laparoscopic adjustable gastric band was to have a minimally invasive procedure that actively restricts intake and controls hunger with subsequently, weight loss. The Lap band® surgical procedure was FDA approved in 2001 and the device is manufactured by Allergan in Irvine, CA.<sup>4</sup> The laparoscopic adjustable gastric band device has an adjustable balloon that is placed in the upper stomach. This balloon could be inflated with saline to create a full feeling after meals, thereby restricting food intake. The surgical procedure of placing the Lap-band® is relatively quick, usually taking anywhere from 30-60 minutes. The cost ranges from \$9000 to \$22,000 and is generally covered by insurance including subsequent revision if necessary. Many insurance may not cover complications arising from the laparoscopic adjustable gastric band. By 9 years after placement, 50% of laparoscopic adjustable gastric band have been removed.<sup>5</sup> This is due to inability to achieve desired weight loss or complications.

The most common complication is band slippage. Band slippage involves prolapsing of part of stomach through the band. An earlier placement technique, involved perigastric dissection, and places the laparoscopic adjustable gastric band on the outer stomach wall which results in frequent band slippage. Specifically, perigastric dissection band placement requires dissection between the lesser curvature of stomach and lesser omentum, across the apex of the lesser sac, to the angle of His. A later technique, pars flaccida (AKA hepatogastric ligament), does not expose the stomach wall which results in less band slippage. The pars flaccida technique is done by dissecting from the base of the right crus along the left crus to the angle of His. A meta-analysis by Singhal R, et al included 19 studies published from 2002 to 2008. The number of laparoscopic adjustable gastric band patients in each study ranged from 500 to 2411. Overall, the rate of band slippage was 4.93%.<sup>6</sup>

Another well recognized complication is band erosion. This is due to a tight band that results in erosion of the band into and through the gastric wall. There are 4 possible etiologies: 1) tissue reaction from the band device 2) infection at the band site 3) excessive inflation of band resulting in ischemia to gastric wall 4) mechanical damage to gastric wall during implantation.<sup>7</sup> In the meta-analysis the overall rate of band erosion was 1.03%.<sup>6</sup>

Esophageal dilation can occur after laparoscopic adjustable gastric band. There has not been many published articles on pseudo-achalasia but it has been well described. It is due to either over inflation of the band during band adjustment<sup>6</sup> or excessive eating.<sup>8</sup> Achalasia-like symptoms include dysphagia, vomiting, or severe reflux.

Golse MR, et al<sup>9</sup> published a retrospective study of 359 laparoscopic adjustable gastric band in France. Eleven out of 359 patients (3%) developed manometric criteria for achalasia-like disorder. All eleven had absence of esophageal peristalsis (<20% contraction waves) and six had impaired GE junction relaxation. None had their laparoscopic adjustable gastric band

removed after a mean of 63 months (range 20-108 months). Eight out of 9 that had their band removed had total resolution of their food intolerance. Another retrospective study by Wiesner W, et al reviewed 120 laparoscopic adjustable gastric band patients. They found 8% developed pouch dilation or esophageal widening. No manometric studies were done.<sup>10</sup>

Khan AK, et al<sup>11</sup> described 6 patients that developed dysphagia or heartburn after laparoscopic adjustable gastric band placement. All 6 had complete aperistalsis documented on esophageal manometry. Five out of 6 had clinical improvement; 4 had fluid removed from their band and one had band removed surgically.

## Summary

Laparoscopic adjustable gastric band (Lap-band®) band procedure was once a commonly performed bariatric procedure but has now fallen out of favor. It is important to be aware of the potential complications, as many patients still have their laparoscopic adjustable gastric band. Late complications can occur even years after placement. Common complications include band slippage and band erosion. This case presentation involved a laparoscopic adjustable gastric band placed 5 years ago, with recent onset of symptoms of epigastric pain, nausea, and vomiting. UGI series showed esophageal dilation and stenosis at the GE junction. After band removal, he did well with resolution of his symptoms.

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