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SMALL INTESTINAL OBSTRUCTION SECONDARY TO MIGRATED INTRAGASTRIC BALLOON RETRIEVED ENDOSCOPICALLY FROM THE JEJUNUM

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ABSTRACT

Introduction: The intragastric balloon is a medical device inserted into the stomach endoscopically and filled with either air or more commonly, saline. Widely utilised since the 1980s, numerous studies have affirmed its safety and effectiveness as a temporary treatment for weight loss. Despite this, there have been reports of rare but severe complications associated with its usage.

Case description: We report the case of a 33-year-old female presented with two-day history of epigastric pain, nausea and vomiting. This occurred after having a gastric balloon placed endoscopically two months earlier. A contrast-enhanced abdominal CT scan revealed a partially deflated and migrated intragastric balloon in the proximal jejunum, causing intestinal obstruction without any signs of bowel perforation. The diagnosis was established as intestinal obstruction due to the migrated intragastric balloon. An emergency endoscopic procedure was undertaken, successfully removing the balloon thus highlighting a unique attempt to endoscopically retrieve a migrated intragastric balloon from the jejunum.

Conclusion: The efficacy of an intragastric balloon in reducing weight in a short time is gaining more popularity. The more common it becomes the more we must be vigilant about its complications. We advise regular follow-up of patients and emphasise patient education of possible signs and symptoms of intragastric balloon migration, which will avoid serious complications.

KEYWORDS

Intragastric balloon, endoscopy, weight loss, obesity, intestinal obstruction

LEARNING POINTS

- Endoscopic removal from the jejunum: Learn the procedure for endoscopic removal of a migrated gastric balloon from the jejunum, recognising it is possible without signs of perforation or leakage. Additionally, understand the importance of performing this procedure with surgical backup in a theatre to address any potential complications, such as perforation, during or after the procedure.
- The role of CT scans: Understand the crucial role of CT scans in diagnosing migrated gastric balloons or perforations related to gastric balloon procedures.
- Recognising and responding to balloon deflation: Identify signs of a deflated gastric balloon, such as methylene blue in the urine, and understand associated symptoms such as reduction in stomach fullness.

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INTRODUCTION

As the global obesity rate continues to climb, an expanding array of weight loss options, both surgical and non-surgical, has emerged. Over the past thirty years, endoscopic intragastric balloons have become increasingly popular as a less invasive substitute for bariatric surgery. Despite being considered a safer alternative, it is essential to note that complications, though infrequent and often under-reported, can still be linked to substantial morbidity and mortality.

Intragastric balloons differ in their material, volume and contents. Some balloons can pass through the digestive tract naturally, while others require removal. Complications are frequent and range in severity, including symptoms such as nausea, vomiting, gastric ulceration or perforation. Management choices include endoscopic retrieval, manual passage through the gastrointestinal tract and surgical procedures, whether open or laparoscopic.

CASE DESCRIPTION

A 33-year-old female with a known case of hypothyroidism on levothyroxine, with no past surgical history, presented to the emergency department with a two-day history of severe colicky epigastric pain associated with multiple episodes of bluish vomiting. The pain was reported to have radiated to the supraumbilical region, rated severe and followed with subsequent vomiting. No associated fever, urinary or bowel changes and no history of trauma was reported. On examination, the patient was in acute distress and severe pain. The abdomen was soft but tender in the supraumbilical region with mild guarding.

The initial laboratory work-up *(Table 1)* revealed elevated serum amylase and lipase, a procalcitonin count with minimal risk of progression to systemic infection; the white cell count with neutrophil count, haemoglobin, platelet count, C-reactive protein and urea were in the normal range.

Parameter	Result	Reference range
Serum amylase	200 U/l	28–100 U/l
Serum lipase	610 U/l	13–60 U/l
Procalcitonin	0.05 ng/ml	< 0.05 ng/ml
White cell count	7.6 × 10^9/l	3.6–11 × 10^9/l
Neutrophil count	5.5 × 10^9/l	2–7 × 10^9/l
Haemoglobin	11.8 g/dl	13–17 g/dl
Platelet count	315 × 10^9/l	150–410 × 10^9/l
C-reactive protein	1.6 mg/l	<5 mg/l
Urea	11 mg/dl	12–14 mg/dl
Beta human chorionic gonadotropin (HCG)	Negative	

Table 1. Laboratory results.



Figure 1. CT axial view showing partially deflated gastric balloon.



Figure 2. CT coronal view showing partially deflated balloon in proximal jejunum.

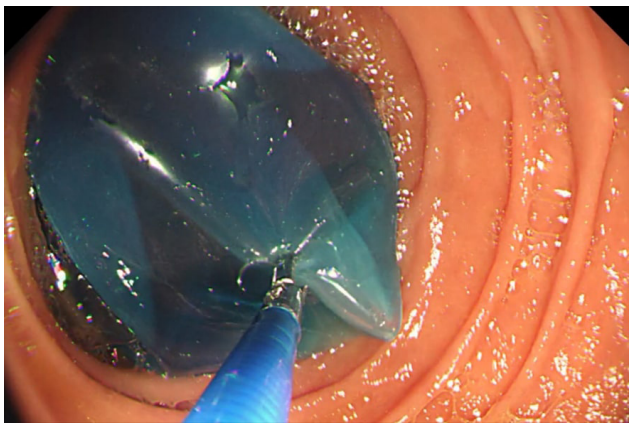


Figure 3. Endoscopic retrieval of balloon from the jejunum.

An X-ray of the abdomen did not show any air under the diaphragm. After a negative pregnancy test, a computed tomography (CT) scan of the abdomen was performed, which showed a partially deflated and migrated intragastric balloon in the jejunum. No intra-abdominal collections were visualised *(Fig. 1 and 2)*. The patient was then admitted under general surgery, kept on nil per oral and was supported on IV fluids. The case was referred to gastroenterology and management plans were discussed with the patient.

A trial endoscopy was recommended, and the procedure was fully explained to the patient regarding the possible complications such as bowel perforation or bleeding,

which may require an immediate laparotomy. The patient agreed to endoscopic intervention and an informed consent was obtained. An emergency endoscopy was performed. Findings during the procedure showed normal appearing oesophagus, and the stomach showing mild diffuse mucosal erythema with a clean based pyloric ulcer.

A partially deflated balloon was seen in the proximal jejunum, so gastric balloon retrieval forceps were used to pull the balloon back into the stomach *(Fig. 3)*. After full deflation of the gastric balloon from the stomach, a snare-assisted balloon was retrieved without any complications. Re-endoscopy showed no immediate complication up to the proximal jejunum, and another re-endoscopy was recommended after three months. Biopsies were taken from ulcer edges and there was no evidence of gastric malignancy. The procedure was tolerated well by the patient who was transferred to a recovery room in a stable condition; post-operative recovery was uneventful. She was discharged on the second post-operative day.

DISCUSSION

The global prevalence of obesity is a growing health concern, affecting diverse populations across age, ethnicity and socio-economic backgrounds. With over 1.4 billion adults categorised as overweight or obese, coupled with increasing obesity-related health conditions, effective treatment options are essential[1]. Intragastric balloons offer a minimally invasive approach to address this global obesity pandemic. While bariatric surgery is considered highly effective for morbid obesity, its criteria can limit patient eligibility. Bariatric surgeries require a body mass index (BMI) above 35 kg/m^2 with comorbidities or above 40 kg/m^2 for severe obesity. This leaves an intermediate patient group without surgical candidacy, needing alternative solutions. Intragastric balloons fulfil the need for safe and effective minimally invasive weight loss therapy.

Complications associated with intragastric balloons emphasise the importance of timely removal, typically recommended based on the duration of placement, whether it is six months or twelve months, to avoid potential risks effectively. Common symptoms include abdominal pain, reflux, vomiting and electrolyte imbalances, often worsened without sustained lifestyle changes. Serious complications such as gastric ulceration and perforation have also been documented. Intestinal obstruction, although rare, can occur due to balloon migration beyond the initial treatment period, necessitating close monitoring. Diagnosis in emergent cases relies on abdominal CT scans. Conservative management may be attempted for stable patients, allowing the deflated balloon to pass naturally; however, surgical intervention becomes necessary if complications persist or the balloon remains obstructive after 48 hours.

Alternatively, an endoscopic approach can also be tried, although its usefulness is often limited by location, according to existing literature. There have been two earlier reports of significance describing attempts at endoscopically retrieving the partially deflated intragastric balloon from the duodenum due to obstruction. While one was confined to only D1 and D2 portions, which was removed successfully, the other one was a failed attempt that required surgery[2-4]. However, according to our research there have been no earlier reports of attempts at endoscopic retrieval from the jejunum that were documented to be successful without further complications[5]. Hence, this report aims to document the success of the team in achieving this previously unreported feat and thereby recommending it as a safer alternative that can potentially be employed and studied further in the future.

CONCLUSION

In conclusion, intragastric balloons offer a practical, minimally invasive treatment option for obesity, particularly for patients who do not meet the criteria for bariatric surgery. While complications such as gastric ulceration, perforation, and intestinal obstruction can arise, timely removal and close monitoring are critical in managing these risks. Our research documents the successful endoscopic retrieval of a partially deflated intragastric balloon from the jejunum, demonstrating that this approach can be a safer alternative to surgery provided surgical backup is available to address potential complications, such as perforation, during or after the procedure. This finding encourages further investigation and application in future clinical practice.

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