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Case Report

A rare complication of capsule endoscopy, retained in diverticula: A report of two cases

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ABSTRACT

Capsule endoscopy is being widely used to identify the origin of an obscure gastrointestinal bleeding. Capsule retention is one of its complications. Herein, we present 2 cases of a retained capsule one in a gastric diverticula that was managed endoscopically, and one in jejunal diverticula managed by small bowel resection.

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Keywords: Endoscopy; Gastric diverticula; Jejunal diverticula; Retained capsule endoscopy

Introduction

Recently, capsule endoscopy is being widely used to identify the origin of an obscure gastrointestinal (GI) bleeding. It is non-invasive, and allows direct inspection of the small bowel mucosa.^{1–3} It is useful when all the work-up of GI bleeding couldn't identify the source of bleeding.^{1–5} Although it is a noninvasive procedure, it is not a complication free procedure. Among its possible complications, is capsule retention defined as the presence of the capsule in the GI tract for at least 2 weeks after ingestion, or indefinitely retained unless endoscopic or surgical intervention have been done.^{1,3}

The rate of retention varies in literature from 0% to 21% and is mainly related to the indication of examination and patient selection.² Hence, the real frequency of capsule retention is poorly defined. The overall incidence of capsule retention is estimated to be very low around 1%–2%.^{1,3} Small bowel is the most common site of retention, being first in the ileum, duodenum and lastly in the jejunum.² To our knowledge, no cases of retained video capsule in gastric diverticula has been reported. Herein, we present a case of a retained capsule in a gastric diverticula that was managed endoscopically.

Case Report

Case presentation: capsule retained in gastric diverticula

This is the case of an 80-year-old female patient, with history of hypertension, diabetes mellitus type II, peripheral vascular disease admitted for investigations of microcytic anemia and recurrent episodes of fresh blood per rectum. Upon presentation patient was clinically stable, hemoglobin level was of 10.6 g/dL. Work-up of microcytic anemia ordered including endoscopic investigations: gastroscopy failed to identify a site of bleeding but presence of a large 3.5 cm fundic diverticulum. Colonoscopy was as well negative for active bleeding but presence of old blood within the terminal ileum was noted. Owing to the recurrent episodes of fresh blood per rectum and failure to identify the source of bleeding on endoscopy, patient consigned on further investigations of her condition with capsule endoscopy, with an informed consent about possible capsule retention in the previously known gastric diverticulum after discussing the possibility of administering the capsule by direct vision through another gastroscopy. Patient ingested the capsule (CapsoRetire, Saratoga, CA, USA) and was eligible to be discharged home as she was clinically and hemodynamically stable and did not require any blood transfusion. Her hemoglobin level upon discharge was of 11.1 g/dL. On 2 weeks of follow-up the capsule was still not excreted. Hence, abdominal

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X-ray was done showing the video capsule projecting over the left upper quadrant (Fig. 1). A computed tomography (CT) scan of the abdomen was ordered and showed the capsule to be retained within the gastric diverticulum (Fig. 2). Thus the patient was diagnosed with capsule retention (Fig. 3) and endoscopic retrieval by gastroscopy was scheduled. Capsule endoscopy was successfully removed (Fig. 4). Patient stable after the endoscopic intervention and was discharged home. In view of the age of our patient and her stable medical status and no history of previous hospitalization for massive GI bleed requiring blood transfusion, patient opted for conservative management with iron supplements and blood transfusions when needed.

Case 2: capsule retained in jejunal diverticula

This is the case of an 84-year-old male, with history of coronary artery disease and peripheral artery disease, on antiplatelet

therapy, presenting for investigation of microcytic anemia and recurrent episodes of melena. On presentation, patient was hemodynamically stable, with soft abdomen, and digital rectal exam was positive for melena. Gastric lavage using a nasogastric tube was negative for blood. Gastroscopy and colonoscopy were done, but failed to identify the bleeding source.

Owing to the persistent nature of his symptoms and inability to identify the site of bleeding with endoscopy, capsule endoscopy was done. Fifteen days after ingestion, capsule was not excreted. Hence, patient was diagnosed with capsule retention and consequently an abdominal X-ray was done, showing the capsule in the left lower abdominal quadrant (Fig. 5). On follow-up abdominal X-rays, no change in position of the capsule was noted. A CT scan of the abdomen was ordered, and showed the endoscopic capsule, retained in the distal jejunum, no signs of bowels obstruction, perforation or inflammation was present (Fig. 6).

Thus, the patient was diagnosed with capsule retention and a diagnostic laparoscopy was scheduled at day 21 post ingestion, in

Fig. 1. The kidneys, ureters, bladder X-ray, showing the capsule in the left upper abdominal quadrant.

Fig. 2. Abdomen-pelvis computed tomography scan, showing the retained capsule in the gastric diverticulum (arrow).

Fig. 3. Capsule retained in gastric diverticulum.

Fig. 4. Capsule retrieval.

Fig. 5. Capsule in the left lower abdominal quadrant.

Fig. 6. Retained capsule in the distal jejunum; no signs of bowels obstruction, perforation or inflammation was present.

Fig. 7. Capsule retained jejunal diverticula.

order to retrieve it. Upon abdominal exploration, an isolated mid-jejunal segment, of around 50 cm, was found harboring multiple diverticula on its mesenteric border. Left paramedian 5 cm incision was made, entry into the abdomen, Alexis retractor (Applied Medical, Santa Margarita, CA, USA) was inserted, the jejunal segment exteriorized, the capsule was palpated in one of the diverticula (Fig. 7). Resection of the diseased jejunum (Fig. 8) was done, with subsequent extracorporeal side to side jejuno-jejunal anastomosis performed. The mesenteric defect was closed, and abdomen closed and endoscopic capsule retrieved (Fig. 9). The patient had a smooth post-operative course and was discharged on postoperative day 3.

Microscopic examination of the specimen revealed small bowel diverticulosis/diverticulitis, with 11 lymph nodes negative for dysplasia.

Capsule endoscopy video showed multiple jejunal diverticula, and the bleeding site identified in one of them.

Fig. 8. Jejunal segment resected.

Fig. 9. Retrieved capsule.

Discussion

Video capsule endoscopy is nowadays the leading investigation modality for occult GI bleeding as well as for examining the small bowel mucosa for any pathological abnormality.² After review of literature the most feared complication is capsule retention² with a rate ranging from 0% to 5%.^{1,3-5} The most common cause that was demonstrated was related to patients with Crohn's disease.^{1,2,5} Other demonstrated causes of retention were associated with small bowel tumors, non-steroidal anti-inflammatory drugs use, previous GI surgeries mainly due to the adhesions, and elderly patients^{1,2,4} with the most common site of retention being the small bowel. Henceforth, reporting this case of capsule retention in a gastric diverticula is of outmost importance. Gastric diverticula is the least common among all GI diverticula. It is defined as out pouching of the stomach wall. It is usually asymptomatic and discovered incidentally while investigating other GI complaints. However, it may present with wide range of symptoms including epigastric pain, nausea, vomiting, early satiety, and occasionally GI bleeding, perforation and malignant transformation. In this case the patient had persistent symptoms of GI bleed with inability to locate its source, making the video capsule the last resort to detect the source of bleeding. The optimal management of capsule retention is debatable, and according to the literature, surgery is not the primary standard of care. In fact, studies have shown that when feasible, endoscopic retrieval is more favorable.^{2,3} In this case the decision for an endoscopic intervention was taken for retained capsule in gastric diverticula. During endoscopy, the capsule was found entrapped in the gastric diverticula, which was retrieved endoscopically.

In the second case, to the best of our knowledge this is the first reported case of capsule retention in a jejunal diverticula. Jejunal diverticula disease is a rare condition that is usually asymptomatic and its only life threatening presentation is an occult GI bleed and diverticular perforation. Jejunal diverticulosis is difficult to locate by endoscopy or by radiologic imaging. In this case the patient had persistent symptoms of GI bleed with inability to locate its source, making the video capsule the last resort to detect the source of bleeding. Knowing that jejunal diverticula is inaccessible via the endoscopic route decision was made for laparoscopic approach.

The decision for a surgical intervention was solely dependent on radiologic imaging demonstrating that capsule retention is confined to the jejunum, and hence not amenable to endoscopic

retrieval. Intraoperative, the patient was found to have jejunal diverticulosis with a retained capsule in one the diverticula. Therefore, decision for segmental small bowel resection was taken to treat both entities, the retained capsule and the GI bleed.

In conclusion, to our knowledge, these are the first reported cases of a retained video capsule in a gastric diverticulum and jejunal diverticula. Although capsule endoscopy is not an invasive procedure, it is not a complication free procedure. Among its possible complications, is capsule retention defined as the presence of the capsule in the GI tract for at least 2 weeks after ingestion, or indefinitely retained unless endoscopic or surgical intervention have been done.

Careful selection of patients eligible for capsule endoscopy is essential, gastric diverticula and jejunal diverticula should be among the differential diagnosis for a possible cause of capsule retention. Moreover, we suggest that in patients with known gastric diverticulum and in need for capsule endoscopy, ingestion be done under direct vision using the gastroscopy.

Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

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