

## Case Report

# Successful Retrieval of Retained Video Capsule Endoscope Using Double Balloon Enteroscope: A Case Report and Review of Literature

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### ABSTRACT

Video capsule endoscopy is now the first-line tool in evaluating and diagnosing obscure gastrointestinal bleeding, inflammatory bowel disease, and small bowel neoplasms. Capsule retention is an uncommon but clinically significant complication. How to best retrieve these retained capsules is currently being debated. In this case report, we describe a retained capsule successfully retrieved using double-balloon enteroscopy. This case also highlights the fact that capsule retention can occur even in the absence of signs and symptoms suggestive of intestinal obstruction.

**KEYWORDS:** Double-balloon enteroscopy, endoscopic retrieval, retention, wireless capsule endoscope

## INTRODUCTION

Video capsule endoscopy (VCE) has now become a standard noninvasive imaging procedure of the gastrointestinal (GI) tract, particularly small intestine, associated with efficacy, obviation of need for surgery, and favorable diagnostic accuracy.<sup>[1]</sup> Most VCE examinations are carried out for obscure GI bleeding after negative endoscopies and to diagnose suspected Crohn's disease (CD) and its response to modern medical treatment. Retention of the capsule is one of the most frequent complications with overall incidence of 1%–2%, but the real frequency remains poorly defined.<sup>[1]</sup> The extraction of impacted VCE using double balloon enteroscopy (DBE) has been reported to be feasible, safe, successful, and easy to perform.<sup>[2]</sup> Here, we report a case of successful retrieval of VCE using DBE technique.

## CASE REPORT

A 43-year-old female patient presented with 4 months history of easy fatigability and generalized weakness. There was no history suggestive of overt GI bleed, any obvious GI complaints, fever, arthralgia, or menstrual irregularity. She had no previous history of any abdominal surgery, tuberculosis or nonsteroidal anti-inflammatory drugs (NSAID) intake. Physical examination revealed pallor and platynychia. Vitals signs were normal. Laboratory findings showed microcytic hypochromic

anemia with hemoglobin 72 g/L, hematocrit 19.4%, mean corpuscular volume 68 fL, mean corpuscular hemoglobin 22 pg, mean corpuscular hemoglobin concentration 26.2 g/dL, red cell distribution width 34%, platelets  $450 \times 103/\text{mm}^3$ , reticulocyte count 3%, serum iron 30  $\mu\text{g/dL}$ , total iron binding capacity 552  $\mu\text{g/dL}$ , and serum ferritin 8 ng/ml. Stool for occult blood was positive. IgA anti-endomysial antibody was negative. Ultrasound and X-ray of abdomen were normal. Upper GI endoscopy and colonoscopy were unremarkable; hence, she was subjected to capsule endoscopy. VCE showed dirty liquid stools and multiple enteroliths (probably in proximal ileum) with the failure of capsule progression thereafter [Figure 1]. X-ray abdomen at this point confirmed the presence of retained capsule in the pelvic region [Figure 2]. There was no spontaneous passage of capsule in stool for more than a week. Without waiting further, we decided to proceed with ante grade DBE for removal of the capsule. Enteroscope was passed up to proximal ileum where a smooth stricture was noted with retained enteroliths and capsule. The stricture was nonnegotiable. Rest of the examined small bowel was

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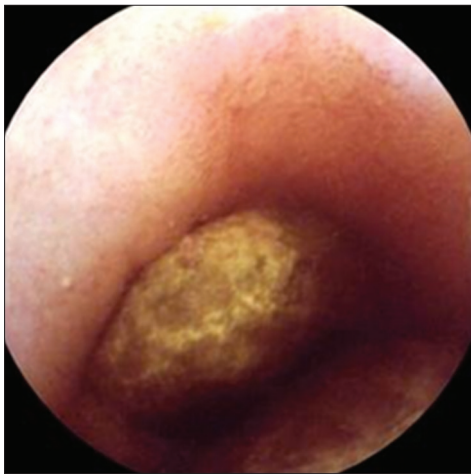
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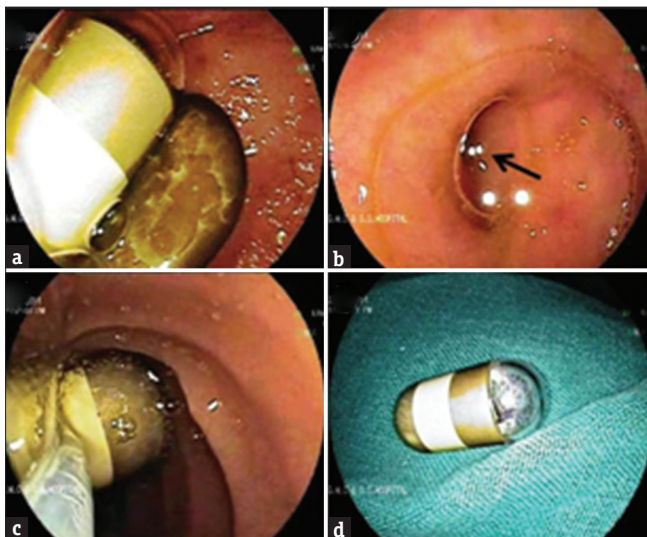
normal. Biopsy was taken from the stricture. Capsule was removed using a snare. [Figure 3]. Contrast-enhanced computed tomography (CT) abdomen with oral contrast done thereafter showed dilated ileal loops with air fluid level, calcified enteroliths, and “comb sign” suggestive of increased mesenteric vascularity [Figure 4]. Histopathology examination of biopsy specimen confirmed CD. She was started on anti-inflammatory medications and is under follow up.

## DISCUSSION

Most of the VCE are spontaneously excreted in the stool within 24–48 h.<sup>[3]</sup> The International Conference on Capsule Endoscopy-2005 defines capsule retention if it remains in the GI tract for  $\geq 2$  weeks or the capsule remaining in the bowel lumen for a shorter period requiring medical, endoscopic or surgical intervention.<sup>[4]</sup>



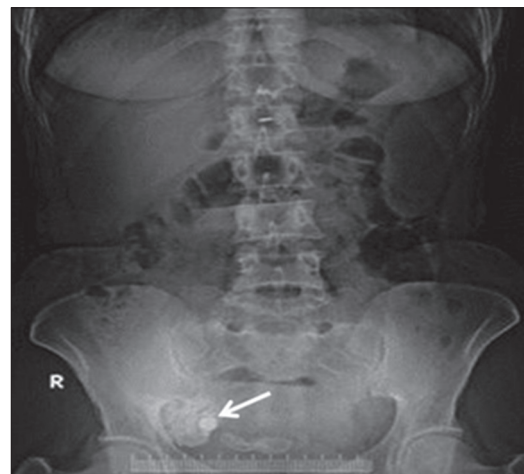
**Figure 1:** Capsule endoscopy showing enteroliths



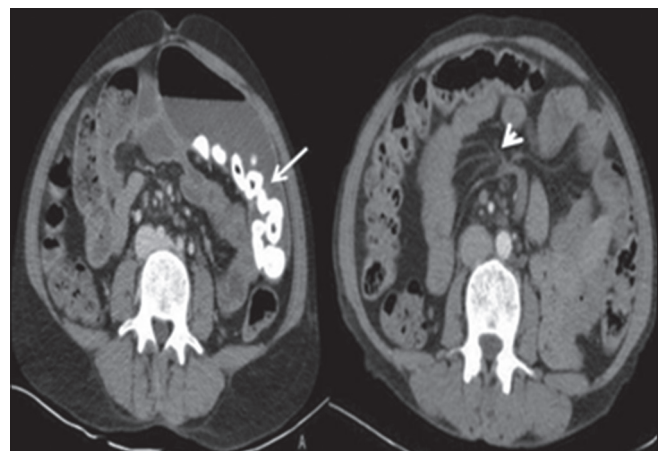
**Figure 3:** (a) Retained capsule with enteroliths in proximal ileum seen on double balloon enteroscopy. (b) Smooth stricture (black arrow). (c) Capsule removed using snare. (d) Retrieved capsule

A systematic review showed retention rates of 1% and 1.7% in prospective and retrospective studies, respectively, with a pooled retention rate of 1.4%. The most common cause for retention was CD (35.3%) followed by neoplasms (22%), NSAID induced enteropathy (18%), postsurgical stenosis (7%), adhesions (2.9%), tuberculosis (2.2%), ischemia (1.5%), and radiation enteritis (2.2%).<sup>[5]</sup>

Most retained capsules are asymptomatic with the longest duration of asymptomatic retention reported being 4.5 years.<sup>[6]</sup> In a retrospective study of 104 retained capsules only 15% had partial small bowel obstruction.<sup>[7]</sup> In another retrospective study of 1000 VCE with 1.4% retention rate, all retentions were asymptomatic.<sup>[8]</sup> Perforations can occur, mostly in patients with CD or intestinal adhesions. It occurs within a day after ingestion to few months after retention.<sup>[4]</sup> Risk factors for capsule retention such as history of radiation to the abdomen and pelvis, CD, NSAID consumption (even if not recent), and



**Figure 2:** X-ray showing retained capsule in pelvic region



**Figure 4:** Computed tomography-abdomen showing dilated ileal loops with air fluid level and calcified enteroliths (white arrow) and “Comb sign” (arrowhead) suggestive of increased mesenteric vascularity

small bowel surgery should be ruled out before procedure. Pain may not always be present. Luminal narrowing even up to 5 mm may be asymptomatic, particularly in NSAID diaphragm disease. In patients at risk, appropriate imaging or a patency capsule should be used to rule out stricture.

The Agile Patency Capsule (Given Imaging, Yoqneam, Israel) has been developed to minimize the risk of retention. It starts dissolving 30 h after ingestion, even if one end of the capsule is impacted in a stricture. Patency is confirmed when the radio frequency identity tag is not detected by scanning the patient at 32–38 h after ingestion or the capsule is excreted without any change in the original dimensions. When the capsule was only partially dissolved or degraded, patency was not confirmed. It can be useful before capsule endoscopy in patients with strictures, to avoid retention.<sup>[9]</sup> CT and barium meal follow through (BaMFT) are also not full proof. In a retrospective study, 93% of patients with retained capsules had prior normal BaMFT or CT or both and 79% of them had NSAID-induced strictures.<sup>[8]</sup>

For retained capsule conservative treatment should be considered when there is no need for immediate surgery by treating the underlying cause, that is, use of anti-inflammatory agents or colonoscopy preparation fluids, which may lead to spontaneous passage.<sup>[4]</sup> In a systematic review of 184 capsule retentions, capsules were excreted spontaneously or by pharmaceutical manipulation in 15%, 12% were removed endoscopically and the majority (58.7%) was removed surgically.<sup>[7]</sup> Antegrade DBE can be used for endoscopic retrieval from proximal small bowel.<sup>[2]</sup>

Can capsule retention be a boon in disguise? In a retrospective study of 31 patients with subacute intestinal obstruction, capsule retention occurred in three cases (9.7%), caused by CD or tumor, of which, two capsules were retrieved at surgery, and the other one spontaneously passed the stricture by medical treatment in 6 months. None of the cases showed any symptoms of acute or sub-acute obstruction during VCE examination. In remaining, 28 capsules was excreted in 3 days. The capsule allowed definitive diagnosis in 12 of 31 cases.<sup>[10]</sup>

## CONCLUSION

Retention is a rare but known complication of VCE. The absence of signs and symptoms of bowel obstruction does not rule out stricture, as in our case. Retained capsule may sometimes help in diagnosing the lesion and further management. DBE can be used successfully in retrieving retained VCE and should be used where expertise is available.

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## Conflicts of interest

There are no conflicts of interest.

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