

# Colonic obstruction caused by video capsule entrapment in a metal stent

Ervin Toth<sup>1</sup>, Lars Marthinsen<sup>2</sup>, Maria Bergström<sup>3</sup>, Per-Ola Park<sup>3</sup>, Peter Månsson<sup>4</sup>, Artur Nemeth<sup>1</sup>, Gabriele Wurm Johansson<sup>1</sup>, Henrik Thorlacius<sup>5</sup>

<sup>1</sup>Department of Gastroenterology, Skåne University Hospital, Lund University, 20502 Malmö, Sweden; <sup>2</sup>Department of Pediatrics, Halmstad Hospital, 30185 Halmstad, Sweden; <sup>3</sup>Department of Surgery, South Älvsborg Hospital, 50182 Borås, Sweden; <sup>4</sup>Department of Surgery, Halmstad Hospital, 30185 Halmstad, Sweden; <sup>5</sup>Department of Surgery, Skåne University Hospital, Lund University, 20502 Malmö, Sweden

*Correspondence to:* Ervin Toth, MD, PhD. Department of Gastroenterology, Skåne University Hospital, Lund University, S-205 02 Malmö, Sweden. Email: ervin.toth@med.lu.se.

**Abstract:** Video capsule endoscopy (VCE) has become the method of choice for visualizing the small bowel mucosa and is generally considered to be a safe method. Although uncommon, the most feared complication of VCE is capsule retention that can potentially lead to life-threatening bowel obstruction. Herein, we present for the first time a case of capsule retention in a colonic stent. The patient had known Crohn's disease with colonic involvement and underwent an uneventful but incomplete small bowel VCE for assessment of disease activity and extension for optimizing medical treatment. Five months later, the patient presented with intestinal obstruction due to a Crohn's-stricture in the sigmoid colon, which was successfully decompressed with a self-expandable metal stent. Nonetheless, two days later the patient showed signs of bowel obstruction again and abdominal X-ray showed that the capsule was trapped in the metal stent in the sigmoid colon. Subsequently, emergency surgery was performed and the patient fully recovered. Intestinal capsule retention necessitating interventional removal is rare. This report describes a unique case of capsule retention in a colonic metal stent and highlights the potential risk of performing capsule endoscopy examinations in patients with gastrointestinal stents.

**Keywords:** Crohn's disease, complication, capsule endoscopy, colon, metal stent

Submitted Feb 14, 2017. Accepted for publication Mar 07, 2017.

doi: 10.21037/atm.2017.03.79

View this article at: <http://dx.doi.org/10.21037/atm.2017.03.79>

## Introduction

Video capsule endoscopy (VCE) has emerged as the method of choice for visualizing the small bowel mucosa (1,2). Beside the work-up of obscure gastrointestinal bleeding (OGIB) and in the evaluation of intestinal lesions related to non-steroidal anti-inflammatory drugs (NSAIDs) and celiac disease, VCE is particularly useful in the diagnosis and surveillance of Crohn's disease (3-8). It is generally held that VCE is a safe method to examine the small bowel (9,10). Nonetheless, capsule retention is a feared complication with the potential to cause acute small bowel obstruction requiring emergency surgery (11).

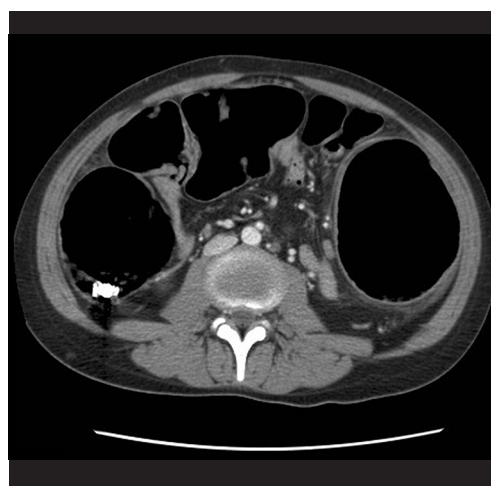
We report an unusual case for the first time with capsule entrapment in a colonic metal stent necessitating surgical removal of the capsule in a patient with Crohn's disease.

## Case presentation

A 17-year-old man with total Crohn's colitis verified with colonoscopy and histology underwent a small bowel follow-through showing no signs of mucosal inflammation. The patient experienced frequent relapses and never reached remission. The small bowel was examined with VCE (PillCam<sup>TM</sup>SB2, Medtronic, USA) in order to evaluate disease activity and extension for optimizing medical



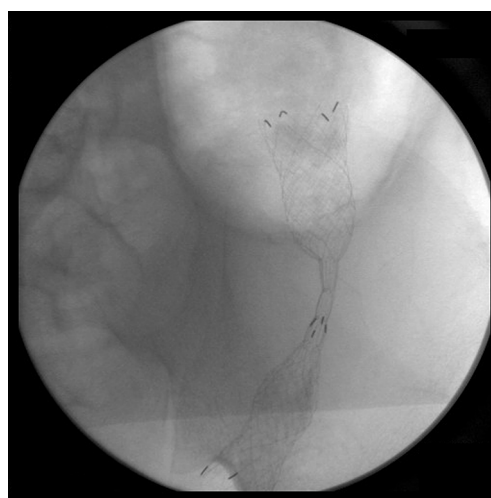
**Figure 1** Incomplete capsule endoscopy showing normal mucosa in the small intestine.



**Figure 3** Abdominal CT showing the retained capsule endoscope in the cecum.



**Figure 2** Plain abdominal X-ray showing colon dilatation from the cecum to the sigmoid colon and the retained capsule in the cecum.



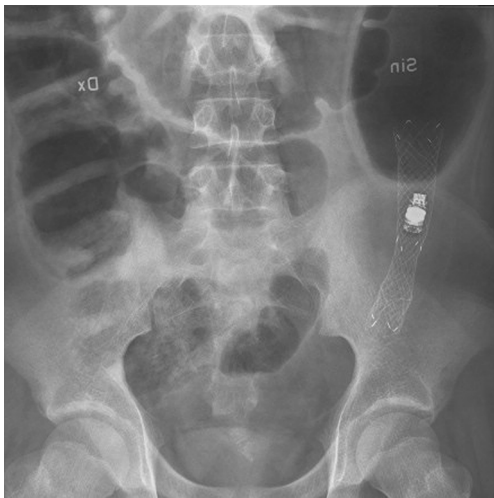
**Figure 4** Appearance of the stent immediately after stenting visualized by use of plain abdominal X-ray.

treatment. The VCE was incomplete but revealed no Crohn's lesions in majority of the small intestine (*Figure 1*).

Five months later, the patient presented in the emergency ward with severe abdominal pain and clinical signs of suspected intestinal obstruction. Abdominal plain X-ray and CT revealed a dilated bowel down to the sigmoid colon where a stricture was suspected. Concomitantly, it was found that the capsule was retained in the cecum (*Figures 2,3*). The patient was in a poor general condition and emergency surgery was considered to be too risky. Instead, the patient was treated with a self-expanding metal stent with the

intention to bridge his care for surgery within two weeks. Stent placement in the sigmoid colon was successful and the intestinal obstruction was decompressed (*Figure 4*).

Two days later, the patient presented again with intestinal obstruction. An abdominal plain X-ray demonstrated that the colon was dilated from the cecum to the sigmoid colon where the capsule was observed to be trapped in the metal stent (*Figure 5*). The patient underwent an emergency Hartmann's procedure and recovered uneventfully. The resected specimen showed severe inflammation and stricture in the sigmoid colon (*Figure 6*)



**Figure 5** Plain abdominal X-ray showing colon dilatation from the cecum to the sigmoid colon where the capsule is trapped in the metal stent.



**Figure 6** Resected specimen of sigmoid colon showing severe inflammation and stenosis.

## Discussion

VCE is now an established method in the work-up of small bowel diseases (1,2). VCE is a safe technique and accumulating data from large studies indicate that the incidence of intestinal retention is less than 2%. Certain conditions, such as intestinal tumours and Crohn's disease that limit passage in the small bowels may predispose capsule retention in the GI tract potentially causing bowel obstruction (9,10). The most common site of capsule

retention is the small bowel, but other localizations, including oesophagus, stomach and airways have also been reported (12). The present case describes for the first time capsule entrapment in a colonic self-expandable metal stent in a patient with Crohns disease.

Clinical management of capsule retention includes medical, endoscopic or surgical treatment (1,10). Surgical interventions were most common in the in the early years of VCE use. However, this trend has changed and more recent studies have reported a more favourable clinical outcome using endoscopic techniques (13). In the present case, surgery was used to remove the retained capsule because of the benefit of concomitant removal of the obstructing lesion as well as the stent itself. Another advantage of surgical removal might be that it is possible to obtain pathological tissue for a diagnosis.

Although most cases of symptomatic capsule retention occur close to the time of capsule ingestion late cases of capsule retention-induced bowel obstruction has been reported. For example, in one case reported a 71-year-old man presented with acute intestinal obstruction and perforation six months after capsule ingestion (14). The majority of capsule retentions remain asymptomatic even for a longer time. According to the literature, the longest time for which a capsule has been left in situ is 12 years (15). Thus, if documentation of capsule expulsion is lacking or uncertain this must be taken into consideration when placing stents in the gastrointestinal tract.

The problem of capsule retention might be addressed by using patency capsule test. The patency capsule is made of self-dissolvable material and used before capsule endoscopy and retention of the patency capsule may constitute a contraindication to capsule endoscopy. Indeed, convincing studies have shown that use of patency capsule can minimize risk of capsule retention in patients with suspected small bowel strictures (16,17). However, the role of patency capsules in evaluating patency of GI stents especially those deployed in the colon is not known and remains to be studied. In this context, it should be mentioned that also patency test capsules can be retained and cause obstructive symptoms (18).

Based on our presented case, we conclude that patients with gastrointestinal stents should serve as a relative contraindication to VCE. The risk of intestinal obstruction and the potential need for surgical intervention should be clearly outlined for such patients if they have to undergo capsule endoscopy.

## Acknowledgements

None.

## Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

*Informed Consent:* Written informed consent was obtained from the patient for publication of this Case report and any accompanying images.

## References

- Pennazio M, Spada C, Eliakim R, et al. Small-bowel capsule endoscopy and device-assisted enteroscopy for diagnosis and treatment of small-bowel disorders: European Society of Gastrointestinal Endoscopy (ESGE) clinical guideline. *Endoscopy* 2015;47:352-76.
- McAlindon ME, Ching HL, Yung D, et al. Capsule endoscopy of the small bowel. *Ann Transl Med* 2016;4:369.
- Koulaouzidis A, Rondonotti E, Giannakou A, et al. Diagnostic yield of small-bowel capsule endoscopy in patients with iron-deficiency anemia: a systematic review. *Gastrointest Endosc* 2012;76:983-92.
- Rondonotti E, Koulaouzidis A, Yung DE, et al. Neoplastic Diseases of the Small Bowel. *Gastrointest Endosc Clin N Am* 2017;27:93-112.
- Eliakim R, Magro F. Imaging techniques in IBD and their role in follow-up and surveillance. *Nat Rev Gastroenterol Hepatol* 2014;11:722-36.
- Rokkas T, Niv Y. The role of video capsule endoscopy in the diagnosis of celiac disease: a meta-analysis. *Eur J Gastroenterol Hepatol* 2012;24:303-8.
- Yousfi MM, De Petris G, Leighton JA, et al. Diaphragm disease after use of nonsteroidal anti-inflammatory agents: first report of diagnosis with capsule endoscopy. *J Clin Gastroenterol* 2004;38:686-91.
- Kopylov U, Nemeth A, Koulaouzidis A, et al. Small bowel capsule endoscopy in the management of established Crohn's disease: clinical impact, safety, and correlation with inflammatory biomarkers. *Inflamm Bowel Dis* 2015;21:93-100.
- Höög CM, Bark LÅ, Arkani J, et al. Capsule retentions and incomplete capsule endoscopy examinations: an analysis of 2300 examinations. *Gastroenterol Res Pract* 2012;2012:518718.
- Nemeth A, Wurm Johansson G, Nielsen J, et al. Capsule retention related to small bowel capsule endoscopy: a large European single-center 10-year clinical experience. *United European Gastroenterol J* 2016. [Epub ahead of print].
- Lin OS, Brandabur JJ, Schembre DB, et al. Acute symptomatic small bowel obstruction due to capsule impaction. *Gastrointest Endosc* 2007;65:725-8.
- Leeds JS, Chew TS, Sidhu R, et al. Asymptomatic bronchial aspiration and retention of a capsule endoscope. *Gastrointest Endosc* 2009;69:561-2.
- Van Weyenberg SJ, Van Turenhout ST, Bouma G, et al. Double-balloon endoscopy as the primary method for small bowel video capsule endoscope retrieval. *Gastrointest Endosc* 2010;71:535-41.
- Skovsen AP, Burcharth J, Burgdorf SK. Capsule endoscopy: a cause of late small bowel obstruction and perforation. *Case Rep Surg* 2013;2013:458108.
- Araujo IK, Pages M, Romero C, et al. Twelve-year asymptomatic retention of a colon capsule endoscope. *Gastrointest Endosc* 2017;85:681-2.
- Römmele C, Brueckner J, Messmann H, et al. Clinical experience with the PillCam patency capsule prior to video capsule endoscopy: a real-world experience. *Gastroenterol Res Pract* 2016;2016:9657053.
- Nemeth A, Kopylov U, Koulaouzidis A, et al. Use of patency capsule in patients with established Crohn's disease. *Endoscopy* 2016;48:373-9.
- Kopylov U, Nemeth A, Cebrian A, et al. Symptomatic retention of the patency capsule: a multicenter real life case series. *Endosc Int Open* 2016;4:E964-9.

**Cite this article as:** Toth E, Marthinsen L, Bergström M, Park PO, Månsson P, Nemeth A, Wurm Johansson G, Thorlacius H. Colonic obstruction caused by video capsule entrapment in a metal stent. *Ann Transl Med* 2017;5(9):199. doi: 10.21037/atm.2017.03.79