

Large Bowel Perforation Secondary To Capsule Endoscopy: A Report Of A Case And Review Of The Literature

R Pathak, H Enuh, D Vadada

Citation

R Pathak, H Enuh, D Vadada. *Large Bowel Perforation Secondary To Capsule Endoscopy: A Report Of A Case And Review Of The Literature*. The Internet Journal of Gastroenterology. 2013 Volume 13 Number 1.

Abstract

The advent of video capsule endoscopy (VCE) has revolutionized imaging of the small bowel, improving diagnostic yield at relatively low complication rates. The procedure was initially thought to have only minimal to zero risk. Recently, acute life threatening complications from small bowel perforation have been reported. However, we present a rare case of large bowel perforation from capsule retention 5 year post video capsule endoscopy.

INTRODUCTION

The advent of video capsule endoscopy (VCE) has revolutionized imaging of the small bowel, improving diagnostic yield at relatively low complication rates. The procedure was initially thought to have only minimal to zero risk. Recently, acute life threatening complications from small bowel perforation have been reported. However, we present a rare case of large bowel perforation from capsule retention 5 year post video capsule endoscopy.

CASE REPORT

We present the case of a 19-year-old girl with Crohn's disease that was diagnosed at the age of 14 with video capsule endoscopy. She had been on medication on and off for acute exacerbations of Crohn's disease since that age. The VCE was retained after the procedure and had not caused any symptoms. A few attempts were made to locate the capsule by colonoscopy, but it had not been possible to retrieve the capsule. Five years post VCE, she presented with abdominal pain and signs of peritonitis with free air and fluid on the computed tomography scan. The capsule was visible in that scan as a radio-opaque foreign body in the cecum.

She was explored and found to have 2 perforations in the cecum with matted terminal ileum. An ileo-cecal resection was performed with primary anastomosis. She recovered well from the surgery and was discharged after a week in the hospital.

DISCUSSION

Wireless video endoscopy or video capsule endoscopy (VCE) is a noninvasive technology designed primarily to provide diagnostic imaging of the small intestine, an anatomic site that has proven peculiarly difficult to visualize. The primary use include identifying the site of obscure gastrointestinal bleed, suspected Crohn's disease (CD) and small bowel tumor. The sensitivity of VCE in diagnosing obscure gastrointestinal bleed and Crohn's disease ranges from 30% to 70% (1) and 50% to 70% (2) respectively. A variety of small intestinal lesions have been detected with VCE, including small intestinal varices, tumors and polyps, celiac disease and intestinal graft-versus-host disease (3, 4). It is considered a very low risk procedure and a safe technology compared to the standard colonoscopy. Over 400,000 capsules have been deployed worldwide since 2000 with rare complications and no reported deaths (5). One of the major risks is retention of the capsule which is not inherently serious. This can occur at the site of natural stenosis such as the cricopharyngeus muscle, the pylorus, the terminal ileum, or in pathologic strictures, eg, Zenker's diverticula, Crohn's disease strictures, small bowel diaphragm disease, radiation enteritis, tumors, NSAID enteritis, small bowel resection, and primary anastomosis (6-8) and technical problems like short duration of capsule batteries. A handful of small bowel perforation from wireless capsular endoscopy has been reported in literature.

Despite concerns over capsule retention and possible

obstruction, the widespread use of VCE for evaluation of CD is justified by the improvements in diagnostic yield relative to traditional modalities, with low procedure risk (9). To the best of our knowledge only four cases of small bowel perforation from retention of wireless capsule endoscopy has been documented. (9-12) Recipi et al. described an acute SB perforation in an 82 year old male with suspected CD, Um et al. reported a small bowel perforation in a 75 year old female with active CD 17 days post VCE and Parikh et al presented a case of acute small bowel perforation in a 58 year old male with undiagnosed Crohn's disease. However, we present the first case of large bowel perforation after 5 years of wireless capsule endoscopy in a 19 year old female with Crohn's disease. Thus, a longer follow up should be considered in patient with even asymptomatic capsule retention. In view of this growing concern for perforation, more advanced imaging studies are indicated to exclude stenosis in high risk patient like Crohn's disease prior to wireless capsule endoscopy. Specifically, additional imaging in the form of barium follow-through, and CT/MR enterography may help characterize SB disease, although the presence or absence of a stricture does not necessarily preclude the possibility of SB obstruction (9). In this regard, patency capsule test has shown promising result in excluding small bowel obstruction. Passage of the patency capsule into the colon after 30 hours suggests that there are no obstructions likely to impede passage of the video capsule. However, VCE retention following a patency study that suggested no significant strictures has been reported when capsule localization was determined using a plain abdominal film (13). The patency capsule itself has also been shown to result in symptomatic SB obstruction in few cases (14).

CONCLUSION

The use of wireless video endoscopy has revolutionized the visualization of the small bowel and diagnostic index which was initially thought to have a very minimal risk, our case presentation together with the other three cases demonstrate a life threatening complication from capsule endoscopy. A longer follow up period is needed even in asymptomatic patients with capsule retention. A more detailed selection criteria for the use of wireless capsule endoscopy is

advocated.

References

1. Koulaouzidis A, Rondonotti E, Giannakou A, Plevris JN: Diagnostic yield of small bowel capsule endoscopy in patients with iron-deficiency anemia: a systematic review. *Gastrointest Endosc*; 2012; 76:983
2. Dionisio PM, Gurudu SR, Leighton JA, Leontiadis GI, Fleischer DE, Hara AK, Heigh RI, Shiff AD, Sharma VK: Capsule endoscopy has a significantly higher diagnostic yield in patients with suspected and established small-bowel Crohn's disease: a meta-analysis. *Am J Gastroenterol*; 2010; 105(6):1240.
3. Barret M, Malamut G, Rahmi G, Samaha E, Edery J, Verkarre V, Macintyre E, Lenain E, Chatellier G, Cerf-Bensussan N, Cellier C: Diagnostic yield of capsule endoscopy in refractory celiac disease. *Am J Gastroenterol*; 2012; 107(10):1546- 53.
4. Cave D: Wireless video capsule endoscopy. <http://www.uptodate.com/contents/wireless-video-capsule-endoscopy>; accessed 3/13/13
5. Cheon JH, Kim YS, Lee IS, Chang DK, Ryu JK, Lee KJ, Moon JS, Park CH, Kim JO, Shim KN, Choi CH, Cheung DY, Jang BI, Seo GS, Chun HJ, Choi MG: Can we predict spontaneous capsule passage after retention? A nationwide study to evaluate the incidence and clinical outcomes of capsule retention; *Endoscopy* 2007; 39:1046-1052.
6. Wiesen AJ, Sideridis K, Fernandes A, et al: True incidence and clinical significance of pneumoperitoneum after PEG placement: a prospective study. *Gastrointest Endosc*; 2006; 64:886-9.
7. Calvo M, Bujanda L, Heras I, et al: The rendezvous technique for the treatment of choledocholithiasis. *Gastrointest Endosc*; 2001; 54:511-3.
8. Eliakim R: Video capsule endoscopy of the small bowel. *Curr Opin Gastroenterol*; 2008; 24:159-163
9. Parikh A, Parikh J, Albers S, Chandler C: Acute small bowel perforation after wireless capsule endoscopy in a patient with Crohn's disease: a case report. *Cases Journal*; 2009; 2:7607.
10. Um S, Poblete H, Zavotsky J: Small bowel perforation caused by an impacted endocapsule; *Endoscopy* 2008; 40:E122-E123.
11. Repici A, Barbon V, De Angelis C, Luigiano C, De Caro G, Hervoso C, Danese et al: Acute small-bowel perforation secondary to capsule endoscopy. *Gastrointest Endosc* 2008, 67:180-183
12. Yitzhak A, Bayme M, Perry ZH, Mizrahi S: Small bowel perforation after capsule endoscopy in a patient with occult gastrointestinal bleeding and undiagnosed Crohn's disease; *Am Surg*; 2012 ;78(3):E159-61.
13. Koornstra JJ, Weersma RK. Agile patency system. *Gastrointest Endosc*. 2009; 69(3):602-4.
14. Delvaux M, Ben Soussan E, Laurent V, Lerebours E, Gay G: Clinical evaluation of the use of the M2A patency capsule system before a capsule endoscopy procedure, in patients with known or suspected intestinal stenosis. *Endoscopy* 2005, 37:801-807.

Author Information

Rahul Pathak, MD, Pediatric Surgery Fellow

Department of Internal medicine, Richmond University Medical Center, Department of Pediatric Surgery, Arkansas Children
Staten Island, New York, USA; Little Rock, AR, USA

Hilary Enuh, MD

Department of Internal medicine, Richmond University Medical Center
Staten Island, New York, USA

Deepak Vadada, MD

Gastroenterology and Hepatology Unit, Richmond University Medical Center
Staten Island, New York, USA