

## Recurrent Mechanical Small Bowel Occlusion due to Mucosal Diaphragm: A Pelvic Radiotherapy Complication?

Francesco Mongelli, Matteo Di Giuseppe, Michele Marengo, Davide La Regina

Department of Surgery, EOC - Ospedale Regionale San Giovanni Bellinzona e Valli, Bellinzona, Switzerland

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

### Abstract

**Introduction:** Radiation therapy plays an important role in patient with pelvic cancer. Few cases are reported in the literature of mechanical small bowel occlusion resulting from radiotherapy. No cases of endoluminal disease are reported.

**Case report:** A 73-year old man treated with pelvic radiotherapy for a prostate adenocarcinoma presented to our emergency department with a mechanical small bowel obstruction. A diagnostic laparoscopy was performed without intra-operative identification of bowel adhesions. Over the following months, the patient continued to be symptomatic for spontaneously resolving small bowel obstructions, thus a videocapsule endoscopy was performed. 2 days later the patient presented to the emergency department, where a x-ray of the abdomen localised the videocapsule within the small bowel with imaging revealing a gut stenosis. The patient underwent a laparoscopic assisted ileal resection, with intraoperative and histopathological findings showing an endoluminal mucosal bridge causing a stricture.

**Conclusions:** The frequency of small bowel endoluminal disease is probably underestimated but it should be taken into account in patients with recurrent SBO symptoms after pelvic radiotherapy. In these cases the videocapsule endoscopy is a valuable diagnostic tool while the patency capsule test would have been indicated in a suspected bowel occlusion or stenosis before the videocapsule endoscopy, and probably should have been considered in this case.

### Introduction

Pelvic cancers are among the most frequently diagnosed diseases, with pelvic radiation therapy playing an important role in multidisciplinary therapy [1]. Long term, common complications include rectal bleeding, pain and diarrhoea. There are few cases reported in the literature of

mechanical small bowel occlusion resulting from radiotherapy [2, 3]. The majority of these cases describe an occlusion due to a peritoneal carcinomatosis or adhesions [4], with no cases of endoluminal disease reported.

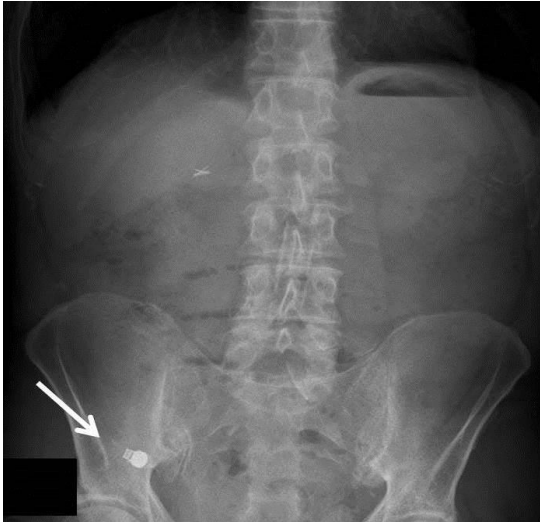
### Case report

A 73-year old man presented to our emergency department (ED) with the typical symptoms of mechanical small bowel obstruction (SBO). The patient was successfully treated 1 year previously with pelvic radiotherapy (cumulative dose 78 Gy) for a prostate adenocarcinoma (Gleason

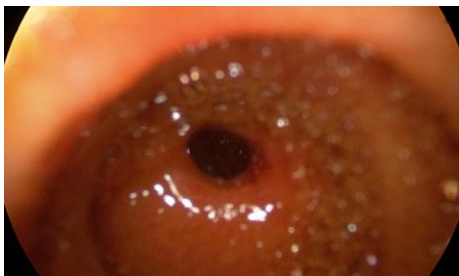
Address for correspondence and Reprint requests to:  
Francesco Mongelli, Ospedale San Giovanni, via Ospedale,  
6500 Bellinzona, Switzerland, Email  
[francesco.mongelli@mail.com](mailto:francesco.mongelli@mail.com).

© 2017 Mongelli F et al. Licensee Narain Publishers Pvt. Ltd. (NPPL)

Submitted: Monday, July 24, 2017; Accepted: Tuesday, August 8, 2017; Published: Monday, August 14, 2017



**Figure 1: Abdomen x-ray showing the presence of the videocapsule in the lower right quadrant**



**Figure 2: Videocapsule image revealing the presence of a mucosal gut stenosis**

score 8, 3+5). A diagnostic laparoscopy was performed without intra-operative identification of bowel adhesions. The symptoms resolved spontaneously and the patient was discharged 3 days later.

Over the following months, the patient continued to be symptomatic for spontaneously resolving SBO. Due to the recurrence of these symptoms and the impossibility to obtain an etiological diagnosis, a videocapsule endoscopy was performed.

2 days later the patient represented to the ED, where a x-ray of the abdomen localised the videocapsule (Figure 1) within the small bowel with imaging revealing a gut stenosis (Figure 2). The patient underwent a



**Figure 3: intraoperative finding showing the presence of a stricture caused by a mucosal bridge**

laparoscopic assisted ileal resection (Figure 3), with intraoperative and histopathological findings showing an endoluminal mucosal bridge causing a stricture.

The postoperative course was uneventful and the patient was discharged after 4 days.

### Discussion

The use of videocapsule endoscopy in this case is controversial. The sole indication was as a result of recurring symptoms and the fact that all other diagnostic exams (including CT scan, colonoscopy, esophagogastroduodenoscopy, magnetic resonance and x-ray bowel transit) were inconclusive, yet the videocapsule endoscopy led to a rapid diagnosis and an uncomplicated surgical outcome. Nevertheless, the patency capsule test would have been indicated in a suspected bowel occlusion or stenosis before the videocapsule endoscopy [5], and probably should have been considered in this case.

Small bowel stenosis after radiotherapy is rare. Moreover abnormal or irregular bowel motion in patients treated with pelvic radiation therapy are common [6], potentially causing the prevalence of endoluminal small bowel disease to be underestimated. There are a few cases of small bowel mucosal diaphragm described after non-steroidal anti-inflammatory drugs

abuse, but in our case the only and most likely cause was radiotherapy, known in other settings to cause localised tissue damage. We propose that even if the histopathological result was inconclusive, a correlation should be taken into account. Of note that the patient developed this complication probably due to the high cumulative dose, as radiotherapy treatments below 45 Gy rarely cause complications [7].

### Conclusions

The frequency of small bowel endoluminal disease is probably underestimated but it should be taken into account in patients with recurrent SBO symptoms after pelvic radiotherapy. In these cases the videocapsule endoscopy is a valuable diagnostic tool while the patency capsule test should always be done before.

### Learning points

1. Common complications after pelvic radiotherapy do not include mechanical small bowel occlusion and the majority of those cases describe an occlusion due to a peritoneal carcinomatosis or adhesions, with no cases of endoluminal disease reported.
2. The indication to videocapsule endoscopy in this case was a result of recurring symptoms and the fact that all other diagnostic exams were inconclusive, yet the videocapsule endoscopy led to a rapid diagnosis.
3. In case of suspected mechanical bowel obstruction the patency capsule test should be done before the videocapsule endoscopy, and probably should have been considered in this case.

### Consent

Authors declare that a written informed consent was obtained from the patient

### Competing interest

Authors disclose any financial or non-financial competing interests

### Author's contributions

FM: Drafting the manuscript

MDG: Study design and conception

MM: Analysis and interpretation of data, review of literature

DLR: Review of literature and critical revision

### Declaration

This article was accepted and presented at the Swiss Congress of Surgery "SGC Bern 2017"

### Funding

No sources were granted for this article

### References

1. American Cancer Society. Cancer Facts and Figures 2014. Atlanta, GA American Cancer Society, 2014
2. Lasagna B, Balbo G, Garino M, Botto Micca F. Actinic lesions of the small intestine requiring surgery. Case reports. *Ann Ital Chir.* 1990 Sep-Oct;61(5):553-9. [[PubMed](#)]
3. Gomes CA, Barros LC, Melo LS, Rocha VC. Actinic terminal ileum stenosis after radiotherapy for endometrium tumor associated with severe malnutrition. *Arq Bras Cir Dig.* 2013 Jun;26(2):154-5. [[PubMed](#)] [[Free Full Text](#)]
4. Santangelo ML, Grifasi C, Criscitiello C, Giuliano M, Calogero A, Dodaro C, Incollingo P, Rupealta N, Candida M, Chiacchio G, Riccio E, Pisani A, Tammaro V, Carlomagno N. Bowel obstruction and peritoneal carcinomatosis in the elderly. A systematic review. *Aging Clin Exp Res.* 2017 Feb;29(Suppl 1):73-78. [[PubMed](#)]
5. Goenka MK, Majumder S, Goenka U. Capsule endoscopy: Present status and future expectation. *World J Gastroenterol.*

- 2014 Aug 7;20(29):10024-37. [[PubMed](#)] [[PMC Full Text](#)]
6. Frazzoni L, La Marca M, Guido A, Morganti AG, Bazzoli F, Fuccio L. Pelvic radiation disease: Updates on treatment options. World J Clin Oncol. 2015 Dec 10;6(6):272-80. [[PubMed](#)] [[PMC Full text](#)]
  7. Johnston, MJ; Robertson, GM; Frizelle, FA. Management of Late Complications of Pelvic Radiation in the rectum and Anus. Dis Colon Rectum 2003; 46, (2): 247-256. [[PubMed](#)]



Published by **Narain Publishers Pvt. Ltd. (NPPL)**  
 The **Open Access** publishers of **peer reviewed** journals. All articles are immediately published online on acceptance. All articles published by **NPPL** are available **free** online. Authors retain the copyright under the Creative commons attribution license. The license permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.