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## A Case of Cecal Volvulus in the Setting of Multiple Sclerosis

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## A Case of Cecal Volvulus in the Setting of Multiple Sclerosis

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### Abstract

This case report describes a patient with a history of multiple sclerosis (MS) and optic neuritis, who presented with acute onset of generalized abdominal pain. The patient was ultimately diagnosed with cecal volvulus requiring emergent laparotomy and right hemicolectomy. This case highlights the relationship between neurogenic bowel dysfunction (NBD) associated constipation in patients with MS and intestinal volvulus. Additionally, this case demonstrates the importance of NBD associated constipation management through various modalities including laxative regimens, behavioral and diet modification, and reduction of polypharmacy, with an emphasis on individualized patient management.

### Keywords

Bowel obstruction; Volvulus; Multiple sclerosis; Neurogenic bowel dysfunction

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## ARTICLE

# A Case of Cecal Volvulus in the Setting of Multiple Sclerosis

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## Abstract

This case report describes a patient with a history of multiple sclerosis (MS) and optic neuritis, who presented with acute onset of generalized abdominal pain. The patient was ultimately diagnosed with cecal volvulus requiring emergent laparotomy and right hemicolectomy. This case highlights the relationship between neurogenic bowel dysfunction (NBD) associated constipation in patients with MS and intestinal volvulus. Additionally, this case demonstrates the importance of NBD associated constipation management through various modalities including laxative regimens, behavioral and diet modification, and reduction of polypharmacy, with an emphasis on individualized patient management.

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## 1. Introduction

Intestinal obstruction is a partial or complete blockage of the small or large intestines, preventing the passage of solids, liquids, and gasses. Buildup of intestinal content proximal to the obstruction leads to patients presenting with symptoms including nausea, vomiting, constipation, abdominal pain, and distention.<sup>1</sup> The incidence of patients presenting to the emergency department with acute intestinal obstruction ranges between 2 and 8% of all emergency department visits.<sup>2</sup> Among the cases of intestinal obstruction, around 10%–15% are associated with large bowel obstruction (LBO), with the most common causes being adenocarcinoma, diverticulitis, and volvulus. Of the cases of LBO, colonic volvulus accounts for 4% of the causes in the United States. Colonic volvulus is associated with a multitude of underlying causes including chronic constipation, enlargement of the colon, long mesentery, Hirschsprung disease, pregnancy, and

abdominal adhesions. Colonic volvulus in the adult population is most commonly found in the sigmoid colon, whereas only around 15% of LBO volvulus occur in the cecum.<sup>3</sup>

Cecal volvulus differs from other types of volvulus in that most patients presenting are commonly in the second to third decade of life, while sigmoid volvulus is more commonly seen in the seventh to eighth decade of life. Additionally, cecal volvulus is more common in young females. Cecal volvulus can be further classified into three different types. Type one occurs when the cecal volvulus forms a clockwise axial twisting or torsion of the cecum along the long axis, with the volvulus occurring in the right lower quadrant. Type two develops from a twisting or torsion of the cecum and terminal ileum, causing a displacement to an ectopic location such as the left upper quadrant. Type three is due to upward folding of the cecum (cecal bascule).<sup>3</sup>

Multiple sclerosis (MS) is a progressive, disabling disease characterized by central nervous system

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(CNS) demyelination. MS produces white matter plaques, axonal loss, and atrophy throughout the CNS with associated dysfunction of neurologic pathways. Due to neurologic pathway dysfunction, MS has a high rate of comorbid bowel dysfunction, among other comorbidities. The most common bowel dysfunctions associated with MS are neurogenic bowel dysfunction (NBD) and constipation. The prevalence of bowel symptoms in MS patients correlates with the duration of disease and the Expanded Disability Status Scale (EDSS), which is used to assess the effects of MS on different body functions (such as cranial nerves and cognition). NBD is seen in an estimated 39–73% of MS patients, while constipation is seen in approximately half of patients with MS. It is important to note that comparatively, only 2–20% of the general population experiences chronic constipation. This statistic suggests an increased incidence and risk for constipation among MS patients.<sup>4</sup>

Considering the higher rates of chronic constipation seen in patient populations with MS, the following case provides a great example in which a patient's history of chronic disease may have resulted in acute, emergent pathology.

## 2. Case presentation

A 55-year-old Caucasian female presented to the emergency department with acute onset of generalized abdominal pain for the past 5 h. She exhibited abdominal distention and increased tenderness in the right upper quadrant (RUQ), with diffuse, non-radiating pain rated at an intensity of 6/10. Her past medical history included optic neuritis and MS on immunosuppressants. Review of systems was positive for nausea and one episode of non-bilious emesis, but negative for fever, chills, or shortness of breath. Her last bowel movement was the day before, and the patient noted that she experienced chronic constipation from her MS. She had no prior abdominal surgeries. Family history was significant for colon cancer.

Given the acuity of her symptoms, labs were drawn and she was sent for imaging. Differential diagnoses included cholecystitis, bowel obstruction, bowel perforation, and malignancy. Surprisingly, her labs were within normal limits despite her abdominal presentation. RUQ ultrasound imaging was unable to identify her gallbladder or biliary ducts due to a large echogenic reflector obstructing the view. The patient's abdominal x-ray [Fig. 1] and computed tomography (CT) scan [Fig. 2] were essential as both revealed a markedly dilated cecum to 9 cm and the latter demonstrated



Fig. 1. Abdominal x-ray of dilated cecum. Markedly dilated cecum.

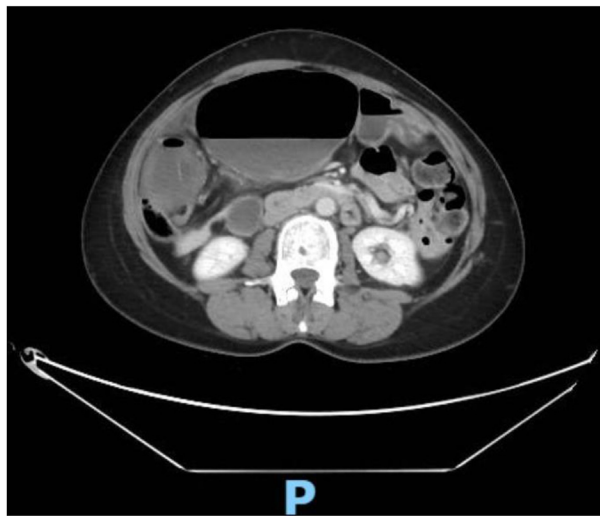


Fig. 2. Abdominal CT scan of dilated cecum. Markedly dilated cecum with prominent air fluid levels and swirling of mesenteric vessels.

prominent air fluid levels and swirling of the mesenteric vessels. She was diagnosed with a large cecal volvulus and an urgent consult was placed to the acute care surgeon.

An emergent laparotomy was performed and the patient's bowel was assessed. Patchy areas of ischemic necrosis were found on the cecum and in the area immediately distal to the volvulus. As a result, the surgeon elected to proceed with a right hemicolectomy. Once the colon was removed and

appropriately anastomosed, a Jackson-Pratt drain was placed and the abdominal fascia was approximated. The skin incision was left open and a negative pressure wound dressing for vacuum-assisted closure was applied to allow the wound to heal by secondary intention, given the increased risk of infection in the setting of bowel ischemia. The patient was admitted for continued monitoring. Her postoperative course was unremarkable and she was discharged eight days after her procedure with an in-office follow-up scheduled.

### 3. Discussion

Chronic constipation is a significant risk factor for the development of intestinal volvulus. Given the prevalence of NBD among patients with MS, it is important to discuss methods that have been successfully employed to provide relief to these patients. Ideally, with adequate management of NBD, the incidence of volvulus among patients with MS will diminish.

As the causes of NBD are multifactorial in patients with MS, approaches to management are also varied and include trials of laxative regimens, behavioral and diet modification, reduction of polypharmacy, regular digital rectal examinations to assess for fissures and hemorrhoids, and abdominal massage.<sup>4</sup> It is important to note that there is not a universally accepted regimen that will work for all MS patients, and identifying a successful regimen can often require many trials and regimen tailoring.

In circumstances in which a bowel regimen does not help patients with MS gain adequate control over their chronic constipation, bowel biofeedback can be employed. With this method, an external device allows patients to visualize their muscle engagement and sphincter control, essentially employing methods of cognitive behavioral therapy with pelvic muscle autonomics. This has yielded improvements in rectal sensitivity and sphincter pressure, though data is limited. Unfortunately,

there is also little evidence to support efficacy of this method among patients with MS with complete sphincter tone loss.<sup>4</sup>

### 4. Conclusion

Ultimately, it is difficult to conclude that the patient in this case presentation could have avoided developing a cecal volvulus with a well-developed bowel regimen. Management of chronic constipation and neurogenic bowel dysfunction in patients with MS is an ongoing area of research with multiple areas for development and improvement. Arguably, the most important aspect of NBD management in patients with MS is the maintenance of open, judgment-free communication between the patient and provider. Without trust within the patient-provider relationship in the context of such a vulnerable circumstance, the scope of patient care is significantly limited.

### Conflict of interest

The authors declare no conflicts of interest.

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