

## Case Report

# A Case of Linaclotide and Intestinal Obstruction

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## Abstract

Linaclotide is safe medication used in the treatment of constipation. Diarrhea is the most common side effect. A patient with prior multiple abdominal surgery developed small bowel obstruction after taking Linaclotide.

## Introduction

Linaclotide is being extensively used in patients with irritable syndrome with predominant constipation (IBS-C) and Chronic Idiopathic Constipation (CIC). Diarrhea is the main side effect encountered in our clinical practice [1]. We present a case here in which the patient developed small bowel obstruction 2 days after taking Linaclotide.

## Case

A 48 year old Asian female presented with constipation for several months. She was having bowel movements twice a week but she had to take Docusate Sodium to move her bowel. She denied any abdominal pain, nausea or vomiting. There was no history of any gastrointestinal bleed, anorexia or weight loss. She had no family history of colon cancer. Her past medical history included endometriosis and allergic rhinitis. She had right ureteral obstruction secondary to endometriosis few months ago. She had right ureteral stent placement which was subsequently removed. She had sigmoid colon resection 10 years ago secondary to her endometriosis. Her past surgical history also included breast surgery, C-section, total abdominal hysterectomy with right salpingo-oophorectomy, left salpingectomy and bilateral ureterolysis. Her grandfather had gastric cancer. She was a nonsmoker and nondrinker. She was on Fluticasone propionate nasal spray for allergic rhinitis and docusate sodium for constipation. Her physical examination was unremarkable except the midline surgical scar on her abdomen. Her Lab studied showed normal complete blood count and electrolytes. Chronic idiopathic constipation was suspected. She was prescribed Linaclotide 145 microgram once daily. Two days after taking Linaclotide, she developed abdominal pain with nausea and vomiting. CT abdomen suggested small bowel obstruction with transition point in the distal ileum. She underwent surgery and had an uneventful recovery.

## Discussion

Linaclotide is an acid resistant, protease resistant selective peptide agonist of guanylate cyclase 2C (GC-C) receptor [2] present on the luminal surface of enterocytes in the small intestine and colon. After binding to the GC-C receptor, Linaclotide causes an increase in cyclic guanosine monophosphate (cGMP) level. Elevated cGMP stimulates secretion of chloride and bicarbonate ions into the intestinal lumen through activation of the Cystic Fibrosis Transmembrane

Conductance Regulator (CFTR) ion channel, and inhibits absorption of sodium, resulting in increased intestinal fluid secretion and accelerated GI transit [3]. Thus Linaclotide can cause secretory type of diarrhea. Extracellular cGMP also decreases the sensitivity of pain-sensing nerves and reduces visceral hypersensitivity. Clinical trial demonstrated that Linaclotide could decrease abdominal pain, bloating and constipation [4]. Linaclotide minimally absorbed from the gut. The different adverse effects are diarrhea (16-20%), abdominal pain (7%), flatulence (4 to 6%), headache (<2 to 4%), abdominal distension (2 to 3%), fecal incontinence (1 to <2%), GERD (1 to 2%), viral gastroenteritis (1 to <2%), sinusitis (2 to 3%), dyspepsia (1 to <2%) and fecal incontinence (1 to <2%). The patient presented with idiopathic constipation without having any evidence of small bowel obstruction. She was prescribed Linaclotide to help moving her bowel. On literature search, no case of small bowel obstruction was found in relation to ingestion of Linaclotide. In our case, the temporal relationship between Linaclotide intake and small bowel obstruction may suggest that Linaclotide precipitated the development of small bowel obstruction. Our patient had multiple intra-abdominal surgeries with formation of adhesion and bands. She received docusate sodium for her constipation in the setting of previous surgeries but she did not develop intestinal obstruction. So from the clinical experience, it would be advisable to avoid Linaclotide in patients with multiple intra-abdominal surgeries. Further studies will be needed to find out whether Linaclotide is safe in patients with multiple intra-abdominal surgeries.

## Conclusion

Linaclotide should be avoided in patients with multiple abdominal surgeries until further study is done.

## References

1. Yu SW, Rao SS. Advances in the management of constipation-predominant irritable bowel syndrome: the role of linaclotide. *Therapeutic Advances in Gastroenterology*. 2014; 7: 193-205.
2. Johnston JM, Kurtz CB, Drossman DA, Lembo AJ, Jeglinski BI, MacDougall JE, et al. Pilot Study on the effect of linaclotide in Patients with Chronic Constipation. *American J Gastroenterology*. 2009; 104: 125-132.
3. Love BL, Johnson A, Smith LS. Linaclotide: a novel agent for chronic constipation and irritable bowel syndrome. *American J Health-System Pharmacy*. 2014; 71: 1081-1091.
4. Layer P, Stanghellini V. Linaclotide for the Management of Irritable Bowel Syndrome with Constipation. *Alimentary Pharmacology and Therapeutics*. 2014; 39: 371-384.