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## Case report

# Incomplete small bowel obstruction in a patient with ankylosing spondylitis ☆☆☆

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## ABSTRACT

Small bowel obstruction is a blockage in the small intestine, which is usually caused by adhesion scar tissue, hernia, medication, or malignancy. The symptoms of small bowel obstruction include nausea and vomiting of bile, abdominal distention and obstipation. We present a case of a 61-year-old man with ankylosing spondylitis and scoliosis, who suffered from incomplete small bowel obstruction due to unusual direction of duodenum and externally compressed by liver, gallbladder and pancreas. We gave conservative treatment and inserted a nasojejunal tube for enteral feeding, and the duodenum broke free from the grip of liver, gallbladder and pancreas to its normal anatomical direction. Besides common etiology of small bowel obstruction, unusual body shape and smaller abdominal cavity may cause obstruction due to external compression of neighbor organs. Conservative treatments include gastrointestinal decompression, correction of electrolytes abnormality and nutrition support, while surgical intervention is suggested for the patient without improvement on conservative management.

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## Introduction

Small bowel obstruction is a blockage in the small intestine. Small bowel obstructions are usually caused by adhesion scar tissue, hernia, medication, or malignancy. The symptoms of small bowel obstruction include nausea and vomiting of bile, abdominal distention and obstipation [1]. In severe cases, the blood supply of small bowel might be compro-

mised, leading to bowel ischemia, which is a life-threatening situation. The diagnosis of small bowel obstruction requires detailed history taking of operation history and medication use. Physical examination and blood tests are important in detecting warning signs of bowel ischemia and requirement of emergent surgical intervention. X-ray and computed tomography of abdomen can help confirm the etiology of small bowel obstruction. Conservative treatments of small bowel obstruction are decompression of gastrointestinal tract with a

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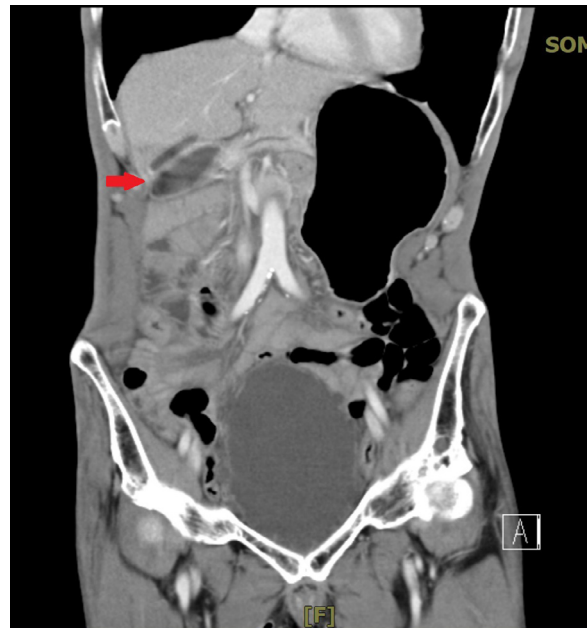
nasogastric tube, administering intravenous fluids, prohibiting oral intake, and waiting for spontaneous resolution. Surgical interventions are indicated in cases of conservative treatment failure [2].

Incomplete or partial small bowel obstruction indicates that some fluid or gas pass beyond the obstruction. The etiologies, clinical presentations and management of incomplete small bowel obstruction are similar to total obstruction. We present a case of a 61-year-old man with ankylosing spondylitis and scoliosis, who suffered from incomplete small bowel obstruction due to unusual tract of duodenum and externally compressed by liver, gallbladder and pancreas. We gave conservative treatment and inserted a nasojejunal tube for nutrition support, and the incomplete obstruction was eventually resolved.

### Case description

A 61-year-old man with medical history of ankylosing spondylitis and scoliosis was presented to the emergency department with a 1-week history of vomiting after intake. Physical examination showed distended abdomen without peritoneal signs. Laboratory studies were notable for a white blood count of  $14000/\mu\text{L}$  (normal range:  $3400\text{--}9500/\mu\text{L}$ ), hemoglobin of  $13.7\text{ g/dL}$  (normal range:  $13.3\text{--}17.2\text{ g/dL}$ ), platelet count of  $317,000/\mu\text{L}$  (normal range:  $143,000\text{--}349,000/\mu\text{L}$ ), serum potassium of  $3.1\text{ mmol/L}$  (normal range:  $3.5\text{--}5.1\text{ mmol/L}$ ), serum sodium of  $139\text{ mmol/L}$  (normal range:  $136\text{--}145\text{ mmol/L}$ ), and serum calcium of  $8.5\text{ mg/dL}$  (normal range:  $8.6\text{--}10\text{ mg/dL}$ ).

The coronal view of abdominal computed tomography (Fig. 1) demonstrated distended stomach and proximal duodenum and a lumen with fluid below gallbladder. The sagittal view of abdominal computed tomography (Fig. 2) demonstrated the aortomesenteric angle at  $38^\circ$ . The axial view of the abdominal computed tomography (Fig. 3) confirmed the lumen with fluid was the narrowed third portion of duodenum, externally compressed by neighbor organs, including liver, gallbladder and pancreas. We gave intravenous fluids and prohibited oral intake of the patient. The following esophagogastroduodenoscopy revealed narrowing of duodenum from the second portion to the third portion (Fig. 4). A nasojejunal tube was inserted endoscopically distal to the narrow site of duodenum. The abdominal x-ray right after nasojejunal tube insertion revealed unusual tract of the second portion of duodenum going upward towards the liver (Fig. 5). The following upper gastrointestinal series showed dilated proximal duodenum and confirmed partial obstruction by external compression at third portion of duodenum (Fig. 6, Video). We also see the unusual direction of the second portion of duodenum going upward towards the liver along with the nasojejunal tube (Fig. 5). We resumed enteral feeding and encouraged the patient to increase walking and physical activity time over 2 hours per day during hospitalization. Five days later, following abdominal x-ray showed recovered duodenum direction (Fig. 7) and the patient's discomfort improved. One week after hospital discharge, during the outpatient department follow up, we removed the nasojejunal tube for the better life quality of the patient.



**Fig. 1 – The coronal view of abdominal computed tomography demonstrated distended stomach and proximal duodenum and a lumen with fluid below gallbladder.**



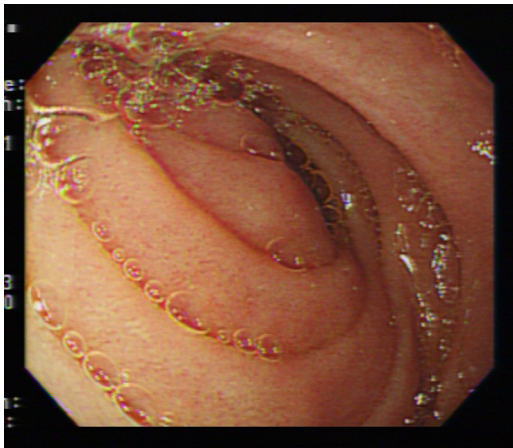
**Fig. 2 – The sagittal view of abdominal computed tomography demonstrated the aortomesenteric angle at  $38^\circ$ .**

### Discussion and conclusion

Complete small bowel obstruction indicates no fluid or gas passes beyond the site of obstruction. Incomplete or partial small bowel obstruction indicates that some fluid or gas pass beyond the obstruction. The etiologies of small bowel



**Fig. 3** – The axial view of the abdominal computed tomography demonstrated the narrowed third portion of duodenum, externally compressed by neighbor organs, including liver, gallbladder and pancreas.



**Fig. 4** – The esophagogastroduodenoscopy revealed narrowing of duodenum from the second portion to the third portion.

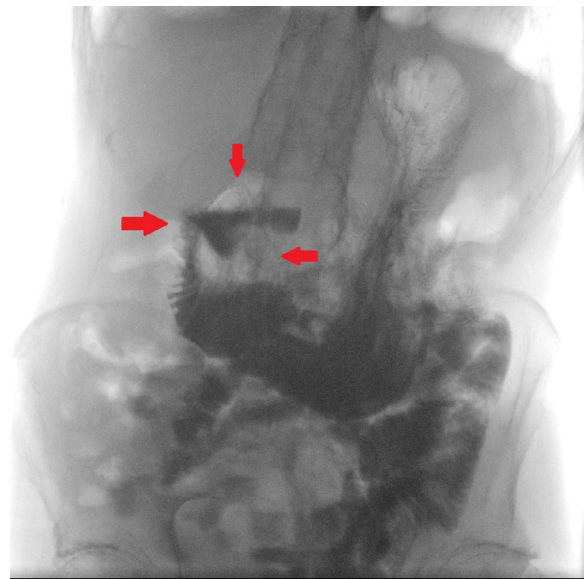
obstruction include adhesion scar tissue, hernia, medication, and malignancy.

In our case of the 61-year-old man with ankylosing spondylitis and scoliosis, duodenum dislocation and partial obstruction is related to torturous and smaller abdominal cavity. We inserted a nasojejunal tube passing through the narrowing site of third portion of duodenum to resume enteral feeding. Fortunately, with the help of the patient's physical activity and enteral nutrition support, the second portion of duodenum broke free from the grip of liver, gallbladder and pancreas, and finally returned to its normal anatomical direction.

Common etiologies of small bowel obstruction such as adhesion, hernia, medication, and malignancy. Besides, unusual body shape is a rare risk factor for small bowel obstruction. In



**Fig. 5** – The abdominal x-ray right after nasojejunal tube insertion revealed unusual tract of the second portion of duodenum going upward towards the liver.



**Fig. 6** – The upper gastrointestinal series showed dilated proximal duodenum and confirmed partial obstruction by external compression at third portion of duodenum. It also demonstrated the unusual direction of the second portion of duodenum going upward towards the liver along with the nasojejunal tube.

patients with skinny body shape, superior mesenteric artery syndrome should be considered, whose duodenum was compressed between the aorta and the superior mesenteric artery [3]. In our case of ankylosing spondylitis and scoliosis, the patient's duodenum went wrong direction due to torturous body shape and smaller abdominal cavity.



**Fig. 7 – The abdominal x-ray showed recovered duodenum direction 5 days after nutrition support and physical activity.**

Similar to other etiology of small bowel obstruction, conservative treatments include gastrointestinal decompression, correction of electrolytes abnormality and nutrition support. For the patient without improvement with conservative management, surgical intervention is suggested.

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### **Ethics approval and consent to participate**

The authors of this manuscript have obtained written, informed consent from the patient to write up the case report and for the use of images pertinent to the case. We have ensured anonymity of all clinical and graphical data used.

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### **Availability of data and material**

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request

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### **Authors' contributions**

HC Chiang: Design and write the paper, this author had read and approved the manuscript.

CY Chen: Supervised the research, this author had read and approved the manuscript.

CH Chuang: Supervised the research, this author had read and approved the manuscript.

HL Hsu: Supply the case information, supervised the research, made advice on manuscript revision, this author had read and approved the manuscript.

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### **Supplementary materials**

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.radcr.2021.05.075](https://doi.org/10.1016/j.radcr.2021.05.075).

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### **REFERENCES**

- [1] Paulson Erik K, Thompson William M. Review of small-bowel obstruction: the diagnosis and when to worry. *Radiology* 2015;275(2):332–42.
- [2] Baiu Ioana, Hawn Mary T. Small bowel obstruction. *JAMA*. 2018;319(20):2146.
- [3] Karki Bipin, Sunder Shrestha Pramesh. Superior mesenteric artery syndrome. *Clin Case Rep* 2020;8(11):2295–7.