

Fibrofatty Band-Associated Small Bowel Obstruction After Marathon Running

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ABSTRACT

We report a 57-year-old man who developed subacute small bowel obstruction after running a marathon. A fibrofatty band was identified restricting the terminal ileum upon subsequent imaging. Surgical division of the band resulted in complete resolution of the patient's symptoms. Fibrofatty bands are embryonic remnants of the vitellointestinal duct and have not previously been reported to cause small bowel obstruction at the terminal ileum. We discuss the origin of remnant fibrofatty bands and physiological impact of running a marathon upon the gastrointestinal tract that would have contributed to development of subacute small bowel obstruction.

INTRODUCTION

In adults, fibrofatty band-associated small bowel obstruction is rare but most commonly results from Ladd's bands obstructing the distal duodenum. Remnants of the vitellointestinal duct may also form congenital fibrofatty bands which have been associated with Meckel's diverticulum but not with terminal ileal obstruction in adults.

CASE REPORT

A 57-year-old man presented to the emergency unit with an episode of central abdominal pain and vomiting. He complained of mild abdominal distension and reported that he had not passed flatus for 2 days. He had suffered with 4-week history of intermittent central abdominal pain since completing the London Marathon 1 month earlier. He had not lost any weight or noted any previous change in his bowel habit. He was ordinarily fit and well and his past medical and surgical history comprised of a previous discectomy. He occasionally drank alcohol and was a life-long nonsmoker. There was no family history of note. On examination, he appeared mildly dehydrated and had a soft abdomen with mild distension, per rectum examination was unremarkable.

Blood tests demonstrated a normal full blood count, erythrocyte sedimentation rate, and biochemistry including C reactive protein, amylase, lactate, and venous pH. Multiple dilated small bowel loops in the left upper quadrant were seen on plain abdominal x-ray (Figure 1). Computed tomography (CT) demonstrated a stenosis at the terminal ileum causing partial mechanical small bowel obstruction.

The patient's symptoms improved, and his blood tests remained unremarkable. Colonoscopy was passed 10 cm into the terminal ileum; the colonic and small bowel mucosa was macroscopically and histologically normal. Six weeks later, the patient had lost 3 kg in weight and complained of abdominal pain 2 hours after eating. On examination, there was fullness in the right inguinal fossa. The CT enterogram demonstrated wall thickening and hyperenhancement of the distal 12 cm of the terminal ileum. A persistent fibrofatty band was noted on both the initial CT and subsequent CT enterogram.

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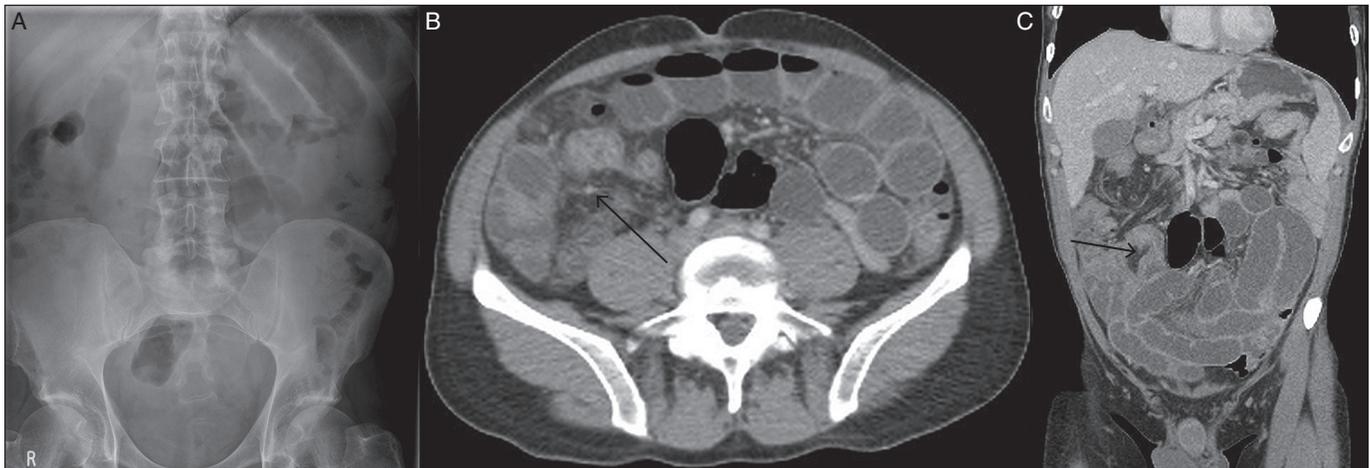


Figure 1. (A) Abdominal x-ray at the time of initial presentation demonstrating small bowel obstruction. (B and C) CT enterogram demonstrating small bowel obstruction with a fibrofatty band (arrow) at the transition point.

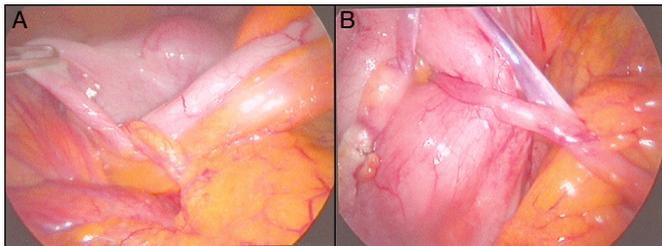


Figure 2. (A and B) Fibrofatty bands causing subacute small obstruction at the distal ileum were found at laparotomy. These were divided causing complete resolution of the patient's symptoms.

The patient was referred to the surgical team who proceeded to a laparoscopy. The only abnormalities found were 2 fibrofatty bands: one crossing the appendix and the other crossing the distal terminal ileum (Figure 2). These were divided at the time of laparoscopy. After the division of the fibrofatty bands, the patient's symptoms rapidly settled, and he regained the weight he had lost. He has remained well since his surgery 1 year ago and has been discharged from surgical follow-up.

DISCUSSION

Remnant fibrofatty bands result from an embryological failure of complete obliteration of the vitellointestinal duct or vasculature by week 7 of intrauterine life. The vitellointestinal duct forms part of the omphalomesenteric tract connecting the yolk sac to the developing foetal midgut. The most common remnant of the omphalomesenteric tract is Meckel's diverticulum. Remnant bands formed from the vitellointestinal duct or vitellointestinal artery remnants are associated with up to 15% of Meckel's diverticulum but can occur independently.^{1,2} It is essential to differentiate between vitellointestinal duct and artery remnants, which arise from the small bowel mesentery. Division of vitellointestinal arterial remnants may result in life threatening haemorrhage.³

Congenital fibrofatty bands are an uncommon finding in children and very rare in adults. Only 1 other report of distal ileal obstruction related to fibrofatty band was found on review of the literature.² Small case series report more proximal obstruction by fibrofatty bands in adults, most commonly by Ladd's bands resulting in duodenal obstruction.^{4,5}

Endurance sports can have a significant impact upon bowel physiology. The prevalence of gastrointestinal symptoms in endurance athletes ranges between 45% and 93%.⁶ During strenuous exercise, blood flow to the bowel may reduce by up to 80%.⁷ Such hypoperfusion combined with dehydration may increase gut permeability after marathon running, inducing symptoms and altering GI physiology.⁸ Colonic and small bowel mucosal erosions and ischaemic colitis have been reported in long-distance runners.⁶ Exercise appears to reduce esophageal peristalsis and delay gastric emptying, the impact upon small bowel and colonic motility appears to be more limited.⁹ GI symptoms are more common in runners than cyclists, and it has been hypothesized that long-distance running results in physical jarring of the GI tract, which contributes to exercise-induced trauma.^{9,10} In this case, we hypothesize that repeated impact of running caused a shift in relative position of the fibrofatty band, looping around the terminal ileum resulting in extrinsic small bowel obstruction. Similarly, the manipulation of the small bowel and colon during colonoscopy has been reported to cause the bowel to pass through congenital fibrofatty bands and mesenteric defects resulting in small bowel obstruction.^{11,12}

DISCLOSURES

Author contributions: T. Pembroke wrote the manuscript and is the article guarantor. LS Raj edited the manuscript.

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Informed consent was obtained for this case report.

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