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Case Report

Small bowel volvulus around caesarian section scar adhesions

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ABSTRACT

Small bowel obstruction secondary to adhesions is a recognized complication of Caesarian section. However, obstruction due to small bowel volvulus caused by adhesions at the Caesarian-section scar has not been reported. We report such a case identified on computed tomography. We review the literature on small bowel volvulus in pregnant patients and discuss the computed tomography findings.

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Introduction

Small bowel volvulus is well-recognized in infants and children but occurs rarely in adults. Small bowel volvulus secondary to adhesions to a C-section scar has not been reported in the medical literature. We present a case of small bowel volvulus because of adhesions to the C-section scar that led to bowel necrosis and subsequent surgical resection.

Case report

A previously healthy 35-year-old female presented to the Emergency Department with 1 day of crampy periumbilical pain radiating to the back associated with nausea and emesis. Her past surgical history was significant for a

primary low transverse C-section 2 years previously. Computed tomography (CT) of the abdomen and pelvis with oral and intravenous contrast demonstrated small bowel dilatation with wall thickening and enhancement consistent with edema and vascular congestion. A moderate amount of free intraperitoneal fluid was present raising concern for bowel ischemia. Among the dilated bowel loops, a “whirl” of mesenteric fat and mesenteric vessels was noted. The dilated loops of small bowel “beaked” in the low abdomen toward the apex of the mesenteric swirling (Fig. 1). This combination of findings was consistent with a volvulus. The superior mesenteric vein (SMV) twisted around the superior mesenteric artery (SMA), and there was narrowing of the SMV branches (Fig. 2). A small soft-tissue mass extended from the uterine fundus into the apex of the volvulus and continued as a thin, linear band toward the anterior

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abdominal wall at the site of the prior C-section (Figs. 3-5). The uterus was retracted anteriorly and appeared to be tethered by the swirling small bowel. At laparotomy, the small bowel was found to be twisted around a thick band of adhesions at the prior C-section scar. Approximately 85 cm of distal jejunum and most of the ileum was found to be frankly necrotic. This was resected and the adhesions were lysed. Two days later, follow-up exploratory laparotomy demonstrated viable small bowel, and the small bowel anastomosis was completed at that time. The patient recovered fully without complication.

Discussion

Small bowel volvulus occurs when the small bowel twists abnormally around its mesenteric axis causing a mechanical bowel obstruction, resulting in bowel ischemia and necrosis if there is also torsion and occlusion of the mesenteric vasculature. Small bowel volvulus is rare in adults, with an incidence of 1.7-5.7 cases per 100,000 adults [1]. In a large population-based study, small bowel volvulus accounted for 1% of all bowel obstructions [2]. Most patients presented emergently (89%), and 65% were treated surgically. Overall mortality in hospitalized patients was 8%.

Primary or idiopathic small bowel volvulus is very rare. Secondary causes of small bowel volvulus include adhesion bands, mesenteric or omental defects, stomas, pregnancy, diverticula, midgut malrotation, and prior surgery [3]. The clinical diagnosis of small bowel volvulus in adults can be difficult because the symptoms are often intermittent and vague and can be mistaken for irritable bowel syndrome, peptic ulcer, biliary, pancreatic, or even psychiatric disease [4]. Involvement of the small bowel ranges from short segments to the entire small bowel. Surgical treatment involves detorsion of the bowel, resection of gangrenous segments, and treatment of the underlying cause [5].

Up to 9% of all intestinal obstructions during pregnancy are attributed to small bowel volvulus [6]. The underlying mechanism of small bowel volvulus in pregnancy is thought to be related to the gradual increase in uterine size during

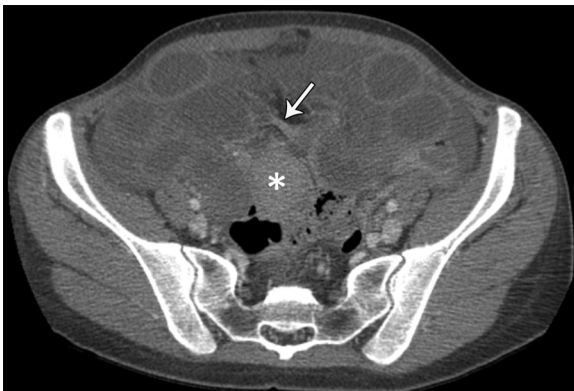


Fig. 1 – Beaking of the small bowel loops toward the apex of the volvulus (arrow) near the uterine fundus (*).



Fig. 2 – The superior mesenteric vein (SMV) branches twist around a small caliber superior mesenteric artery. The SMV branches are markedly diminutive (arrow), narrowed by the volvulus.

pregnancy, causing partial obstruction, proximal distension, and torsion at the point of fixation [6–8]. The reduced intra-abdominal space caused by the gravid uterus may prevent spontaneous detorsion. The sudden decrease in uterine size following delivery may predispose to volvulus due to rapid repositioning of intra-abdominal organs [9]. Caesarian section is a risk factor for developing adhesions and for small bowel obstruction, with an estimated incidence of 0.5-2.2 per 1000 [10,11]. Multiple Caesarian deliveries increase the risk for adhesions and obstruction, with the incidence of bowel obstruction increasing to 9 of 1000 for women with 3 prior Caesarian deliveries [11]. For other gynecologic surgeries, the risk of developing small bowel obstruction secondary to adhesions is much higher, estimated at 16.3 per 1000 cases of hysterectomy [10].

The imaging evaluation of small bowel volvulus often starts with abdomen radiographs, which are often normal or nonspecific. CT is the modality of choice, allowing depiction of anatomic structures in multiplanar detail. Small bowel volvulus should be differentiated from other causes of small bowel obstruction which may respond favorably to conservative management. Several key CT findings are described for small bowel volvulus. The “whirl sign” describes bowel loops, mesenteric fat, and surrounding soft tissue encircling twisting mesenteric vessels and was first described by Fisher in 1981 [12]. If the whirl sign demonstrates twisting of at least 90 degrees or more, the reported sensitivity for detecting small bowel volvulus is 64% [13]. In most cases of small bowel volvulus, the whirl sign rotates at least 180 degrees [13]. The “beak sign” refers to fusiform tapering of compressed bowel loops at the site of twisting. The tip or apex of the beak indicates the point of rotation [12]. The abnormal positioning of the SMA and SMV can be a clue to small bowel volvulus, reflecting the twisting of the mesenteric vessels during volvulus. The courses of the SMA and SMV and their larger, proximal branches are typically straight, fanning out distally with the mesenteric leaves, with the SMA located to the left of and slightly posterior to the SMV. Rotation of the vessels and/or reversed

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