Incidently diagnosed intussusception spontaneously resolved in an adult patient after blunt trauma: A rare case report

Catherine R Lewis, Omar K Danner, Kenneth L Wilson, L Ray Matthews

ABSTRACT

Introduction: Although intussusception is a rare cause of mechanical bowel obstruction in adults, traumatic intussusception is exceedingly rare. In adults, intussusception contributes less than 1–5% of bowel obstructions. The first report of the diagnosis of intussusceptions was over three centuries ago (1674) by Barbette in Amsterdam. However, the first surgical treatment for this condition in literature was not until almost 100 years later in 1871 by Sir Jonathan Hutchinson, who operated on a child with intussusceptions. Risk factors include age, sex, abnormal peristalsis and pre-existing abdominal pathology.

Case Report: A case of jejuno jejunal intussusception in an otherwise healthy 48-year-old female following blunt trauma is presented. The patient was treated conservatively with complete spontaneous resolution of her symptoms. Intussusceptions following blunt trauma is a very rare condition, which may be difficult to diagnose, and usually present as incidental findings. Laparotomy may be necessary in unstable trauma patients and in those individuals whose symptoms of mechanical bowel obstruction fail to resolve in a timely manner or who develop acute peritonitis. In conclusion, intussusception associated with blunt trauma may occur more frequently than previously suspected. Surgical intervention is not always necessary. Conservative management of patients that present with post-traumatic intussusception without other symptomatology may be safely undertaken, unless changes in clinical exam warrant operative intervention.

Conclusion: Trauma surgeons should be aware of the possibility of intussusception in any patient that presents with obstructive symptoms after blunt trauma. Early diagnosis is the key to avoiding bowel ischemia and resection.

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Keywords: Intussusception, Blunt trauma, Bowel obstruction, Jejunojejunal intussusception

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INTRODUCTION

Although intussusception is a rare cause of mechanical bowel obstruction in adults, traumatic intussusception is exceedingly rare. In adults, intussusception contributes less than 1–5% of bowel obstructions. The first report
of the diagnosis of intussusceptions was over three centuries ago (1674) by Barbette in Amsterdam [1]. However, the first surgical treatment for this condition in the literature was not until almost 100 years later in 1871 by Sir Jonathan Hutchinson, who operated on a child with intussusceptions [1]. Risk factors include age, sex, abnormal peristalsis and pre-existing abdominal pathology. Although it is fairly uncommon in adults, it is usually associated with a preexisting abdominal pathology [2–4, 5]. The earliest report in the American literature was in 1831, at that time the correct surgical operation was unknown [6].

Several cases of intussusception following blunt abdominal trauma in adults have been reported in literature [2–5, 7–9]. The condition is not usually immediately life-threatening. However, intussusception can lead to bowel necrosis, secondary to compromised arterial blood supply. This complication can result in perforation and ultimately sepsis [10]. Although it is most often diagnosed in infancy and early childhood, it can occur in adults with or without an identifiable cause. We report an episode of jejunojejunal intussusception following blunt trauma in a healthy adult female.

Intussusception associated with blunt trauma may occur more frequently than previously thought. Trauma surgeons should be aware of the possibility of intussusception in any patient that presents with obstructive symptoms after blunt trauma [5, 8, 11]. Early diagnosis is a key to avoiding bowel ischemia and resection. However, conservative management may be warranted based on patient presentation and overall clinical examination.

**CASE REPORT**

A 48-year-old female, previously healthy, was admitted to the hospital after falling down a flight of approximately 20 stairs. Her primary survey was normal. Her physical examination was notable for left thigh tenderness with minimal swelling, but was otherwise unremarkable, including a negative focused abdominal sonogram for trauma (FAST). All laboratory examination were within normal limits. She had no associated co-morbidities. The patient developed epigastric pain, nausea, and vomiting approximately seven hours after initial evaluation, which prompted immediate reevaluation. An emergent computed tomography (CT) scan of the abdomen and pelvis with oral and intravenous contrast was obtained and revealed two segments of non-obstructing jejunojejunal intussusceptions, measuring 2.5 cm and 3.8 cm (Figure 1A–B and Figure 2). The patient was treated conservatively with bowel rest, nasogastric decompression and intravenous fluids, resulting in spontaneous resolution of her symptoms within 24 hours. Repeat abdominal CT scan the following day subsequently demonstrated that the intussusceptions had completely resolved along with her abdominal symptoms (Figure 3).

She was diagnosed with an isolated left femur fracture that required an intramedullary nailing procedure. The patient was discharged home, after three days, in good condition without any complications. Her follow-up clinic visit was unremarkable.

**DISCUSSION**

Intussusception is defined as telescoping of a proximal loop of bowel (intussusceptum) into a distal bowel segment (intussuscipiens) [3, 8]. In general, intussusception in adults occurs rather infrequently, and
is most likely associated with other abdominal pathology such as tumors, chronic inflammation, adhesions, and Meckel's diverticulum [2–3, 7–8]. It has also been associated with protracted diarrhea of HIV/AIDS, celiac sprue and bowel wall hematomas [3]. Occurring in less than 5% of the causes of small bowel obstruction in adults, intussusception is a leading cause of obstruction in children. The typical symptoms in children include abdominal pain, red currant jelly or bloody stools, and an abdominal mass [3, 9, 11]. Most cases are idiopathic in children and occur in the small bowel, near the ileocecal valve [3, 11]. Bloody stools, a palpable mass and abdominal pain occur less frequently in adults, rendering their presentation atypical. Adults may only experience symptoms of a partial obstruction with associated nausea and vomiting, which may delay the diagnosis of intussusception [8–10].

Several theories have been proposed for the mechanism of intussusception, however, an absolute mechanism is unknown. It is known that bowel stimulation causes an area of constriction above the stimulus and an area of relaxation below the stimulus [9]. Any alteration of this normal pattern may lead to an invagination. Many authors agree that abnormal peristalsis due to spasms of segmental bowel is likely the main cause. Adrenergic stimulation of sympathetic nerve fibers leads to spasm of the sphincters and spasm of the surrounding bowel loops [9–10]. This abnormal motility may also be caused by a mechanical obstruction, such as tumors, adhesions and Meckel's diverticulum [3, 8]. Normal bowel becomes trapped in an adjacent segment of relaxed bowel. As this occurs, the mesentery becomes trapped between these two segments of bowel, resulting in stretching, increased intra-abdominal pressure, vascular compromise, and eventual ischemic necrosis [10]. While difficult to ascertain, intussusception caused by blunt trauma is thought to be caused by abnormal peristalsis or localized spasm, a sudden deceleration injury, bowel wall edema, and/or bowel wall hematomas [2, 4]. The sustained edema and/or hematoma after blunt abdominal trauma serves as a lead point similar to the pathologic lead points usually described.

Intussusception following blunt trauma may be difficult to diagnose. Patients without any obvious abdominal injuries may not lead the trauma physicians to further investigate. The CT scan remains the modality of choice for the diagnosis of intussusception [4]. It may show a 'target lesion' with proximal loops of dilated bowel [3, 8, 10]. These lesions may occur at any level in the alimentary tract and may be in multiple locations [11]. The CT scan is important for determining the presence of associated abdominal pathology, such as enlarged lymph nodes or diverticulum. However, many times the specific cause of the intussusception is only identified after resection, as it is hidden in the intussuscepted mass [8]. The classic appearance of an intussusceptum on a barium enema is a 'coil-spring appearance', indicating crowded haustra in the intussuscipiens. Ultrasonography demonstrates the target, doughnut, and pseudokidney sign on transverse and longitudinal views, respectively. However, the use of ultrasound is unreliable in the setting of obstructive symptoms in which air in the bowel can lead to difficulties in image interpretation [10]. Plain radiographs in adults usually demonstrate a nonspecific bowel obstruction [3, 9].

Many surgeons believe that all causes of intussusception warrant an immediate laparotomy, given the high association with malignancy or other associated pathology [3, 8, 11]. Resection is not always required. When there is no other associated abdominal pathology identified during laparotomy, it is believed that manual reduction without resection is adequate, just as in children [2–3]. In the late 1950s, some surgeons recommended manual reduction of all adult intussusceptions prior to definitive treatment. Weilbaecher et al. proposed resection without attempting manual reduction whenever possible [9]. Even earlier surgeons advocated abdominal laparotomy without delay [6].

Intussusceptions that occur after blunt trauma are usually incidental findings or attributed to abnormal peristalsis due to direct abdominal trauma. In unstable trauma patients, laparotomy is warranted given the necessity to rule out other causes of abdominal injury as possible causes of hemodynamic instability. However, we propose that post-traumatic intussusception be treated on a case-by-case basis. This patient presented after falling down a flight of approximately 20 stairs, without any indications of abdominal trauma on primary or secondary survey. Prior to surgery for her femur fracture, the patient experienced nausea and vomiting, associated with abdominal pain. This prompted further investigate via a repeat abdominal and pelvic CT scan. The CT scan showed two segments of radiographically diagnosed non-obstructing jejunojejunal intussusceptions. This is interesting in that intussusceptions that resolve spontaneously tend to have no identifiable lead point [1]. Due to a paucity of abdominal symptoms, the patient was treated conservatively with hydration, nasogastric decompression and bowel rest with a repeat CT scan in 24 hours. Repeat CT scan demonstrated resolution of the intussusceptions (Figure 3). In the absence of solid organ injury, free fluid or free air, the standard of care should be conservative, with serial abdominal examinations and repeat CT scan if warranted [7]. Attempts at intestinal decompression via nasogastric tube insertion should also be immediately undertaken. Surgical intervention should proceed as soon as possible if changes in clinical exam deem it necessary. If conservative therapy fails after 48 hours, the intussusception should be corrected surgically, unless the patient develops signs of peritonitis, which mandate emergent surgical intervention. If necessary, any segment of necrotic intestine should be resected at the time of laparotomy. Nevertheless, some cases of intussusception may be transient and improve on their own, as occurred in this patient. If no underlying medical condition or pathology is identified, no further treatment or work-up is warranted.
CONCLUSION

Intussusception associated with blunt trauma may occur more frequently than previously thought. Trauma surgeons should be aware of the possibility of intussusception in any patient that presents with obstructive symptoms after blunt trauma [5, 8, 11]. Early diagnosis is a key to avoiding bowel ischemia and resection. However, conservative management may be warranted based on patient presentation and overall clinical examination.

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Kenneth L Wilson – Acquisition of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
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Guarantor
The corresponding author is the guarantor of submission.

Conflict of Interest
Authors declare no conflict of interest.

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