

Transanal impalement of double J steel bar with colonic and jejunal injury: A unique pediatric case report

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Abstract

Pediatric transanal impalement injuries are relatively uncommon and most are attributed to accidental fall on offending objects, sexual assault or blunt trauma. There may be difficulty in recognizing or properly treating such injuries because their severity may not be reflected externally. Evaluation of suspected rectal impalement injury involves careful history and physical examination and proper investigation. There are very few reports on pediatric perianal impalement with associated visceral injuries. We report a case of assault transanal impalement injury associated with mesenteric tear and jejunal perforation leading to devitalization of proximal jejunum in a 2 year male child and relevant literatures were reviewed. To the best of our knowledge, such dual proximal and distal gastrointestinal injury in such a small child has not been reported in any of the English literature so far.

Key words: Assault, impalement injury, pediatric, transanal

INTRODUCTION

Transanal injury of the rectum and sigmoid colon is not uncommon in adult but very rare in children. Transanal impalement injury usually occur either due to fall from height on sharp object, sexual abuse or blunt trauma. Sexual abuse is a common cause in children and should be suspected until proven otherwise. The extent of injury may involve the anorectum, colon, small intestine and genitourinary tract and also depends on the mode of injury. Most of the time, attendant tries to remove the impacted foreign body which further causes additional injury. Timely diagnosis of the extent of injury and its management is imperative. Therapeutic decisions are based on the general surgical principle as in adult.

CASE REPORT

Two years old male child presented to pediatric emergency with history of deliberate insertion of a double J bent rusty steel bar with minimal bleeding per rectum by his neighbor. Attendant tried to pull out the bar but could not

succeed. General physical examination revealed an average built child, febrile with pulse rate of 140/min and blood pressure of 90/60 mm Hg. Abdomen was distended and tender. Local examination showed abrasions at the perianal region with normal looking anus and a steel bar protruding for about 1.5 feet outside the anal opening [Figure 1]. The duration of injury was about 10 h when first seen. Routine blood and electrolytes were normal. Plain X-ray abdomen erect anteroposterior view showed a long steel bar with bent end inside the peritoneal cavity with no free gas [Figure 2]. The child was resuscitated and quickly shifted to operation theatre.

Under general anesthesia exploratory laparotomy was done. Findings included moderate hemoperitoneum with fecal contamination of the peritoneal cavity. The steel bar was seen emerging through sigmoid colon creating a large perforation on transit [Figure 3]. Angulated end of the bar was buried into the retroperitoneum with multiple hematomas at the root of mesentery and a tear 5 cm distal to DJ flexure with 10 cm of jejunum devitalized. The cause of torn mesentery probably may be because of pulling attempted prior to exploration. The bar was pulled



Figure 1: Local examination showing abrasions at the perianal region with normal looking anus and a steel bar protruding for about 1.5 feet outside the anal opening

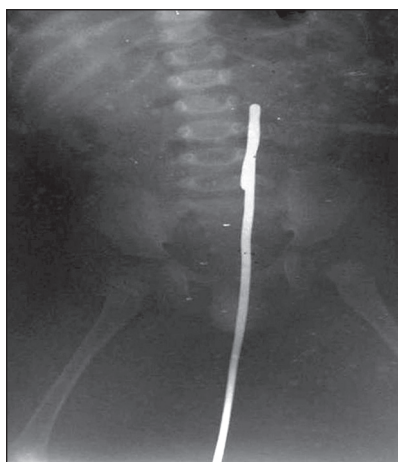


Figure 2: Plain X-ray abdomen erect anteroposterior view showing a long steel bar with bent end inside the peritoneal cavity with no free gas

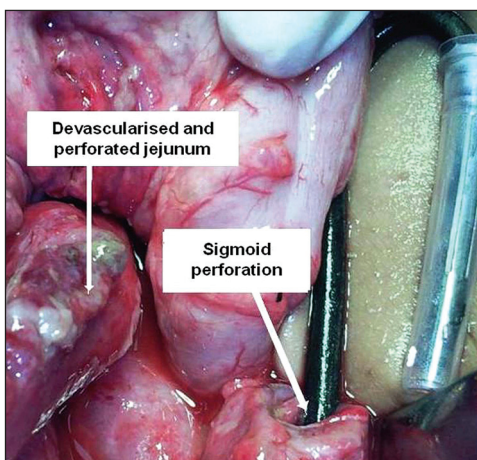


Figure 3: Intraoperative view showing steel bar emerging through large sigmoid colon perforation and segment of perforated devascularized jejunum

inside the peritoneal cavity to disimpact it from the root of mesentery. All the major vessels were preserved. Due to unavailability of cutting instrument for bar, its outer end was straighten and taken out from perforated sigmoid colon.

Resection of the devitalized jejunum with end to end duodenojejunal anastomosis with sigmoid loop colostomy was done after thorough peritoneal lavage. Abdomen was closed after putting a pelvic drain. The child was kept nil per oral and parenteral antibiotics for 5 days postoperatively. He was uneventfully discharged with functioning stoma on 8th postoperative day with plan to close the stoma after distal cologram at about the 6th week. The length of the bar which was used was about 3 feet.

DISCUSSION

Pediatric transanal impalement injuries are rare but have the potential to cause severe consequences. These injuries most often are caused by fall on an offending object or because of sexual abuse.^[1,2] But deliberate assault with steel bar injuring colon and jejunum in such a small child were not found in any English literature previously. Steel bar injury of rectum and vertebral body has been mentioned in adults^[3] and pediatric anorectal impalement with bladder rupture has been reported earlier.^[4] Most commonly associated injury in anorectal impalement is genitourinary and small bowel especially ileum.

In our patient, the bent end of bar which inside the peritoneal cavity had perforated the sigmoid colon and gone high up to the level of DJ flexure. While attempting to remove the bar by attendant, mesentery was hooked and torn. The bar was got impacted in the retroperitoneum due to its unique shaped end. Fortunately, such a long bar had not injured any of the major vessels.

The common causes of anorectal impalement in children are fall on offending object and sexual abuse but in one series, motor vehicle accident accounted for most of the pediatric anorectal injury.^[5] Children may be more prone to serious injury from anorectal impalement due to specific pediatric anatomy. In children, the urogenital diaphragm lies more superficial than in the adult and in girls rectovaginal septum is thinner.^[2] The predominance of the anterior wall rectal injuries can be explained by the anatomical posteroanterior direction of the anorectal canal.^[6]

Perineal impalement injuries in children are classified as transanal or perineal and further subdivided as extraperitoneal or intraperitoneal. This classification is used to predict potential injuries and to develop treatment guidelines.^[7] Transanal extraperitoneal wounds usually are directed posteriorly and

caused by sharp objects. They often leads to retrorectal, retroperitoneal and vascular injuries. Transanal intraperitoneal injuries are directed anteriorly and may lead to damage of rectum, bladder, urethra, bowel and even the solid organs. But in our case there was sigmoid perforation, mesenteric tear and impairment of vascularity of a part of jejunum with impaction of object into retroperitoneum. Perineal extraperitoneal wounds are uncommon and are usually caused by sharp objects but more commonly associated with damage to anal sphincter, vagina and urethra.

The first step in the management is the evaluation of patient with rectal foreign body to determine whether or not perforation has occurred and stability of patient. Plain radiograph should be done to know the location of foreign body and free gas. If free gas or frank feature of peritonitis is present, no further workup is required and urgent laparotomy is warranted after adequate resuscitation of patient.^[8] Various options of management are fecal diversion,^[1] surgical debridement,^[2] wound closer if feasible,^[3] rectal stump irrigation,^[4] presacral drainage^[5] and broad spectrum antibiotics.^[9] Several paths and algorithms are mentioned in the literature but all are based on adult injury. Nonetheless, management by anatomic distinction allows for omission of colostomy in most intraperitoneal injuries and selected extraperitoneal injuries, while diminishing the risk of retrorectal abscess in extraperitoneal injuries with judicious application of presacral drainage.^[10]

In our case there was peritonitis and the steel bar was very much inside the peritoneal cavity on X-ray abdomen with no external injuries, laparotomy was an obvious indication. As the peritoneal cavity was heavily contaminated with fecal material and upper jejunum was also necrosed, resection and anastomosis with exteriorization of the perforated sigmoid was done. Patient was discharged on stoma uneventfully on day 7 after surgery. Sigmoid colostomy closure was done after 8 weeks and patient is doing well thereafter.

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