Research Square

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Isolated Rectal Impalement Injuries from Unusual Foreign Bodies: A Case Series from a Tertiary Health Care Facility

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Abstract

Purpose

Rectal impalement injuries from unusual foreign bodies are rare but carry significant morbidity. This study describes the clinical presentation, management, and outcomes of patients with isolated rectal impalement or insufflation injuries managed at a tertiary care centre.

Methods

Data of 11 patients presenting with rectal impalement or insufflation injuries over a 3-year period (2023–2025) were compiled, including demographics, etiology, mode of injury, clinical features, radiological findings, treatment, and outcome.

Results

Patients were aged 15–40 years with all males in this study. Self-insertion of the foreign body was the most common mechanism (7 cases), followed by barotrauma from air insufflation during an assault (2 cases), penetrating trauma from a fall from height (1 case), and forceful insertion of a vegetable during an assault (1 case). Erect chest and abdominal X-ray was the only imaging performed in all cases. Seven patients with perforation peritonitis underwent emergency exploratory laparotomy with primary repair and faecal diversion (loop ileostomy or colostomy); one required a Hartmann's procedure and one an end colostomy with distal mucous fistula. Two patients required laparotomy after failed per-rectal retrieval, and two patients had the foreign body retrieved per rectum alone. There was no mortality.

Conclusion

Rectal impalement injuries require a high index of suspicion, particularly given frequent concealment of history. Early recognition, individualized management ranging from per-rectal retrieval to exploratory laparotomy, and a multidisciplinary approach help optimize outcomes.

Introduction

Rectal injuries account for approximately 9.6% of all colorectal trauma. Among the recognized etiologies, penetrating trauma such as gunshot wounds is responsible for 80–85% of cases, and stab wounds account for 3–5%. Blunt trauma occurring due to pelvic fractures and impalement injuries accounts for 5–10% of cases. Rare causes include iatrogenic injury secondary to urogynaecological or endoscopic instrumentation, and insertion of foreign bodies [1].

Rectal impalement injuries, though uncommon, occur due to insertion of foreign bodies (solid and elongated objects) into the rectum for sexual abuse or gratification, leading to intraperitoneal or extraperitoneal rectal trauma [2]. Depending on the type, size, and force of the penetrating object and the severity of injury, patients may have associated bowel perforation, peritonitis, vascular injury, damage to adjacent organs, sepsis, and multi-organ failure [3]. The morbidity and mortality due to colorectal injuries are 20% and 3%, respectively [1]. Management begins with pre-hospital care and transportation of the patient in a safe posture without any attempt to manipulate the impaled object. A comprehensive clinical history and thorough examination may reveal the underlying cause, as well as the nature of the injury [4]. Early recognition and prompt surgical intervention by a multidisciplinary team are required to optimize outcomes, minimize complications, and mitigate long-term disability.

Materials and Methods

A total of 11 patients with rectal impalement or insufflation injuries over a period of 3 years (2023–2025) were included in this observational study. Demographic data including etiology, age, gender, mode of injury, clinical features, radiological findings, treatment, and outcome were compiled (Table 1). Each case was distinct, involving rectal trauma with unusual foreign bodies. The management strategy included retrieval of the foreign body per rectum in the emergency room without anesthesia, or retrieval per rectum in the emergency operating theatre under anesthesia (spinal or general), and/or via emergency exploratory laparotomy in complicated cases. This study emphasizes the importance of detailed clinical examination and targeted intervention, representing the first of its kind in our region.

Table 1
Demographic profile, clinical presentation, management, and outcome of 11 patients with rectal impalement or insufflation injuries

S. No.	Age/ Sex	Impaling object	Days before presentation	Clinical presentation	Anal/ peri-anal injury	Management	Complication	Hospital stay	Outcome
1	37/M	Self-insertion of toothbrush	2 days	Peritonitis	-	EL with primary repair of rectal perforation with covering loop ileostomy	-	8 days	Survived
2	17/M	Self-insertion of hair-bun stick	4 days	Peritonitis	-	EL with primary repair of sigmoid perforation with covering loop ileostomy	-	7 days	Survived
3	24/M	Air insufflation using pressure pump nozzle (assault)	1 day 12 hrs	Peritonitis, bleeding per rectum	Multiple acute anal fissures	EL with Hartmann's procedure	Burst abdomen + enterocutaneous fistula	25 days	Survived
4	35/M	Air insufflation using pressure pump nozzle (assault)	1 day	Peritonitis, tenesmus	Acute anal fissures at 12 and 6 o'clock position	EL with resection of perforated transverse colon, end colostomy with DMF	-	7 days	Survived
5	28/M	Accidental fall from height onto a wooden object	1 day	Peritonitis, bleeding per rectum	4 × 4 cm perianal wound with intraperitoneal connection	EL with primary repair of rectal perforation, covering loop colostomy, Penrose drain in perianal wound	-	12 days	Survived
6	30/M	Self-insertion of vegetable (bottle gourd)	1 day	Broken vegetable stuck in anal opening	Broken vegetable occluding anal opening, protruding 7 cm from anal verge	EL with sigmoid enterotomy and retrieval	Surgical site infection	7 days	Survived
7	16/M	Self-insertion of plastic round pencil box	1 day	Foreign body (pencil box) stuck in anal opening	Pencil box occluding anal lumen, protruding 6 cm from anal verge	EL with milking of foreign body and per-rectal retrieval	-	4 days	Survived
8	40/M	Self-insertion of vegetable (round gourd)	1 day	Peritonitis	-	EL with primary repair of rectal perforation, covering transverse colostomy	Surgical site infection, burst abdomen	12 days	Survived
9	28/M	Assault: forceful insertion of	Same day	Peritonitis	Multiple acute anal fissures	Primary repair of rectal perforation	Pelvic collection	10 days	Survived

S. No.	Age/ Sex	Impaling object	Days before presentation	Clinical presentation	Anal/ peri-anal injury	Management	Complication	Hospital stay	Outcome
		vegetable (ridge gourd)				with diversion sigmoid colostomy			
10	15/M	Self-insertion of plastic uncapped pen per rectum	Same day	Pain per rectum	-	Per-rectal retrieval, no anesthesia	-	24 hrs	Survived
11	31/M	Self-insertion of metallic tumbler per rectum	Same day	Perineal pain	-	Per-rectal retrieval under spinal anesthesia	-	24 hrs	Survived

Results

A detailed description of all 11 patients is shown in Table 1. This study included patients in the age group of 15–40 years, highlighting the incidence of rectal impalement in the younger population with a male predominance. Duration of presentation ranged from the same day to 4 days. The most common alleged history of injury was self-insertion of the foreign body in 7 cases, followed by barotrauma secondary to air insufflation using a pressure pump nozzle in 2 patients as an act of assault, penetrating trauma due to a fall from height in 1 patient, and forceful insertion of a vegetable as an act of violence in 1 patient. All patients underwent detailed clinical examination. The only imaging performed in all cases was an erect chest and abdomen X-ray. Seven patients had pneumoperitoneum without any evidence of a retained foreign body (Fig. 1a), of whom 3 also had multiple acute anal fissures (Cases 3, 4, 9) and 1 had a perianal wound (4 × 4 cm) with intraperitoneal connection (Case 5; Fig. 2a). Foreign body impacted within the rectum, resulting in obstruction, was seen in Cases 6 and 7 (Fig. 2b, c). One patient (Case 10) had a linear opacity suggestive of a pen on X-ray (Fig. 1b), and another patient (Case 11) demonstrated a radiopaque foreign body within the rectum suggestive of a metallic object (Fig. 1c).

Seven patients with acute abdomen due to perforation peritonitis underwent urgent exploratory laparotomy after resuscitation and necessary diagnostic workup, with retrieval of the foreign body. Of these 7 patients, the site of bowel perforation was the transverse colon (1 patient), sigmoid colon (1 patient), and rectum (5 patients). In 5 patients, primary repair of the traumatic rectal perforation was performed, with a covering diversion loop ileostomy in 2 patients (Cases 1, 2) and loop colostomy in 3 patients (Cases 5, 8, 9; Fig. 2d, e). One patient underwent Hartmann's procedure (Case 3), and in another patient, resection of the perforated transverse colon was performed with end colostomy and distal mucous fistula.

In 2 patients, exploratory laparotomy was performed after failure of per-rectal attempts at foreign body retrieval (Cases 6 and 7). In 1 patient, sigmoid enterotomy with retrieval of the vegetable (intact round gourd) and primary repair of the enterotomy site was performed (Case 6). In the other patient (Case 7), exploratory laparotomy with milking of the foreign body (round plastic pencil box) and per-rectal retrieval was performed.

Of the 2 patients in whom the foreign body was retrieved per rectum alone, a plastic uncapped pen was retrieved in the emergency room without anesthesia in one patient (Case 10; Fig. 2f), while the other, with a metallic tumbler, required spinal anesthesia for retrieval (Case 11). The retrieved foreign bodies included a variety of unusual objects: a toothbrush (20 × 2 cm), a hair-bun stick (10 × 1 cm), broken/intact vegetables (bottle gourd, ridge gourd, and round gourd) in 3 patients, a pencil box (20 × 7 cm), a pen (15 × 1 cm), and a metallic tumbler (10 × 5 cm), one patient each. Significant morbidities in this series included burst abdomen (1 patient), burst abdomen with enterocutaneous fistula (1 patient), wound dehiscence (1 patient), and pelvic collection (1 patient). All were managed conservatively with antibiotics and aseptic dressings. There was no mortality. Hospital stay ranged from 1 to 25 days. All patients were discharged in stable condition after recovery, without requiring ICU admission. Patients with a diverting stoma underwent restoration of bowel continuity three months after the primary surgery.

Table 1: Demographic profile, clinical presentation, management, and outcome of 11 patients with rectal impalement or insufflation injuries

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S. No.	Age/ Sex	Impaling object	Days before presentation	Clinical presentation	Anal/ peri-anal injury	Management	Complication	Hospital stay	Outcome
9	28/M	Assault: forceful insertion of vegetable (ridge gourd)	Same day	Peritonitis	Multiple acute anal fissures	Primary repair of rectal perforation with diversion sigmoid colostomy	Pelvic collection	10 days	Survived
10	15/M	Self-insertion of plastic uncapped pen per rectum	Same day	Pain per rectum	-	Per-rectal retrieval, no anesthesia	-	24 hrs	Survived
11	31/M	Self-insertion of metallic tumbler per rectum	Same day	Perineal pain	-	Per-rectal retrieval under spinal anesthesia	-	24 hrs	Survived

EL, exploratory laparotomy; DMF, distal mucous fistula.

Discussion

Anorectal impalement injuries present significant challenges in diagnosis and management, along with medicolegal implications due to concealed and/or unreliable history and delayed presentation. Impalement injuries have been documented in historical and forensic literature, with one of the most notorious examples being the method employed by Vlad III, Voivode (Prince) of Wallachia (Romania), known as Vlad the Impaler or Vlad Dracula. His technique involved insertion of elongated, blunt-tipped objects through the natural orifices along a trajectory that avoided injury to vital structures, thereby prolonging the victim's suffering and deliberately delaying death [5]. In recent practice, impalement injuries are most frequently reported in association with accidental falls and foreign body insertion during sexual perversion activities.

A detailed history and thorough abdominal evaluation along with per-rectal examination help in reaching the diagnosis. In some cases, the patient may attempt to self-extract the impaled object, further complicating assessment [6]. When the object is removed before medical evaluation, the injury may be underreported or misinterpreted, potentially delaying treatment and leading to complications [7]. X-ray is a useful imaging modality when the impaling object is metallic, as it can help identify the location and presence of the object within the body. However, radiography has limitations in detecting radiolucent objects and in assessing the extent of internal organ damage. The pelvic region is an anatomically confined space, with as high as 85% incidence of injury to internal organs [8]. CT of the abdomen helps in detailed evaluation of abdominal or pelvic injuries. Contrast-enhanced CT (CECT) with angiography is especially valuable when vascular injury is suspected.

Manipulation of the impaling object must be avoided in peripheral centres where adequate facilities, an anesthesia team, and experienced medical staff are unavailable. Extraction should be performed with utmost precaution under optimum conditions and direct vision to avoid injury to surrounding structures. In the absence of evidence of intra-abdominal injury, per-rectal extraction of the foreign body may be attempted [9]. In complicated cases, early surgical intervention is essential to reduce the risk of sepsis and morbidity. Since local entry-site exploration does not reveal the complete extent of damage in rectal impalement, thorough exploration via urgent laparotomy is the safest approach, as it facilitates immediate identification and management of associated injuries. Additionally, impalement injuries can cause tissue necrosis, necessitating extensive debridement and irrigation of the tract through which the object passed. Primary closure should be avoided to reduce the risk of infection in contaminated wounds [10].

Beiler et al. reported a series of 12 patients with anorectal injuries including impalement. Based on their experience with secondary colostomies performed for wound infection, they proposed four fundamental principles of treatment: (1) fecal diversion, (2) reconstruction when feasible, (3) wound drainage, and (4) administration of broad-spectrum antibiotics [11]. We adhered to these principles in our patients. The role of laparoscopy as a diagnostic modality has been increasingly reported in the literature [12, 13]. A protective colostomy/ileostomy may be omitted only in selected cases with small perforations presenting early with little contamination or inflammation, which can safely be closed primarily [14].

Conclusion

Rectal impalement injuries represent a distinct clinical entity with protean manifestations. Not all cases are reported, owing to social stigma; therefore, the exact incidence remains unclear. In complicated cases, morbidity and mortality are significantly higher due to delayed

presentation, as the diagnosis is often masked by concealment of facts. A high index of suspicion in vulnerable patients, together with watchful clinical and diagnostic evaluation, is key to early diagnosis and prompt management. Timely identification of complications and appropriate surgical intervention may improve outcomes.

Declarations

Funding

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Competing Interests

The authors have no relevant financial or non-financial interests to disclose.

Human ethics and Consent to Participate

Informed consent was obtained from all individual participants included in the study, and from the parent/legal guardian in the case of the minor patient

Consent to Publish

The authors affirm that written informed consent was obtained from the patients (or, for the minor patient, their parent/legal guardian) for publication of their clinical details and accompanying de-identified images.

Author Contributions

All authors contributed to the study conception and design. Data collection and analysis were performed by Dr Rupali Bhardwaj. The first draft was written by Prof Usha R Dalal, and all authors commented on previous versions. All authors read and approved the final manuscript.

Data Availability

The datasets generated during the current study are available from the corresponding author on reasonable request, subject to institutional privacy restrictions.

Ethics Approval

This research was conducted in accordance with the Declaration of Helsinki. As this is a case series including 11 patients , formal approval from the institutional Ethics Committee was not required for this study. Written informed consent for publication of clinical information and relevant images was obtained from all patients included in the study

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Figures

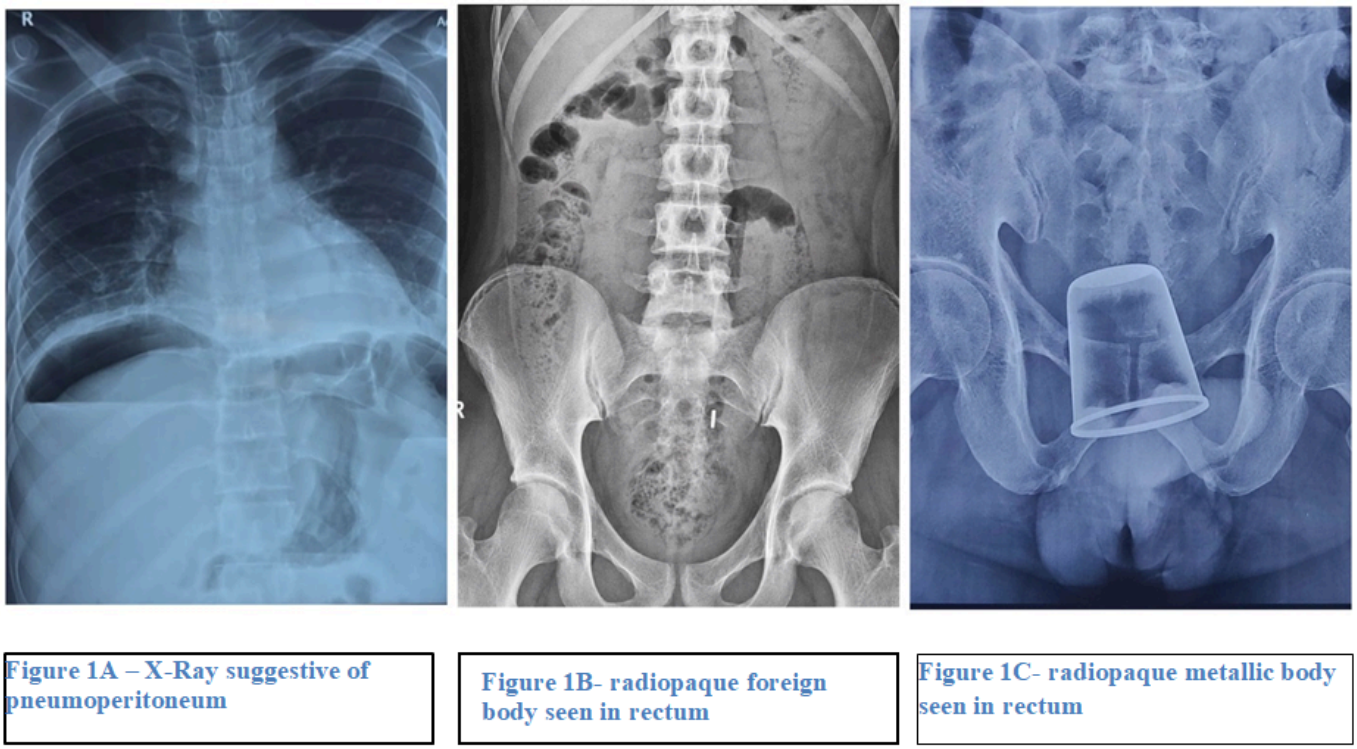


Figure 1

Erect abdominal radiographs. (1a) X-ray suggestive of pneumoperitoneum. (1b) Radiopaque foreign body (pen) seen in the rectum. (1c) Radiopaque metallic foreign body seen in the rectum.

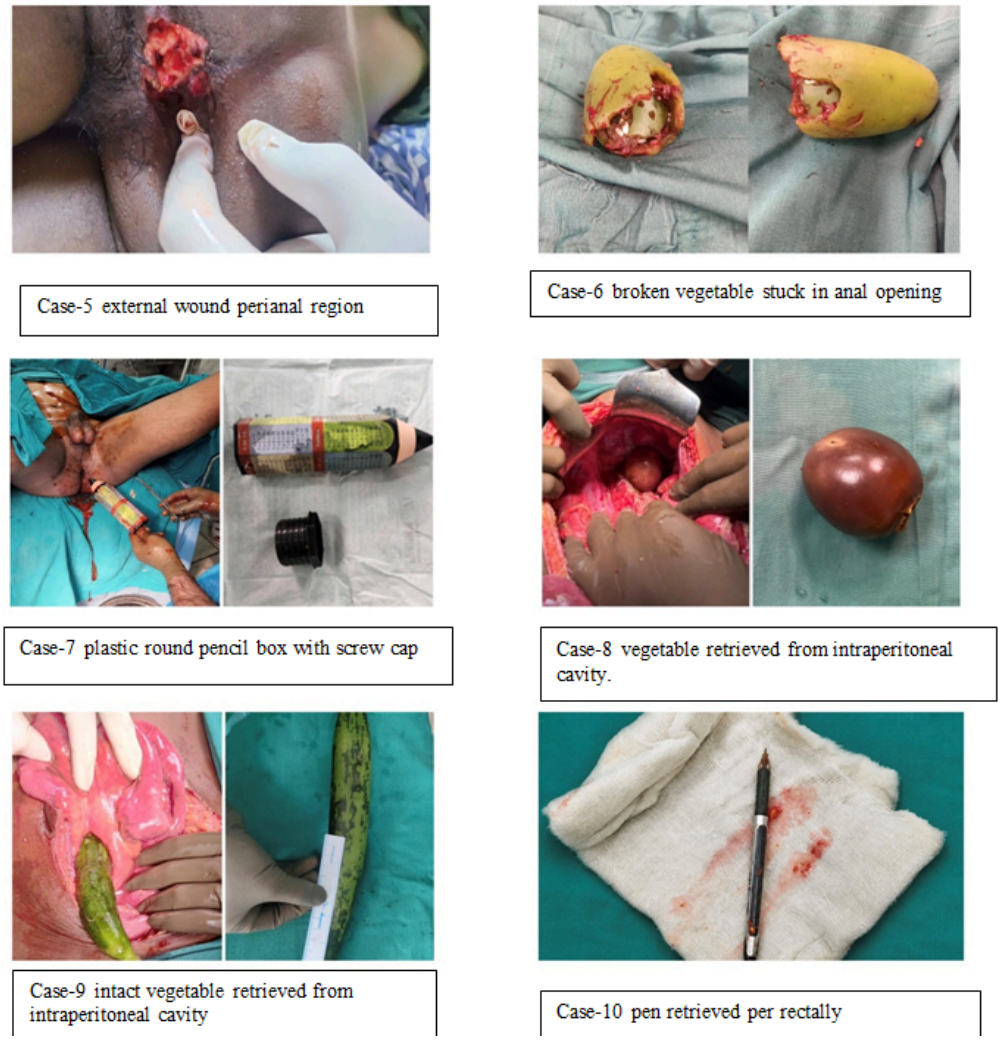


Figure 2

Intraoperative and specimen photographs. (2a) External wound in the perianal region (Case 5). (2b) Broken vegetable retrieved from the anal opening (Case 6). (2c) Plastic pencil box with screw cap retrieved via laparotomy and per-rectal extraction (Case 7). (2d) Vegetable retrieved from the intraperitoneal cavity (Case 8). (2e) Intact vegetable retrieved from the intraperitoneal cavity (Case 9). (2f) Pen retrieved per rectum (Case 10).