Case Report

Successful Management of Perineal Injury without Colostomy in a Pediatric Patient: A Case Report

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Abstract

Perineal trauma in children are rare, but they can be life-threatening and surgically challenging conditions in the absence of a standardized therapeutic approach. Colostomy remains important and plays an essential role in minimizing the frequency of perineal wound infections but has known complications. Here, we describe a case of a 7-year-old boy who was a victim of a road traffic accident polytrauma and sustained severe perineal injury. The patient was managed primarily without stoma creation and achieved complete wound healing and continence. This case highlights that selection of primary repair without colostomy must be meticulous and individualized.

Keywords: Colostomy, injury, management, pediatric, perineal, trauma

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INTRODUCTION

Perineal trauma in children is uncommon, with a wide spectrum of injuries ranging from skin laceration to severe injury to the genitourinary tract, anal sphincter or pelvic compartment. Blunt trauma accounts for 8%–10% of the cases of perineal trauma in children, followed by impalement injury or sexual abuse.[1,2] Evaluation of the magnitude of perineal injury is difficult, as it does not reflect the severity of the internal structure injuries.[1,3]

There is a lack of consensus between clinicians in terms of management of patients with primary or delayed sphincter repair and the decision regarding colostomy. Irrespectively, for the most effective functional outcomes, a prompt diagnosis and early surgical repair of perineal injuries is required. The case presented here provides an example of managing a complicated case of severe perineal injury without stoma creation.

CASE REPORT

A 7-year-old boy, who was a victim of a road traffic accident (pedestrian run over by a car), was transferred from a community hospital to our center. The primary and secondary trauma examinations revealed that the patient was conscious, alert and hemodynamically stable. There were tire marks over the right flank, scattered friction burns and abrasions over the face, left lateral

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chest wall, upper and lower limbs. There were two lacerated wounds: one measuring 10 cm with hematoma overlying open fracture of the right iliac crest [Figure 1], and the other was a deep lacerated perineal wound partially involving the anal opening [Figure 2]. There was no bleeding per urethra and the remaining examinations were unremarkable.

Laboratory workup were within normal limits. Pan computed tomography (CT) with intravenous contrast showed frontal bone fracture and small right lung contusion. In addition, the patient had a grade 2 liver contusion, fracture of the right transverse process of L2–L4 lumbar vertebrae and fracture of the right iliac crest with muscular hematoma involving iliacus muscle [Figure 3]. Subcutaneous air was noted, involving the anterior abdominal wall tracking down to right scrotum (retroperitoneal air) [Figure 4]. In addition, there was air within the perineal region extending to the penile shaft [Figure 5]. There was no free fluid or air within the peritoneal cavity.

Local wound exploration overlying right open iliac crest fracture showed a deep lacerated wound involving the anterior abdominal muscle up to the right iliac bone, with stripping of the internal iliac crest with an intact periosteum. Diagnostic laparoscopy revealed an intact peritoneum with evidence of extraperitoneal hematoma. There was no internal hemorrhage or visceral injury [Figure 6]. The deep perineal laceration wound was in oblique direction from 12–3 o'clock, partially involving anus, and extending superiorly reaching the left pubic ramus; deep anal sphincter and rectum were intact [Figure 7].

Wound debridement and adequate irrigation were performed with repair of iliac crest fracture and the muscles, then two drains were inserted in the subcutaneous tissue and the wound was closed over them. Regarding the perineal wound, after a risk–benefit analysis, primary

Figure 1: Lacerated wound measuring 10 cm with right iliac crest open fracture

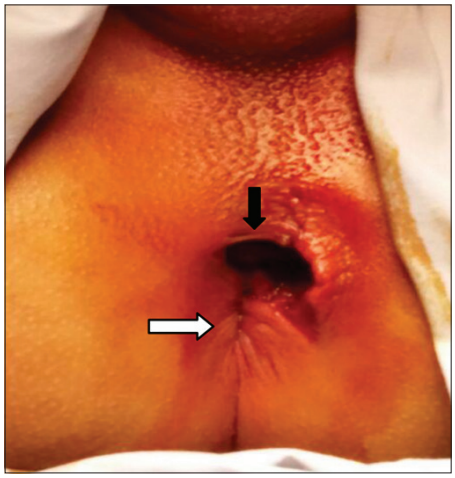

Figure 2: Lacerated perineal wound (black arrow) (white arrow indicates the anal opening)

Figure 3: Right iliac crest fracture (black arrow). Iliacus hematoma with pocket of air (white arrow)

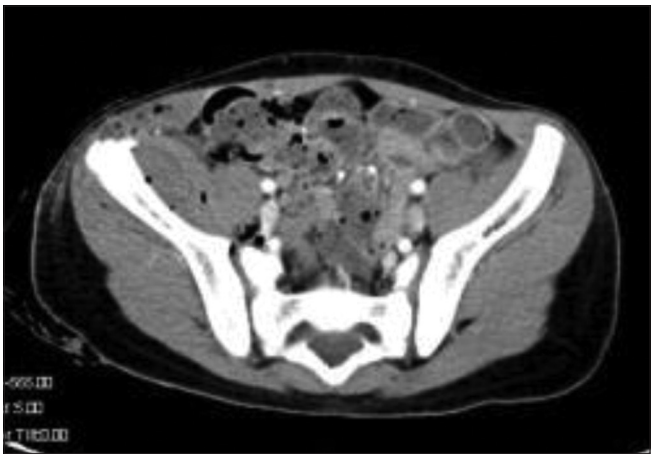

Figure 4: Subcutaneous air and muscular hematoma

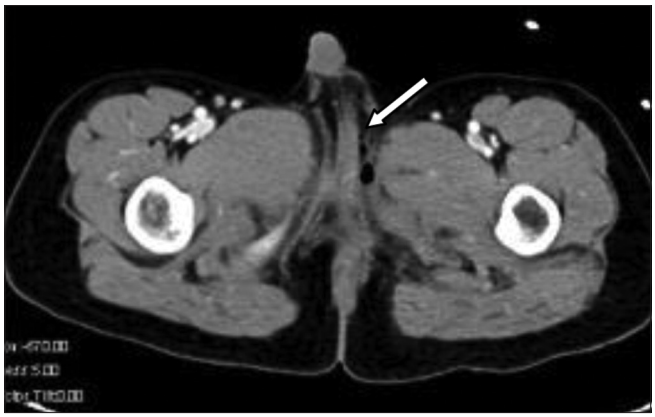

Figure 5: Air within the perineal region extending to the penile shaft

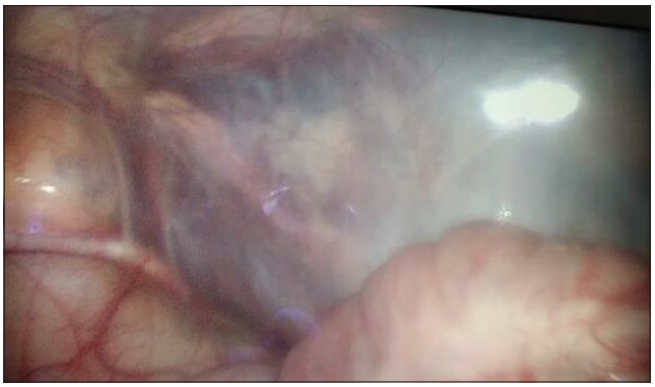

Figure 6: Diagnostic laparoscopy showing extraperitoneal hematoma, intact peritoneum and no internal hemorrhage

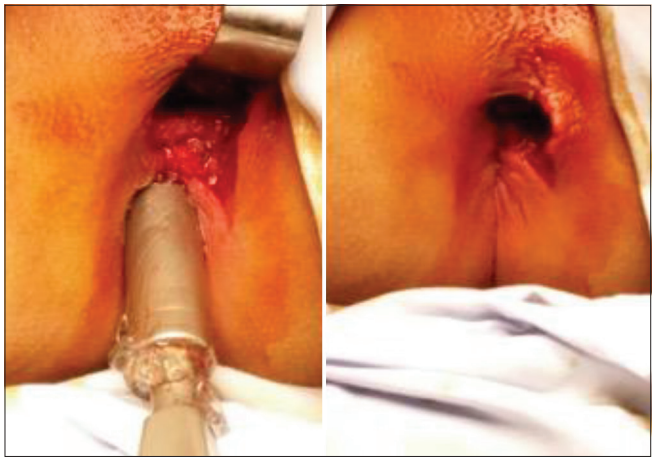

Figure 7: Deep perineal laceration

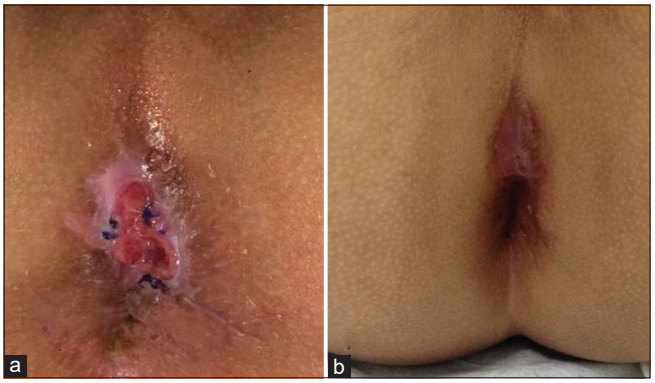

Figure 8: (a) Healing wound, and (b) healed wound with continent sphincter

closure without colostomy was performed, as the patient was be kept nil per mouth and started on total parenteral nutrition (TPN). The wound was irrigated, and the primary repair was done in layers over drain.

Postoperatively, supportive treatment was initiated in the form of TPN, broad-spectrum antibiotics for 14 days and wound care with close observation until primary healing was achieved. The patient was started gradually on diet with subsequent tapering of TPN, and was discharged on day 16 of admission with good clinical outcome. He was followed up weekly in the outpatient clinics for 6 weeks until the wounds healed completely and continence was ensured [Figure 8].

DISCUSSION

Perineal injuries are uncommon in both children and adolescents, and owing to its rarity, there is a lack of consensus regarding the management strategy of such cases.[1] Perineal injuries vary from simple laceration and contusions to more severe destruction of the perineal area. Lack of external findings does not reflect the severity of the injuries as the appearance of wound not always reflects the extent or seriousness of the injury.[2] In general, early diagnosis and intervention are needed to prevent septic complications, secure the anal continence and offer best functional outcomes.[2,3] In fact, early intervention can drastically reduce serious morbidity, and even mortality, in bleeding patients.[4] Theoretically, colostomy is preferred in perineal injuries to protect the wound from contamination, but as our case presented with superficial and partial anal sphincter damage that was not involving the full thickness of the rectum and anus, we decided to go for primary closure without colostomy.

The diagnosis and evaluation of perineal injuries requires meticulous assessment. A detailed history of trauma can provide an estimation of the severity of the injury and the affected organs. Preoperative assessments can be obtained by local examination, with or without rectal examination, X-ray, triple contrast CT (IV, oral and rectal) and laparoscopy. They are considered crucial in classifying the injury and choosing the best management.[5,6] In addition, proctoscopy, vaginoscopy or cystoscopy are performed perioperatively to exclude urethral, rectal bleeding or bowel perforation in suspected cases.[5,7] A study comparing the effectiveness

of CT versus proctoscopy in diagnosing rectal injuries in children with trauma showed that missed injuries were not apparent during proctoscopy, possibly due to the presence of fecal matter in the rectum. The authors concluded that triple CT is the best choice and should be performed in the evaluation of trauma patients.[8] This is similar to the findings of case series, wherein the superior accuracy of triple-contrast CT in diagnosing rectal injuries in children was demonstrated.[8] The use of oral and rectal contrast CT is essential in opacifying the loops of the intestine and helps increase the recognition of bowel injuries.[9] Accordingly, CT was used as the diagnostic modality in the current case.

Positive prognosis and outcome is likely even in patients with severe anorectal injury through proper investigation and aggressive management, as shown in the current case. Notably, compared to adults, children are more susceptible to perineal injuries, but also have a better prognosis, with long-term fecal incontinence in 19% and anal stenosis in 11% of the cases.[8,9] Management of perineal injury in children remains challenging because of lack of a standardized therapeutic approach, and thus the management has been adopted from that of adults. However, children have different tissue thicknesses and injuries tend to be more serious, emphasizing the need for specific guidelines.[1]

About 15–20% of the pediatric and adolescent patients with perineal injuries require surgical intervention.[4] Fecal diversion, wound drainage and broad-spectrum antibiotics are believed to be the principles of management.[7,8] Management depends on the site and extent of injury. Generally, perineal impalement injuries are classified into the following four categories: transanal extraperitoneal, transanal intraperitoneal, perineal extraperitoneal and perineal intraperitoneal.[7,8]

In transanal extraperitoneal injures, caused mainly by sharp objects that lead to retrorectal, retroperitoneal and/or vascular injuries, the management is based on antibiotics and drainage. In case of massive tissue destruction or inflammation, colostomy may be indicated.[7] For transanal intraperitoneal injures, caused by blunt or sharp objects and complicated by evisceration, rectal repair with colonic and peritoneal lavage, antibiotics, and often colostomy are recommended.[7] In isolated perineal extraperitoneal injures involving the anal sphincter, vagina and urethra, management will be by primary repair, debridement, antibiotics and rectorectal drainage. However, in patients with significant tissue loss or destructive injuries involving anus, rectum and sphincter, primary repair with colostomy is recommended.[7,8]

Management of patient with perineal intraperitoneal injuries depends on hemodynamic stability, peritoneal contamination and degree of tissue damage. In hemodynamically stable patients, it is recommended to repair without diversions. Patients with colorectal perforation, advanced peritonitis, massive tissue damage and difficult repair may benefit from a diverting colostomy.[7,8]

In 2011, another management approach was proposed, which classifies perineal injuries into three main categories focusing on the degree of contamination: (1) isolated perineal wounds with or without anal sphincter injury and partial thickness, anorectal injury with minimal or no contamination treated together with the primary wound repair and sphincter repair if needed without colostomy. (2) Anal sphincter injury with or without extraperitoneal full-thickness anorectal injury, with moderate contamination treated by primary anorectal repair and sphincter repair with colostomy. (3) Sphincter injury with full-thickness anorectal injury, and/or intraperitoneal full-thickness anorectal injury with severe contamination treated with perineal drainage, delayed sphincter repair, and laparotomy if needed with colostomy.[1] Colostomy can be considered in cases with shock, multiple injuries and high-velocity weapons.[1] Both classifications approaches can be used in pediatric perineal injures, as no standardized or agreed guideline has yet been proposed.

In the current case, after weighing the risk–benefit regarding primary perineal wound closure with or without diverting colostomy in the presence of severe, deep contaminated and lacerated perineal wound, we proceeded for primary closure without colostomy because the injury was involving superficial and partial anal sphincter but not reaching the full thickness of the rectum and anus.

CONCLUSION

The case presented here provides an example of managing a complicated case of severe perineal injury without stoma creation and highlights that selection of primary repair without colostomy must be meticulous and individualized based on the location and extent of the injury.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient's parents have given their consent for son's images and other clinical information to be reported in the journal. The patient's parents understand that his names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Peer review

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Conflicts of interest

There are no conflicts of interest.

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