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## Case Report and Review of the Literature

# A Rare Traumatic Event: Description of a Parailiac Hernia in a Young Female following Blunt Trauma

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ABSTRACT

Traumatic abdominal wall hernias are a rare event following blunt trauma. This case report details the course of a traumatic left parailiac hernia in an 18-year-old female initially diagnosed on CT imaging. The timing of repair in such hernias is largely debated, and this patient's repair was delayed by significant operative intra-abdominal injuries, recurrent orthopaedic surgeries, and an infected hematoma at the hernia site. Ultimately, it was repaired primarily three months after the initial trauma. At most recent follow-up, there was no recurrence of the hernia but the patient was dissatisfied with cosmesis. The cumulative literature is lacking data on the treatment of traumatic hernias and there is no consensus as to the ideal timing and method of repair; therefore, the strategies described in this case report of a successful traumatic hernia repair are important to establishing guidelines for such trauma.



## Introduction

Traumatic abdominal wall hernias are defined as fascial defects caused by blunt force resulting in an acute increase in intra-abdominal pressure and shearing forces over the pelvic bones [1]. The combination of these forces disrupts the muscle fibers, fascia, and peritoneum while leaving the skin intact. The occurrence of such hernias is less than 1%, but proper initial management is paramount to a successful repair.

Specifically, there is no consensus as to the ideal timing or method of these repairs. This case report argues in favour of delayed repair of a traumatic hernia in the presence of other traumatic injuries and infection. Local contamination, as well as defect size, also played a role in the decision to proceed with a primary repair for this patient. The individual factors which should be taken into account when faced with a traumatic hernia are discussed in this case report and may aid other trauma surgeons faced with the management of such hernias.

## Case Report

An 18-year-old, overweight, restrained female driver was the victim of a head-on collision with prolonged extrication time. In the trauma bay, the primary survey was intact with a GCS15. Secondary survey was significant for an obvious open right ankle fracture, large left hip abrasion, and lower abdominal tenderness. She was hemodynamically stable and was taken to CT scan. Imaging revealed a fat-containing left iliac crest flank hernia with surrounding subcutaneous and intramuscular air, as well as free fluid around the liver and spleen without active extravasation or free air (Figure 1). Other injuries seen on imaging included right talar, distal fibular, and calcaneal fractures. Due to unavailability of the surgical staff with other victims of the motor vehicle accident and the stable clinical status of the patient, she was monitored in the ICU with serial abdominal exams.

She remained hemodynamically stable but, over the next seven hours, developed worsening abdominal tenderness and lower abdominal ecchymosis. She was taken to the OR for an exploratory laparotomy, which revealed hemoperitoneum, omental avulsion, small bowel mesentery avulsion, a 15cm left colon laceration, non-expanding right retroperitoneal hematoma, and left abdominal wall fascial disruption. She underwent a partial omentectomy, small bowel resection, left hemicolectomy, and placement of a 10Fr JP drain in the fascial defect. Since the patient remained hemodynamically stable throughout the procedure and was young and healthy, the decision was made to create

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primary anastomoses and proceed with abdominal closure. Repair of the parailiac hernia was deferred due to the extent of stool spillage from the hollow viscus injuries and tissue swelling at the fascial defect. The patient progressed well post-operatively and was discharged home on post-op day seven.

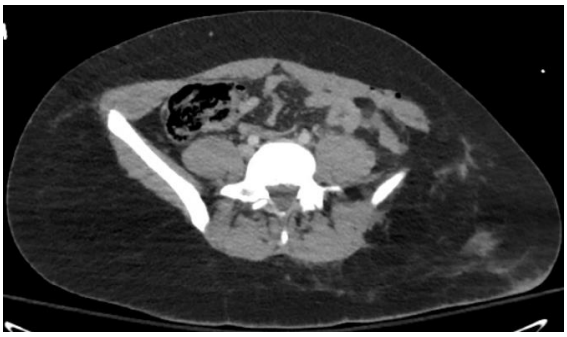

**Figure 1:** An axial view of a CT image showing a left parailiac flank hernia without intra-abdominal contents.

She was evaluated in the outpatient clinic three weeks after her initial surgery, was doing well, and was scheduled for elective repair of the left parailiac hernia seven weeks post-trauma. The day before surgery, she was admitted to the hospital with cellulitis at the hernia site (Figure 2). CT scan at that time revealed a 17.1 × 10.9 × 5.2cm fluid collection, concerning for an infected hematoma (Figure 3). It was amenable to IR drainage, and fluid cultures were positive for MSSA. She remained inpatient for a total of six days for IV antibiotics and was discharged on oral Keflex, and her surgery was rescheduled four weeks later following drain removal. Follow-up imaging prior to surgery showed a reduction of the fluid collection to 5 × 0.6cm, and the cellulitis was resolved on clinical exam.

**Figure 2:** A photo of the patient 7.5 weeks after the traumatic incident. She presented with new pain and erythema of the hernia site, along with systemic symptoms.

Intra-operatively, the fascial defect was measured as 1cm in length. It was causing the patient significant discomfort and was cosmetically unappealing to her. An elliptical skin incision was made and taken down to the iliac wing. The transversus abdominus was exposed, the defect was palpated, and the hernia was easily reduced. Due to the small size of the defect and residual hematoma and recent infection, the defect was primarily closed. Using 1-0 Prolene sutures in a horizontal mattress fashion, the transversalis fascia was brought to the periosteum of the iliac wing. The scarred subcutaneous tissue and skin were excised and brought together in a layered closure. The patient did well and was seen in the office on post-operative day 18 and had no recurrence of the hernia (Figure 4). She continued to present with a bulging at the prior hernia site, which was likely due to denervation of the latissimus dorsi as a direct result of the trauma. She did undergo a scar revision procedure with plastic surgery with minimal improvement in cosmesis.

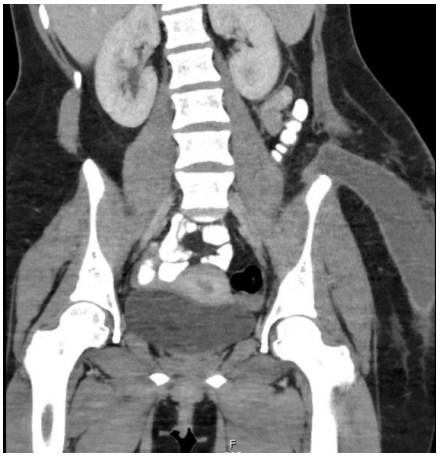

**Figure 3:** A coronal view of a CT image showing a persistent left parailiac flank hernia with a complex, enhancing fluid collection measuring 17.1 × 10.9 × 5.2cm, concerning for an abscess or infected hematoma.

**Figure 4:** A photo of the patient on post-operative day 18 following primary repair of a left parailiac hernia.

## Discussion

Traumatic parailiac hernias are a rare event but pose a difficult question in terms of timing and method of repair. Appropriate course of action is important to preventing recurrence, infection, and pain relief and much of the data available comes from case reports and small volume studies due to the rarity of these events. Lane, *et al.* recommended immediate operative exploration of any traumatic abdominal hernia due to the severe forces required to cause such a defect and the increased risk of additional intra-abdominal injuries [2]. The patient in this case report was hemodynamically stable and without peritonitis, and her imaging did not reveal free air. Due to OR availability and surgical staffing, which were at max capacity with the other members of the MVC with life-threatening injuries, this patient was monitored in the ICU. More immediate operative exploration would have reduced the time of intra-abdominal contamination and, perhaps, prevented the development of her infected hematoma and cellulitis at the hernia site.

Regardless of operative exploration, Brenneman, *et al.* favoured a delayed repair of traumatic hernias. Tissue destruction and swelling can disrupt tissue planes and prevent an adequate primary repair with

increased risk of recurrence [3]. Additionally, the presence of other intra-abdominal injuries poses too great an infection risk. Timing of delayed repair depends on specific patient factors. The patient in this report first required time to recover from her exploratory laparotomy. She also required extensive operative repair and therapy for her right lower extremity fractures. As the hernia did not contain bowel, her orthopaedic repairs and functional recovery were deemed paramount over her hernia repair. Lastly, repair was delayed until resolution of the hernia site infection. No study has yet to define the ideal timing of an early or late repair.

We chose a primary repair because of the small defect and concern for residual infection. Karhof, *et al.* found no significant difference in recurrence of traumatic hernias with mesh repairs or primary repairs [4]. Anchoring of the tissue repair to the periosteum can provide a long-lasting repair. Lastly, we chose an open repair over a laparoscopic repair due to better visualization of tissue planes from above the peritoneum and excision of denervated tissue with attempts at a more cosmetic repair. The patient has not experienced a hernia recurrence over one year after her initial trauma.

In general, the best repair of a traumatic hernia depends on patient and situational factors, such as concomitant injuries, patient stability, defect size, local contamination, and extent of fascial destruction. Carefully considering each factor can lead to a successful repair and may not necessarily enable standardized guidelines for these rare traumatic events.

**Conflicts of Interest**

None.

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None.

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**Consent**

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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