Evisceration from Blunt Trauma in Adults: An unusual injury pattern: 3 cases and a literature review

Timothy Craig Hardcastle[1,2], Gysbert-Johannes Nicolaas Coetzee[2], Lucas Wasserman[2]

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[1] Trauma Service, Tygerberg Academic Hospital
[2] Department of General Surgery: University of Stellenbosch / Tygerberg Hospital

Correspondence
Tim C Hardcastle
University of Stellenbosch,
PO Box 19063, Tygerberg 7505
South Africa
E-mail: tch@sun.ac.za

ABSTRACT:

Traumatic evisceration is a common finding with penetrating trauma, particularly after knife stab wounds. There are limited case-reports of evisceration after blunt wounding patterns in the literature. We present 3 patients who were admitted to our Trauma Service (Diana Princess of Wales Trauma Centre, Tygerberg Academic Hospital, Cape Town South Africa), after a blunt injury with bowel evisceration.

The management is described and the literature reviewed.

KEYWORDS: **Blunt trauma; evisceration; mechanism of injury**

Introduction

The trauma service of the University of Stellenbosch / Tygerberg Academic Hospital is one of only two "Level 1" equivalent trauma units serving the 4,5 Million people living in the Western Cape Province of the Republic of South Africa. We reviewed our data for the past five years to determine if blunt trauma was a significant cause of evisceration of the intestines due to full thickness injury of the abdominal wall. The unit attended to just over 120000 trauma patients during this period and only three cases of evisceration were found with a blunt injury mechanism. These three cases are reported here.

Case Reports

Case 1

A 28 year-old male was the victim of a pedestrian vehicle collision on a nearby highway, presenting with a minor head injury (Glasgow Coma Score 13/15) and open herniation of bowel (evisceration) through a blunt traumatic abdominal wall defect. He also had a left compound tibia/fibula fracture, without vascular compromise. He was haemodynamically stable and required minimal fluid resuscitation. His primary survey and secondary survey were conducted as per ATLS guidelines. The eviscerated bowel was covered with saline dressings. He was taken directly to laparotomy, where a transection of the descending colon was found (American Association for the surgery of Trauma (AAST): Colon Injury Scale Grade 4), which was debrided and repaired primarily. The abdominal wall was reconstructed in layers. He made an uneventful recovery complicated only by minor wound sepsis of the lower limb fracture site. He was discharged from the Trauma Surgical service on post-operative day 6, tolerating a full diet, to the orthopaedic service for further care of the fracture and mobilisation.

Case 2

A 30 year old male was the victim of a pedestrian vehicle collision and presented in shock to the Trauma Unit, responding well to minimal fluid therapy. His injuries included a transverse laceration across the mid-abdomen, with a skin defect and herniation of the entire small intestine, with two lacerations of the bowel present (AAST: Small Bowel Injury Scale Grade 3). His other injuries included a compound right femur fracture and a closed left humerus fracture.

He was taken for laparotomy, where the bowel was repaired by means of a primary repair of one laceration and resection and anastomosis of the other injury. The muscles of the abdominal wall were approximated and the skin left open. The orthopaedic injuries were managed by debridement and internal fixation.

He underwent a re-look laparotomy on day 2 where the abdominal wall was re-debrided and re-sutured in a double layer and split skin grafting was undertaken to cover the remaining skin defect on day 8 of admission. He proceeded to have an uneventful recovery and has been transferred to a rehabilitation unit for orthopaedic rehabilitation.

Case 3:

A male, 22 years old, was the victim of a pedestrian vehicular collision and was dragged under the vehicle for approximately 200 meters. He presented to our unit in shock, with degloving of most of his anterior abdominal wall and evisceration of small bowel with multiple enterotomies (AAST: Small Bowel Injury Scale Grade 3). He had deep partial abrasions (equivalent to a grade 2 burn) of his back and an open wound with exposed pelvic bony tissues.

He underwent immediate laparotomy after resuscitation, with bowel repair and wound debridement of the soft tissue injuries. Broad-spectrum antibiotic cover and ICU admission followed. Split skin grafting at day three failed and he was managed with vacuum dressings and grafted as the wounds granulated. He had two re-look laparotomies for intra-abdominal sepsis during his ICU stay and a tracheostomy on day 10. Unfortunately he developed two small bowel fistulae after the third operation and this was managed with standard fistula management and total parenteral nutrition, until a surgical repair was possible on day 50. He was finally discharged to a rehabilitation center three weeks after the last surgical procedure.

Discussion and literature review

Traumatic evisceration is a common finding with penetrating trauma, particularly after knife stab wounds (11). These three cases remain the only cases in our database for the past five years, with over 120000 trauma patients treated during this period. These three cases constitute only the second report, in an otherwise healthy adult patient, in the English speaking literature. The limited reports in the literature (5,6,7,8,13) document only isolated cases of the occurrence of such injuries and the majority reported in the literature (5,6,8,13) relate to injuries in children, where the relatively thin anterior abdominal wall can largely explain the injuries. The injuries where cyclists were involved follow a well-described pattern (4).

There are only two reports of this type of injury in adults, of which one describes evisceration through an existing incisional hernia where the integrity of the anterior abdominal wall was already compromised (7). The other case reported related to a multiply injured patient where the entire anterior abdominal wall was degloved / avulsed with an open pelvic fracture requiring a massive reconstructive process (2). While this case is similar to our third case, the focus of the latter article was on the transfusion therapy required and the evisceration and its consequences were only discussed as was relevant to the intestinal complications. Also, the extent of soft tissue loss in the case described by Brotman and co-workers (2) was far more extensive than either of our first two cases and the presence of the evisceration was a consequence of there not being any intact anterior abdominal wall to prevent the evisceration from occurring. Their patient required a far more extensive reconstruction than in these cases, with multiple pelvic skin grafts and tissue expansion flaps. This was similar to our third case. Our other two patients were fortunate to have had a successful primary closure of the abdominal wall defect.

The injury patterns in this type of trauma are associated with massive transmission of energy from the wounding instrument to the patient. The abdominal parieties are simply torn apart and can present either as the more common traumatic abdominal wall hernia, of which some 50 - 60 cases have been reported since 1906 (9,10), or where the skin is breached, in the very infrequent presentation of evisceration. One can postulate that there may be some “penetrating” element to the trauma, but the history in all of our cases did not convincingly reveal this to be the case.

The repair of the abdominal wall, preferably with non-absorbable suture material, is the preferred method, avoiding the use of mesh with the inherent risk of septic complications. Primary anastomosis of the transected left colon in the first patient was successful, with the decision to conduct primary repair being based on healthy bleeding bowel ends after debridement. There was no other injury in the abdomen requiring intervention. This approach is in keeping with the recently reported international experience, both with penetrating injury (Eastern Association for the Surgery of Trauma guidelines) (3) and with blunt injury (1,12).

Conclusion

Evisceration from blunt abdominal trauma is an extremely rare event and suggests extreme energy forces transmitted to the patient. When occurring in an adult this implies even higher energy transmission, given the more structured and muscular anterior abdominal wall. Primary suture repair of the injured abdominal wall is the recommended approach. There may be a place for primary colonic anastomosis in trauma patients with minimal contamination and healthy tissues after appropriate wound debridement in the haemodynamically stable patient.

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Conflict of Interests: None