Challenging Cases in Pediatric Trauma: Management of the Open Abdomen

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Introduction:
This case illustrates the difficulties associated with the diagnosis of intestinal injuries in the presence of blunt trauma, and the management of the open abdomen using temporary techniques.

Case Study:
A 11-year-old female was struck by a truck traveling at a high rate of speed while riding her bicycle without a helmet. On arrival her GCS was 8. Her pulse was 136 and blood pressure was 101/37. She was intubated and underwent CT scans of her head, neck, chest, abdomen, and pelvis. Multiple fractures were diagnosed which included the left humerus, femur, radius/ulna, distal tibia/fibula, and multiple vertebral fractures. Her left foot was pulseless and on arteriography, a single occlusion was revealed in the anterior tibial artery. Other injuries included significant pulmonary contusion, grade 3 splenic injury, and a widely displaced pelvis. No mass lesions or significant axonal injury were viewed on the CT of the head.

Over the ensuing 2 weeks, she underwent serial abdominal washouts, fluid restriction, and temporary abdominal closure utilizing a Wittmann patch. The abdomen was closed after 2 weeks with fascial and skin closure, secured with retentive sutures. The patient was extubated on day 29 and discharged to a rehabilitation facility in good condition.

The child was initially treated with fluids, C-spine collar, and fracture stabilization. She underwent ORIF of the pelvic ring, left femur, and tibia/fibula fractures. A repeat CT scan of her abdomen and pelvis was negative. On day 5, she developed abdominal distention and hypotension. A repeat CT scan demonstrated extraluminal air and fluid collection in the left lower quadrant. During exploration a sigmoid colon perforation was identified in a segment with a degloving injury. Due to significant fluid overload abdominal closure was not feasible.

Delay in Diagnosis of Blunt Bowel Injury in the Pediatric Population
Blunt bowel and mesenteric injuries (BBMI) represent a unique challenge to those who care for pediatric trauma patients. Most authors report an incidence of 10% (1–6). Despite these injuries, there remains legitimate concern regarding the consequences of “missed” injuries and delayed diagnosis. The diagnosis of BBMI in children is problematic for a number of reasons. The consequences of “missed” injuries and delayed diagnosis. The diagnosis of BBMI is often one of exclusion in the pediatric patient. A high index of suspicion is essential to minimize complications.

Intrabdominal sepsis and increased bowel edema with the loss of domain.

Temporary abdominal closure using the Wittmann Patch.

References: