# Early Recognition and Operative Intervention Can Increase Survival for Pediatric Trauma Patients

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## Case Study
A 10 year old girl was an unrestrained passenger in a MVC. She was found 15 minutes after the crash, unresponsive on the floorboard at the back seat of the car. She was brought to the hospital by EMS as a Level I trauma code.

### Abdominal Compartment Syndrome
Injured children have had resuscitation and are accessible to radiology work and three spacing in the abdomen. Edema in the abdominal cavity (including the intestines, retroperitoneum, and other organs) increased intraabdominal pressure (IAP) (increased IAP compresses the inferior vena cava. Blood flow into the heart is decreased — to renal and mesenteric ischemia, followed by tissue perfusion and multiple organ failure.

Abdominal Compartment Syndrome (ACS) in children is a sustained elevation in IAP of greater than 10 mm Hg associated with new or worsening organ dysfunction (World Society of Abdominal Compartment Syndrome). It is infrequently reported, rapidly progressive and underappreciated in the pediatric population. It is associated with 50 to 100% mortality if not recognized and treated promptly.

### Decompressive Laparotomy
Surgical decompressive laparotomy (DL) with open abdomen management for ACS is the definitive treatment of choice when medical and less invasive therapies have failed. This has shown improvement in organ function and mortality. DL improves respiratory mechanics, restores abdominal organ perfusion, and venous return to the heart.

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### Hospital Course
- The abdominal negative pressure wound dressing was changed at the bedside in the PICU 2 days following surgery.
- 4 days later the abdomen was closed at the bedside in the PICU.
- On hospital day 6 she was extubated.
- Transferred to intermediate care, then to general pediatric unit.
- Admitted to PICU, intubated and mechanically ventilated.
- Right proximal femur fracture.
- Possible duodenal or pancreatic fractures with epidural hematoma, perched facet T10-T11.
- Liver laceration, grade 2, retroperitoneal hematoma,possible duodenum or pancreatic contusions on CT scan.
- Surgery at the bedside in the PICU was performed by Kristen Zeller, M.D. After induction of anesthesia, a midline laparotomy incision was made from the xiphoid to the pubis. Anesthesia, a midline laparotomy incision was made from the xiphoid to the pubis. Anesthesia, a midline laparotomy incision was made from the xiphoid to the pubis.
- The abdomen was closed in the operating room & an open reduction.
- Bladder pressure = 20 mm Hg.
- Difficult intubation.
- Need for repositioning.
- Abdominal hypertension.
- Persistent oliguria, elevated ventilatory pressures and rising bladder pressure resulted in the progression of abdominal hypertension and the abdominal compartment syndrome.

### Conclusions
- ACS is a potentially lethal condition in pediatric trauma patients who are severely injured or receive large volume fluid resuscitation.
- ACS must be recognized early.
- UPH should be closely followed and measured accurately.
- "Sticks can be the first to recognize IAH and the propagation of patients to ACS."
- Abdominal decompression appears to have a positive effect on patient survival.

## References