

Trauma Case Review

Four years old boy with hypovolemic shock from grade 5 liver injury

Near fatal injury with a happy ending

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Financial Disclosures

- No relevant financial relationships with any commercial interests.
- Stig Somme, MD

Synopsis

- Four years old boy was riding a scooter on the playground. He fell and the end of the handlebar hit him in the abdomen.
- His mother was close by and observed the accident.
- Due to his complaints of pain and that he appeared dizzy his mother puts him in the car and drives to the ED at CHCO.
- As soon as they arrived he lost consciousness and was carried in by his mother. He did not have a palpable pulse in triage
- He was immediately brought over to the trauma room and a trauma red was activated



Trauma resuscitation

- No pulse
- CPR was initiated
- Intraosseous (IO) access x 3 were placed
- LMA placed -> soon after intubated with ETT
- Massive transfusion protocol was initiated
- 2 units PRBC were administered through IO
- 4 rounds of epinephrine were administered
- A right groin central line was placed
- PRBC and IVF were administered through the central line

Continued Trauma resuscitation

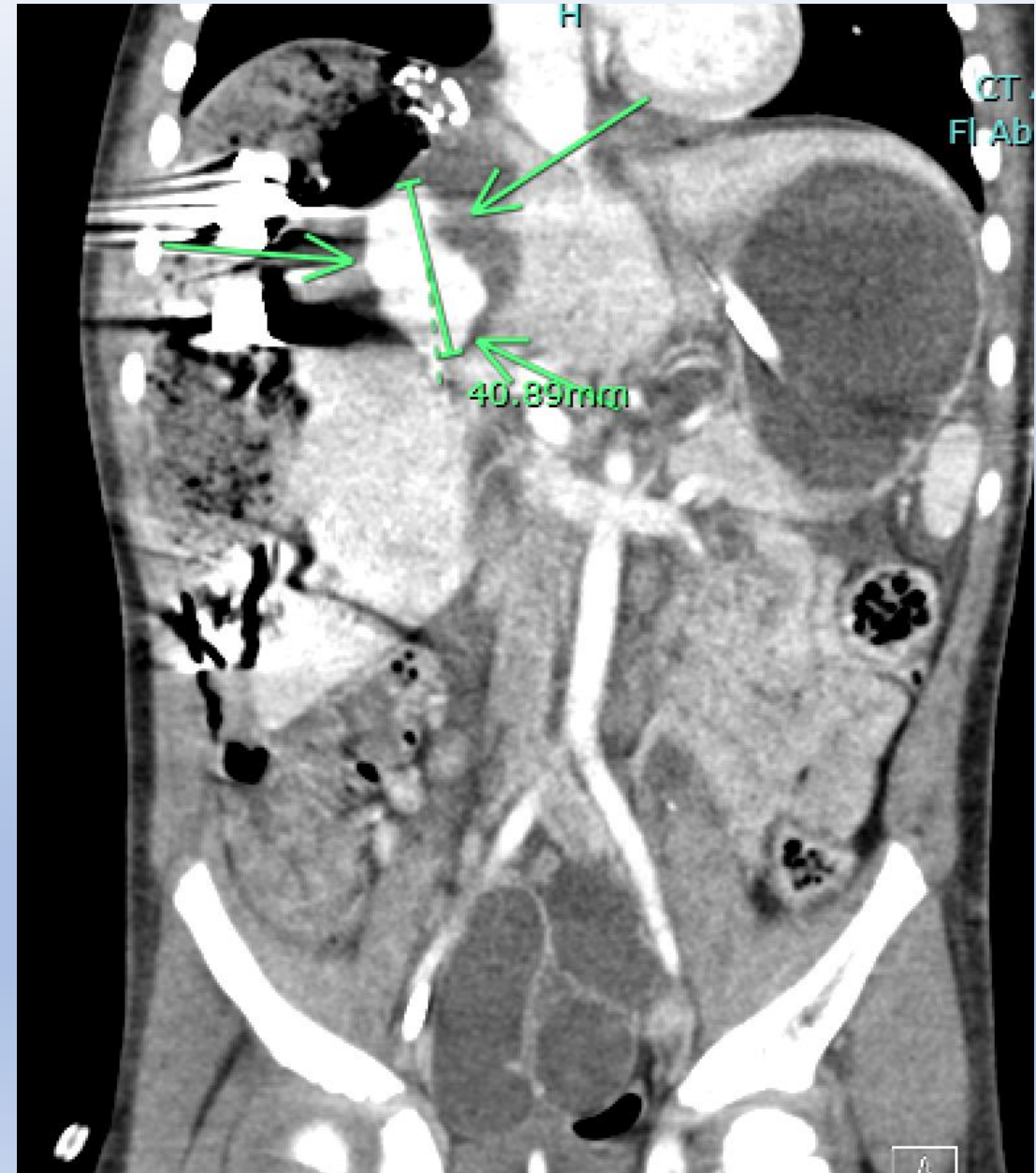
- FAST scan
 - Fluid in the abdomen consistent with blood
 - Minimal cardiac filling
- Return of spontaneous circulation was achieved in the ED
- MTP was continued with 1:1:1 PRBC:Plasma:Platelets
- Patient was brought to the operating room directly from the ED with anesthesia, surgery, ED staff present and blood being administered

Operating Room

- Anesthesia obtained arterial access while the abdomen was prepped
- Midline laparotomy
- Large amounts of blood in the peritoneum
- All four quadrants were packed
- Blood appeared to be coming from the liver
- A large laceration was seen extending from diaphragm and hepatic veins across the entire anterior surface of the right lobe of the liver
- There was no bleeding from the spleen or small/large bowel mesentery. No pancreatic injury was seen.
- Quick clot/thrombin/Gelfoam was applied to the bleeding surface with lap pads over to apply pressure
- A temporary abdominal closure was used to close the abdomen
- He was brought to the PICU and was hemodynamically normal after the resuscitation and control of bleeding in the ED

PICU

- Normal hemodynamically since OR
- Neurologically normal
- CT scan abdomen/pelvis
 - Close proximity to right portal V.
 - Possible extravasation of contrast
 - Right lobe not perfused
 - Parenchymal disruption >75% of lobe
 - Grade 5 liver injury



OR #2

- Post trauma day #1
- Right hepatectomy
- Minimal blood loss

Summary

- 4 years old boy with grade 5 liver injury
- Survival without neurologic or other sequelae.
- Huge efforts by everyone present!
- Multidisciplinary care
 - ED
 - Surgery
 - Anesthesia
 - Transplant
- Nurses, techs, residents, fellows and attending physicians

What were the main reasons he did well?

- Proximity to hospital with short down time
- Massive transfusion protocol -> blood products available shortly
- IV access relatively soon after he lost pulses (Groin Central Line)
- CPR started and performed under direction of ED
- To OR quickly with control of bleeding by packing off liver
- Long term outcome - > right lobectomy by experienced transplant team