

Blunt Renal Injury



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6 year old girl



09:40 2 car head on collision

- heavy damage to both cars
- restrained rear seat passenger

09:50 MedFlight to scene

Assessment:

- Awake and oriented x 3. GCS 15
- Positive seat belt sign. Abdomen distended and soft.
- HR 122, R 26, BP 109/84

Interventions:

- C-spine stabilization
- O₂/NRB
- IV started and fluid bolus given

10:19

Patient arrives at NCH



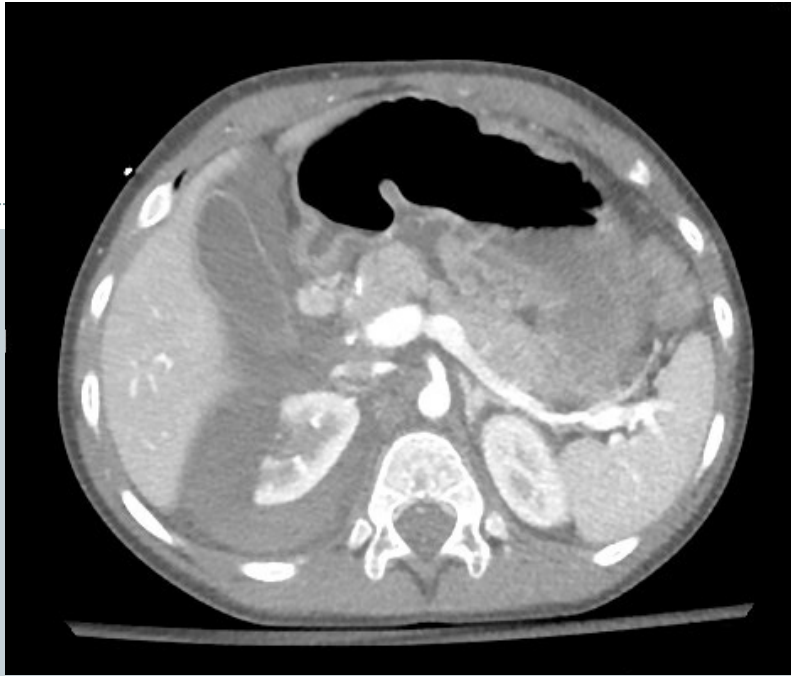
- HR 128, BP 104/60, R 36, SPO₂ 100%, GCS 15
- Primary Survey:
 - Respirations non-labored and equal bilaterally
 - Color pale, cap refill < 3 seconds
- Secondary Survey:
 - Abdomen distended
 - ✦ soft with diffuse tenderness
 - Multiple abrasions
 - Laceration to right leg
 - HH 9.6/27.3, PT 16.3, INR 1.33

10:50

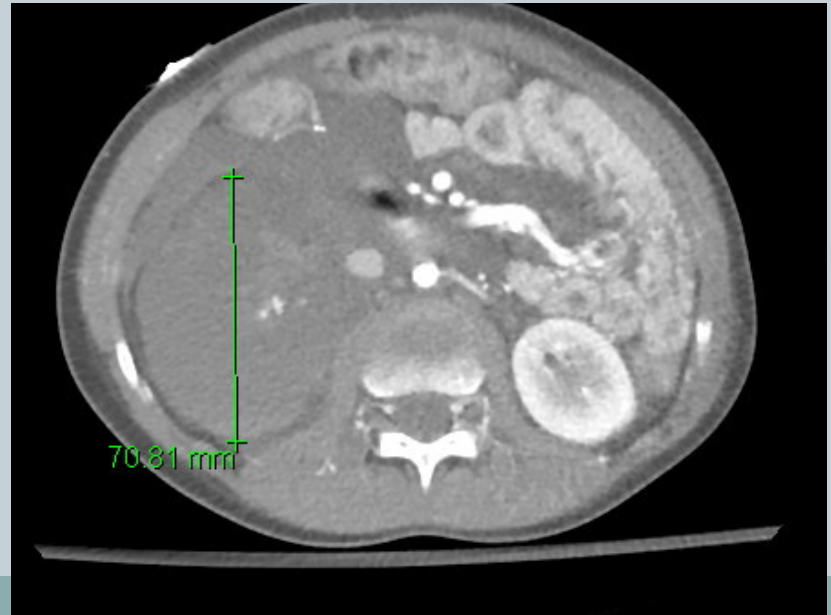
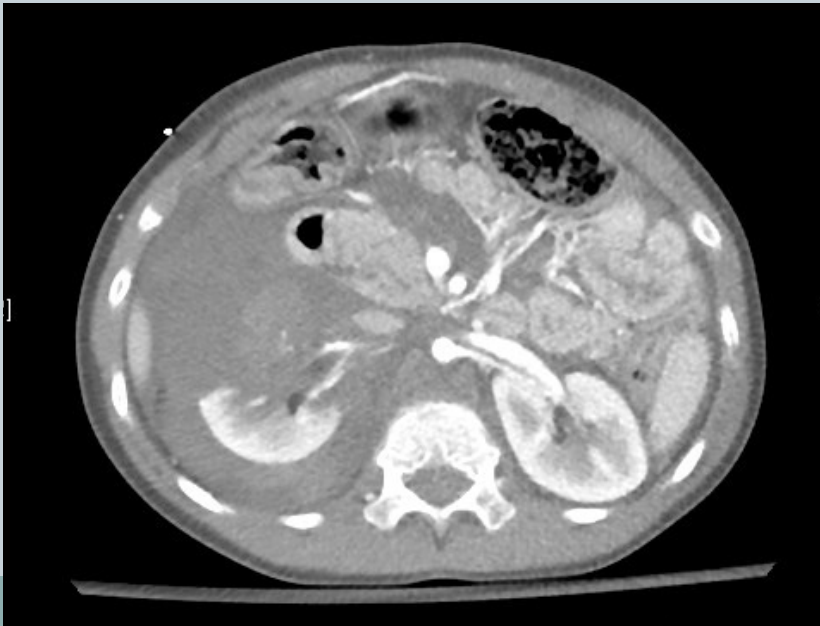
Abdominal CT



- **Grade IV right renal injury**
 - appears to be a vascular injury with active extravasation
 - associated pararenal fluid and free intraperitoneal ascites
- **Subtle air over the anterolateral liver margin**
- **likely mesenteric hematoma**
 - discrete region of bowel injury is not seen
- **Subtle heterogeneity of the pancreatic head**
 - may reflect contusion but no pancreatic laceration
- **Compression fractures at L1 and L2**



[L]



Free air over liver



Surgical attending decides to go to OR



- free air and tender abdomen
- Fluid Resuscitation:
 - PTA : 500 ml crystalloid (25ml/kg)
 - ED : 1700 ml crystalloid (85 ml/kg)
 - ✦ 300 ml PRBC (15 ml/kg)

Procedure



- Exploratory laparotomy with colon mobilization and peripancreatic drain
- Findings
 - Large right retroperitoneal hematoma to midline
 - ✦ not expanding
 - urology consult agreed that no intervention needed
 - Pancreatic contusion
 - Hematoma to right colon mesentery
 - ✦ but no colon injury
 - No evidence of hollow viscus injury.

Post Procedure



- 13:50 Patient admitted to PICU.
- 14:30 Patient extubated to 2L NC
- 18:53 Patient tachycardic
 - SBP 70's, poor UOP, Hgb 5.5
 - Transfused PRBC's, FFP and Platelets
- 21:13 SPO₂ decreased to 75%
- 21:19 Intubated with 5.5 ETT

Over several hours



- abdominal distension worsened
- JP output brisk.
- Total blood products since OR procedure
 - PRBC: 112 ml/kg
 - FFP: 64 ml/kg
 - Platelets: 26 ml/kg
- evidence of compartment syndrome
 - desaturations to low 80's
 - bladder pressure 20 mmHG
 - ✦ Increased to 27 mmHg

Second Procedure



- right trauma nephrectomy
- placement of wound vac

Complications



- Coagulopathy
- Shock
- Abdominal compartment syndrome
- ARDS
- Pancreatitis
- Enterocutaneous fistula
- Acute Renal failure (reversible)

AAST Grade for Kidney Injury



Grade^a	Injury Description^b
RENAL INJURY SCALE	
I	Contusion Hematoma
II	Hematoma Laceration
III	Laceration
IV	Laceration Vascular
V	Laceration Vascular

Nephrectomy by CT grade



- **Grades I. II. III**
 - rare
- **Grade IV**
 - 5%
- **Grade V**
 - 50%

discussion



- Embolization
- Indication for nephrectomy