

## Hepatic Lesion Complicated by a Bilioma with Extravasation of PDC and Renal Laceration After Abdominal Blunt Trauma in a Child

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**Received:** November 19, 2024; **Published:** December 24, 2024

### Abstract

Pediatric abdominal trauma is a significant cause of morbidity, often presenting diagnostic challenges due to misleading clinical findings. This case describes an 8-year-old child involved in a road traffic accident, presenting with hepatic and renal injuries. A CT scan revealed multiple hepatic contusions with vascular extravasation and early bilioma formation, alongside right renal lacerations without delayed contrast extravasation. These findings underscore the critical role of early imaging in identifying injury severity, guiding conservative management, and monitoring for complications. Multidisciplinary collaboration and precise imaging are essential to achieving favorable outcomes in pediatric trauma care.

**Keywords:** Bilioma; Laceration; Trauma; Child

### Introduction

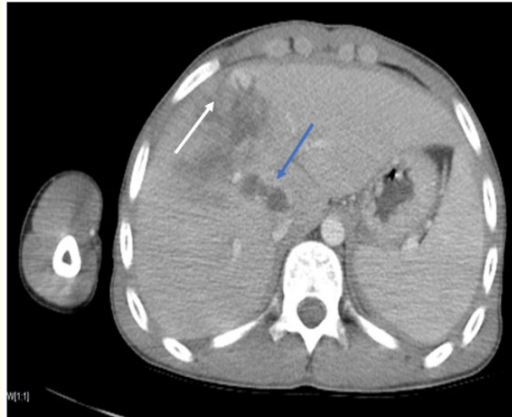
Trauma is a leading cause of morbidity and mortality in children, with abdominal injuries being particularly challenging due to pediatric-specific anatomical and physiological considerations. In children, clinical evaluation can often be misleading, as initial findings may appear reassuring despite significant internal injuries.

Hepatic and renal traumas are among the most frequently encountered abdominal injuries in pediatric trauma. Advances in imaging, particularly CT scans, play a pivotal role in the evaluation, classification, and management of such injuries. Conservative management remains the cornerstone of pediatric trauma care, requiring precise imaging for decision-making. This article discusses the case of an 8-year-old child presenting with hepatic and renal trauma following a road traffic accident, with a focus on early imaging findings and their implications for management.

### Visual Case

An 8-year-old child admitted to the emergency room for a public road accident hit by a car with an abdominal impact point, the clinical examination finds a conscious child GCS 15/15, with hemodynamic and respiratory stability, ecchymosis in the right hypochondrium, and diffuse abdominal tenderness without other associated signs, a body scanner was requested in favour multiple deep hepatic contusions of the right liver of segment VIII, some of which come into intimate contact with the right portal branch with vascular blush in the arterial and portal phase in connection with extravasation of the PDC with individualization of three small collections of segment I in contact with

the hilum and segment VIII, oval, well limited, hypodense measuring for the largest 17 x 12 mm and 19 x 17 mm (Figure 1), upper and mid-renal polar lacerations (Figure 2), lower polar without extravasation of the PDC at late times with reliable abundance of perihepatic, Morrison, peri-splenic, GPC, interanses and pelvic hematic effusion.



**Figure 1:** Multiple deep hepatic contusions of the right liver of segment VIII, some of which come into intimate contact with the right portal branch (arrow white) with vascular blush in the arterial and portal phase related to extravasation of the PDC.

Three small collections of segment I in contact with the hilum and segment VIII, oval, well defined, hypodense measuring for the largest 17 x 12 mm and 19 x 17 mm: Bilioma (arrow blue).



**Figure 2:** Right renal lacerations (arrow blue) without PDC extravasation at late times.

## Discussion

Trauma in children is a frequent pathology. The clinical examination is difficult and sometimes falsely reassuring. Management is less standardized than in adults and can vary from one center to another, especially when it occurs in a non-exclusively pediatric environment. The treatment of trauma/or abdominal injuries in children is in the vast majority of cases conservative and therefore requires a precise imaging assessment taking into account the many pediatric specificity [1].

Hepatic lesions encountered during trauma such as a fracture or vascular wound (torn out of the hepatic veins) are not covered by imaging. The lesions most often identified are contusions and intraparenchymal hematomas [4].

Grade	Subscapular hematoma	Laceration
1	<10% of the surface	< 1 cm deep
2	10-50% of the surface	1-3 cm
3	>50% or >10 cm	>3 cm
4	25-75% of a hepatic lobe	
5	>75% of a hepatic lobe	
6	Liver avulsion	

**Table 1:** AAST liver trauma classification [5].

Vascular complications include hemorrhage, hemobilia, arteriovenous fistula and pseudoaneurysm they generally occur around the fifteenth day and can evolve asymptomatic or be complicated by hemorrhagic shock or portal hypertension. Their diagnosis is based on ultrasound with Doppler and CT scan Their treatment is conservative with the possibility of an intervention endovascular procedure [2] for our patient, he had an extravasation of PDC in late times, a CT angiography was requested after returning without particularity.

Biliary complications include fistulas, bilioma, bilioperitoneum, and bile duct structure. The bilioma are present in 2 to 12% of hepatic traumas and their frequency increases with the severity of the trauma. Their discovery is late from +day15 to sometimes several years after the trauma and it is the first diagnosis to be evoked before any post-traumatic collection. Spontaneous regression is usual for small bilioma (< 3 cm) and in case of persistence, percutaneous puncture or endoscopic drainage can be performed [1]. In our patient, we have the early appearance of bilioma at D+1 after the trauma.

Bilioperitoneum should be considered in the presence of any intraperitoneal effusion with stable hemoglobin. It exposes to an infectious risk [3].

Bile duct stenosis is exceptional. It is secondary to direct trauma or traumatic pancreatitis. It exposes to the risk of cirrhosis.

In our case, we found also right renal lacerations without PDC extravasation at late times associated with liver damage.

For kidney damage CT is more accurate than ultrasound for detecting and staging traumatic kidney injury. It allows, in fact, a complete morphological assessment of the parenchyma, vascular and excretory tract lesions. It also makes it possible to evaluate the functional, secretory and excretory aspect of the traumatized kidney compared to the contralateral side, on the different acquisition times and it allows a precise evaluation of the vascular lesions [6].

**Conclusion**

Pediatric abdominal trauma requires a high index of suspicion, as clinical findings may not correlate with the severity of internal injuries. CT imaging plays a pivotal role in diagnosing and staging hepatic and renal injuries, identifying complications, and guiding

conservative management. This case emphasizes the importance of early imaging and multidisciplinary collaboration in achieving favorable outcomes in pediatric trauma patients.

### Questions

1. **Question 1:** Bilioma represents an immediate complication of hepatic traumatism, true or false

Answer false: The bilioma are present from +day15 to sometimes several years after the trauma.

2. **Question 2:** For kidney damage CT is more accurate than ultrasound for detecting and staging traumatic kidney.

Answer true: It allows a complete morphological assessment of the parenchyma, vascular and excretory tract lesions. It also makes it possible to evaluate the functional, secretory and excretory aspect of the traumatized kidney compared to the contralateral side, on the different acquisition times and it allows a precise evaluation of the vascular lesions.

### Bibliography

1. Chaumoitre K, *et al.* "Peculiarities of thoracic and abdominal trauma in children". *Journal of Radiology* 89.11 (2008): 1871-1888.
2. Goffette PP and Laterre PF. "Traumatic injuries: imaging and intervention in post-traumatic complications (delayed intervention)". *European Radiology* 12.5 (2002): 994-1021.
3. Sharif K, *et al.* "Benefits of early diagnosis and preemptive treatment of biliary tract complications after major blunt liver trauma in children". *Journal of Pediatric Surgery* 37.9 (2002): 1287-1292.
4. Le Dosseur P, *et al.* "Management of abdominal trauma in children". *Journal of Radiology* 86.2 (2005): 209-221.
5. The American Association for the Surgery of Trauma (2019).
6. Lougué-Sorgho, *et al.* "Kidney trauma in children: good practices in medical imaging". *Journal of Radiology* 87.3 (2006): 275-283.

**Volume 14 Issue 1 January 2025**

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