

Severe Splenic Injury in a 12-Year-Old Child

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Grade IV Splenic Injury | No Active Contrast Extravasation | Hemodynamically Stable | Successful Non-Operative Management

BACKGROUND

Pediatric splenic injury is the most common solid-organ injury following blunt abdominal trauma. Current management strategies increasingly emphasize physiological stability rather than injury grade alone. Even severe splenic injuries can frequently be managed without surgery when active bleeding is absent. Radiology plays a central role in injury grading, identification of hemorrhage, detection of vascular complications, and imaging follow-up.

CASE PRESENTATION

A previously healthy 12-year-old boy presented after a bicycle accident resulting in blunt trauma to the upper abdomen. Initial ultrasound demonstrated free intraperitoneal fluid suspicious for hemoperitoneum. Contrast-enhanced Computed Tomography (CT) revealed a deep splenic laceration extending through the hilar region (Grade IV, AAST). Approximately 750–1000 mL hemoperitoneum was present. No active contrast extravasation, pseudoaneurysm, or bowel injury was identified. Despite dramatic CT appearance, the patient remained hemodynamically stable.

MANAGEMENT

Based on clinical stability and absence of imaging evidence of ongoing hemorrhage, non-operative management was selected. Treatment included:

- Intensive care monitoring
- Serial hemoglobin measurements
- Intravenous fluids and analgesia
- Repeated clinical examinations
- Follow-up ultrasound surveillance

No blood transfusion, angiographic embolization, or surgical intervention was required.

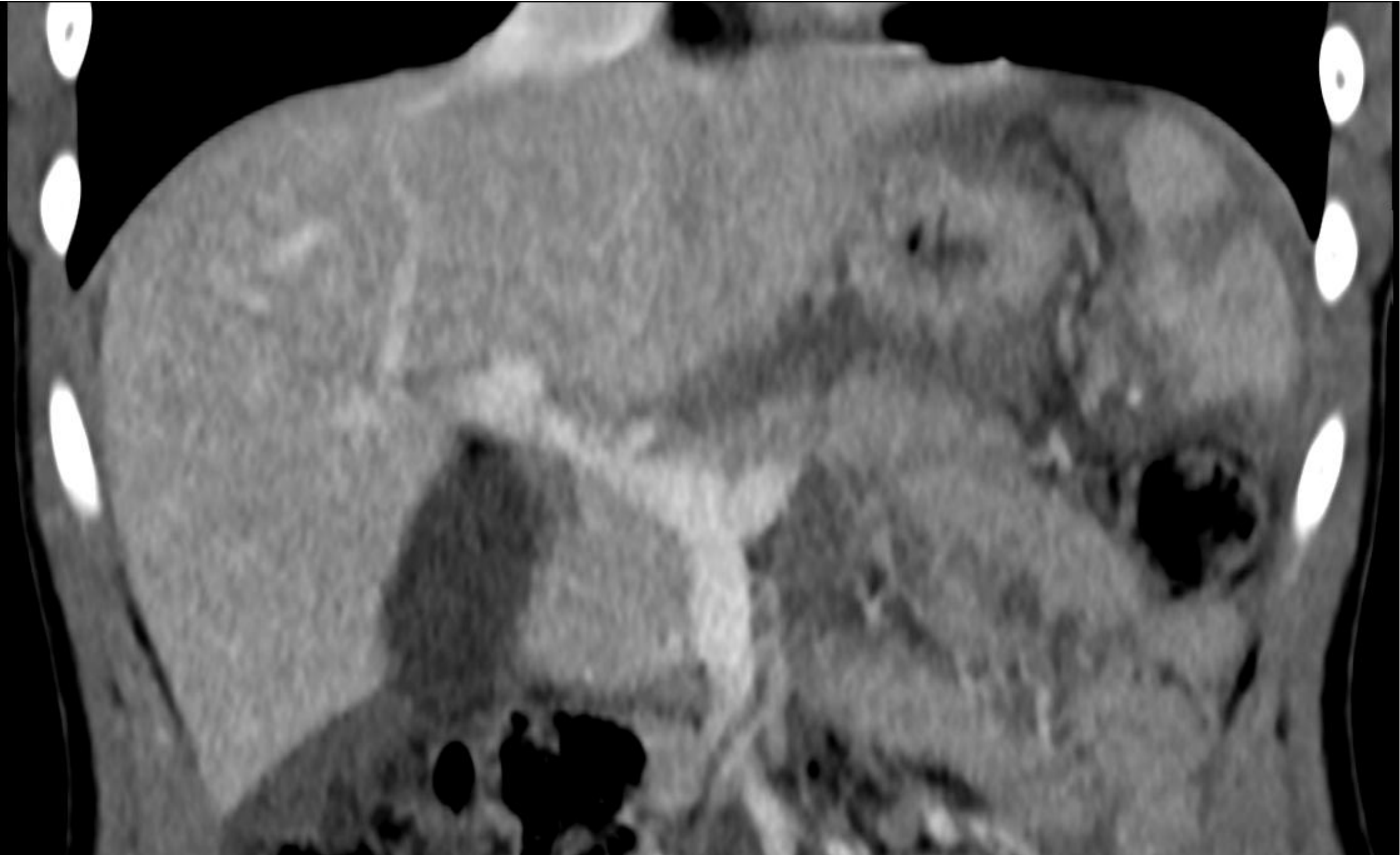


Figure 1. CT: Deep hilar splenic transection with hemoperitoneum, no active extravasation – coronal view.



Figure 2. CT: Axial view demonstrating extent of splenic laceration and perisplenic blood.

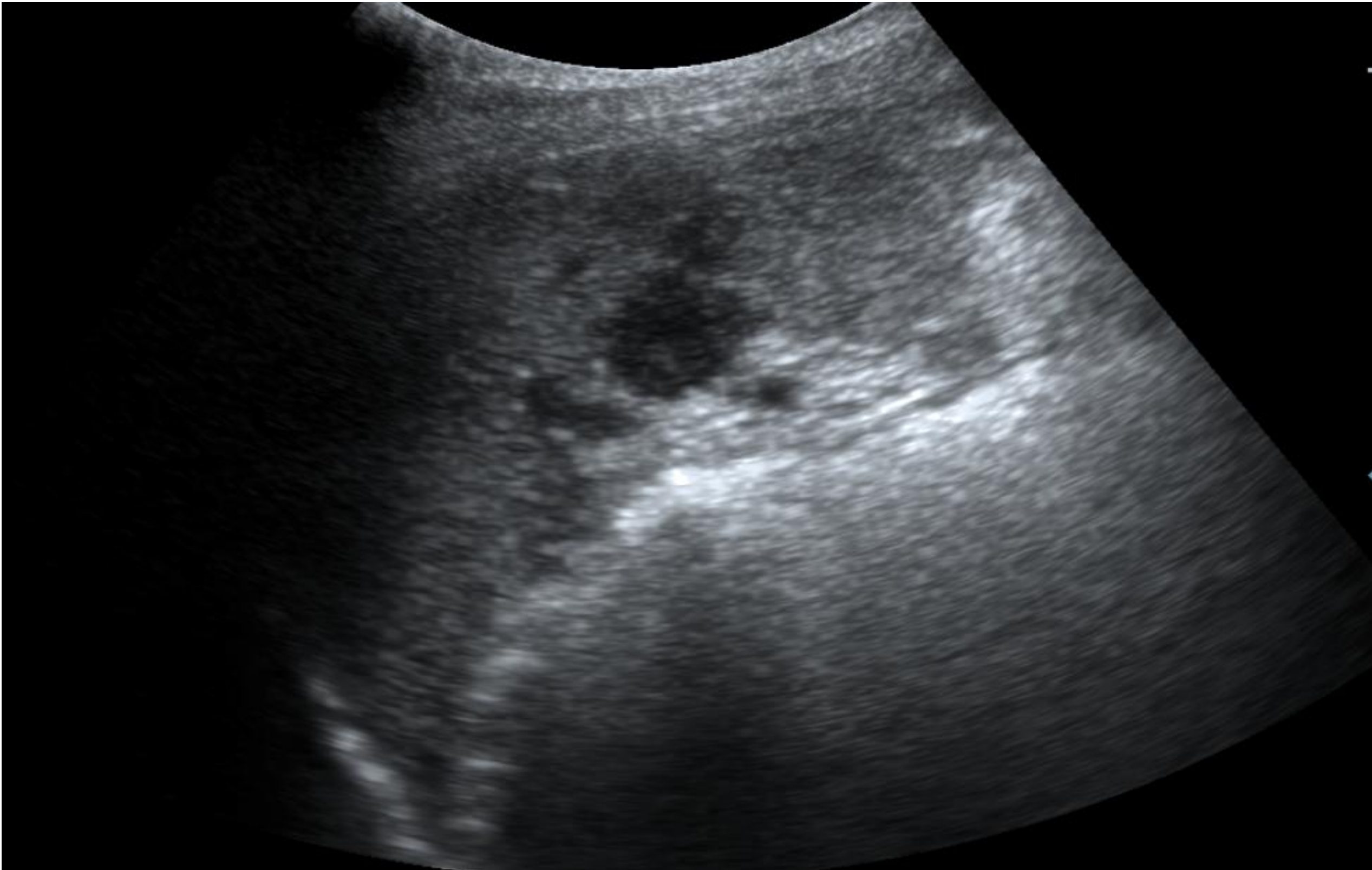


Figure 3. Follow-up ultrasound (2 months after the injury): no hemoperitoneum, organizing hematomas, no pseudoaneurysm.

IMAGING FOLLOW-UP

Serial ultrasound examinations demonstrated progressive reduction of intraperitoneal fluid collections and gradual evolution of the splenic injury into heterogeneous organizing hematomas. Particular attention was directed toward detection of delayed vascular complications, especially splenic pseudoaneurysm. No pseudoaneurysm, secondary hemorrhage, or delayed vascular complication was detected during hospitalization or follow-up.

OUTCOME

Hemoglobin levels initially decreased but subsequently stabilized without transfusion. Clinical recovery was uneventful. The patient was transferred from ICU to the surgical ward on day two and discharged home one week after trauma. Follow-up ultrasound demonstrated continued resorption of hemoperitoneum and progressive healing of the splenic parenchymal injury.

DISCUSSION

This case illustrates that imaging severity and physiological status may not correlate in pediatric trauma. Although CT demonstrated a high-grade splenic injury with hilar transection and extensive hemoperitoneum, the absence of active bleeding allowed successful spleen-preserving treatment. The case highlights the complementary roles of CT and ultrasound. CT accurately grades injury severity and excludes active hemorrhage, while ultrasound provides radiation-free follow-up assessment.

TEACHING POINTS

- High-grade splenic injury on CT does not automatically require surgery in a stable child.
- Hemodynamic status remains the primary determinant of treatment strategy.
- Absence of active contrast extravasation is a key finding supporting conservative management.
- Follow-up ultrasound is valuable for monitoring hemoperitoneum and detecting pseudoaneurysm.
- Radiologists directly influence spleen-preserving treatment decisions.

CONCLUSION

Even severe pediatric splenic injury can be successfully managed non-operatively when CT excludes active bleeding and the patient remains hemodynamically stable. Accurate radiological assessment at presentation and structured ultrasound follow-up are essential for safe spleen-preserving management.

References

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