





RENAL ULTRASOUND TO EVALUATE FOR BLUNT RENAL TRAUMA IN CHILDREN: A RETROSPECTIVE COMPARISON TO GOLD STANDARD DIAGNOSTIC TEST STUDY

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PURPOSE OF STUDY

We hypothesized that ultrasound imaging would be able to identify clinically significant injuries when compared to CT scan in the setting of pediatric blunt abdominal trauma.



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STUDY DESIGN

- All children < 18 years of age who were evaluated for blunt abdominal trauma were identified.
- A clinically significant renal injury was defined as an AAST > grade 3 or an injury that prompted a urologic intervention.
- Significant hematuria was defined as an episode of gross hematuria or >50 RBC/HPF.
- Those patients who had a CT and ultrasound imaging within three weeks of blunt abdominal trauma were included.



IMAGE REVIEW OF PATIENT WITH BLUNT ABDOMINAL TRAUMA

•The ultrasound images were reviewed by four reviewers

- 2 pediatric urologists
- 2 pediatric radiologists
- •The reviewers were blinded to all clinical information and CT scan results
- •The reviewers were asked to identify any renal injuries







RESULTS



* All patients with grade III-V injury of the kidney had significant hematuria.





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EXAMPLE OF A MISSED CLINICALLY SIGNIFICANT INJURY BY A REVIEWER



Medical Center

EXAMPLE OF A MISSED CLINICALLY SIGNIFICANT INJURY BY A REVIEWER



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EXAMPLE OF A REVIEWER IDENTIFIED CLINICALLY INSIGNIFICANT INJURY

Rt Kidney Sup



REVIEWER IDENTIFIED GRADE I-II INJURY ON ULTRASOUND IMAGES









CONCLUSIONS

- When compared to a CT scan as gold standard, blinded review of kidney ultrasound images had a of sensitivity of 79-100% (between the 4 reviewers) to detect grade III-V injuries and NPV of 93-100%.
- An episode of gross hematuria or > 50 RBC/HPF had sensitivity and NPV of 100% for grade III-V injuries.
- CT scan to rule out renal injury can potentially be avoided in children with blunt abdominal trauma who do not have significant hematuria, especially if kidneys are normal on ultrasound.









Thank You