



Renal Imaging in the Age of Contrast Enhanced Ultrasound in Paediatric Trauma

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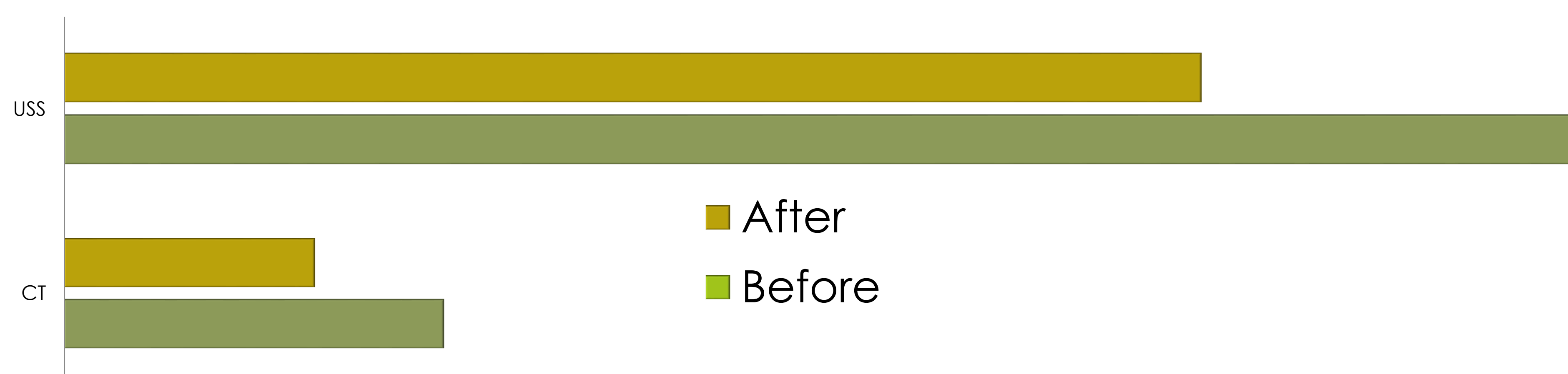
Background: Computerised tomography (CT) is the gold standard imaging modality in the acutely injured child with suspected abdominal injury. Exposure to ionising radiation must be kept to a minimum and the “as low as reasonably achievable” principle should be adhered to. Contrast Enhanced Ultrasound (CEUS) offers the possibility of imaging without the risks of ionising radiation.

Aim: to review imaging in children with renal injuries at our centre before and after the introduction of CEUS.

Method: A retrospective review of a contemporaneously maintained database was undertaken. Data was reviewed from 2010 to 2016 (7 years). Data was collected regarding age at injury, gender, AAST grade of renal injury, acute and subsequent imaging. Data is presented as median (range).

Results: Over the 7 year period there were 1826 paediatric trauma activations and 28 children had renal injuries (1.4%). 15 were male. The grades of injury were from 1 to 5. All patients had a least one CT abdomen in the acute phase. Currently, no departmental protocol exists regarding imaging after initial CT and patients are managed according to symptoms, physiological and laboratory parameters. One patient died and one patient was transferred, 26 patients were analysed. There was significant variation in imaging after initial CT.

Rate of subsequent scans before and after introduction of CEUS

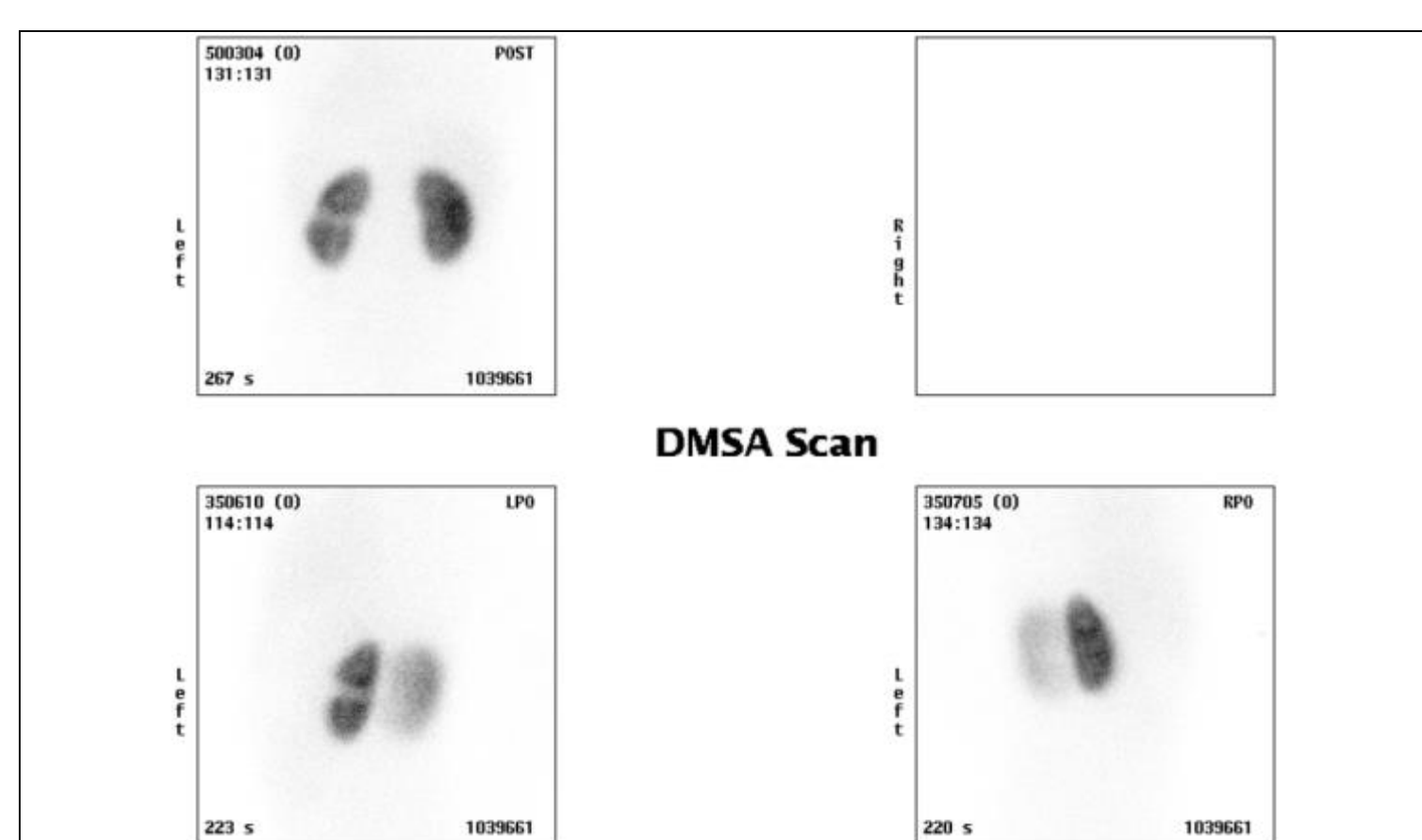


The rate of subsequent CTs was 7/14 (0.5 scans/patient) before the introduction of CEUS and 4/12 (0.33 scans/patient) after CEUS.

The rate of subsequent US was 28/14 (2 scans/patient) before the introduction of CEUS and 13/12 (1.1 scans/patient); [18/12 (1.5 scans/patient) including CEUS] after CEUS.

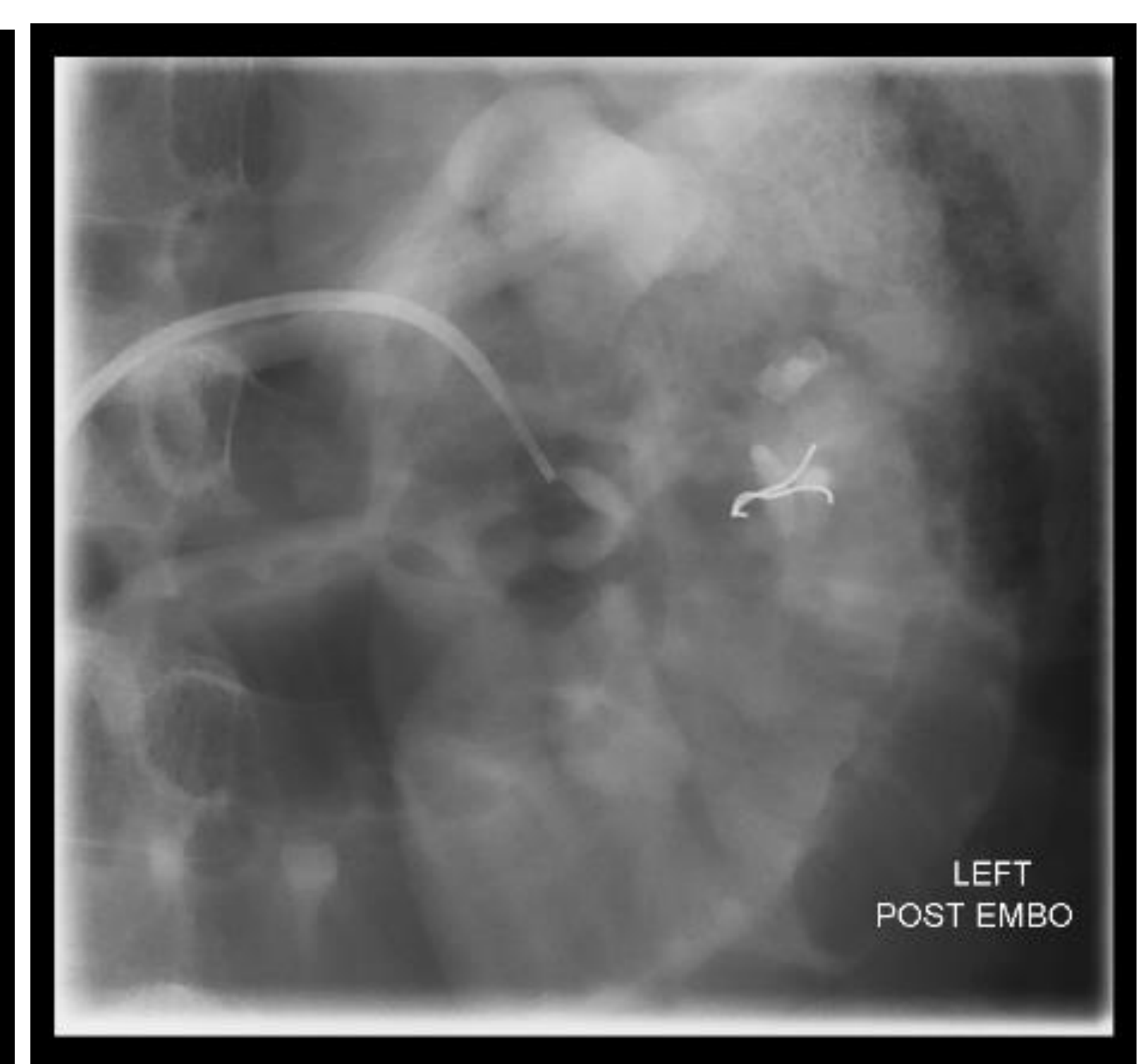
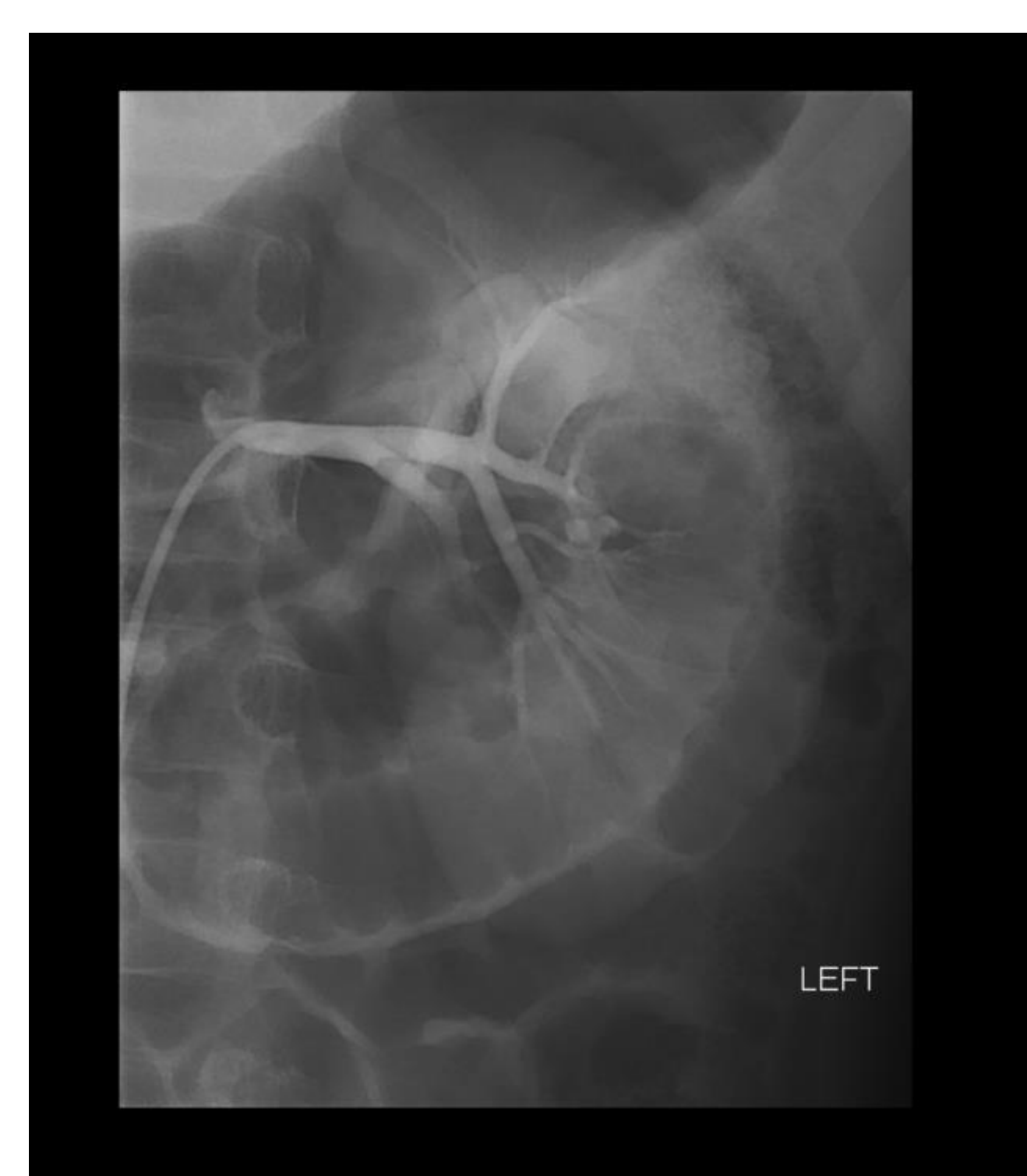
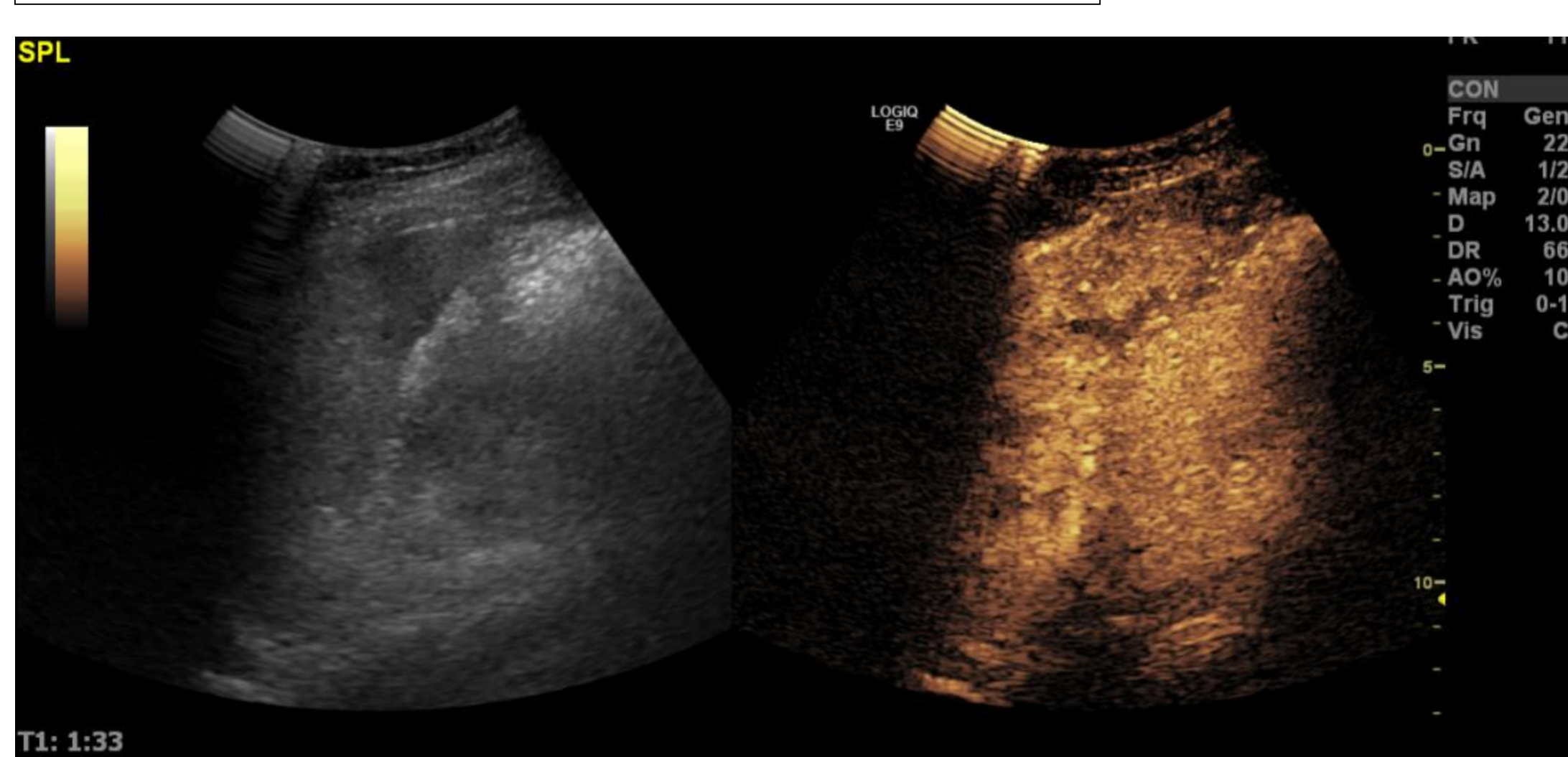
The total number of follow up imaging encounters prior to CEUS introduction was 43/14 (3.1 scans/patient, range 0-11) and 27/12 (2.3 scans/patient, range 0-6) after.

The number of scans performed before and after introduction of CEUS was not significantly different.



Additional imaging included:

- Fluoroscopy (embolisation, ureteric stent insertion)
- DMSA.



CEUS correctly identified one post injury symptomatic pseudoaneurysm that was embolised.

Conclusion: CEUS can be safely and effectively performed in children with renal injury. The exact role of CEUS remains to be determined but offers the potential to reduce exposure to ionising radiation in children.