



Simulation in Radiology Training: The impact of simulation training on procedural confidence

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Background

- Ultrasound-guided biopsies, drain insertion and vascular access are core competencies as outlined by the RCR curriculum.
- Simulation training using phantom models provides a safe, controlled environment in which trainees can practise these procedures without risk to patients.
- This study aims to evaluate the impact of a simulation-based ultrasound-guided procedure course on radiology trainee confidence.

Methods

- Data was collected from 2023 to 2025
- 83 UK radiology trainees (ST1–ST4) from across the South-East Imaging Academy regions attended a 1-day simulation-based course at Bournemouth University.
- All trainees completed pre and post course questionnaires using a 5-point Likert scale for the following ultrasound guided procedures:
 - biopsy
 - drain insertion
 - vascular access
 - procedure consenting
- Responses were compared statistically using a two-tailed Mann-Whitney U test.

4 Didactic Lectures were given



Vascular Access

The Basics

Joe Long, ST4 IR SpR

Ultrasound Guided Procedure Simulation Day May 2023

Periprocedural Care and Anticoagulation

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Introduction

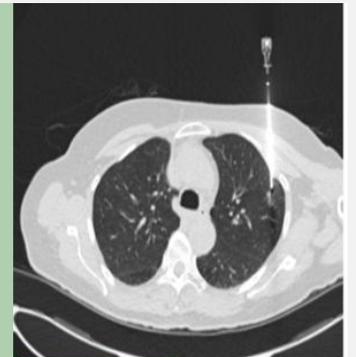
- **AIM:** To improve trainee confidence with US guided techniques given the larger emphasis the new RCR curriculum has put on procedural skills.

- Vascular access
- Abdominal and soft tissue biopsies
- Chest drain insertion
- Abscess drainage

- Go through the preparation and equipment required
- Discuss the indications and contraindications of each procedure.
- Practice the procedures with the US machine
- Case discussion of common complications and management

IMAGE GUIDED LUNG BIOPSIES

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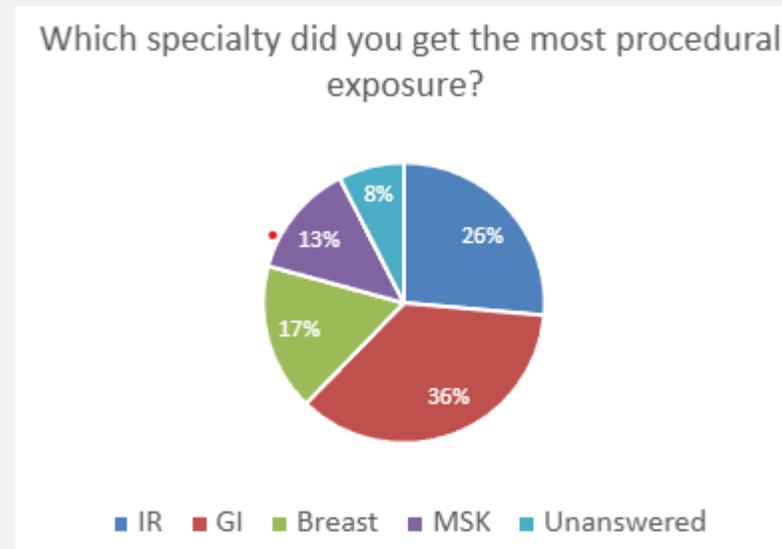
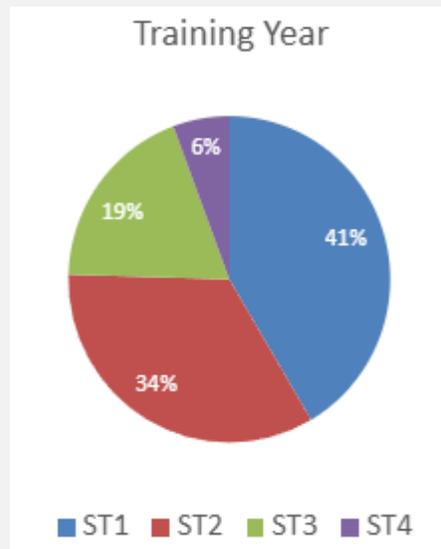


Small group procedural skill stations using portable ultrasounds and mannequins.

Stations include IV access, chest and abdominal drain insertion and liver biopsy.

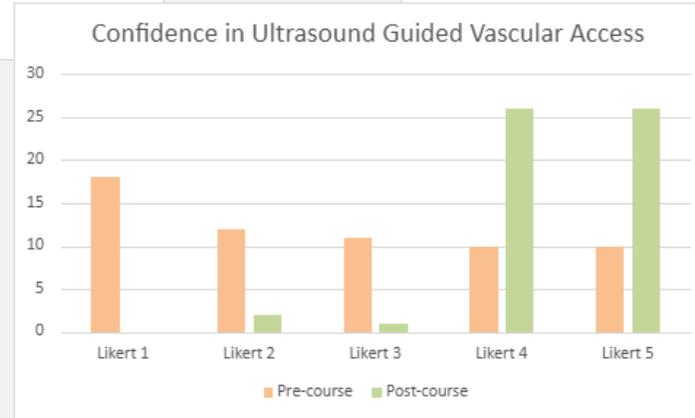
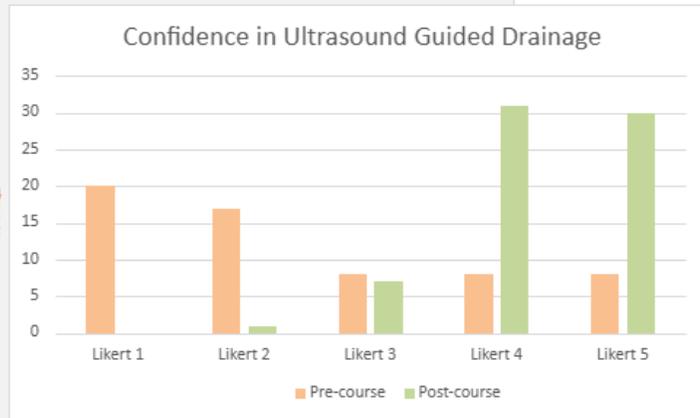
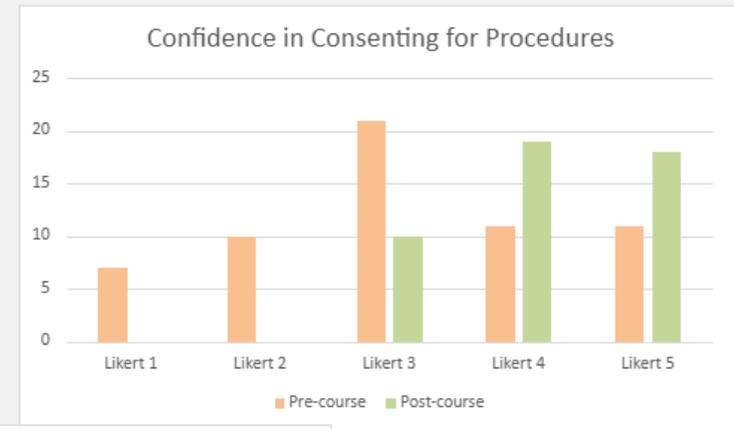
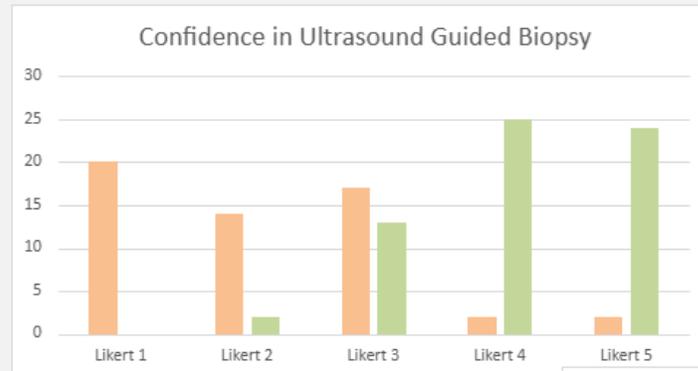
Results

Overall, 74% of trainees reported insufficient exposure to ultrasound-guided procedures during their clinical training.



Results

Following simulation, confidence improved significantly ($p < 0.01$) across all assessed domains:



Conclusion

The increasing number of UK radiology trainees, combined with the RCR's heightened emphasis on developing core procedural skills, has amplified the need for structured training in ultrasound-guided interventions.

Simulation-based teaching offers a valuable and safe method of enhancing procedural confidence, supporting trainees as they prepare for and optimise future clinical exposure.

References

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