‘How low (and far) would you go?’: The speed and accuracy of identifying intervertebral level and depth to epidural space in novices, using ultrasound

M Sinnott[1], K Hoyland[1], N Nguyen-Lu[2]

1. Obstetric anaesthesia fellows, 2. Consultant, Guy’s and St Thomas’ NHS Foundation Trust

Guy’s and St Thomas’ NHS Foundation Trust

INTRODUCTION

Pre-procedural ultrasound (US) for central neuraxial block (CNB) is not yet universally embraced in current UK obstetric anaesthetic practice. This is despite well documented benefits and support for its use from recent systematic reviews and metanalysis[1]. One reason for this may be the perceived difficulty in achieving competence in the technique, with up to 40 scans suggested as necessary to achieve competence[2].

We aimed to assess the ease with which the technique can be taught to anaesthetic trainees with limited experience of it.

METHODS

- A targeted teaching session was held for 13 trainees which encompassed both didactic theory and hands-on scanning practice on live models.
- Attendees had limited experience of the technique.
- Ability of learners to identify vertebral level in the longitudinal paramedian sagittal oblique (PSO) view (Figure 1) and depth to epidural space in the transverse view (Figure 2) was assessed with reference to baseline values obtained by faculty members experienced in the use of the technique.

FIGURE 1

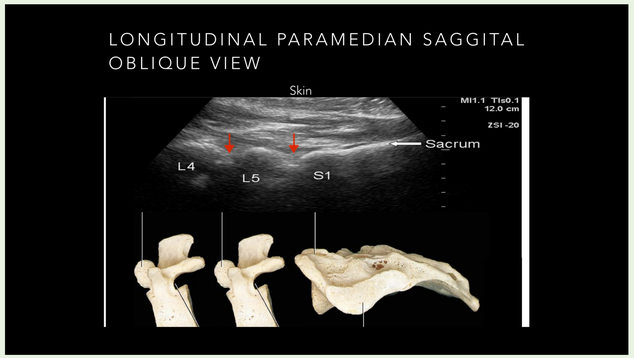


FIGURE 2

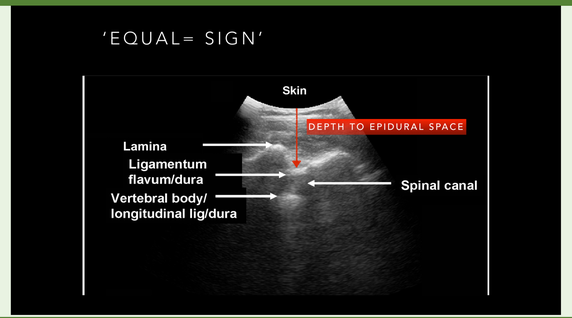
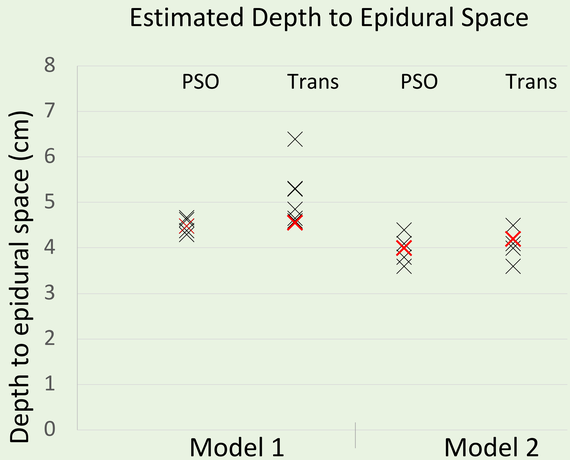


FIGURE 3



Novice scanner accuracy in estimating depth to epidural space on first attempt. Spread of candidate measures around ‘true’ depth (red crosses) show little dispersion. *PSO = paramedian sagittal oblique window; Trans = transverse window*.

RESULTS

- 92% of candidates were able to correctly identify the L3/4 interspace on first attempt.
- Candidates were generally very accurate in assessing the depth to epidural space in both paramedian sagittal oblique (PSO) and transverse windows (Figure 3).
- When referenced to ‘true depth’ (as measured by faculty), median (IQR) error on first scan attempt was:
  - 0.1cm (0.2) in PSO window,
  - 0.3cm (0.55) in transverse window.

DISCUSSION

- First scan accuracy surprisingly high following a short teaching session.
- Suggests the technique is easy to learn and should encourage further efforts at improving its uptake.
- Benefits include improved procedural success, reduced complications and flattened learning curve[2].
- Scans were directly supervised - candidates could not be deemed independently competent yet.

ACKNOWLEDGEMENTS

Many thanks to Alison Clarke and Arushi Ramani with their assistance in this project

REFERENCES

1. Young B, Onwochei D, Desai N. Conventional landmark palpation vs. Preprocedural ultrasound for neuraxial analgesia and anaesthesia in obstetrics-a systematic review and metanalysis with trial sequential analyses. *Anaesthesia* 2021, 76, 818-831
2. Sadeghi A, Patel R, Carvalho JCA. Ultrasound-facilitated neuraxial anaesthesia in obstetrics. *BJA Education* 2021; 21(10): 369 – 375