

The width of the posterior epidural space in obstetric patients

RWD Nickalls¹ and MS Kokri²

Anaesthesia (1986); vol. 41, pp. 432–433

<http://www.nickalls.org/dick/papers/anes/epiduralwidth.pdf>

The interest currently being shown in the combined spinal epidural technique prompts us to publish some data we have on the width of the epidural space in obstetric patients. We have been using a recently described modification of this combined technique¹ to estimate the width of the posterior epidural space in the midline, in 33 patients for Caesarean section.

All patients were in the left lateral position, and great care was taken to advance the Tuohy needle (16-G) slowly enough to avoid pushing it further than necessary into the epidural space, which was detected by the loss of air resistance. A spinal needle (26-G; 15 cm) was then advanced through the Tuohy needle with similar caution, and clamped with a pair of small lightweight artery clips as soon as the dura was felt to have been pierced. The spinal needle, with artery clip still attached, was re-inserted after the procedure into the Tuohy needle, and the length of spinal needle protruding from the end was measured to the nearest half millimetre. This length was taken as an index of the width of the epidural space, on the assumption that both the Tuohy and the spinal needle had entered their respective epidural and dural spaces to approximately the same depth.

The results for each lumbar interspace are shown in the figure. Neither patient height (measured at the booking clinic) nor lumbar interspace number showed any significant correlation with epidural width. The results were therefore pooled ($n = 33$): the mean (SD) epidural width was 6.8 (1.9) mm and the mean (SD) height was 1.57 (0.06) m.

Published data regarding the width of the adult posterior lumbar epidural space are both sparse and indirect and there are none for obstetric patients. Bromage² indicates that this space is greatest in the midline ‘... in the second lumbar interspace, where the distance is about 5–6 mm in adult males’. However, he gives no supporting reference for this statement. Bonica³ gives the range as ‘... 4–6 mm in the lumbar region’. In a dissection study, Cheng⁴ gives a value of 6 mm for ‘... the average person’. Resin cast data from cadavers suggest ranges of 2–9 mm⁵, and 1–9 mm⁶. However, in the latter study, widths greater than 3 mm were associated with posterior compression of the dural sac. In a recent detailed dissection study of the lumbar epidural space⁷ the width of the posterior epidural space was not measured. Myelographic data do exist⁸ for the posteriolateral and anterior lumbar epidural spaces, but not for the space in the midline posteriorly. Meaningful comparison is therefore very difficult. Even so, our values, which we believe are the first published measurements in obstetric patients, do not differ significantly from those already published.

¹Department of Anaesthesia, Nottingham University Hospitals, City Hospital Campus, Nottingham, UK. email: dick@nickalls.org

²Department of Anaesthesia, The Royal Victoria Infirmary, Newcastle-upon-Tyne, NE1-4LP, England, UK.

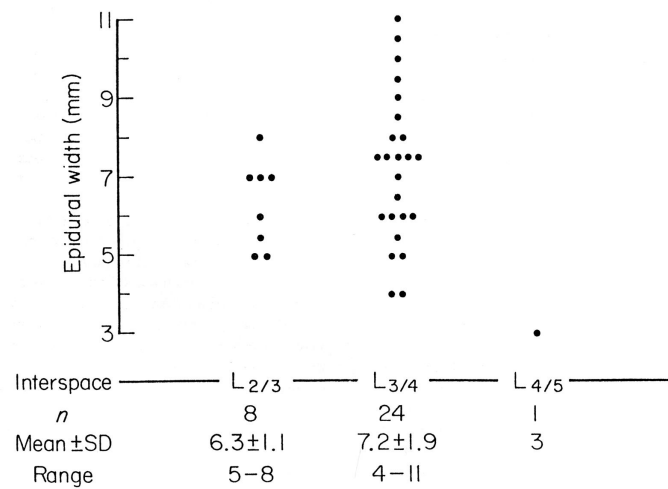


Figure 1:

References

1. Nickalls RWD and Dennison B, (1984). A modification of the combined spinal and epidural technique. *Anaesthesia*; 39, 935-936.
2. Bromage PR, (1978). *Epidural analgesia*. (London: Saunders), 13-14.
3. Bonica JJ, (1967). *Principles and practices of obstetric analgesia and anaesthesia*. (Oxford: Blackwell Scientific Publications), p. 622.
4. Cheng PA, (1963). The anatomical and clinical aspects of epidural anesthesia. Part I. *Anesthesia and Analgesia*; 42, 398-406.
5. Husemeyer RP and White DC, (1980). Topography of the lumbar epidural space. A study in cadavers using injected polyester resin. *Anaesthesia*; 35, 7-11.
6. Harrison GR, Parkin IG and Shah JL, (1985). Resin injection studies of the lumbar extradural space. *British Journal of Anaesthesia*; 57, 333-336.
7. Parkin IG and Harrison GR, (1985). The topographical anatomy of the lumbar epidural space. *Journal of Anatomy*; 141, 211-217.
8. Lewit K and Sereghy T, (1975). Lumbar peridurography with special regard to the anatomy of the lumbar peridural space. *Neuroradiology*; 8, 233-240.