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Fractured spinal needle: a rare, but potentially significant, risk of spinal anaesthesia

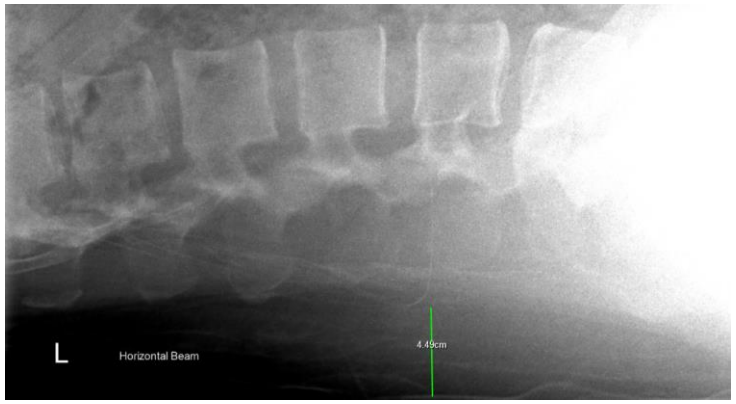
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Introduction

- Fractured spinal needles are a rare, but documented, complication of attempted spinal anaesthesia.
- Both the incidence and clinical significance of a retained spinal needle fragment are unknown.
- No cases of neurological injury due to retained spinal needle fragment have been documented.

Case report

- A 38-year-old woman of 41+2 weeks gestation was taken to theatre for examination and repair of a second-degree vaginal tear under spinal anaesthesia following a spontaneous vaginal delivery and postpartum haemorrhage earlier that day.
- After an unsuccessful attempt with a 90 mm 26 G Whitacre needle at L4/5 level in left-lateral position, a second attempt was made with a 115 mm 26 G needle, requiring multiple redirections, however, while a small amount of CSF was obtained, it was deemed not to be adequate and was withdrawn.
- After withdrawal of this needle, the anaesthetist noted that the stylet could not be advanced through the spinal needle.
- On inspection by another anaesthetist, it was recognised that only 50 mm of needle remained.
- A further, unsuccessful attempt with a new 115 mm 26 G needle was made. After removal of this needle, it was noted that it was significantly deformed, though no part of it was missing.



Lateral X-ray of the lumbar spine, showing the fragment

- A final, successful attempt was made with a 115 mm 26 G needle in the sitting position. The surgical procedure was carried out without issue.
- Immediately after the case, the patient was informed and a full neurological examination was performed, finding no abnormalities.
- A lumbar X-ray confirmed the presence of the retained fragment, 45 mm deep to the skin. The tip could not be visualised, but due to the length of the fragment it was presumed unlikely to be in the vertebral canal.
- The patient was transferred to the local spinal unit, where an uncomplicated removal of the fragment was carried out under general anaesthesia
- She suffered no neurological complications

Discussion

- Most previously reported cases have occurred in obese patients (BMI ≥30 kg/m^2). If a needle is inserted to a greater depth, the tip of the needle is further from its fulcrum and thus the moment of the force acting on it is increased. This has significant implications when there is a greater number of redirections and contact with vertebrae required to locate the intervertebral space, with a further increase in risk when using longer needles.
- Many cases involved the use of 27 G needles, however needles as large as 25 G have been reported to fracture
- Spinal needles often break at the point at which they exit the introducer needle. The fact that the 2nd anaesthetist noticed that he was unable to reintroduce the stylet into the spinal needle shows the stylet was not in the spinal needle when it fractured, therefore reducing its strength
- Overall this case was unlikely to be due to any defect in the needle used and was instead the result of excessive force and inadequate technique by the anaesthetist.

References

1. Kaboré RAF, Traore IA, Traore SIS, et al. Broken needle during spinal anesthesia: an avoidable complication. Local Reg Anesth 2018; 11: 111-3
2. Yazdanyar N, Nielsen YW. Needle fracture-a rare complication to spinal anaesthesia. Eurorad 2013; 10885. https://www.eurorad.org/case/10885