

COMPARISON OF DURAL PUNCTURE EPIDURAL TECHNIQUE (DPE) VERSUS LUMBAR EPIDURAL TECHNIQUE (LE) FOR LABOUR ANALGESIA

Muhammad Ishaq Mohd Abd Rahman^{1*}, Dr Mohd Nizamuddin Ismail²

¹Department of Anaesthesiology and Intensive Care, International Islamic University Malaysia

²Department of Anaesthesiology and Intensive Care, International Islamic University Malaysia

*Corresponding author's email: ishaq6r@gmail.com

ABSTRACT

Neuraxial techniques are considered the gold standard for labour analgesia. Conventional lumbar epidural (LE) and Combined Spinal Epidural (CSE) are the most commonly used techniques for providing pain-free labour experience in current clinical practice. Although LE has minimal side effects, it has been associated with a slow onset and inadequate sacral spread that is crucial during the second stage of labour. CSE on the other hand, has a more rapid onset with excellent sacral spread but has been associated with maternal hypotension, pruritus and foetal bradycardia. Dural Puncture Epidural (DPE) is a novel technique that is a modification of the CSE technique where the only difference is that medication is not administered into the subarachnoid space. The dural puncture by the spinal needle serves as a mean or conduit for the translocation of medication from the epidural space into the subarachnoid space. We hypothesise that DPE has a faster onset to adequate analgesia with a better sacral spread when compared to LE for labour analgesia. A total of 80 parturients that requested for labour analgesia were randomly allocated to either DPE or LE groups. Initial bolus for DPE and LE comprised epidural 10 millilitres 0.05% Ropivacaine with Fentanyl 2 micrograms per millilitres over 10 minutes. Upon completion of the initial bolus, a blinded coinvestigator assessed the outcomes. The primary outcomes were time taken to Numerical Pain Rating Scale (NPRS) ≤ 1 analysed by using survival analysis and incidence of bilateral S2 dermatome blockade analysed by using Pearson Chi Square test. Secondary outcomes included, block quality, catheter failure rates, maternal adverse effects, modes of delivery and satisfaction score. DPE achieved NPRS ≤ 1 significantly faster than LE (median times [IQR] were 10 [7.9 – 12.0] minutes and 18 [16.3 – 19.7] minutes respectively; Log Rank test p-value 0.002). Compared with LE, DPE had significantly greater incidence of bilateral S2 dermatome blockade at 10 minutes (relative risk [RR] 2.12; 95% CI 1.42 – 3.17; p-value 0.000) and a higher mean maternal satisfaction score (mean [SD] 98.1 [6.7]; p-value 0.000). There were no reported incidence of hypotension, foetal bradycardia, nausea, vomiting, pruritus and post dural puncture headaches in both groups. There were also no statistically significant difference in the incidence of lower segment caesarean section and instrumental delivery between DPE and LE. The DPE technique had a significantly faster onset to adequate analgesia with better bilateral S2 spread without any significant adverse effects to the foetus or to the mother. DPE could benefit parturients with cardiovascular disease or hypertensive disorders where achieving rapid adequate pain relieve is extremely important to prevent unwanted complications from continuous sympathetic stimulations.

Keywords: Dural Puncture Epidural, Lumbar Epidural

Acknowledgement: The findings are based on research conducted in the labour room of Hospital Tengku Ampuan Afzan, Kuantan.