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Intrathecal anaesthetic drug dosing strategies for the repair of perineal tears an evaluation of current practice

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Introduction

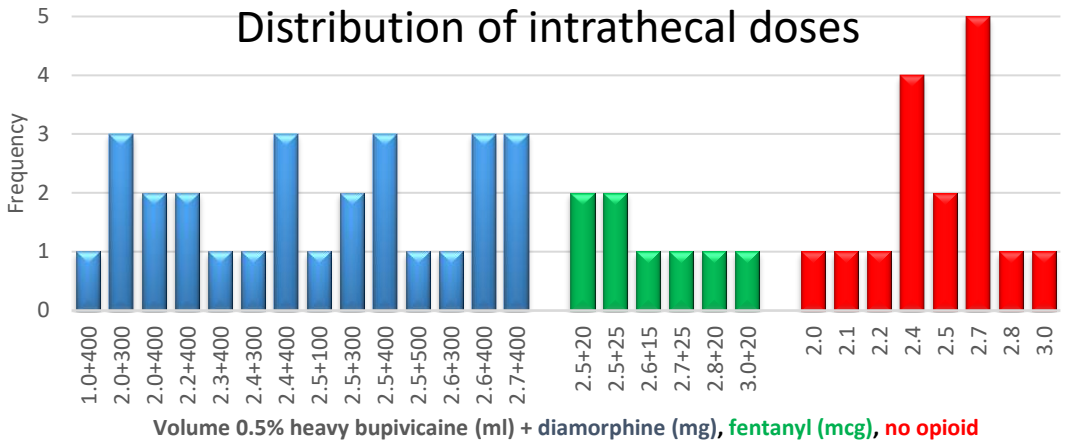
Spinal anaesthesia is the method of choice for providing anaesthesia for obstetric procedures due to the avoidance of the additional risks posed by general anaesthesia to the obstetric population[1] . Excessive intrathecal dosage during neuraxial blockade is associated with greater incidence of side effects[2] including hypotension, nausea and vomiting as well as an increased length of time to recovery from anaesthesia[3] that may adversely affect breastfeeding, bonding with the child and overall maternal satisfaction.

Methods

All single procedure repair of obstetric lacerations performed under spinal anaesthetic from January 2020 to June 2020 in a single tertiary obstetric unit were included in the study. Results were obtained retrospectively from patient records. Data are presented as mean ± SD and [range].

Results

Fifty-five cases were identified as meeting the inclusion criteria. 53 cases (96%) used 0.5% hyperbaric bupivacaine as the anaesthetic agent versus 2 cases which used 2% prilocaine (4%). The mean dosage of bupivacaine used was 12.3±1.36[9-15]mg. In both cases using prilocaine a dose of 60mg was used. The mean length of procedure was 34±13[10-60]minutes. Intrathecal opioids were used in 36 cases (66%), of which 28 (51%) used diamorphine and 8 (15%) used fentanyl. The mean dose of fentanyl was 21.25±3.54[15-25]mcg versus 364.3±73.1[100-500]mg for diamorphine. For the 55 cases, 29 different combinations of local anaesthetic and opioid were used, with the modal combination being 13.5mg 0.5% hyperbaric bupivacaine without opioid, used 5 times. The mean block height recorded was T7±2[T3-T12], however there was poor correlation between block height achieved versus dose of local anaesthetic used (R = 0.22). The mean dose of phenylephrine used was 0.52±0.83[0-3.40]mg, showing poor correlation with dose of local anaesthetic used (R = 0.05), however unsurprisingly there was better correlation with block height achieved (R = 0.32). There were no recorded anaesthetic related complications.



Discussion

It is clear from the data that a large variation in practice exists. Whilst there will be heterogenicity amongst the patient group with regards to physiological status and surgical requirements, none of the procedures lasted over an hour. Perineal sensation is supplied by sacral nerve roots, predominantly via the pudendal nerve. With a mean block height of T7, most of the patients received a dose of local anaesthetic greater than what would be required to achieve reliable anaesthesia for this procedure. This leads to unnecessary hypotension, nausea and vomiting and a prolonged recovery from anaesthesia.

References

1. Bloom SL, Spong CY, Weiner SJ, et al. Complications of anesthesia for cesarean delivery. Obstet Gynecol 2005;106(2):281–7.
2. Van de Velde M, Van Schoubroeck D, Jani J, et al. Combined SpinalEpidural Anesthesia for Cesarean Delivery: Dose-Dependent Effects of Hyperbaric Bupivacaine on Maternal Hemodynamics. Anesth Analg 2006;103(1):187–90.
3. Nair GS, Abrishami A, Lermitte J, Chung F. Systematic review of spinal anaesthesia using bupivacaine for ambulatory knee arthroscopy. Br J Anaesth 2009:307–15.