Is the Dose of Local Anesthetic Injected Through an Intrathecal Catheter 25-50% Less Compared to a Single Injection Spinal for Cesarean Delivery?

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With the increasing use of intrathecal catheters, we have made the following observation. When compared to single injection spinal anesthesia, the amount of local anesthetic required with intrathecal catheters to achieve a block adequate for cesarean delivery is most often significantly less.

To our knowledge, no previous studies have investigated the local anesthetic dose requirement for cesarean section with the use of an intrathecal catheter.

Following IRB approval, we prospectively followed all the intrathecal catheters used for cesarean delivery in regards to the local anesthetic dosing. We used 0.75% hyperbaric bupivacaine to achieve a bilateral T4 to T6 block. The following items were recorded: initial volume required to achieve an adequate block, the duration of surgery, and total volume of local anesthetic (LA) used. Patients' height, weight and BMI were also recorded.

According to the Results thus far (of this ongoing study) the average amount of bupivacaine needed to achieve initial T4 to T6 block is 0.87ml or 6.525 mg (range 0.6 to 1.1ml or 4.5 mg to 8.25 mg). Leo et al (1) demonstrated that hyperbaric bupivacaine 7 mg injected spinally under CSE setting can provide rapid onset, effective anesthesia for cesarean section.

If an adequate block can be achieved with less local anesthetic, bolus injection of a spinal medication that was intended for single shot spinal through a spinal catheter may lead to high spinal block with respiratory difficulty, aspiration risk and severe hypotension. Therefore, slow incremental dosing titrated to the effect is important when an intrathecal catheter is used to achieve surgical anesthesia during cesarean section. Adequate block level may be achieved with local anesthetic doses that are 25-50% less when compared with single injection spinal.