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A Clinical Solution to the Unavailability of Dextrose Ampules in Spinal Anesthesia Kits

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Spinal mepivacaine has been used for short surgical procedures due to the rapid onset, short duration and adequate sensory blockade of mepivacaine (1). Lidocaine also has a short duration of action, but is limited by transient neuralgic symptoms. Bupivacaine is limited by a long duration of action, making this drug unsuitable for short duration or ambulatory procedures. Mepivacaine is provided as a 1.5% isobaric solution, and the addition of dextrose is commonly used to provide hyperbaricity. A typical dose of spinal mepivacaine is 3-4 ml (45-60 mg). In 2010, spinal kit manufacturers informed us that the 10% dextrose ampules would no longer be available, thus an alternative local anesthetic plan was devised. Only minimal amounts of dextrose are needed to produce a reliably hyperbaric spinal medication (3,4). We sought to maintain the short-duration advantages of mepivacaine by utilizing a lower than usual dose (2ml of a 1.5% solution), with the addition of 0.25-0.5 ml of 0.75% bupivacaine in 8.25% dextrose, which is the solution found in most American spinal anesthesia kits. The addition of the hyperbaric bupivacaine is ostensibly to provide a vehicle by which to add dextrose to the mepivacaine. We have used this combination in several procedures of short duration, such as cervical cerclage (n=3), postpartum tubal ligation (n=1), and hysteroscopy (n=1). Adequate surgical anesthesia has resulted, with full return of motor and sensory function within 3 hours of the spinal injection. Two patients requested small doses of sedative for intraoperative anxiolysis.

The addition of dextrose aids in cephalad spread of the local anesthetic and the small amount of added bupivacaine contributes to an adequate sensory blockade, given the reduced dose of mepivacaine. Very little glucose is required to convert an isobaric local anesthetic to hyperbaric (3). Our preliminary observations are aimed at a clinical alternative, using currently available products, to mitigate the unavailability of separate ampules of dextrose in spinal anesthesia kits. We suggest that various combinations of existing hyperbaric and isobaric local anesthetics be investigated to determine the optimal spinal solution for short-durations, ambulatory surgical procedures.