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A New Loss of Resistance Syringe for Labor Epidural Placement

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Introduction: Loss of resistance (LOR) technique is the most common method for detection of the epidural space. This subjective LOR is detected using continuous or intermittent pressure on the syringe plunger with the operator's thumb. A new LOR syringe, the AutoDetect™ syringe, is a modified Portex Pulsator™ LOR syringe with an internal compression spring, alleviating the need for operator thumb pressure. This LOR syringe has previously been evaluated in an animal model.[1] This study evaluates the AutoDetect™ syringe for detection of the epidural space in laboring women.

Methods: After IRB approval and informed consent, ten healthy laboring women requesting labor epidurals were enrolled in this unblinded prospective study. All the epidurals were inserted in the sitting position at inter space L2/3 or L3/4 using a 17G Tuohy needle. LOR was detected using the AutoDetect™ syringe loaded with 5 ml. normal saline. Experienced attending anesthesiologists inserted all the epidurals. After location of the epidural space, a 19G closed-tip, spring wound, flexible, single orifice epidural catheter (Braun™) was inserted 5 cm into the epidural space and aspirated for blood or cerebrospinal fluid. Initial analgesia was provided with 15 ml. of 0.125% bupivacaine plus 10 µg sufentanil. Data recorded included patient demographics, LOR depth, number of attempts, and any difficulties with epidural placement. Results are reported as mean ± standard deviation.

Results: The study cohort's BMI was 31±5 and mean skin-to-epidural space depth was 5±1 cm. The epidural space was found on the first pass in 7 of 10 subjects and 3 passes in 9 of 10 subjects. One patient had a difficult block with multiple attempts. We experienced no false LOR during any epidural placements and all epidurals delivered successful analgesia. We had no dural punctures or post dural-puncture headaches.

Conclusion: The AutoDetect™ syringe was reliable in detecting the epidural space in laboring women. We experienced no dural punctures or complications with this technique. ***This objective LOR syringe may be useful as a teaching aid to demonstrate the principles of LOR.*** This study demonstrates the feasibility of this new LOR syringe, however, future studies with larger numbers of patients are needed to determine if this syringe leads to less dural punctures, increases epidural success or decreases insertion time.

References: 1. Anesth 2004;100, A72[figure1] Anesthesiology 2005; 103: A582