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Title: RANDOMIZED, CONTROLLED TRIAL OF THE RECIPROCATING PROCEDURE DEVICE FOR LOCAL ANESTHESIA OF INTERVENTIONAL PROCEDURES

Wilmer L. Sibbitt, Jr.*, University of New Mexico Health Sciences Center, Albuquerque, New Mexico, United States. Sharon E. Nunez, Sharon C. Kettwich, Lawrence G. Kettwich and Arthur D. Bankhurst.

Purpose: The reciprocating procedure device (RPD) permits much greater control of the needle and syringe during syringe procedures. We hypothesized that better control of the needle provided by the RPD would result in more rapid, less painful, and more effective local anesthesia for interventional procedures.

Materials and Methods: 150 local lidocaine anesthesia procedures were randomized between the RDP and the conventional syringe. The post-anesthesia pain-inducing procedure was deep needle aspiration for diagnostic and therapeutic purposes. Outcome measures included anesthesia administration time, patient pain during anesthesia, pain during the subsequent needle procedure, and operator satisfaction with the anesthesia device. Pain and was measured by the Visual Analogue Pain Scale (VAPS).

Results: 82 anesthesia procedures with the conventional syringe resulted in a mean anesthesia administration time of 1.22 0.87 minutes, a mean anesthesia VAPS (patient pain) score of 5.60 3.11, a mean post-anesthesia procedure VAPS (patient pain) score 5.09 1.83, and a mean VASS (operator satisfaction) score of 5.00 3.4. In contrast, the RPD in 68 subjects in resulted in a mean anesthesia administration time of 0.68 0.61 minutes (49% reduction) ($p < 0.001$), a mean anesthesia VAPS (patient pain) score of 3.93 .2.56 (43% reduction) ($p < 0.001$), a mean post-anesthesia procedure VAPS (patient pain) score 2.04 0.27 (62% reduction) ($p < 0.001$), and a mean VASS (operator satisfaction) score of 8.74 0.91 (85% increase) ($p < 0.001$). With the conventional syringe 65% (51/82) vs. 35% (25/68) with the RPD experienced moderate to severe pain (VAPS score 5 or greater) during anesthesia, and 65% (48/82) vs. 5% (9/68) experienced moderate to severe pain during the subsequent deep syringe procedure.

Conclusions: The greater control provided by the RPD markedly reduces patient pain during administration of local anesthesia, reduces anesthesia administration time, maintains the effectiveness of local anesthesia during deep needle procedures, and improves operator satisfaction with the anesthesia device. The RPD is superior to the conventional syringe for administering local lidocaine anesthesia for interventional procedures.