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## **FIRST CLINICAL EXPERIENCE WITH THE RECENTLY FDA-APPROVED ONE-HANDED RECIPROCATING PROCEDURE SYRINGE**

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### **Purpose:**

To clinically evaluate the performance of the recently FDA-approved highly controllable, one-handed reciprocating procedure syringe in typical interventional syringe procedures.

### **Materials & Methods:**

60 interventional syringe procedures, including fine needle aspiration biopsy, thoracentesis, local anesthesia, and joint procedures, were randomized to either the reciprocating syringe (AVANCA Medical Devices, Inc, Albuquerque, NM; AVANCAMedical.com) or a conventional syringe under an IRB-approved clinical protocol. Procedure duration and outcomes were recorded. Patient pain and operator satisfaction were determined by analogue intensity scales administered in real time to the participants by a non-operating observer. Needle control by individual operators was separately and precisely measured in millimeters in the forward and reverse directions using a needle-based quantitative displacement system.

### **Results:**

Use of the reciprocating syringe resulted in a 17% reduction in procedure duration ( $2.9 \pm 1.2$  vs.  $3.5 \pm 1.5$  minutes,  $p < 0.001$ ), a 61% reduction in patient pain (Analogue Pain Scale:  $1.76 \pm 1.85$ , vs.  $4.5 \pm 0.9$ ,  $p < 0.001$ ), and 70% percent increase in the operator satisfaction (Operator Satisfaction Scale:  $8.84 \pm 0.90$  vs.  $5.2 \pm 0.40$ ,  $p < 0.001$ ). Needle control with the reciprocating syringe was markedly enhanced with a 59% reduction in forward needle intrusion ( $5.21 \pm 3.4$  mm vs.  $12.8 \pm 6.8$  mm,  $p < 0.001$ ) and a 52% reduction in posterior retraction ( $1.29 \pm 1.73$  vs.  $2.67 \pm 1.7$  mm displacement,  $p < 0.001$ ). No complications were noted with the reciprocating syringe.

### **Conclusion:**

In typical clinical interventional syringe procedures, the recently FDA-approved highly controllable, one-handed reciprocating procedure syringe reduces procedure time, improves needle control, reduces patient pain, and improves operator satisfaction. The markedly improved needle control of the reciprocating procedure syringe has great promise to reduce patient pain, reduce procedure time/costs, minimize complications, and improve the diagnostic/therapeutic efficiency of typical interventional syringe procedures.