

# A RANDOMIZED CLINICAL COMPARISON OF THE LOSS OF RESISTANCE TECHNIQUE AND THE COMPUFLO® COMPUTERIZED SYRINGE PUMP FOR PROPER EPIDURAL PLACEMENT

O. Ghelber, R. Gebhard, P.Szmuk

Department of anesthesiology  
UT Health Science Center in Houston

**Background and Goal of Study** The initial success rate of finding the epidural space by untrained residents is low and the learning curve is slow(1). Compuflo® (C) [Milestone Scientific, Livingston, NJ, USA] is a computerized injection system capable of detecting the pressure at the end of a needle thus being able to easily identify (visually and audibly) the lesser pressure in the epidural space. We successfully used this device for identification of the epidural space in 20 parturients.(2)We tested the hypothesis that using C will help inexperienced operators to successfully identify the epidural space in a simulator model.

**Materials and Methods** With IRB approval and signed informed consent, 30 subjects with <10 previous epidural placement experience were enrolled the study. A Life/form® spinal injection simulator (Nasco, Fort Atkinson, Wi, USA) was used as a model. After the techniques of finding the epidural space using loss of resistance (LOR) with saline and with C use were described, the subjects were asked to identify the epidural space using both methods. The starting method was randomized and after correctly identifying the space, or failing 5 attempts, the subjects were asked to use the alternate approach. A score the difficulty (1-10) for each approach was recorded. The main study outcome was the number of attempts and the difficulty score. The results were analyzed using t-test 2 paired samples for mean.

**Results and Discussions** 96% subjects correctly identified the epidural space using LOR and 100% using C in 5 attempts or less. There was a significant difference ( $p<0.05$ ) between the two methods both with regard to number of attempts (1.8 vs 1.2) and difficulty score (5.4 vs. 3 in LOR and C respectively). Out of 8 subjects with previous epidural placement experience 3 needed 2 attempts with LOR and 1 needed 2 attempts with C.

**Conclusion** Using Compuflo® significantly improved inexperienced operators success rate for the identification of the epidural space in a simulator model. The subjective difficulty score was less with the Compuflo® use in all subjects.

1.de Oliveira Filho CR.. Anesth Analg 2002; 95: 411–6 2.Ghelber, R. Gebhard, P. Szmuk et al.Anesth Analg 2005;100:S-255