Our Experience with EpiFaith® Syringe: A New Loss of Resistance Syringe for Locating the Epidural Space

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Introduction

The EpiFaith® syringe (Flat Medical, Taiwan) is a recently developed, spring-loaded, loss of resistance (LOR) syringe that can apply different degrees of constant syringe pressure while the operator is advancing the epidural needle, which releases when the epidural space is reached. Advantages of an epidural detection syringe compared to a traditional LOR syringe are the ability to advance the Tuohy needle with two hands, an objective sign of LOR and a potential teaching tool.[1,2] Only pre-clinical animal and phantom model studies of the device have so far been conducted. The aim of this study was to evaluate the EpiFaith® syringe in a clinical setting using a cohort of patients receiving neuraxial labor analgesia.

Methods

After obtaining IRB approval and written informed consent, 40 women requesting neuraxial labor analgesia were enrolled in this prospective study. Four experienced obstetric anesthesiologists participated in the study. Each were trained on how to use the syringe on a phantom model, and then performed 10 neuraxial procedures using the EpiFaith® syringe. Only combined spinal-epidural (CSE) or dural puncture epidural (DPE) techniques were performed to allow additional placement confirmation. Outcomes included: number of times (%) the EpiFaith® syringe detected the epidural space; the technique comparison score (-5 = absolutely worse, 5 = absolutely better, 0 = no difference) by the anesthesiologist to compare the EpiFaith® syringe with their regular LOR technique; and if any complications or technical issues were encountered.

Figures

Figure 1: Technique comparison score (-5 = absolutely worse, 5 = absolutely better, 0 = no difference) by anesthesiologists that compared the EpiFaith® syringe with their regular loss of resistance technique

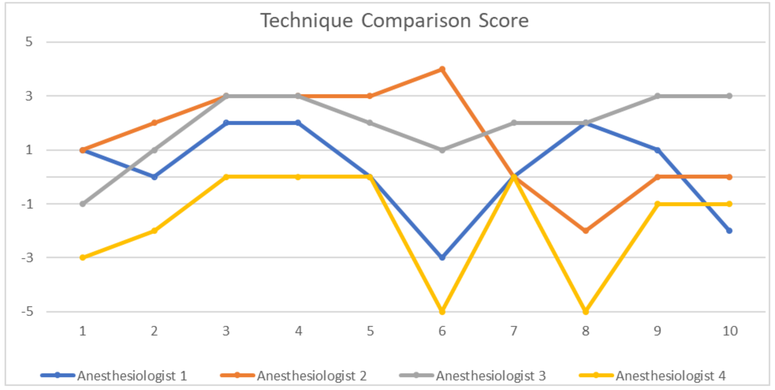
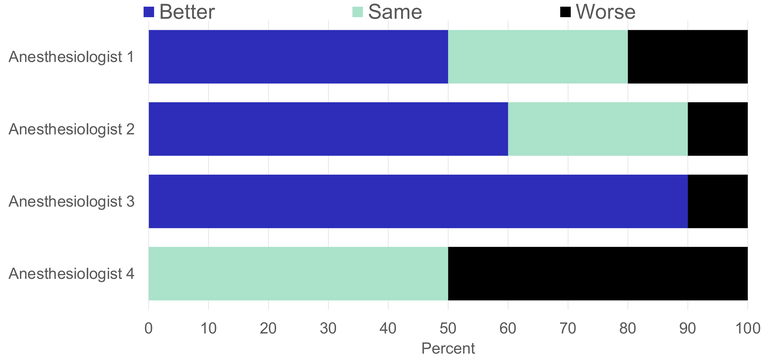


Figure 2: Comparison scores (scored as: worse, same, or better) by anesthesiologists that compared the EpiFaith® syringe with their regular loss of resistance technique



Results

In 90% of the cases, a clear LOR endpoint was reported by the operator, and the epidural space was correctly identified. Air was used to detect LOR in all but 5 cases. In 50% of cases, the anesthesiologists reported a greater technique comparison score with the EpiFaith® syringe compared with their regular LOR syringe. No difference in the comparison scores were reported in 28% of cases, and in 22% of cases the EpiFaith® syringe had lower scores. There was no improvement in these scores with each subsequent use (Figure 1). In 4 cases, tension of the spring released prior to reaching the epidural space and the EpiFaith® syringe had to be re-loaded. Operators mentioned 2 cases in which there was a brief delay in the spring release when they entered the epidural space. There were no unintentional dural punctures or failed blocks reported.

Discussion

The EpiFaith® syringe reliably detected the epidural space, and overall was preferred by experienced anesthesiologists over their regular LOR technique (Figure 2). Future large, randomized studies are required to compare the device to standard techniques to determine if a higher number of correct epidural space placements and a reduced incidence of unintentional dural puncture can be achieved.

References

1- Habib AS, George RB, Allen TK, Olufolabi AJ. A pilot study to compare the Episure Autodetect syringe with the glass syringe for identification of the epidural space in parturients. Anesth Analg. 2008;106:541–3

2- Riley ET, Carvalho B. The Episure™ Syringe: A novel loss of resistance syringe for locating the epidural space. Anesth Analg 2007;105:1164–6