

Title: Combined Spinal and Epidural Anesthesia-Incidence of "Dry-Tap" with 26-g Gertie Marx Needle

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Introduction: Combined spinal and epidural (CSE) anesthetic technique is used often to provide quick and effective pain relief during labor and delivery. It combines the reliability of a spinal block with the longer duration of action of continuous epidural block. In this procedure the epidural needle is placed in the epidural space and then the spinal needle (which is longer than the epidural needle) is inserted through the epidural needle and advanced till it penetrates the dura arachnoid membrane and then a small amount of fentanyl is injected through it. Following that, the spinal needle is removed and the epidural catheter is advanced through the epidural needle and placed in the epidural space. Sometimes, penetration of subarachnoid space is not possible with the spinal needle (dry-tap). The incidence of dry-tap can vary with the use of different types of spinal needles as well as the length of the spinal needle. In this study we wanted to document the incidence of dry-tap using 26-gauge Gertie Marx spinal needle.

Methods: We evaluated the incidence of dry-tap in 205 consecutive patients who received CSE analgesia. The CSE kit we used (Arrow AK-05560) consisted of a 17-gauge- 8.89 cm Tuohy epidural needle and a 26 gauge 12.4 cm Gertie Marx spinal needle. The spinal needle protruded 1.5 cm beyond the tip of the Tuohy needle. Several residents did the CSE procedure. They documented whether the dural puncture was successful or not. Successful dural puncture was recognized by the return of cerebrospinal (CSF) fluid. If there was no return of CSF, the epidural catheter was threaded into the epidural space and continuous infusion epidural anesthesia was continued in the usual manner.

Results: 205 women received CSE anesthesia. In six patients there was no successful penetration of the arachnoid membrane (dry-tap). In those patients, the epidural catheters were placed without difficulty and they all had satisfactory pain relief. The body weight and height of those patients (who had dry-tap) were not different from those who had successful spinal tap.

Discussion: Urmey et al noted a 24.5% failure rate when they performed CSE using an 8.75 cm Weiss epidural needle and a 27-g 11.71 cm Whitacre spinal needle, with a 12mm protrusion distance. Casati et al found a failure rate of 5% using an 18-gauge Tuohy epidural needle and 27-g Whitacre spinal needle with a protrusion length of 15 mm. In our study using 17-gauge Tuohy epidural needle and 26-gauge Gertie Marx spinal needle with a protrusion length of 15 mm resulted in a 3 % failure rate. Several factors maybe responsible for the occurrence of dry-tap. These include lateral insertion of the epidural needle, usage of spinal needle that is too thin, and also usage of the spinal needle that does not protrude long enough, Urmey et al noted a mean protrusion value of 8.5mm with a range of 5-15mm. The mean protrusion length in Casati's study was 8.0 +/- 3.1 mm, however in five patients, it reached 15mm. A study done by Joshi et al used a 16-gauge 8 cm Tuohy needle modified with an aperture in its curve (a back hole) for the insertion of a 26-gauge spinal needle (Quincke) designed to protrude 10 mm beyond the tip of the epidural needle. They noted a failure rate of 15%. With the use of Gertie Marx 26-gauge spinal needle that has the protrusion distance of 1.5 cm, we noted a failure rate of only 3%.

Reference:

- 1) Urmey WF, Stanton J, Perterson M, Sharrock NE. Combined spinal-epidural anesthesia for outpatient surgery; dose response characteristics of intrathecal isobaric lidocaine using a 27-gauge Whitacre spinal needle. *Anesthesiology* 1995;83:528-534.
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- 3) Joshi GP, McCarroll S.M. Evaluation of combined spinal-epidural anesthesia using two different techniques. *Regional Anesthesia* 1995;19(3): 169-174.