

COMBINED SPINAL-EPIDURAL ANESTHESIA AT QUEEN RANIA ALABDULLAH CENTER FOR TRANSURETHRAL RESECTION OF THE PROSTATE

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ABSTRACT

Objective: To study the advantage of combined spinal-epidural as a new technique for regional anesthesia.

Methods: We report our experience of a pilot study in which regional anesthesia was performed on 32 patients who underwent transurethral resection of the prostate. The 16G technique consisted of two needles. Tuohy needle and a 27G, 115 mm spinal needle. (SIMS Portex) with a lock type. This technique is called combined spinal – epidural.

Results: Intrathecal placement of the spinal needle was successful at each attempt with flow in 30 patients and a need to aspirate cerebrospinal fluid in two. The average height of the block was T10. All patients developed sympathetic block after five minutes. No side effects were noted.

Conclusion: Combined spinal-epidural may be a useful alternative for either spinal or epidural regional anesthesia separately.

Key words: Combined spinal - epidural anesthesia, Prostate surgery, Transurethral resection of the prostate.

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Introduction

Combined spinal-epidural (CSE) may offer advantages in day case surgery, cold surgery and post-operative analgesia, because it may produce a rapid onset of spinal anesthesia with the option to extend the blockade with an epidural catheter. Recent kits for producing CSE anesthesia using CSE cure (SIMS Portex) locking needle has a modified Tuohy needle which allows the spinal needle to be locked firmly onto the epidural needle after dural puncture.

Combined spinal-epidural anesthesia has the advantage of a rapid action of spinal anesthesia, while the insertion of a catheter into the epidural space enables smaller amounts of anesthetic agents to be used⁽¹⁻³⁾ and to extend the height of the block.

Methods

Patients admitted for transurethral resection of the prostate (TURP) during the period of the study at Queen Rania Alabdullah Center were enrolled. They were

informed of the technique by the anesthetist before insertion of the block. Verbal consent to a spinal anesthesia was obtained from 32 patients.

The procedure was undertaken with the patients in the sitting or lateral position during pre-load of the circulation with crystalloid solution (500 ml). Using a midline approach at the L2-L3 interspace, a 16G Tuohy needle was introduced into the extradural space with the bevel parallel to the dural fibers⁽⁴⁾.

The epidural space was identified using the loss of resistance to air technique with the spinal needle positioned correctly. The spinal needle was advanced until the tip was felt to puncture the dura as a click, 15 seconds were allowed for outflow of cerebrospinal fluid (CSF), if no fluid was visible, an attempt to aspirate CSF was made.

The success of this locking needle-through-needle technique for combined spinal epidural anesthesia requires the immobilization of the spinal needle during intrathecal injection as shown in (Fig. 1)

The spinal needle was passed through the Tuohy

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needle in the usual way, but its hub is designed to surround the hub of the Tuohy needle so that when the dura is punctured, it can be twisted in a clockwise direction and the two hubs fixed together. The technique allowed a 15 mm maximum protrusion distance of the spinal needle beyond the tip of epidural needle. On the appearance of cerebrospinal fluid, 1.5 ml of 0.5% plain bupivacaine were injected over 10 seconds plus 25-microgram fentanyl.

On removal of the spinal needle, the extra-dural catheter was inserted, so that 3 cm remained in the extra dural space.

The anesthetist performing the block assessed the dermatomal level, as the loss of cold discrimination to an ice cube. Sympathetic block was noted as the presence or absence of warm dry feet.

A modified Bromage scale was used to assess the motor block⁽⁵⁾.

Arterial pressure was measured every 3 minutes for the first 20 minutes using a noninvasive blood pressure measurement. Hypotension, recorded as the systolic pressure less than 20% from the baseline, was treated with fluids and incremental doses of ephedrine.

If anesthesia was inadequate at 10 minutes, the extra dural catheter was used.

Because of the risk of intrathecal placement of the catheter, 2-5 ml 0.5% bupivacaine (12.5 mg) were used, a dose unlikely to produce a dangerously high block if given intrathecally⁽⁶⁾.

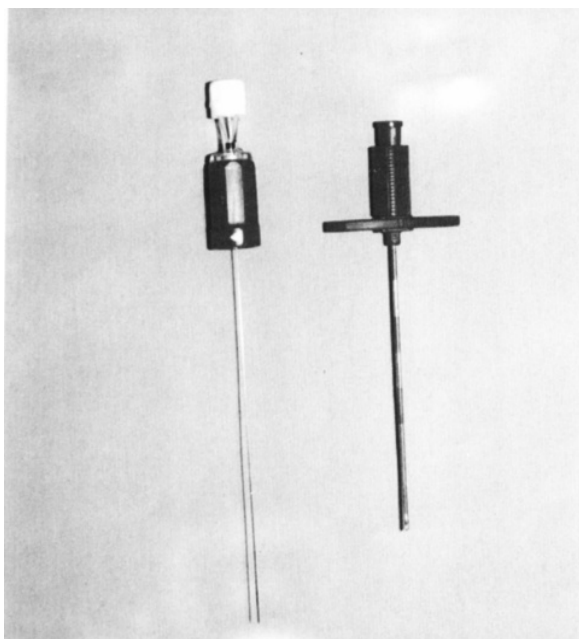


Fig. 1. Needle-through-needle with a lock type. Combined-spinal epidural set.

Results

A total of 32 patients were studied with a mean age of 62 years (range 58-74 years). Intrathecal placement of the spinal needle was successful at each attempt with

flow in 30 patients and a need to aspirate cerebrospinal fluid in two.

Table I shows the results of bromage score of the patients where 14 patients (44%) were in zero degree, 9 patients (28%) had one degree, 6 patients (19%) had a degree of two, and 3 patients (9%) degree of 5.

The total dose was 12.5 mg each time. No complications were noted during or after the procedure.

Table I. Bromage score among the study group.

	Motor Block	No.
0	Able to lift legs against gravity	14
1	Able to flex knee, unable to lift legs	9
2	Able to move feet, unable to flex knee	6
3	No movement	3

Discussion

Carrie has recommended a maximum first dose of bupivacaine (12.5 mg)⁽⁷⁾. This dose should be given in 10 ml volume. Doubling this dose to 25 mg of bupivacaine in 10 ml (0.5%) has produced a total spinal block⁽⁸⁾.

We have adapted the single space CSE to produce a safe, rapid and reliable onset of anesthesia in TURP.

The presence of an extradural catheter allows treatment of inadequate anesthesia, should this be necessary after a small dose of bupivacaine. The catheter also allows continuation of analgesia post operatively.

Subarachnoid placement of the extradural catheter is a risk with this technique and occurred in 3% of procedures at one center⁽⁹⁾.

At Queen Rania Alabdulla Center, the single space CSE has been used routinely for spinal anesthesia without any recognized intrathecal placement^(10,11).

With a single needle technique, decreased incidence of headache is achievable with the adoption of smaller needles⁽¹²⁾, the use of non-cutting needles⁽¹³⁾ keeping the bevel parallel with the dural fibers⁽⁴⁾ and approaching the dura at a more acute angle⁽¹⁴⁾, so that the holes in the dura and arachnoid do not overlap⁽¹⁵⁾.

The advantage of the dose of subarachnoid bupivacaine we used is the lesser degree of motor block seen in patients.

The value of the extradural catheter is the ability to prolong anesthesia or extend the block for postoperative analgesia and treat inadequate intrathecal block.

Conclusion

The device we applied appears easy to use, safe, and may be a useful alternative for conventional methods. Further large scale studies are anticipated to check for the spectrum of side effects performing a combined spinal-epidural technique, with few or no side effects.

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