Letter to the Editor

Is epidural volume extension (EVE) the evolved form of combined spinal epidural (CSE) anesthesia?

Dear Editor,

We read with great interest the original article titled “Major laparoscopic surgery under regional anesthesia: A prospective feasibility study” by Singh et al published in *Med J Armed Forces India* 2015;71:126–131.¹ We wish to bring out the following salient aspects which are vital to the appreciation of the study outcomes. We would regard the anesthetic technique as Epidural Volume Extension (EVE) technique instead of Combined Spinal Epidural (CSE), as reported in the article.¹ The distinction between EVE and CSE lies in the volume and timing of epidural injectate. EVE is the application of epidural injectate shortly after intrathecal injection, classically described using saline whereas CSE is the sequential epidural local anesthetic injection applied as incremental boluses at various times, targeting a particular sensory level of block.² Singh et al have employed EVE in their study.¹

The importance of differentiating the technique as EVE lies in the unique clinical advantages it provides. EVE facilitates reduction in intrathecal drug dose, provides block augmentation by direct thecal compression, as demonstrated in MRI studies, almost uniform block height augmentation with volumes ranging from 5 ml to 20 ml, additional block enhancement with local anesthetic epidural injectate instead of saline (4.8 ± 1.6 segments versus 2 ± 2 segments) and early recovery of motor power.² On the other hand, CSE causes a paradoxical decrease in duration of spinal anesthesia.²

The marked difference in the incidence of complications like hypotension (10%) as compared to 20.5% in a large series of 3492 patients³ could be due to post spinal hemodynamic stability due to EVE.² The lower conversion rates to General Anesthesia could possibly be due to effective augmentation of block height by EVE² than due to intrathecal fentanyl (20mcg). This puts up a strong case for EVE as gold standard anesthetic technique for all abdominal surgeries, including laparoscopy.

The case series provides compact preliminary evidence in favor of versatile scope of EVE as an evolved form of CSE in improving perioperative outcomes in terms of better pain profile, fewer complications i.e., postoperative nausea vomiting and urinary retention.

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Reply

Dear Editor,

I thank the authors for noticing and appreciating our article “Major laparoscopic surgery under regional anesthesia: A prospective feasibility study” published in *Med J Armed Forces India* 2015;71:126–131. We also feel that Epidural Volume Extension (EVE) and Combined Spinal Epidural (CSE) anaesthesia are twin brothers, both involve injecting drug in the intrathecal space and also in epidural space. The increase in level of spinal analgesia in CSE also is described

due to the compression of intrathecal space. If the volume injected in the epidural space contains local anaesthetic it also adds to the duration and intensity of the block. The EVE as described uses only saline and relies on only thecal compression and catheter is used later for either increasing the level of block or postop analgesia. It has really evolved out of better understanding of the mode of action of CSE. Since our study was a feasibility study we stuck to giving LA only in the epidural space as well, especially since after

initial few cases we were using single shot technique. After receiving this letter we did a number of cases under pure spinal anaesthesia with bupivacaine and fentanyl and had similar results as with CSE but it does call for further studies to confirm. The biggest problem faced during laparoscopic surgery under regional anaesthesia is shoulder tip pain because of diaphragmatic stretching especially if the initial peritoneal insufflation is too rapid. This pain is mediated

through C4 which can't be blocked either by CSE or EVE and we feel that this was considerably muted by intrathecal fentanyl but further larger comparative studies will be required to confirm this.

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Letter to the Editor

Dear Editor,

We read with profound interest the original article titled 'Real time ultrasound-guided percutaneous tracheostomy: is it a better option than bronchoscopic guided percutaneous tracheostomy?' by Ravi et al. published in *Med J Armed Forces India* 2015;71(2):158–164.¹ The study highlights the usefulness of ultrasound-guided percutaneous tracheostomy (USPCT) in assessing the vascular and soft tissue anatomy of the neck as compared to the bronchoscopic-guided percutaneous tracheostomy (BPCT).

We have the following queries:

- Was any percutaneous tracheostomy (PCT) performed in an unintubated case or an awake patient in the study?
- Use of local infiltration with Lignocaine with or without adrenaline before or during the procedure.
- Plausible reason for the statistically significant tracheal cuff puncture, 8 out of 36 cases in BPCT technique against 0 out of 38 cases in USPCT.

We would also like to express the following:

In our experience of twenty-four BPCT performed between August 2012 and July 2015 (Griggs technique – 10 and PercuTwist technique – 12), the only significant major complication we had was two cases of severe hemorrhage (<50 ml), both with the Griggs technique. Both cases were obese with short neck. As brought out by your article, availability of ultrasound guidance may have prevented the complications.

A study found the use of ultrasound combined with bronchoscopic examination very useful in enhancing the

safety of PCT. Ultrasound examination before and bronchoscopic surveillance during the procedure drastically minimized complications in PCT.²

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Reply

Dear Editor,

Thank you very much for the keen attention given to the article. I have replied to your kind queries to the best of my abilities and hope these replies will suffice.

- We did perform the percutaneous tracheostomy (PCT) in unintubated patient in few of the planned percutaneous tracheostomy in the ICU. However, we did not include it in our study since they were very few in numbers and it would have created a bias (as per the statistician) in the analysis.