Case Study

The use of the CSEcure® technique for radical prostatectomy – a local perspective

Radical prostatectomy is a type of major urological cancer surgery that removes the entire prostate gland and some surrounding tissue. During the procedure the pelvic lymph nodes may also be taken for a biopsy. The goal of the operation is to remove the cancer entirely and prevent its spread to other parts of the body.

There are many ways to perform a radical prostatectomy, including laparoscopically, but the most common method uses an abdominal approach with the incision beginning below the umbilicus and extending to just above the pubic bone. After removal of the prostate, the urethra is anastomosed to the neck of the bladder over a urinary catheter. A radical prostatectomy has the potential for major blood loss. At our institution the procedure takes approximately 2 – 2.5 hours to complete.

Although radical prostatectomy can be performed under general anaesthesia (with intravenous PCA morphine for postoperative analgesia), there is now good evidence that regional anaesthesia, with light sedation, can provide equally good operating conditions with reduced blood loss, faster recovery and better postoperative analgesia.¹

Regional anaesthesia can be provided using an epidural catheter, a single shot spinal or a combined spinal epidural (CSE) technique. An epidural block is much slower to establish than a single shot spinal which itself has a limited duration of action. Naturally with a surgical procedure of this duration there is a high chance that the spinal anaesthetic may have to be converted intraoperatively into a general anaesthetic. These problems are easily overcome with a CSE technique. The spinal component provides a fast onset of dense regional anaesthesia with the facility for intraoperative epidural top-ups, if the patient experiences discomfort or pain. If intraoperative sedation is needed, small amounts of sedation using short acting benzodiazepines such as midazolam can be given. The epidural catheter can also be used for postoperative analgesia using a local anaesthetic / opioid infusion.
The critical part of the anaesthesia, of course, is the CSE. There are many ways to site a CSE, although today most anaesthetists would use a needle through needle technique at a single interspace. This method involves first sitting an epidural needle in the epidural space using a standard loss of resistance technique followed by inserting a long spinal needle (e.g. a 27G, 119mm length Whitacre spinal needle) through the epidural needle. In most cases the spinal needle passes through the epidural space, puncturing the dura mater and entering the subarachnoid space, leading to the characteristic dural “click” or “pop”. This leads to the flow of CSF through the spinal needle. When CSF is seen at the hub of the spinal needle, the local anaesthetic can be injected. The spinal needle is next removed. Finally the epidural catheter is threaded into the epidural space and the epidural needle removed. The epidural catheter is then fixed to the skin with an adhesive dressing or an epidural catheter fixation device, such as the Lockit® epidural clamp manufactured by Smiths Medical.

A common protocol which is used for radical prostatectomy performed under CSE at our institution is given below:

1. After establishing an intravenous infusion of crystalloid through a 16G cannula, a CSE is performed in the sitting position at approximately L3-4, using a CSEcure locking needle device. A useful tip is to remove the spinal needle stillette before passing the spinal needle slowly through the epidural needle. Even if no dural click is felt, CSF can then be identified once the spinal needle enters the subarachnoid space.

2. When CSF is seen at the hub of the spinal needle, 15mg hyperbaric bupivacaine (0.5% Marcain) + 15 mcg fentanyl is injected through the spinal needle.

3. The patient is then placed supine. A 20G arterial line is inserted into a radial artery under local anaesthesia. A triple or quad lumen central line is inserted into the right internal jugular vein, again under local anaesthesia using an ultrasound guided technique.

4. The spinal block level, to cold and touch, is tested using ethyl chloride spray. If the level of anaesthesia is inadequate an epidural top-up of 5-10 ml 0.5% levobupivacaine is given via the epidural catheter to increase the block height.

5. The patient is then moved into the operating theatre and midazolam, in 0.5mg increments, given intravenously if needed for light sedation during the operation. Music is also provided to the patient using a minidisk player and headphones.

6. A high airflow device such as a Warmtouch mattress is used for intraoperative warming. Calf compression boots (Flowtron) are utilized both intraoperatively and during the postoperative period.

7. Intraoperative supplementation of the epidural block is provided using boluses of 5-10 ml 0.5% levobupivacaine with fentanyl.

8. At the end of the operation, the patient is moved to the high dependency area for postoperative monitoring. Postoperative analgesia is provided with an epidural infusion of 0.125% bupivacaine + 4 mcg / ml fentanyl.

Although radical prostatectomy is a major surgical procedure, excellent operating conditions and reduced intraoperative blood loss can be provided using a CSE technique. A faster recovery time and postoperative epidural analgesia are additional benefits.

References