CASE REPORT

Prolongation of subarachnoid block for prolapsed intervertebral disc surgery by intra-operative subdural injection under direct vision

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ABSTRACT

A 45 years old male, weighing 70 kg suffering from prolapsed intervertebral discs (PIVD) and was scheduled for decompression surgery at L3-L4, L4-L5 spinal levels. Spinal anesthesia was administered at L3-L4 interspace in the sitting position using 25gauge spinal needle and 3 ml of 0.5% hyperbaric bupivacaine was injected. The patient was turned prone after 5 min. After about two hours of surgery the patient complained of pain. A decision to administer spinal anesthesia again was undertaken as the dura mater was already exposed at the surgical site. Hyperbaric bupivacaine 1.5 ml was injected in the subarachnoid space under direct vision using 25G spinal needle. Adequate block was achieved and surgery was completed without.

This report shows that intraoperative local anesthetic injections into the subarachnoid space under direct vision can be used to prolong the duration of the block.

Key words: Intervertebral Disc Displacement; Anesthesia, Spinal; Anesthesia, General; Bupivacaine

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INTRODUCTION

Lumbar backache is a common cause of chronic debility. Acute lumbar disc prolapse or chronic degeneration with disc-space narrowing at L4/5 or L5/S1 are common pathologies. In disc prolapse surgical discectomy is used to relieve symptoms associated with the pathology. Though general anesthetic technique involving intubation and mechanical ventilation is more commonly used for spine surgeries, regional techniques, mainly spinal anesthesia (SA) are increasingly being used for simple lumbar procedures.

CASE REPORT

A 45 years old male, weighing 70 kg with complaints of tingling and numbness of both lower limbs for the past five months, and difficulty with walking, presented to the orthopedic outpatient department for treatment. He was diagnosed to have prolapsed intervertebral disc at L3-L4 and L4-L5 level and was scheduled for discectomy. On pre-anesthetic evaluation he had no history of previous surgery but was hypertensive for the past two years and was on tablet losartan 50 mg once daily. There were no pertinent findings on physical examination and no laboratory abnormalities were found. Patient was advised to take regular morning dose of his antihypertensive medication.

In the operating room monitoring was instituted with pulse oximetry (SpO2), electrocardiogram (ECG) and noninvasive blood pressure (NIBP). He had oxygen saturation 99%, a sinus rhythm on ECG and BP at 134/80 mmHg. He was premedicated with inj. midazolam 1 mg IV. Preloading was done with 500 ml of Ringer's Lactate solution. SA was planned for surgery. An ***LMA Fastrach***™, i-gel™ and a light wand stylet were kept ready in case of need to secure the airway in prone position.

SA was instituted by lumbar puncture at L3-L4 space in sitting position using 25gauge spinal needle and

3 ml of hyperbaric bupivacaine 0.5%. Patient was then turned supine. Sensory level was checked and adequate block was achieved up to T6 segment. He was turned prone and surgery was started. After about two hours of uneventful surgery, the patient complained of pain and needed anesthesia supplementation.

It was decided after consultation with the surgeon to refresh SA instead of administering him general anesthesia (GA). One and a half ml of 0.5% hyperbaric bupivacaine was injected in the subarachnoid space under direct vision using 25G spinal needle. Adequacy of block was checked, sensory block upto T6 level was confirmed and surgery continued for another 45 min without any added complications or discomfort to the patient.

DISCUSSION

We present here a case in which the duration of SA was prolonged by a sequential spinal injection under direct vision. SA, epidural or GA, have all been used for lower spine surgery, but randomized controlled trials establishing the superiority of one technique over the other techniques are lacking.

McLain et al[1] conducted a case-controlled study in 400 patients who underwent either SA or GA for lumbar decompression, and demonstrated that SA was as effective as GA. They concluded that spinal resulted in shorter anesthesia duration, decreased incidence of nausea and postoperative analgesic needs, and was accompanied with fewer adverse effects.

Traditionally, GA is commonly used in lumbar disc surgery; nevertheless, regional anesthesia, either spinal or epidural, has also been used as a successful alternative in spinal surgery. Although discectomy has been performed under regional anesthesia, SA is not a commonly used technique. This technique avoids the deleterious physiological consequences of the prone position under GA.[2] Maintenance of spontaneous ventilation results in less distention of the epidural veins and produces an excellent surgical field. Although SA has previously been reported for discectomy and is mentioned in anesthetic textbooks, it is unclear exactly how widely the technique is practiced.[3-5] In general, SA has been shown to carry a very low risk of serious complications.[6]

SA advantages include self-positioning by the patient, this regulates the respiratory function and also decreases intraoperative bleeding by decreasing peripheral venous pressure.[7] Reduced bleeding reported in previous studies may be due to relatively fewer episodes of intraoperative hypertension because SA inhibits surgically induced stress level to a greater degree than GA.[8-10] Jellish et al[11] have shown that patients, who receive a SA, bleed less during lumbar disc procedures compared with those in whom GA was given. They suggested that reduced blood loss under SA and spontaneous ventilation was due to a combination of sympathetic blockade (with resultant vasodilation and relative hypotension) and lower intrathoracic pressure.[12]

In our case, we successfully extended the duration of block by injecting local anesthetic into subarachnoid space under direct vision through the dura mater.

CONCLUSION

Local anesthetic can be injected into subarachnoid space under direct vision, prolonging the duration of neuraxial block. This technique can be used during lengthy spinal surgery and can help to obviate a need for general anesthesia.

intra-operative subdural injection

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