

# Prolonged Sensory And Motor Blockade Following Combined Spinal-Epidural Anaesthesia In A Patient With Ankylosing Spondylitis

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## Abstract

Ankylosing Spondylitis presents unique challenges to the anaesthesiologist. In addition to the management of the airway, which can be difficult, regional anaesthesia and neuraxial blockade have also proved to be difficult or impossible in such patients. We report one such patient with severe degree of ankylosing spondylitis, with restricted mouth opening and no neck movements, who presented to us for total hip replacement. Neuraxial anaesthesia in the form of combined spinal-epidural anaesthesia was given to him, with all the airway equipments kept ready, if required. The surgery was uneventful, and epidural catheter was retained post operatively for relief of post operative pain. We observed an unusual delay in the recovery of sensory or motor blockade in this patient upto 36 hours after the surgery. This unusual delay can be due to intrathecal migration of the drug or a faulty infusor pump. Also, Ankylosing Spondylitis patients have narrowed epidural spaces. These options must be kept in mind for future surgeries when there is an unusual delay in recovery.

## INTRODUCTION

Ankylosing Spondylitis is a chronic, painful, inflammatory arthritis affecting the spine and sacro iliac joints, causing eventual fusion of the spine. Such patients present significant challenges to the anaesthesiologist. Airway management is difficult due to limited or no neck movement, restricted mouth opening and difficulty in laryngoscopy. Central neuraxial blockade may also be difficult due to difficulties in positioning of the patient, and varying degrees of fusion of the spine. More often than not, these patients present for total hip replacement surgeries for which central neuraxial blockade is best suited. This would also ensure adequate post operative analgesia, aiding in early mobility and thereby reducing complications related to prolonged immobility in hip surgery patients. The combined spinal-epidural technique is commonly used to provide intra operative and post operative analgesia. An epidural infusor pump is used for continuous post operative analgesia, in which very low, sensory dose of bupivacaine is added. We report a patient in whom this resulted in prolonged total sensory and motor blockade in the post operative period.

## CASE REPORT

A 50 year old male patient, weighing 78 kgs and 180 cms tall, presented to us for revision total hip replacement. There

was no past significant medical or surgical history except an earlier primary hip replacement done 18 years prior under spinal-epidural anesthesia. On examination, he had a moderately severe degree of ankylosing spondylitis, with no neck movement and restricted mouth opening, with a stiff lumbar spine and mild degree of kyphosis, thereby proving to be a case of difficult intubation. Vitals and other parameters were normal. Laboratory investigations were within normal limits.

This patient was induced with combined spinal epidural technique in the sitting position. The technique was performed easily, in the first attempt at the L3-4 interspace with a 16-gauge Tuohy epidural needle and 27-gauge Sprotte spinal needle. No paresthesiae were elicited and neither blood nor cerebrospinal fluid (CSF) was obtained through the epidural needle. Clear CSF was obtained through the spinal needle and 3 mL of 0.5% (heavy) bupivacaine was injected intrathecally. A 16 G epidural catheter was passed easily at the first attempt and was secured at the skin. Neither blood nor CSF was aspirated through the catheter. A sensory level of T8 was obtained. Vital signs remained stable throughout the procedure. The duration of the surgery was 5 hours, and the patient was maintained intra operatively on infusion of 0.5 % bupivacaine epidurally after adequate

test doses to confirm the correct location of catheter. Hemostasis was adequate. Estimated blood loss during the surgery was 1500 ml and patient received 3000 ml crystalloid and 2 units of whole blood intravenously. At the end of surgery, patient had sensory block of L1 and motor block of L2-L3. The patient had mild pain at the surgical site. A continuous post operative epidural infusion was started through an infusor pump with 0.0625% Bupivacaine and 10 microgm/hour fentanyl along with 20 microgm/hour clonidine for hemodynamic stability. The patient was sent to the ward with the epidural catheter in situ along with the pump and was re assessed at regular intervals.

6 hours into the post operative period, the patient was comfortable with no pain in the surgical site, with sensory level at L 1 and motor weakness in the lower limbs. He was otherwise stable with respect to hemodynamic parameters. 12 hours into the post operative period, the patient still had the same sensory level and persisting weakness. He was not able to lift the normal leg against gravity and there was quadriceps muscle weakness, associated with not able to move both the feet ( Bromage score = 3 ). The same scenario continued for the next 24 hours, which prompted us to temporarily disconnect the infusor pump and observe him. This resulted in improvement with the patient being able to lift the non operated limb against gravity, as well as move both his feet, 4-5 hours later. Neurological examination proved to be normal, with return of normal sensations in both his lower limbs. A check MRI did not reveal any hematoma. The epidural catheter was removed on the 2<sup>nd</sup> post operative day and patient received supplementary analgesics thereafter.

## DISCUSSION

This report generates interest for the following reasons. Why did the patient develop persistent complete sensory and motor blockade post operatively, which lasted so long? The concentration of Bupivacaine in the infusor pump was too low to cause this blockade. It was intended to provide relief from post operative pain. Secondly, were there any chances of intrathecal migration of epidural catheter in the post operative period? During the intra operative period, the epidural catheter was in situ as confirmed by test doses. Also, epidural infusions were used intra operatively for maintenance of sensory and motor blockade. The chances of postoperative migration of epidural catheter has been documented earlier. Another possibility is intrathecal diffusion of the drug alone, with the epidural catheter in situ.

This may not account for the complete motor blockade which the patient had, especially in L4-L5 muscle group. A third possibility is malfunction of the infusor pump which might have resulted in excessive drug entering the epidural space, thereby causing accumulation of drug. The underlying disease of the patient, as in this case, might have also contributed in the diffusion of the drug. There is no possibility of a traumatic tap as the regional blockade was achieved with a single attempt, also the check MRI showed no hematoma. The addition of fentanyl and clonidine to the infusor pump solution may have potentiated the local anesthetic action, thereby enhancing the blockade.

Data suggest that spinal anaesthesia can be used as an alternative to general anaesthesia in AS patients undergoing perineal or lower limb surgery (1). Combined spinal-epidural anaesthesia has been proven to be safe for total hip replacement patients, especially in those patients who are difficult candidates for general anaesthesia, such as this. This technique can be performed reliably and quickly by the needle through needle technique (2). The Combined spinal epidural anaesthesia (CSEA) technique has attained widespread popularity for patients undergoing major surgery below the umbilicus who may require prolonged and effective postoperative analgesia. The CSEA technique is now well established in several institutions. CSEA has the advantages of both techniques. Spinal administration of the local anaesthetic guarantees a rapid onset of action, good motor relaxation, and reliable analgesia with less local anesthetic and, thus, lower overall toxicity. The epidural catheter enables the analgesic action to be prolonged by administering top-up doses, providing optimal postoperative pain therapy. (3,4,5)

In this patient, the blockade resolved after disconnection of the infusor pump, which may point towards a causative factor as listed above.

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