

# Sole Epidural Anaesthesia for Caesarean Section in a Patient with Multiple Sclerosis: A case Report and Literature Review

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## Abstract

Neuraxial blocks in patients with multiple sclerosis has been controversial, because the effect of local anaesthetic drugs on the course of the disease is unclear. We report an obstetric patient with multiple sclerosis whose Caesarian section was performed successfully under sole epidural anesthesia and postoperative pain control was managed using epidural morphine. There were no exacerbations of neurologic symptoms and no relapse of disease at one month follow-up. We suggest that the choice of anaesthetic technique for patients with multiple sclerosis should be determined after evaluation of the course of the disease and informed consent. The obstetric patients with multiple sclerosis should not be denied the neuraxial block for labor and caesarian section.

## INTRODUCTION

Multiple sclerosis (MS) is seen as a chronic inflammatory disease of the central nervous system (CNS), which leads to circumscribed demyelinated plaques in the CNS with axonal preservation and reactive astrocytic scar formation. The pathological hallmark of MS is the presence of focal demyelinated plaques with partial axonal preservation and reactive glial scar formation in the white and gray matter of the CNS with diffuse damage throughout the normal-appearing white and gray matter. As the disease progresses these alterations are associated with increasing global brain atrophy.<sup>1</sup> More than 2.3 million people are affected by MS worldwide.<sup>2</sup> In Nepal, there were about 4182 MS cases and 41 deaths reported in 2016.<sup>3</sup> MS is more common for women with a ratio of MS between adult women and men is 3:1. Similarly the rate of MS relapses decreased through pregnancy, relapse rates increased

three months after delivery and were equal to previous non pregnant state afterwards.<sup>4</sup> Conduct of anaesthesia and pain management can be challenging in a patient with MS. Here we report a case of a patient with MS undergoing LSCS Caesarean section under sole epidural anaesthesia with injection bupivacaine and morphine.

## CASE REPORT

Twenty-two years female at 40 weeks of gestation (WOG), weighing 60 kg, known to have MS for last six months, was planned for elective LSCS. At three months of pregnancy, there was acute onset double vision, ataxia and abnormal body with normal bowel and bladder habit. She was diagnosed with secondary progressive MS based on clinical findings and relevant investigations including MRI. She received oral methylprednisolone for 14 days for acute optic neuritis and planned to start oral dimethyl fumarate therapy after pregnancy. Currently there was no residual

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In the operation room, she was preloaded with 250 ml of Ringer's Lactate (RL) through 18 G intravenous (IV) cannula. She then received IV metoclopramide 10 mg, Pantoprazole 40 mg and Ceftriaxone 1 gm as per our institution protocol. All ASA standard monitors were attached and monitored periodically. Epidural catheterization was done

in sitting position following strict aseptic and antiseptic precaution with 18 G Tuohy needle at the T12 L1 level by the loss of resistance (LOR) to saline technique. LOR was illustrated at 4 cm from skin and epidural catheter was fixed at 9 cm from the skin. Test dose of 3 ml 2% lidocaine with Adrenaline (5 mcg / ml) was injected to rule out intravascular and intrathecal injection. She was laid down supine with table tilt of 10 - 15 degree. Fetal heart rate was reassessed to be more than 110 / min. Epidural anaesthesia was provided with freshly prepared solution of 2% Lidocaine with Adrenaline (5 mcg / ml) with Fentanyl (5 mcg / ml) on titration of 3 - 5 ml every 2 - 3 minutes monitoring the vitals and level of block. Over 10 minutes, 14 ml solution was injected to achieve a block height of sensory dermatome T4 and Bromhage grade 3. CS was then initiated and a healthy baby of 2.5 kg with APGAR score of 6/10, 8/10 of was delivered. IV Oxytocin 3 U bolus was provided slowly over one minute and infusion of 3 U / 500 ml was initiated. Freshly prepared morphine 2.5 mg was injected through epidural catheter and flushed with 1 ml of sterile normal saline. The duration of surgery was 25 minutes and there was no major haemodynamic fluctuation. Epidural catheter was removed after one hour of surgery in the labour ward. She received paracetamol and ketorolac for postoperative pain management. Foley catheterization was removed on first postoperative day and was discharged home the next day. Cerebellar signs like dysdiadochokinesia, heel shin test and truncal ataxia were present as preoperative level. On one month follow up she was doing fine with no incidence of relapse or any other new finding.

## DISCUSSION

Historically anaesthesiologists were scared of providing regional analgesic / anaesthetics to patients with demyelinating diseases due to belief of risk of flaring up the disease itself. The flaring could be associated with direct mechanical trauma or due to toxicity of the local anesthetic agent or neuronal ischemia.<sup>5</sup> Many authors have reported prolonged block due to flare up of MS due to regional anesthesia. Inucane et al reports prolonged paraventricular block with 0.5% 6 ml bupivacaine that lasted more than 12 hours in a MS patient.<sup>6</sup> Bader et al reports flares up of MS in postpartum cases that received concentrations of bupivacaine greater than 0.25%.<sup>7</sup> Shuangshoti et al reports intracranial glioma mimicking MS.<sup>8</sup> We avoided Bupivacaine in our case due to these case reports.

Pregnancy in multiple sclerosis (PRIMS) study was one of the first large prospective studies done on the pregnant population. The study collected data on the cohort of 227 women who had a pregnancy with a live infant for up to two years postpartum. The study concluded that the relapse rate decreased significantly during pregnancy, especially in the third trimester, and increased following delivery. From the second trimester onwards, in the two years post-partum, the relapse rate did not differ from that in the pre-pregnancy year. Epidural analgesia was shown to not affect the relapse rate.<sup>4,9</sup> Similarly Pasto et al showed no correlation between epidural analgesia, Caesarean delivery and postpartum relapses and disability.<sup>9</sup> Ten year retrospective cohort study by Hana et al showed neither delivery mode (Vaaginal vs Caesarean) nor type of obstetric anesthesia / analgesia was found to have any impact on the course of MS at six months postpartum in women with this condition.<sup>10</sup> Reviewing these articles, we conducted this case under sole epidural anaesthesia and there was no perioperative relapse of MS.

## CONCLUSIONS

Sole epidural anesthesia with proper planning and careful patient selection and proper consent can be an excellent alternative to general anesthesia and other neuraxial anaesthesia for surgeries in MS patients.

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