



## PATIENT CONTROLLED EPIDURAL ANALGESIA WITH ROPIVACAINE AND FENTANYL FOR POSTOPERATIVE SPINE SURGERY PATIENT IN PERIPHERAL INSTITUTE: A CASE STUDY

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### ABSTRACT

PCEA is an excellent method for postoperative pain management in spine surgery patients. It provides excellent pain relief and patient satisfaction as the patient has a sense of control on their own pain. In this case study we describe the use of a PCEA pump in a peripheral health institute. Also we have discussed the pros and cons of using a PCEA pump in a peripheral health institute.

**KEYWORDS** : Patient controlled epidural analgesia, PCEA, Ropivacaine, Spine surgery, pain management.

### INTRODUCTION

Spine surgery is a very painful procedure. Dealing with post-operative pain in spine surgery patients is a very challenging task. Sometimes trauma patients come to peripheral health institutes for spine surgery. But inadequate pain control in post-operative period can lead to various complications. In this study, we inserted an epidural catheter in a spine surgery patient at the end of surgery. Patient controlled epidural infusion of 0.2% ropivacaine + 2mcg/ml fentanyl was used for pain control.

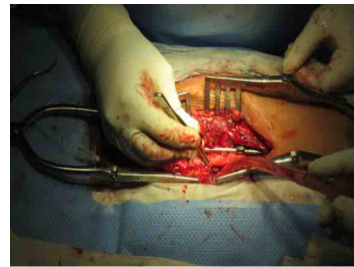
### CASE REPORT

A 36 year old female patient teacher by profession presented in emergency department of district hospital Mandi with history of fall and trauma to lower back. On radiological examination an unstable fracture of D12 spine was found. So she was admitted in orthopaedics ward of the hospital and posted for surgery the next day.

In pre-anaesthetic examination, her vitals were pulse- 80/min, BP- 122/76 mmHg. No abnormality was found on systemic examination. There was no neurological deficit. There was no history of diabetes, HTN, asthma or any drug allergy. On airway examination mouth opening of 3cm, MPS 2, neck movements adequate and no loose teeth or dentures found. ECG was normal, Hb was 11g/dL all other investigations were within normal limits. She was told for fasting 8 hours before surgery and arrange 2 units of blood for the surgery. However she was very apprehensive for the post operative pain. So she was told about patient controlled epidural analgesia for post operative pain control by the anaesthesiologist. A written informed consent was taken after explaining the anaesthesia plan and possible side effects of epidural analgesia to her.

On the day of surgery, in the operation theatre an 18G IV cannula and an arterial cannula using 20G arterial cannula were secured under local anaesthesia in addition to the already present 20G IV cannula. Induction was done with incremental doses of propofol, atracurium was used for muscle relaxation. Intubation was done with 7.5mm ID cuffed endotracheal tube. The tube was fixed at 20cm after checking capnography and bilateral air entry. Then prone position was given and bilateral air entry was again checked to confirm tube position. Maintenance of anaesthesia was done with O<sub>2</sub>:N<sub>2</sub>O: Isoflurane in ratio of 33%:66%:0-2%. Infusion PCEA and fentanyl were given for intraoperative analgesia. The surgery went uneventful. Near the end of surgery before dura closure, the epidural catheter was inserted by the operating surgeon and tip of catheter was inserted 5cm above the defect. Epidural space was closed and 5ml of normal saline was inserted to check for the patency of epidural catheter and also to check for any leaks from the surgical site. The incision was

then closed and the epidural catheter was fixed and dressing applied. Supine position was given to the patient, and after reversal of neuromuscular blockade extubation was done.



**Image 1:** The surgeon inserting the epidural catheter into epidural space.



**Image 2:** The surgeon checking for patency of epidural catheter.



**Image 3:** Application of dressing and fixing of epidural catheter after surgery.

In the recovery room, the patient was checked for any neurological deficit before starting the PCEA pump (Patient Controlled Epidural Analgesia pump). The PCEA infusion consisted of 0.2% Ropivacaine and 2mcg/ml Fentanyl. The PCEA settings were: basal infusion rate of 10ml/hour, patient controlled bonus of 2.5ml, lockout period of 10 minutes and maximum boluses per hour limited to four. The patient was given the demand switch of the PCEA pump and was told to

press it whenever she felt unbearable pain. The anaesthesiologist visited the patient regularly (2 hourly) to analgesic solution in the PCEA syringe(50ml) and also to check for any side effects or pump dysfunction. The epidural catheter was removed on third postoperative day and the satisfied patient discharged on 5th postoperative day. No untoward side effects were noted during her stay in the hospital.

## DISCUSSION

Spine surgery is a very painful procedure and post operative pain is a major cause of patient morbidity after spine surgery. Infusion acetaminophen, diclofenac and tramadol are routinely used for postoperative analgesia after spine surgery. But these agents provide inadequate pain relief in this surgical population. PCEA is an excellent method for post operative pain control in spine surgery patients. We used ropivacaine fentanyl combination as analgesic solution in our PCEA pump. Ropivacaine provides excellent analgesia with minimal motor blockade so it permits for checking of motor movements in postoperative period. Fentanyl reduces ropivacaine requirement and further potentiates the analgesic effect of ropivacaine.<sup>2,3</sup> However, using PCEA pump in peripheral health institutes is very demanding job on part of the anaesthesiologist. As the staff in peripheral health institutes is not trained in use of PCEA pumps, so the anaesthesiologist has to frequently visit the patient to frequently replace the analgesic solution. Also in case of any adverse event<sup>4</sup>, no proper backup services may be available so patient might have to be referred to higher centres for further management.

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