International Journal of Medical and Pharmaceutical Research
Website: https://ijmpr.in/ | Print ISSN: 2958-3675 | Online ISSN: 2958-3683
NLM ID: 9918523075206676
Volume: 4 Issue:6 (Nov-Dec 2023); Page No: 150-152

Case Report

Regional Anaesthesia for Low Lumbar Spine Surgery: A Case Report

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ABSTRACT

Introduction: The common Anaesthetic technique for spine surgeries including Lumbar spine surgeries is general anaesthesia (GA). Spinal Anaesthesia (SA) as opposed to general anaesthesia during elective lumbar spine surgery is an emerging technique and represents a potentially modifiable factor to limit perioperative complications. The aim of this case report is to determine if Spinal anesthesia is a safe alternative to General anaesthesia for lumbar spine surgery.
Objective: To report a case of spinal anaesthesia for short duration Lumbar spine surgeries in orthopaedics.
Method: Search of relevant references from Pubmed, Elsevier, and others with 10 considered relevant by authors were finally selected.
Result: We present a case of a 25 year old obese female who was previously Operated for Posterior instrumentation of L5- S1 spine in view of pott's spine underwent Epidural abscess debridement at L5 S1 level under spinal Anaesthesia.
Conclusion: We conclude spinal anaesthesia is well tolerated and has favourable outcomes compared to general anaesthesia and can be considered for short duration procedures of lower level lumbar spine surgeries.

Key Words: *Spine Surgery, Spinal Anaesthesia, Emerging techniques*

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INTRODUCTION

Surgical procedures of the spine are on the rise recently due to the epidemic of low back pain. Surgeries for degenerative spine disease and herniated discs are common in younger population. Different surgical procedures done on lumbar spine are discectomy, laminectomy, decompression, foraminotomy and various types of fusions, etc.

The anaesthetic management of spine surgeries is challenging in view of significant blood loss, prolong procedure, complications related to position, and postoperative pain management. General anaesthesia (GA) is the most commonly used technique to anaesthetise patients during spine surgery. The use of spinal anaesthesia (SA) during elective lumbar spine surgery is an emerging technique [1].

Spinal Anaesthesia can be a mode of anaesthesia for low lumbar spine procedures. Procedures with duration of 2-3 hours that do not have significant risk of excessive blood loss can be induced with spinal anaesthesia.

The common anaesthetic technique being general anaesthesia is associated with increased blood loss, blood pressure and heart rate changes, positioning related complications, requirement of intraoperative and postoperative analgesics, postoperative recovery room monitoring, etc.

Spinal anaesthesia on the contrary is advantageous in terms of decrease in intraoperative blood loss, postoperative hypoxic episodes, arterial and venous thrombosis and to provide postoperative pain control [2, 3].

SA is safer anaesthesia for patients with lung, liver and kidney diseases which are not uncommon in older age group. Additional benefit of SA is awake patient can position themselves according to their comfort and chance of injuries due to prone positioning is less [4].

This article presents a case of lumbar spine debridement performed under spinal anaesthesia. Patient tolerated the procedure well and was vitally and haemodynamically stable intraoperatively.

Case Presentation:
A 25 year old female patient (height, 168cm; weight, 92kg) who was previously operated for
Posterior instrumentation of spine at L5-S1 level

In view of pott's spine came with complains of pain in lower back over previously operated site since 2 months. The pain was insidious in onset and gradually increased over the period.

Patient was a recently diagnosed case of Pott's spine and was on anti tuberculosis treatment since last 4 months. Patient had no other significant medical or surgical comorbidities and no known relevant family medical history. Patient had no history of any addiction. Preoperative laboratory examination results were within normal limits. MRI evaluation was suggestive of pre-paravertebral abscess extending from L5 to S2 and anterior epidural abscess.

Estimated duration of the surgery as per orthopaedician was 2 hours , considering the duration of the surgery and estimated blood loss, lower lumbar area to be operated, plan of anaesthesia was spinal anaesthesia.

After reconfirming patients consent and nil by mouth status, patient was taken on operation table and baseline vital parameters were noted. On securing peripheral intravenous cannula patient was preloaded with 350 ml of ringer lactate solution.

During the procedure of induction patient was given sitting position with arms resting on pillow by the chest so as to get optimum extension of spine. After attaining all the aseptic conditions, injection site was anaesthetised with 2ml of 2% lignocaine through a 1.5 inch long 25 gauge needle. The anaesthetic drug was a mixture of 3.6 ml (18 mg) of 0.5 % hyperbaric bupivacaine with 0.4 ml(60 mcg) of Buprenorphine. Lumbar puncture was performed by midline approach with a 25-gauge Whitacre needle at L2-L3 intervertebral space. After observing free flow of cerebrospinal fluid in all directions, the anaesthetic solution was injected intrathecally and patient was given supine position immediately.

No immediate adverse events such as hypotension, bradycardia or nausea were reported. After 5 minutes of intrathecal injection, cephalad level of dispersion of anaesthesia was T10. The level of dispersion was well guarded to attain a level of T6 at the end of 15 minutes.

After the level of dispersion was settled patient was given prone position. Proper padding with cushion was done over dependant areas and bony prominences.

The procedure went for around 150 minutes. Patient was awake throughout the procedure and didn't need any sedation. Patient was haemodynamically stable throughout the procedure.

The patient did not experience nausea or vomiting in the operating room or in the post operative recovery unit. The patient was observed for vitals for 30 minutes postoperatively and returned to general ward.

CLINICAL DISCUSSION

Awake surgical procedures have been previously used in a wide range of specialities; however there is a paucity of information regarding their utility in spine surgery as per current evidences [5]. Our case demonstrateslow lumbar spine surgery performed under spinal anaesthesia. In this patient was assessed for the impact of spinal anaesthesia with respect to ease of induction, intraoperative blood loss, use of vasopressors and analgesics intraoperatively, operative time, total anaesthesia time, postoperative analgesic use and total cost of anaesthesia.

In our case, no vasopressor was used as patient was haemodynamically stable throughout the procedure. The blood loss was around 150-200 ml which was tolerable and no analgesic was used intraoperatively. Also, the total anaestheisa time was less due to awake patient conditions in spinal anaesthesia which is consistent with the previous study findings by Perez-Roman RJ, et el. And Deng H, Coumans J-V et al [5, 6]

The perioperative time was short as patient was brought back to ward quickly and hospital stay of the patient was for 3 days which further added to Patients convenience. This finding stands in accordance to what was reported in previous studies [7, 8]

The time required for rescue analgesic to be added postoperatively was also delayed significantly. One possible explanation for this is the more dominant effect of spinal anaesthesia on afferent nociceptive pathway [9]. These pain

fibres are smaller thanmotor fibres and thus have delayed recovery compared to motor fibres. Therefore, the pain relief may last into the postoperative setting despite return of motor function [10].

There was no any positioning related trauma such eye injury or pressure injuries to the patient as patient was awake and could position according to her comfort.

Overall it lead to patient satisfactionin terms of low cost of procedure, awake procedure and reduced duration of stay in hospital postoperatively. Further, stable intraoperative conditions, decreased intraoperative blood loss, less postoperative opioid use for pain, decreased post anaesthesia care unit stay and early discharge of the patient added to surgeons satisfaction. Limitations of our case reportincludes delayed checking for the limb movements post operatively.

CONCLUSION

Even though lumbar spine surgeries under GA are the norms, our case supports the feasibility of SA for lumbar spine surgeries. Spinal Anaesthesia is well tolerated and has favourable outcomes in terms of anaesthesia time, intraoperative conditions, analgesic requirements and hospital stay. Thus, it can be an alternative mode of anaesthesia for lower lumbar spine surgeries. Our case report replicates findings of the previous literature.

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