

# Continuous Spinal Anesthesia for Hemiarthroplasty in a Geriatric Patient with Multiple Co-Morbidities

Shobha D<sup>1</sup>, Namrata .S. Urs<sup>2</sup>

<sup>1,2</sup>Assistant Professors, Sapthagiri Institute of Medical Sciences & Research Center, Bangalore, India

Guided By

**Dr. Parashuram Jajee**

Professor and HOD, Department of Anaesthesiology,  
Sapthagiri institute of medical sciences and research center, Hesaragatta main road, Bangalore, India

**Abstract:** *Elderly patients with co-morbidities have an increased risk of perioperative mortality and morbidity from anaesthesia. Here is a case report of one such patient who underwent hemiarthroplasty under continuous spinal anaesthesia. This technique was advantageous over single shot spinal, epidural and general anaesthesia.*

**Keywords:** Continuous spinal anaesthesia, Postdural puncture headache, Cauda equina syndrome, Haemodynamics, Geriatrics.

## 1. Case Report

An 84 year old female came with a history of self fall, found to have fracture neck of right femur and was scheduled for right hemiarthroplasty. She was short in stature (140cms), obese (90kgs), hypertensive, had a history of COPD with recent acute exacerbation and poor effort tolerance. Pre anaesthetic evaluation showed wheeze, bilateral basal crepitations and oxygen saturation of 94% in room air. BP was 140/80mm Hg; ECG showed features of old anteroseptal myocardial infarction; ECHO revealed IHD, concentric LVH, sclerotic aortic valve, moderate MR with an EF of 40%. She was treated with bronchodilators, antihypertensives and cardiology fitness was obtained prior to surgery. On the day of surgery, bilateral basal crepitations were present with no wheeze. Case was accepted under ASA III, and planned for a continuous spinal anaesthesia (CSA).

In the operating room, patient was connected to the monitors and preloaded with 250ml of Ringer lactate solution. In sitting position under aseptic precautions and local infiltration, an 18G Tuohy needle was introduced in the L<sub>3-4</sub> interspace. After obtaining freeflow of clear CSF, a 20G epidural catheter was inserted into the subarachnoid space and fixed at 10cm mark. No parasthesia or pain was experienced during the procedure. The patient was put to supine position and Injection 0.5% hyperbaric bupivacaine 1cc was given intrathecally through the catheter. Sensory blockade level at 5 minutes was T<sub>10</sub> with adequate motor block (Bromage scale – 3). Oxygen was administered through facemask at 2L/min. After 40 minutes, when the bromage scale was 2, 0.5ml of 0.5% hyperbaric bupivacaine was administered through the spinal catheter and same repeat dose was given at 1hr 40min when the bromage scale was 2. The surgery lasted for 2 hours 30 minutes. Vitals were stable throughout the procedure except for one episode of hypotension (90/50 mm Hg) at 10 minutes following 1<sup>st</sup> dose of intrathecal drug administration, which was promptly treated with 6mg IV ephedrine. A total of 1200ml of IV fluids was given intraoperatively. Patient was comfortable in

the postoperative period. Analgesia was maintained with intrathecal opioids and the catheter was removed 48 hours postoperatively. Patient was discharged on day 10.

## 2. Discussion

Elderly patients with co-morbidities have an increased risk of mortality and morbidity from anaesthesia. CSA even though an old technique is not practiced regularly due to fear of its own complications like PDPH, cauda equina syndrome, meningitis [6], etc. But it has its advantages over single shot spinal anaesthesia and epidural anaesthesia. In CSA small doses of local anaesthetics are injected into the subarachnoid space with an intrathecal catheter intermittently. By titrating the local anaesthetic doses, the patient is more haemodynamically stable especially in elderly patients with fewer episodes and lesser severity of hypotension [7]; good control of segmental spread [9]; ability to prolong the anaesthesia for long surgical cases; provides a means for post operative analgesia; faster recovery time, lesser incidence of cardiovascular and respiratory complications. Complications of general anaesthesia and chances of difficult airway in obese, edentulous patients can be avoided. Our patient was an elderly obese [13] female with a history of hypertension, Echo showing IHD [10] features and had a recent acute exacerbation of COPD [11] which had a high risk of morbidity along with the difficulty airway [12], cardiac and respiratory complications with general anaesthesia. Single shot spinal anaesthesia carried a risk of hypotension and cardiac complications and Epidural anaesthesia carried relative technical difficulty during the insertion of epidural catheter as is common in geriatrics; and the risk of patchy blockade; [1]-[2] thereby increasing the chances of conversion to GA with endotracheal tube has to be considered. Failure rate of 25% to 40% in establishing an adequate epidural analgesia after a combined spinal-epidural technique was stated in a study conducted by Patel SD, et al.[4].

The risk of PDPH in our patient following CSA was low as there is generally a low incidence of it in elderly patients. With obesity the engorged extradural veins reduce the volume of the extradural space, increasing its pressure and thereby decreasing the CSF leakage [3]. Cauda equina syndrome [8] and neurological symptoms were earlier seen with the use of microcatheters [5], which are no longer being used. We used a 20G epidural catheter with which the drug is uniformly distributed so decreasing the chances of neurotoxicity. Adequate aseptic measures were taken while inserting the catheter which avoids the chances of infection and meningitis. For the above reasons, we chose the continuous spinal anaesthesia technique for our patient.

### 3. Conclusion

CSA is a safe method which is reliable with fewer complications, with control over the haemodynamics, level of anaesthesia, duration of block and also provides a means for good post operative analgesia.

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### Authors Profile

**Dr. Shobha D. DA**, DNB, Assistant Professor, Sapthagiri Institute of Medical Sciences & Research Center, Bangalore, India. (1<sup>st</sup> author)

**Dr. Namrata .S.Urs**, MD, Assistant Professor. Sapthagiri Institute of Medical Sciences & Research Center, Bangalore, India. (2<sup>nd</sup> author)

**Dr. Parashuram Jajee**, MD, DA, Prof and HOD, Dept of Anaesthesiology, Sapthagiri Institute of Medical Sciences & Research Center, Bangalore, India. (Guide)