

# Successful Perioperative Management of Septuagenarian with Multiple Comorbidities for Hip Fracture Fixation

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**Abstract:** Perioperative management of elderly individual with hip fracture with associated comorbidities poses significant challenges to Anaesthesiologist. In addition to technical difficulties in performing central neuraxial block in elderly, associated comorbidities due to CAD, COPD, derangement in renal function DM, HTN and Various drug interaction creates tough terrains for anaesthesiologist to safely navigate through and to ensure successful outcome We present here Anaesthetic management of elderly patient with fracture neck femur having deranged cardio renal parameters, dilated cardiomyopathy with low EF, COPD for hemiarthroplasty.

**Keywords:** Peng Block, Combined Spinal Epidural, Hip Fracture Fixation in Elderly

## 1. Introduction

It is indeed distressing to note significant morbidity and mortality in elderly individual presenting for hip fracture management within 1 year of injury. Deranged physiology due to involvement of multiple systems, perioperative arrhythmias Post operative delirium cognitive dysfunction derangement in metabolic and biochemical parameters, are some of challenges which needs to addressed in scientific way. It is very critical on part of anaesthesiologist to identify and do skilful optimisation of patient before proceeding to administer anaesthesia to minimise perioperative complications.

### Case History and Preoperative evaluation

75 - year - old gentleman was admitted with Left hip pain and restricted mobility, consequent to fall at home few days back. He was being planned for Hemiarthroplasty for fracture neck femur. Known case of COPD on inhalers since 20 years with frequent hospitalisations for acute exacerbations. Also known case of DM on oral hypoglycaemic drug tab metformin 500mg and Hypertension since 5 years on Tab Cilacar 10 mg and Tab Nebivolol 5mg

One year back he was admitted to hospital with chest pain. Coronary angiogram done and he was put on antianginal drugs and conservative management was advised for coronary artery disease

During course of above evaluation, he was also detected to have deranged kidney function test. He was put on conservative management for same.

After admission Preoperative evaluation was done and on physical examination HR 98 beats /minute BP 150/70, Spo2 92% Room air. His Metabolic equivalents was less than 4. His airways assessment revealed MMC grade 3 with restricted neck extension

His lab studies showed Creatinine 2.84 mg/dl with e GFR 22, Blood urea 48mg/dl. His Hb1ac was 7.5 and Serum Potassium 5.9. His 2d Echo showed Global hypokinesia of LV Mild to Moderate MR Concentric LVH, LVEF 35 Percent and mildly increased Pulmonary artery pressure. Rest of his blood investigations were unremarkable.

Nephrology Consultation obtained for deranged KFT with Low e GFR. Serum potassium corrected with Glucose insulin infusion and he was put On K bind sachet. His daily fluid intake restricted to 1.2 litres/day. Patient also received other usual medications like Tab Ivabradine Tab isolazaine. Also received Duolin and Budecort nebulisation Preoperatively.

### Anaesthetic Management

After arrival in OR holding area, Routine monitors were applied including ECG, NIBP Pulse oximetry. 18G iv canula secured in Rt hand and IV RL infusion commenced at 100 ml/hr. We performed Ultrasound guided PENG block with 20 ml of 0.25 % bupivacaine to provide analgesia and minimise discomfort during patient positioning for Combined spinal epidural analgesia.

Patient shifted to OR, Baseline values of vital parameters recorded. Sitting position given and under aseptic precautions epidural space identified in 13 14 interspace with 18 G Tuohy needle using LOR to air at 5 cm depth. Subarachnoid performed using 27 g spinal needle of Portex CSE Kit. 2 ml of 0.5 % bupivacaine injected intrathecally. After intrathecal injection 20 g epidural catheter threaded in and fixed at 10cm mark and secured firmly with adhesive dressing. Following procedure Patient positioned carefully with adequate padding of Pressure points. Patient was hemodynamically stable post induction. Rt radial artery canulated with 20 g art canula for continuous BP monitoring.

30 to 45 minutes post start of surgical procedure epidural infusion with 0.5 % bupivacaine commenced Around 300 ml blood loss noted, managed with crystalloids. At end of surgical procedure Patient shifted to recovery area and routine monitors were connected for vital parameters monitoring. Epidural infusion with 0.1% sensorcaine and fentanyl 2 ug/cc commenced at 5 ml to 6 ml/hr for ensuring good quality post operative analgesia along with inj Paracetamol 1G iv 8<sup>th</sup> hrly.

## 2. Discussion

Advances in monitoring standards coupled with better understanding of pharmacokinetics of various anaesthetics have resulted in better outcomes in perioperative care following hip fracture in elderly with significant comorbidities.

When considering various options<sup>1</sup>for Anaesthetising Patient with multiple comorbidities, it becomes prudent on part of Physician to have vivid understanding of deranged physiology pertaining to individual systems along with overall damaging cascade effects it has on patient.

Considering his advanced age, COPD features, Deranged kidney function test, we planned to proceed with case under Regional Anaesthesia<sup>2</sup>. In order to minimise perioperative stress, ensure stable hemodynamics and also have Prolonged analgesia in Post operative period, we selected Combined spinal epidural anaesthesia<sup>3</sup> as wisest choice in our Patient

We performed Ultrasound guided PENG Block (Peripheral extracapsular nerve group)<sup>4</sup> with 20 ml of 0.25% Bupivacaine to ensure satisfactory blockade of femoral, obturator and Lateral cutaneous nerve of thigh. This was done to ensure that our patient had minimal pain and discomfort consequent to Positioning for CSEA

Low volume of 0.5% bupivacaine in subarachnoid space ensured a stable hemodynamic and also avoided respiratory derangement consequent to high spinal particularly in background of his COPD status. It was very vital for us to ensure that his abdominal muscle and intercostal muscles are not affected consequent to subarachnoid block as action of these muscles are needed for effective cough.

Considering his compromised cardiac status due to dilated cardiomyopathy, low EF and also in back ground of deranged Kidney function<sup>5</sup>, it was very crucial that stable hemodynamic were maintained throughout to preserve Renal perfusion and prevent worsening of his Pre - existing cardiorenal status

Invasive monitoring helped in Continuous and precise monitoring of BP and also assisted in drawing blood samples for ABG and other relevant biochemical tests in Perioperative period. We ensured that inotropes Noradrenaline and Dobutamine were kept ready to support in case of significant hypotension or myocardial dysfunction.

It was also ensured that same standards of monitoring and care was continued into post operative period. Fluid

management guided by Ultrasound assisted IVC diameter<sup>6</sup>, base deficit, serum lactate and hourly urine output levels. IV fluid administration stopped on resumption of adequate oral intake Epidural infusion of local anaesthetic with opioid helped in providing adequate post operative analgesia and at same time ensuring smooth physiotherapy and rehabilitation leading to smooth recovery and discharge.

We ensured that his hydration status was adequate, nebulised bronchodilators were continued, cardiac medications including ACE inhibitors, diuretics etc were continued. Though there are abundant literature suggesting early surgical fixation of hip fractures in elderly<sup>7</sup>, identification and optimisation of various comorbidities<sup>8</sup> forms vital step in effective perioperative management of elderly patients with hip fracture. Considering back ground of his cardiorenal status, elderly age and COPD it was vital for us to manage biochemical and metabolic derangements so as to minimise perioperative arrhythmias.

## 3. Conclusion

It is very crucial to identify and optimise various deranged physiological biochemical and metabolic parameters before proceeding with surgery in elderly patient with hip fracture. Though at outset, General Anaesthesia may seem more comfortable to patient with better airway control and oxygenation indices, we chose combined spinal epidural anaesthesia in order to minimise stress, provide longer periods of Post operative analgesia, at the same time minimising systemic side effects of opioids and ensuring faster recovery and rehabilitation

Successful perioperative management of elderly patient with multiple comorbidities coming for hip fracture fixation calls for meticulous planning, good preoperative optimisation and skilled execution of anaesthetic plan. In addition to above measures adequate pain control in post operative period coupled with chest physiotherapy breathing exercises and early mobilisation are very vital in ensuring faster recovery and better outcome.

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