

Anaesthetic Management of a Morbidly Obese Patient Posted for Lumbar Spine Surgery and Total Knee Replacement in Succession

Dr. Aakash Agarwal¹, Dr. Sabih Ahmed², Dr. Krishan Yogesh Sawhney³

¹Consultant, Department of Anaesthesiology, Sanar International Hospital, Golf Course Road, Sector 53, Gurugram, Haryana 122002
Correspondence Address Email id: [aakashagarwal06\[at\]gmail.com](mailto:aakashagarwal06[at]gmail.com)

²Senior Consultant & Head of Department, Department of Anaesthesiology, Sanar International Hospital, Golf Course Road, Sector 53, Gurugram, Haryana 122002

³Consultant, Department of Anaesthesiology, Sanar International Hospital, Golf Course Road, Sector 53, Gurugram, Haryana 122002

Abstract: *Morbid Obesity presents a multitude of challenges to an anaesthesiologist like airway management, positioning of patient, metabolic disturbances and so on. Here we report the successful management of a case of a morbidly obese patient who underwent Lumbar Spine Decompression surgery coupled with Bilateral Total Knee Replacement.*

Keywords: Morbidly obese, Lumbar spine surgery, Total knee replacement

1. Case Report

A 66 years old female patient was admitted to our hospital with chief complaints of low back ache radiating to right lower limb associated with bilateral knee pain on walking. MRI spine showed prolapsed intervertebral disc and severe lumbar canal stenosis. Xray bilateral knee showed severe tricompartmental osteoarthritis. The patient was Hypertensive and on regular medications, (Candesartan and Hydrochlorothiazide), hence the blood pressure was well controlled. It was decided to take up the patient for L4 - 5 minimally invasive lumbar decompression and right L5/S1 foraminotomy alongwith bilateral computer navigated total knee replacement.

A detailed preoperative anesthesia check up was done. The patient's weight was 114 kg, height 150cm with a BMI of 50.67kg/m². The Dobutamine Stress echo report was negative for reversible myocardial ischemia with an EF of 55% - 65%. Preoperative investigations revealed Hb of 14.3 gm/dl, INR of 1.03, Creatinine of 1.2, rest of the investigations were within normal limits.

A preoperative cardiology consultation was done as a routine procedure. She was accepted for surgery under grade 3 of American society of Anaesthesiology grading. A High Risk Consent was obtained from the patient including consent for Postoperative ICU stay and Mechanical Ventilation. Apart from these, routine preoperative orders were followed. The patient was advised for Incentive Spirometry and deep breathing exercises from the moment we did the Preanesthesia check up.

In the operating room, routine procedure was followed with standard monitor placement and an IV cannula of 20 G was secured before induction. For induction of anesthesia, she received IV Midazolam 1 mg, IV Glycopyrrolate 0.2 mg, IV Fentanyl 2mcg/kg, IV Propofol 1.5mg/kg, IV Cisatracurium 0.15mg/kg. Maintenance of anaesthesia was achieved with

Fentanyl 1mcg/kg hourly, Cisatracurium infusion and Sevoflurane/ Desflurane with oxygen - air mixture (50: 50), and was mechanically ventilated. The patient first underwent Spine surgery in prone position and then underwent knee replacement in supine position. An Epidural Catheter was placed by the Spine Surgeon itself in L4 L5 epidural space under direct vision before making the patient supine for knee surgery. Normothermia was maintained throughout surgery. The surgical duration was around 6 hours. The patient remained hemodynamically stable throughout surgery. She had a blood loss of around 500ml and Urine output during surgery was 450 ml. Total IV intake was 3500 ml crystalloid and 500 ml colloid. Following surgery, the patient was reversed and extubated. Recovery from anaesthesia was uneventful. During extubation, prophylactic IV Lignocaine (1mg/kg) was used to maintain hemodynamics. The patient was shifted to ICU for monitoring.

2. Discussion

Osteoarthritis of the knee and lumbar spondylosis are comorbidities that commonly coexist in elderly age group population. It can often be difficult to decide for the Orthopaedician, which to treat first, osteoarthritis of knee or lumbar spondylosis.

Patients experiencing severe degenerative changes in the knee and less severe degenerative changes in the lumbar spine may undergo surgery for the knees first. Conversely patients with severe degenerative changes of the lumbar spine may undergo spine surgery first. (1).

Chang et al reported that patients with severe lumbar spine symptoms before knee replacement were likely to demonstrate poor knee function 2 years post surgery. (2)

Preoperative Lumbar canal stenosis, especially at levels which affect the L3 nerve root, may have poor post

operative knee movements and poor overall recovery after total knee replacement. (3)

The case that we report here is that of a patient who underwent decompression of the spine first and then bilateral total knee replacement in the same sitting. A multidisciplinary approach was used involving the Anaesthesiologist, Orthopaedician and the Spine surgeon and a thorough discussion was performed with the patient and her relatives. In the postoperative period the patient had complete relief of spine symptoms as well as full recovery of the knee movements.

Conduction of safe anesthesia for a morbidly obese patient undergoing concomitant spinal decompression and knee replacement surgery was a challenging task. The process started with a thorough preoperative evaluation and involvement of other body systems. Preoperative Incentive spirometry and deep breathing exercises were started to optimize lung function.

All preparations for a difficult airway management and a difficult IV access were made. The conduction of anesthesia in prone position for an obese patient can be very challenging. Kinking of endotracheal tube, accidental extubation, cardio pulmonary compromise are only a few of various greivous complications that can occur during prone position. (4)

Special emphasis was laid on the use of DVT stockings considering the nature of surgery and the patient profile. (5) Care was taken to secure properly the epidural catheter placed by the surgeon as it was an important tool for post operative analgesia.

In supine position, hemodynamic changes were minimized with adequate fluid resuscitation and intraoperative initiation of Epidural analgesia. Awake extubation with standby difficult airway equipment was performed as the patient was morbidly obese.

The patient had an uneventful course in the postoperative period with excellent analgesia by epidural catheter and was discharged on the 4th postoperative day.

3. Conclusion

This case report elaborates the performance of anesthesia for two surgeries in succession and the challenges faced. Further studies are warranted for the performance of safe anesthesia for similar cases.

References

- [1] Londhe SB, Shah RV, Patwardhan M, Doshi AP, Londhe SS, Subhedar K, et al. Study of patients with bilateral knee osteoarthritis undergoing total knee replacement procedure with coexisting lumbar spondylosis symptoms. *Asian spine journal*.2021; 15 (6): 825 - 830.
- [2] Chang CB, Park KW, Kang YG, Kim TK. Coexisting Lumbar Spondylosis in patients undergoing TKA: How

common and how serious. *Clinical Orthopaedics and Related Research*.2014; 472: 710 - 717.

- [3] Sheppard WL, Mckay KM, Brown AU, Blumstein G, Park HY, Shah A, et al. Severity and location of lumbar spine stenosis affects the outcome of total knee arthroplasty. *Journal of orthopaedic surgery and research*.2021; 16: 720.
- [4] Latkar P, Kaushik PS, Prabhudesai AA, Mehta H. Prone spine surgery in a morbidly obese patient: anesthesia challenges and management. *Indian journal of case reports*.2022; 8 (6): 160 - 162.
- [5] Baxi V, Budhakar S. Anesthesia management of a morbidly obese patient in prone position for lumbar spine surgery. *Journal of craniovertebral junction and spine*.2010; 1 (10): 55 - 57.