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Idiopathic Subglottic Stenosis with Several Idiopathic Cervical and Mediastinal Lymph Nodes - Airway and Anaesthetic Management

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Abstract

This case report details the anaesthetic approach for a 60-year-old female with subglottic stenosis, who had experienced bronchospasm and hypotension during previous surgeries under general anaesthesia. The patient was scheduled for open hernioplasty, and hernioplasty complex airway anatomy and history of anaesthetic complications posed significant challenges. Following a comprehensive preoperative assessment, including video laryngoscopy and CT imaging, it was decided to use a Combined Spinal Epidural (CSE) block to minimize the risks associated with general anaesthesia. The surgery was performed successfully, with the patient remaining stable throughout the procedure and during the postoperative period. This case highlights the importance of a personalized anaesthetic plan, particularly in patients with difficult airway conditions and a history of adverse reactions to general anaesthesia. Regional anaesthesia, specifically CSE, proved to be a safe and effective alternative, allowing for a successful surgical outcome without complications. This report emphasizes the need to carefully consider anaesthetic options in complex cases to enhance patient safety and optimize surgical results.

Keywords*: Airway Management, Anaesthetic Management, Combined Spinal Epidural Block, Laparoscopic Hernia Repair, Subglottic Stenosis.*

Introduction

Subglottic stenosis is characterised by the narrowing of the airway at the level of the inferior edge of the cricoid cartilage which can lead to significant respiratory distress, including dyspnoea and stridor [1]. Subglottic stenosis is graded from 1 to 4, based on the severity of the obstruction [2]. The idiopathic cervical and mediastinal lymph node enlargements can cause mechanical compression over major airways obstructing the induction of General anaesthesia. Life-threatening airway compression can occur even after an uneventful endotracheal tube intubation [3]. Bronchospasm during general anaesthesia can present in isolation or as a component of anaphylaxis particularly in patients with reactive airway diseases such as asthma or COPD. If untreated, it can cause hypoxia, hypotension and increased morbidity and mortality. It can be triggered by various factors, including the use of certain neuromuscular blocking agents like atracurium, which may cause bronchospasm through histamine release or allergic reactions [4]. Incisional hernias are defects that can occur at the abdominal wall at the site of a prior surgical incision, with incidence rates ranging from 30% within two

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years to as high as 60% after five years, influenced by factors such as surgical technique and patient comorbidities. They often originate due to poor wound healing or tissue healing failure [5, 6].

Case Presentation

A 60-year-old female patient (ASA- 3, height:147cms, weight:54Kgs) presented with complaints of abdominal pain and distension for 8 months. The patient had past h/o Total abdominal hysterectomy done 3 years back under neuraxial anaesthesia. The patient was planned for a Total Laparoscopic Hysterectomy 5 years back and following induction of general anaesthesia, the patient developed increased blood pressure and seizure, so surgery was deferred.

Before 5 months, she was planned for Laparoscopic incisional hernia repair and following induction of general anaesthesia, the patient developed bronchospasm and hypotension, so the procedure was deferred, and the patient was sent to ICU. 3 months back, the planned Laparoscopic incisional hernia repair, again developed bronchospasm following induction, so the procedure was deferred and the patient was sent to the ICU. The patient came to us for the Incisional hernia repair. She had h/o shortness of breath (MMRC - grade 3) for 2 years. She was unable to perform the pulmonary function test, has PEFR of 170ml and breath-holding time of 26 seconds and was started on Nebulization with Budamate 12th hourly and duolin 6th hourly. She was not on any medication for the seizure and had no other episode of seizure in the past. Neurology clearance was obtained for the procedure and was not started on any medication. Echocardiography was done which revealed thickened aortic valve, mild AS, mild AR and concentric LVH. Video laryngoscopy was done which revealed an anteriorly pushed bilateral aryepiglottic fold, reduced anteroposterior diameter at the glottic and subglottic area, and bilateral true vocal cords were visualised completely. ECT neck and chest - few prominent cervical lymph nodes in bilateral level Ib, II, III, IV stations and few calcified lymph nodes in the right lower paratracheal and paraaortic region. Tracheal AP diameter at the level of glottis - 10 mm and at sub-glottis - 9mm.

Airway examination – Mallampati - grade 4, oral cavity opening 2-3 finger breadth, thyromental distance- more than 2 finger breadth, neck movements normal were present. Lumbar intervertebral spaces were well palpable. Hence the patient was planned for Open hernioplasty under neuraxial anaesthesia with a combined spinal epidural block. Preoperative high-risk consent and an ICU bed with a ventilator were reserved.

The patient was advised to continue the nebulization the night before and in the morning of the surgery and the patient was accepted for surgery under ASA 3. The patient was shifted inside the OR, routine monitors were connected, 1 18G venflon and 1 20G venflon was secured. Basal heart rate was 98 bpm, blood pressure was 110/80 mmHg and SpO2 of 98% at room air. The difficult airway trolley was kept on standby. A 20G Epidural catheter was placed in the L1-L2 space using loss of resistance technique and graded epidural bolus was given intraoperatively. The Subarachnoid block was given with ultrasound guidance using a 25G spinal needle at L3-L4 space, and 2.0ml 0.5% hyperbaric bupivacaine was administered. The height of the block achieved was T6. The procedure lasted a total of 2hr 20 mins, associated with 300ml of blood loss. Intraoperatively patient's vital parameters and hemodynamic status were stable. The patient was shifted to the anaesthesia Care Unit and continued monitoring. Adequate analgesia was given with the drugs such as paracetamol 1gm IV and weak opioid tramadol 100mg IV was administered. Post-operative epidural analgesia was achieved with an infusion of 0.125% Bupivacaine at the rate of 4ml / hr for 2 consecutive postoperative days. The

postoperative period was uneventful. She was discharged on POD - 7.

Discussion

Idiopathic subglottic stenosis, predominantly affecting females, leads to significant airway narrowing through cartilaginous rings. Diagnosis involves virtual chest CT and laryngoscopy, with virtual CT bronchoscopy demonstrating high sensitivity [7]. Patients face fatal airway obstruction risks, complicating management. Anaesthetists evaluate awake fibre-optic intubation versus tracheostomy which is effective in various challenging scenarios, such as cervical necrotising fasciitis and achondroplasia, where traditional intubation methods may fail due to anatomical constraints or rapid airway compromise [8, 9]. Airway obstruction, often with lymph node enlargements, is a feared complication assessed through flow-volume loops. General anaesthesia, preferred for awake fibre-optic intubation, uses various techniques to overcome challenges [10]. The patient, having experienced bronchospasms, opts for regional anaesthesia, specifically Combined Spinal Epidural (CSE). Low-dose bupivacaine and graded epidural doses ensure successful, complication-free postoperative pain relief, allowing early ambulation in elderly patients. CSE is chosen for its rapid onset and flexibility [11]. The patient's decision aligns with the risks and benefits, considering the challenges of previous general anaesthesia [12]. The successful use of low-dose local anaesthetic with an epidural catheter in place demonstrates its efficacy without adverse effects. This approach contributes to postoperative pain relief and facilitates the early ambulation of elderly patients, emphasising the importance of individualised anaesthesia choices in complex cases [13, 14].

Conclusion

This case highlights the challenges of managing a patient with subglottic stenosis and a history of complications under general anaesthesia. Given the patient's previous experiences with difficult airway management, bronchospasm, and hypotension, the decision to use a Combined Spinal Epidural (CSE) block for the open hernioplasty proved to be a safe and effective alternative. The successful outcome was facilitated by thorough preoperative assessment, including video laryngoscopy and CT imaging, as well as vigilant intraoperative monitoring. This case emphasizes the value of personalised anaesthesia strategies, particularly in patients with complex airway and medical histories, to ensure both safety and successful outcomes in perioperative care.

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Conflict of Interest

The authors declare no conflict of interest related to this article.

Consent Declaration

Written informed consent was obtained from the patient to publish this case report and any accompanying images.

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