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Case Report

Anesthetic Management of a 70 Year old male with Advanced Hypopharyngeal Carcinoma and Triple-Vessel Coronary Artery Disease Undergoing Emergency Cystoscopy with Bladder Clot Evacuation

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ABSTRACT

Geriatric patients with advanced malignancy and severe comorbidities present major perioperative challenges. We report the anesthetic management of a 70-year-old man with advanced hypopharyngeal carcinoma, triple-vessel coronary artery disease (EF 30%), and renal failure requiring urgent endoscopy for gross hematuria. Preoperative evaluation revealed creatinine 5.1 mg/dL, uremic encephalopathy, and a difficult airway due to vocal cord fixation and facial palsy. Management prioritized hemodynamic stability using etomidate induction and specific airway strategies, ensuring an uneventful procedure. This case highlights the value of multidisciplinary planning to ensure myocardial protection and airway safety in high-risk oncologic patients.

Introduction

Perioperative myocardial infarction (PMI) remains a leading cause of morbidity and mortality in patients undergoing non-cardiac surgery, particularly among those with significant coronary artery disease subjected to major surgical stress. The coexistence of advanced malignancy requiring urgent surgical intervention, severe cardiovascular compromise, and acute metabolic derangement presents a rare and complex clinical scenario for which limited guidance exists in the current literature. This case exemplifies the successful perioperative management of a complex combination of comorbidities. We highlight the rationale for the use of general anesthesia in this extremely high-risk patient and describe the favorable perioperative outcome achieved through meticulous planning and multidisciplinary optimization [1].

Case Report

A 70-year-old male presented for cystoscopy with bladder clot removal and right DJ stent removal following one week of gross hematuria and clot passage. He had been diagnosed with advanced hypopharyngeal carcinoma (left pyriform sinus) with laryngeal involvement, confirmed on PET-CT (28 May 2025), showing a 2.5 × 3.2 × 2.4 cm lesion with SUVmax 10.4 and cricoid cartilage erosion. Bilateral metabolically active cervical lymph nodes were noted. He had completed two cycles of nimotuzumab combined with cisplatin (most recent in early July 2025). Video laryngoscopy revealed a fixed left vocal cord and suspicious pyriform fossa growth (Figure 1).

The patient had a ten-year history of hypertension and type 2 diabetes mellitus (HbA1c 6.5%, on metformin). Notably, he had been advised to undergo CABG, but this

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was deferred due to advanced malignancy, and a strategy of medical optimization was adopted.

Coronary angiography (2 July 2024) demonstrated significant triple-vessel disease: LAD with 70% ostial and 90% mid-segment stenosis with chronic total occlusion; LCx with OM2 100% occlusion; and RCA (dominant) with 90% proximal calcific stenosis and chronic total occlusion. ECG demonstrated T-wave inversions in leads II, III, and aVF, consistent with a prior inferior wall myocardial infarction, without evidence of active ischemia. Transthoracic echocardiography (29 August 2025) showed global left ventricular hypokinesia with an ejection fraction of 30%, concentric left ventricular hypertrophy, Grade II diastolic dysfunction, and mitral annular calcification. Cardiac markers: Troponin-21.9 and CK-MB less than 0.53.

Preoperatively, the patient also reported an active upper respiratory infection with a productive cough and intermittent expectoration.

Auscultation revealed bilateral inspiratory crepitations on auscultations. These findings raised concern for an ongoing lower respiratory tract infection or retained secretions, with potential implications for intraoperative and perioperative airway management and postoperative pulmonary complications.

Approximately 2.5 weeks prior to surgery, the patient developed left lower motor neuron facial nerve palsy, presented as mouth deviation to the right and limited mouth opening (two-finger breadths).

Etiology was likely multifactorial has chemotherapy-related immunosuppression predisposing to viral reactivation (HSV/VZV), cervical lymphadenopathy, and microvascular disease. He was managed with valacyclovir, prednisolone, and vitamin B6.

Preoperative laboratory investigations revealed significant metabolic derangement. Serum creatinine was markedly elevated at 5.1 mg/dL (from baseline Grade I nephropathy on prior ultrasound), blood urea nitrogen was 107 mg/dL, serum potassium was 5.9 mmol/L (borderline hyperkalemia), and hemoglobin was 12.3 g/dL.

Baseline troponin-I was elevated, which interpreted as chronic myocardial injury from severe CAD rather than acute myocardial infarction since no new ECG changes, chest pain, or rising troponin trend. Coagulation studies were normal (INR 1.1), and platelet count was adequate at 2.73 lakhs/mm³. Chest X-ray and arterial blood gas analysis were also obtained in view of his productive cough and bilateral crepitations and were used to guide perioperative respiratory optimization.

On the day of surgery, the patient appeared drowsy but arousable, which was attributed to uremic encephalopathy (creatinine 5.1 mg/dL, BUN 107 mg/dL), malignancy-related fatigue, poor oral intake, and dehydration.

Blackish hyperpigmentation was noted over the neck and supraclavicular area, consistent with anti-EGFR monoclonal antibody effects (nimotuzumab) and regional inflammation from cervical lymphadenopathy (Figure 2). In view of his active, productive cough and bilateral crepitations, a course of nebulization with N-acetylcysteine (mucolytic) and ipratropium bromide (anticholinergic) had been initiated the night before and on the morning of surgery to improve airway clearance.

He was on bisoprolol (beta-blocker) and rosuvastatin; aspirin had been appropriately discontinued due to hematuria. ASA physical status was IV E (severe systemic disease, emergency procedure).

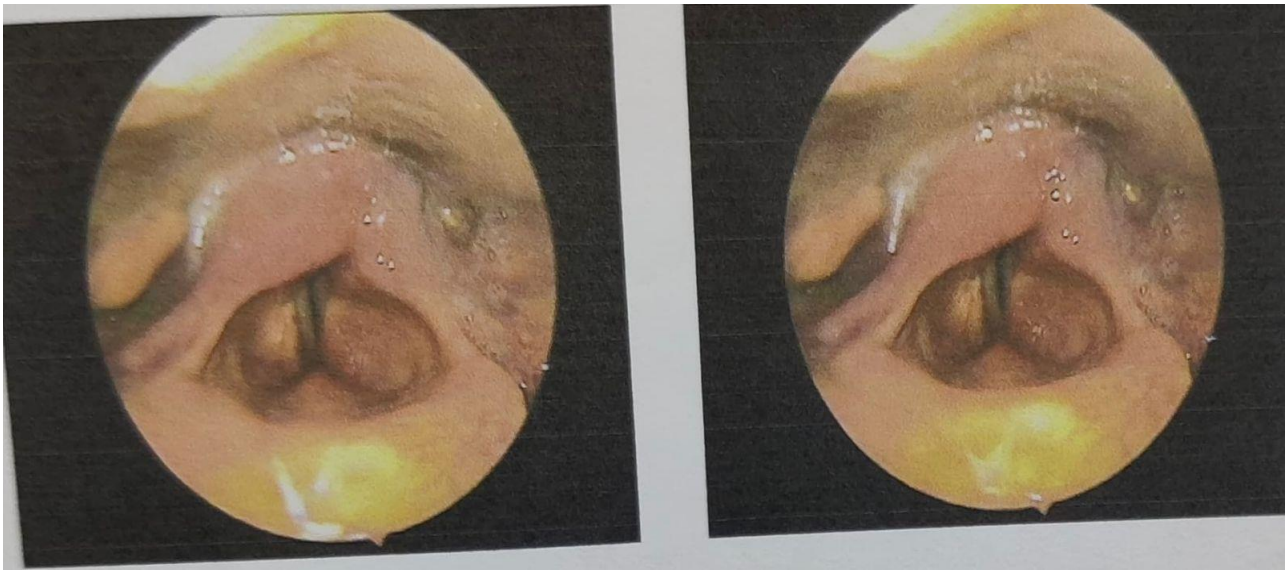

Figure 1- Video laryngoscopy study (impression- left vocal cord fixed, right vocal cord in paramedian position? Left pyriform fossa growth)

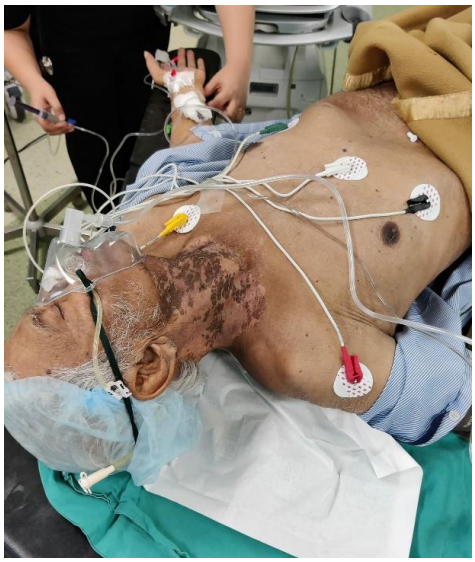

Figure 2 -hyperpigmentation over the neck and left radial arterial line (invasive line) (impression -anti-EGFR monoclonal antibody effects (nimotuzumab) and regional lymphadenopathy)

Figure 3 - Intra operative invasive monitoring

Anesthetic Technique and Intraoperative Management

Given the presence of severe triple-vessel coronary artery disease with chronic total occlusions, electrocardiographic evidence of a prior inferior wall myocardial infarction, and markedly reduced left ventricular systolic function (ejection fraction 30%) with global hypokinesia, stringent hemodynamic control was imperative. The emergency nature of cystoscopic bladder clot evacuation, the requirement for complete immobility, and the potential for significant autonomic stimulation and bleeding rendered regional anesthesia alone unreliable. General anesthesia was therefore selected to enable graded anesthetic delivery, attenuation of sympathetic responses, and prompt management of hemodynamic instability, while ensuring optimal surgical conditions and patient safety (Figure 3).

Advanced hypopharyngeal carcinoma with laryngeal involvement and cricoid cartilage erosion, with restricted mouth opening secondary to facial nerve palsy, raised significant concern for a difficult airway. Additional challenges included a fixed left vocal cord, pyriform fossa tumor involvement, and limited mouth opening (two-finger breadth), collectively increasing the likelihood of a Cormack–Lehane grade IV laryngoscopic view. Accordingly, comprehensive airway preparedness was ensured and it included availability of smaller-caliber endotracheal tubes (6.0–6.5 mm internal diameter), videolaryngoscopy (C-MAC), and readiness for flexible bronchoscopic intubation as a rescue strategy.

Standard ASA monitors (electrocardiography, noninvasive blood pressure, pulse oximetry, and end-tidal carbon dioxide) were applied. Given the high risk of peri-induction hemodynamic instability, invasive arterial blood pressure monitoring via the left radial artery and a central venous catheter via the right internal jugular vein is recommended. Following 3 minutes of pre-oxygenation, anesthesia was induced with etomidate to preserve sympathetic tone and maintain myocardial perfusion pressure in the setting of severe ischemic cardiomyopathy. Fentanyl was administered for analgesia. Neuromuscular blockade was achieved with cisatracurium (0.2 mg/kg), selected due to its organ-independent Hofmann elimination, Tracheal intubation was performed using a C-MAC videolaryngoscope, which revealed distorted laryngeal anatomy. A smaller-diameter endotracheal tube (6.5 mm internal diameter) was carefully advanced to minimize trauma to the friable tumor tissue and ensure atraumatic airway securing. Anesthesia was maintained with sevoflurane at a MAC of 0.8–1.0, supplemented with intermittent boluses of cisatracurium (0.03 mg/kg). Lung-protective ventilation was employed with tidal volumes of 4–6 mL/kg to avoid excessive peak airway pressures. A strict restrictive fluid strategy was adopted in view of impaired renal function and poor left ventricular systolic performance. A total of 200 mL of Ringer's lactate was administered over the 2-hour procedure. Hemodynamic stability was maintained using a low-dose noradrenaline infusion (0.05 µg/kg/min) to target a mean arterial pressure above 65

mmHg, thereby ensuring adequate coronary perfusion to the ischemic myocardium.

Emergence and Extubation

Neuromuscular blockade was reversed with neostigmine and glycopyrrolate. Given the patient's high-risk cardiac and airway profile, he was transferred to the intensive care unit for close postoperative monitoring.

Discussion

Perioperative Myocardial Ischemia Risk

Perioperative myocardial injury is a major cause of adverse outcomes in patients with advanced coronary artery disease undergoing non-cardiac surgery. Unlike spontaneous myocardial infarction, perioperative ischemia is frequently clinically silent and is most often precipitated by an imbalance between myocardial oxygen supply and demand rather than acute plaque rupture. Surgical stress, anesthetic-related hemodynamic fluctuations, and inflammatory activation can overwhelm the limited coronary reserve in patients with fixed obstructive disease [2-4].

In this patient, chronic total occlusions involving multiple coronary territories meant that myocardial perfusion was dependent on collateral flow. Consequently, even brief episodes of hypotension, inappropriate heartrate extremes, anemia, or hypoxemia carried a high risk of ischemia so mandating strict control of heart rate, arterial pressure, and oxygen delivery throughout the perioperative period is important.

Induction Agent Selection in Severe Coronary Disease

The choice of anesthetic induction agent is critical in patients with severe ischemic cardiomyopathy. Etomidate is induction agent of choice which is superior cardiovascular stability during induction and intubation by minimizing myocardial depression and preserving perfusion pressure. Comparative data in patients with coronary artery disease demonstrate lower incidences of hypotension, arrhythmias, and ischemic ECG changes with etomidate compared with propofol during high-risk peri-intubation periods [5].

Airway Challenges in Head and Neck Malignancy

Malignancies involving the hypopharynx and larynx substantially increase the risk of difficult airway management due to structural distortion, reduced glottic mobility, and tumor-related narrowing. Vocal cord fixation, cartilage erosion, and restricted mouth opening compromise both laryngoscopy and endotracheal tube passage. In such cases, conventional airway assessment scores may underestimate the degree of difficulty. Anticipation of these challenges and preparation with videolaryngoscopy, alternative tube sizes, and rescue airway techniques were essential to ensure safe airway control while minimizing trauma to friable tumor tissue was made available in operative room [6].

Renal Dysfunction and Chemotherapy-Related Considerations

Renal impairment alters anesthetic pharmacokinetics and increases susceptibility to electrolyte-related dysrhythmias and prolonged drug effects making slecetion of anaesthetic drugs selection even more complicated. Cisatracurium was appropriately selected due to its organ-independent metabolism. Fluid administration required careful restriction to balance renal perfusion against the risk of cardiac decompensation in the setting of reduced ventricular function.

Immunosuppression caused by chemotherapy probably caused facial nerve palsy by reactivating a virus, which made it harder to manage the airway and raised the risk of aspiration and eye injury, so specific precautions were needed during the surgery [7].

Importance of Multidisciplinary Planning

The successful management of this patient illustrates the value of multidisciplinary collaboration. Input from cardiology, oncology, otolaryngology, nephrology, and anesthesia allowed comprehensive risk stratification, informed anesthetic decision-making, and coordinated perioperative care, enabling safe completion of an otherwise high-risk emergency procedure.

Conclusion

This case illustrates the challenges of anesthetic management in a patient with advanced malignancy, triple vessel disease with low ejection fraction, impaired ventricular function, renal dysfunction, and a predicted difficult airway. Favorable outcomes were achieved through careful hemodynamic optimization, judicious selection of anesthetic agents, proactive airway planning, restrictive fluid management, and continuous monitoring for myocardial ischemia and dysrhythmias. With meticulous preparation and multidisciplinary coordination, even patients with extreme perioperative risk profiles can safely undergo essential emergency surgical interventions.

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