Anesthetic Management of a Subxyphoid Pericardial Window Challenged by Metastatic Lung Cancer

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Pericardial effusion, particularly cardiac tamponade, is marked by significant hemodynamic changes. Hemodynamic goals include optimizing preload and cardiac output in the face of reduced ventricular compliance and venous return. Spontaneous ventilation is preferred to minimize intrathoracic pressure on inspiration. Here we discuss a patient with malignant lung cancer who presented for a subxyphoid pericardial window due to a subacute pericardial effusion. The anesthetic management was compromised by chronic left-sided bronchial lesions with a recently placed endobronchial stent, and potential for respiratory insufficiency without positive pressure ventilation.

Our patient was a 56yr old female with significant COPD, on home oxygen, complicated by malignant lung cancer on chemoradiation therapy, and status post a left sided endobronchial stent for left upper lobe bronchial lesions. Of note, she failed previous placement of a tracheal stent. Her medical history included uncontrolled hypertension, and diabetes mellitus. She weighed 69kg and baseline vitals were within normal limits. On airway exam, she was described as a Mallampati III, with diffuse coarse breath sounds throughout; left greater than right. Saturation was 95% on 2L nasal cannula. Heart sounds were normal. ECG revealed normal sinus rhythm. Her transthoracic echo demonstrated a hyperdynamic left ventricular wall with near occlusion in systole; EF 75-80%, mild pulmonary hypertension and significant pericardial effusion. Minimal pre-medication, with 2mg midazolam and 50mg fentanyl, was used to facilitate arterial access without pronounced respiratory depression. On induction, she received 12mg etomidate, 3mg ketamine, and 80mg succinylcholine. Mask ventilation with oral airway adjunct proved uncomplicated. Endotracheal intubation was achieved via direct laryngoscopy (grade 2A view), and a standard 7.5 cuffed endotracheal tube was successfully placed. The patient was maintained on total intravenous anesthesia consisting of a remifentanil infusion. Most importantly, she was unable to breath spontaneously during the case due to her poor pulmonary function, therefore judicious use of mechanical ventilation was employed. She was assisted with volume control ventilation, at a respiratory rate of 6, and inspiratory:expiratory ratio of 1:2 without positive-end expiratory pressure. During the case, she received 25mg ephedrine, 350mcg fentanyl, 0.2mg dilaudid, 4mg zofran, and 20mg famotidine. She was hemodynamically stable after drainage. Finally, she was reversed with 3mg neostigmine and 0.8mg glycopyrrolate. Naloxone 0.04mg was used to counter residual opioids. Patient was successfully extubated and post operative recovery was unremarkable.