Anesthetic Management of a Patient with an Extensive Intracardiac Tumor
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Introduction
Cardiac tumors are benign or malignant neoplasms arising in the heart wall or surrounding pericardium. Primary cardiac tumors in children are rare, with a reported incidence of 0.03-0.08% (1). The majority of primary cardiac tumors in children are benign. Secondary malignant tumors are more prevalent than primary malignant tumors (2).

Case Presentation
16 year-old male was diagnosed with a cervical spine myxoid sarcoma and underwent resection with laminectomy. Postoperatively, the patient developed SVC syndrome and hemodynamic instability. Doppler and cardiac CT showed a large mass in the left axillary, internal jugular, innominate, azygos veins and the SVC with extension into the RA and RV. The right ventricular outflow tract had some patency given contrast passed through. Airway exam showed significant upper extremity and neck swelling with limited neck range of motion. The neurosurgery team expressed concerned regarding neck manipulation during intubation. The patient was moderately sedated secondary to a hydromorphone PCA. The airway was topicalized with lidocaine and the patient received additional sedation with IV midazolam. Endotracheal intubation was successful with a fiberoptic bronchoscope. General anesthesia was subsequently induced with IV etomidate and rocuronium without significant hemodynamic changes. Sevoflurane 0.2-1.2% was used for maintenance with additional doses of midazolam. The surgical dissection was complicated by dilated venous collaterals and significant bleeding. A 300 ml pericardial effusion was drained upon opening the pericardium. SVC recanalization and reconstruction, open tumor thrombectomy, right atrial and right ventricular tumor resection was performed. Total bypass time was 110 minutes.

Discussion
Clinical presentation of cardiac tumors depends on the size and location of the mass (3). Cardiac tumors may cause inflow and outflow obstruction, myocardial dysfunction, valvular insufficiency, pericardial effusion and arrhythmias. Patients with both obstruction of blood flow and arrhythmia are particularly at risk for instability intraoperatively (1). Although no airway difficulties directly related to cardiac tumors have been reported, large pericardial tumors may produce airway symptoms similar to those seen in patients with anterior mediastinal masses. In our case the original tumor location in the cervical spine and SVC syndrome necessitated awake fiberoptic intubation. Choice of induction technique depends on the hemodynamic effects of the tumor and patient’s clinical condition. Central access may be difficult depending on the location of the tumor. Venous congestion and collateral flow can cause significant blood loss during surgical dissection. Transeosophageal echocardiography may help guide intraoperative anesthetic management.

Conclusion
Anesthetic management of the patient with a cardiac tumor depends on the hemodynamic effects of the mass and patient’s clinical condition. Anesthetic technique should be tailored to maintain preload, sinus rhythm and contractility. Airway management may be complicated by tumor location.

References
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