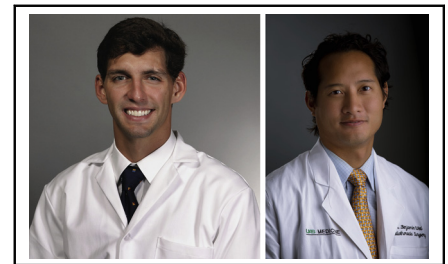


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Commentary: Fontan physiology and special consideration for lobectomy

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Nagayama and colleagues¹ present an interesting technical case of anatomic lung resection for a primary lung malignancy in a patient with Fontan physiology. The patient of interest was diagnosed with pulmonary atresia and an intact ventricular septum having a hypoplastic tricuspid valve and right ventricle. The authors describe a remote left modified Blalock-Taussig palliation shunt from the left subclavian artery to left pulmonary artery placed during infancy presumably for elevated pulmonary vascular resistance (PVR). The authors do not mention whether a partial cavopulmonary shunt was fashioned before conducting total cavopulmonary connection (TCPC). Preoperative imaging revealed a TCPC with the superior vena cava connected directly to the right pulmonary artery and the inferior vena cava connected to the right pulmonary artery via an intra-atrial lateral tunnel. The modified Blalock-Taussig shunt was found to be occluded; it is unclear whether the shunt was intentionally ligated during the TCPC procedure or occluded over time. A cavopulmonary shunt is indicated once the PVR is reduced to <4 Wood Units/m² and any BT shunt taken down or ligated at this time to decrease the volume load of the systemic ventricle.

Although the patient was unlucky to develop lung cancer at age 26 years, he was fortunate that it occurred in the left lung. Due to a hypoplastic left pulmonary artery, perfusion to the left lung was minimal and the investigators correctly judged that a left upper lobectomy would not impair the

CENTRAL MESSAGE

Anatomic lung resections are feasible among select patients with Fontan physiology through careful consideration.

patient's Fontan circulation. What if the lesion had been located in the right lung? Concerns for increased PVR following lobectomy provoking Fontan failure are valid^{2,3} but theoretical given a paucity of literature in this specific population. A right middle, upper, or lower lobectomy may evoke varying effects, perhaps in a progressive fashion, respectively, on PVR and Fontan circulation either at rest or with exertion. How would even a lesser right-sided resection, such as wedge resection or segmentectomy, be tolerated in a patient with a Fontan circulation? There are little data on the topic. This unique case report should prompt thoracic surgeons to refamiliarize themselves with physiologic considerations among patients who have undergone palliative shunts. As life expectancy increases among this patient population, more survivors of congenital heart disease may require thoracic surgical intervention for malignancies of the chest.^{4,5}

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