

Multipurpose Use of Embolic Protection Baskets in Pediatric Interventions for Congenital Heart Disease: A Case Series

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Introduction: Embolic protection baskets are used routinely for high-risk procedures in adults but this is not typical in pediatrics. Our institution has utilized cerebral embolic protection devices in various catheterization and hybrid interventions with a patient at risk of embolic complications.

Patient 1: A 14 yo girl presented with occlusive left lower extremity arterial thrombus and echocardiogram showing a mobile left atrial appendage mass concerning for myxoma. Prior to sternotomy, access was obtained in the left femoral artery and an angled glide catheter was advanced into the carotid arteries. A guidewire was advanced over which SpiderFX embolic protection devices were advanced and deployed. The surgical resection was uneventful after which the carotid baskets were retrieved.

Patient 2: A 14 yo boy underwent Ross procedure and required post-operative ECMO support. Due to left ventricular thrombus formation, at time of decannulation a 6Fr sheath was placed in the left femoral artery and catheters were advanced to the carotid arteries and left vertebral artery. A wire was advanced and SpiderFX embolic protection devices were deployed. Following decannulation, the carotid baskets were retrieved without difficulty. The vertebral artery basket was unable to be captured and angiogram showed complete occlusion of the vessel with thrombus. A multipurpose catheter was advanced and clot was aspirated to allow the basket to be moved into the descending aorta and then captured.

Patient 3: A 5yo boy with single ventricle physiology s/p fenestrated extracardiac Fontan and left pulmonary artery stenting required two cath procedures that were high risk for embolization including recreation and stenting of his Fontan fenestration and recanalization of his LPA stent. For each procedure, arterial access was obtained in the left femoral artery and SpiderFX embolic protection devices were deployed. In both cases there was debris in at least 1 of the 3 baskets upon retrieval.

Discussion: These cases represent unique utilization of embolic protection baskets in congenital heart disease. Many patients have residual right to left shunting lesions which put them at higher risk of embolic events during interventions. Additionally, surgical procedures with potential for embolism on the left side could benefit from cerebral vasculature protection.