



# Stenting Obstructed TAPVD for Palliation is a Viable Option in Very Sick Neonates

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## Editorial

Obstructed Total Anomalous Pulmonary Venous Drainage (TAPVD) is a life-threatening emergency in neonates. The anomaly is the result of pulmonary veins draining to a systemic venous channel *via* a common confluence, rather than connecting to their normal location of left atrium [1]. Obstruction of pulmonary venous return at any level (usually at the site of common draining channel in to anomalous site), adds element of “pulmonary venous hypertension”. Increased pulmonary blood flow and “pulmonary arterial hypertension” is also there, as a result of systemic and pulmonary veins ultimately draining to right side of the heart. The neonate can develop severe pulmonary congestion and hypoxemia. The situation may not be optimally responsive to mechanical ventilation and in some cases Extra Corporeal Membrane Oxygenation (ECMO) has to be instituted to resuscitate the hypoxic, acidotic baby with low cardiac output. The Obstructed TAPVD in a neonate is a surgical emergency. The corrective procedure is surgical routing of the pulmonary venous confluence to the left atrium. The surgery is technically demanding which gets more complicated in neonates who are in extremis despite aggressive intensive care support. TAPVD is commonly associated with single ventricle anatomy and visceral situs abnormalities. These combinations have very high discharge mortality (38% in one report) after surgical correction [2]. In the past decade or so, there have been reports of successful stenting of the obstructed venous channel in TAPVD as a palliation [3]. There are also anecdotal reports of stenting TAPVD in low birth weight babies [4]. Stenting of Obstructed TAPVD has been adopted in our centre in extremely sick neonates. The aim is to palliate very sick baby for a few weeks when corrective surgery can be performed as semi urgent procedure. The procedure has been without complications in 4 babies who later went on to have operative correction in a much more stable clinical condition [4,5]. As in one of the illustrative cases, shown in Figure 1 the child had an “infra cardiac” obstructed TAPVD. The confluence was draining *via* a common vein to a tributary of hepatic vein below the diaphragm. The baby also had situs inversus with mirror image dextrocardia, bilateral Superior vena cavae and large ventricular septal defect with double out let right ventricle. After stenting in the cardiac catheterization lab, the egress to Inferior vena cava improved (Figure 2) and the mean pressure in the obstructed veins dropped to 6 mmHg from 20 mmHg pre procedure. This baby underwent a staged correction a few weeks later and is doing well 4 months after the corrective surgical procedure. We advocate stenting as a reasonable option for initial palliation in very sick neonates with obstructed TAPVD [6]. Routine use of this modality

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**Figure 1:** Angiogram showing all pulmonary veins joining in to a vertical confluence, which descends caudally towards diaphragm and is obstructed below the diaphragm.



**Figure 2:** The infra diaphragmatic venous confluence is stented to the hepatic vein and upper segment of IVC relieving venous obstruction.

will depend on the available Pediatric Cardiac Intervention expertise and facility. The procedure is safe and reproducible. Presently, it is being adopted in various pediatric cardiac centers around the world.

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