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**Bidirectional Glenn's Cavo-Pulmonary Shunt -**

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## **A Shuntless, off-pump Novel Way for Bidirectional Glenn's Cavo-Pulmonary Shunt in Patients with Cyanotic Congenital Heart Diseases**

**Talal FARES\***

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### **Abstract**

**Background:** We present here a simplified method to perform Bidirectional Glenn's Cavo-Pulmonary Shunt (BDG) in which we use no cardiopulmonary bypass (CPB) nor an intra-operative temporary shunt, sometimes used on the belief that it lessens the developed intra-venous congestion and pressure in the upper torso, intra-operatively. Our approach springs from the idea that acute intra-venous congestion, resulting from the application of vascular cross-clamp on the superior vena cava (SVC) during operation, is being vented through abundant and numerous anatomic venous anastomoses between the SVC system and the inferior vena cava (IVC) system. It also springs from the conception that the brain of patients with low arterial blood O<sub>2</sub>-saturation tolerates cerebral hypoxia better than the normally functioning brain. Such hypoxia may ensue from the transient low cerebral arterial blood flow, resulting in turn from the temporary intra-venous cerebral congestion (and related raised pressure) following SVC clamping.

**Patients and Methods:** Between 1997 and 2003 we applied this method on 55 patients who were candidates for total correction with the Modified Fontan Operation. Bidirectional Glenn shunt in these patients was a palliative initial procedure to improve severe cyanosis, a stage to be followed later by definitive total correction. Patient's age ranged from 14 months to 33 years. All patients underwent full neurologic examination, pre- and post-operatively. Pressure values were recorded in the internal jugular vein following SVC clamping. The time of SVC clamping was then measured, i.e.

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the time necessary to perform the anastomosis between SVC and the right pulmonary artery, plus the time of suturing the cut upper end of the right atrium at its junction with the SVC.

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**Results:** 1- The jugular intra-venous pressure increased 50-75% of systemic arterial pressure. The SVC clamping time ranged between 10-18 minutes. 2- No changes in post-operative neurologic examination findings were observed in our patients, nor any neurologic disorders noticed during rather an irregular follow-up period in most of the patients. 3- There were three deaths unrelated to the surgical method employed, two deaths of which occurred in the ICU after weaning from ventilator. 4- There was a remarkable improvement in the level of arterial blood O<sub>2</sub>-saturation in all patients, generally in the range of 15-30%.

**Conclusion:** Our simplified and economic method confirms the absence of abnormal neurologic manifestations after acute temporary SVC cross-clamping. In addition, CPB and temporary shunt complications are avoided in this method, which we recommend in all patients who are candidates for total correction with the Modified Fontan Operation.

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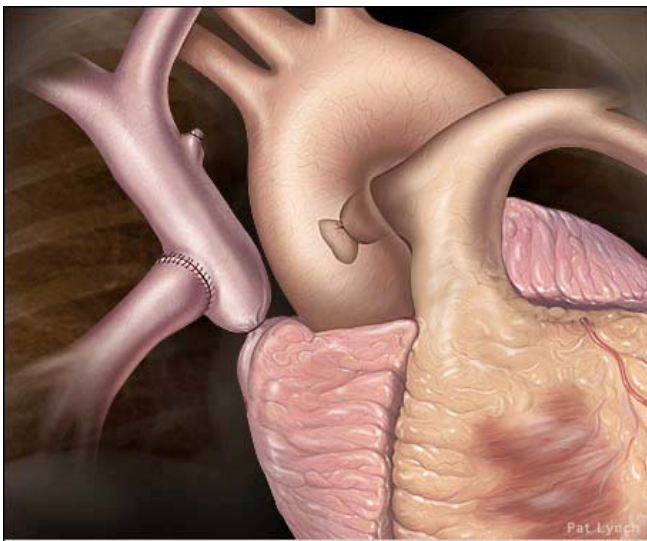
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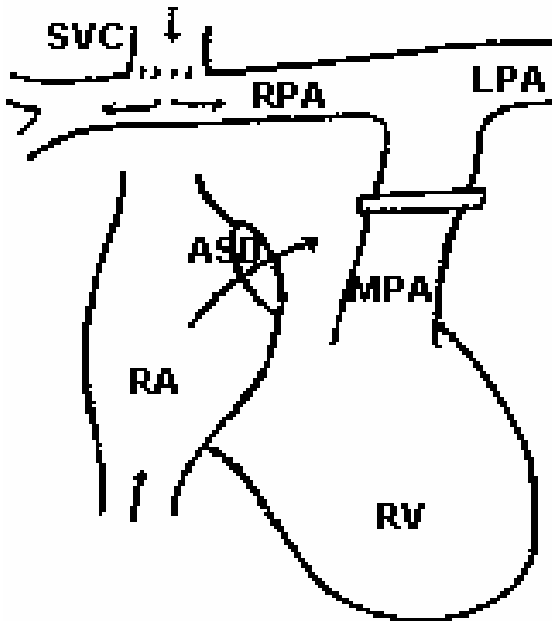
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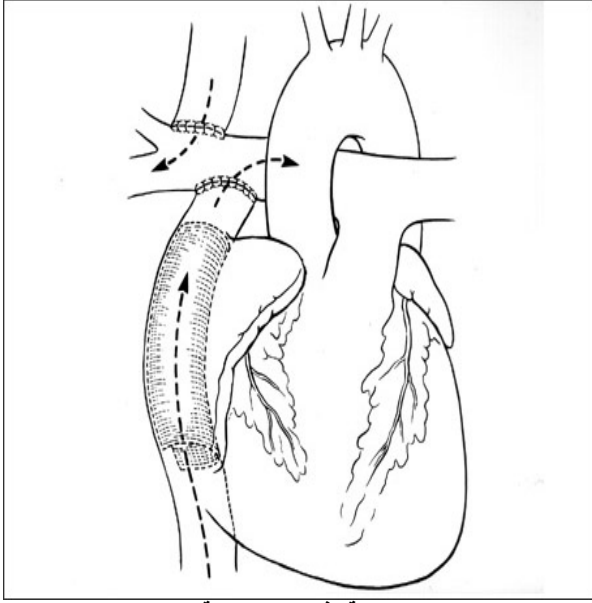


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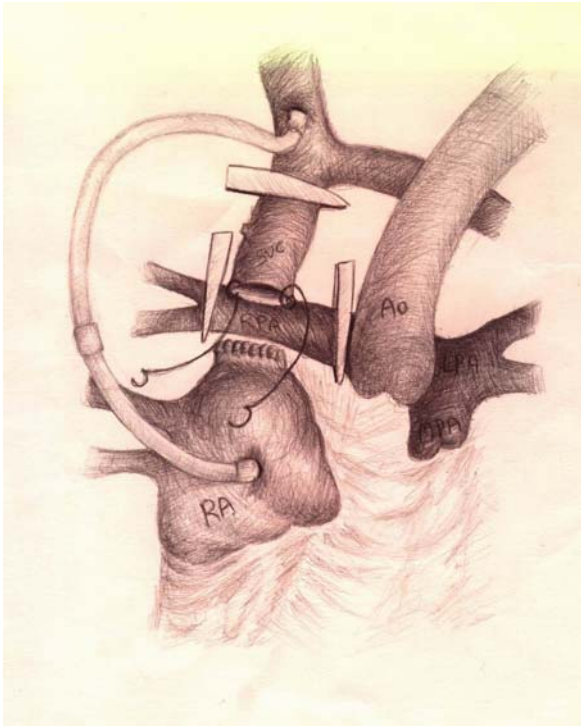
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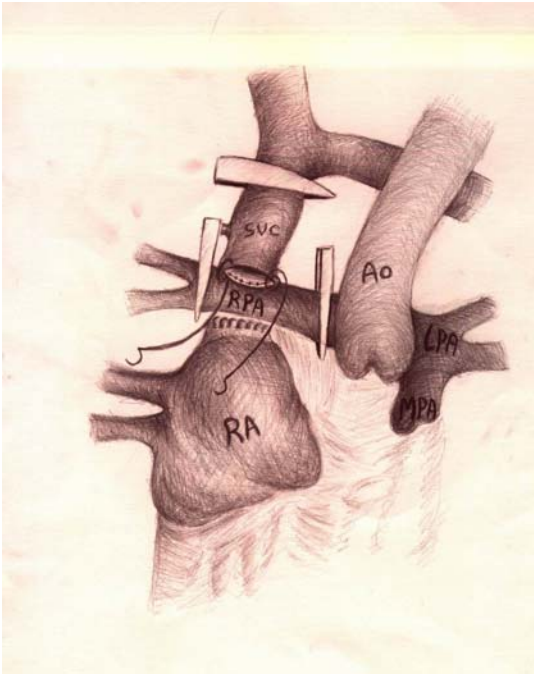
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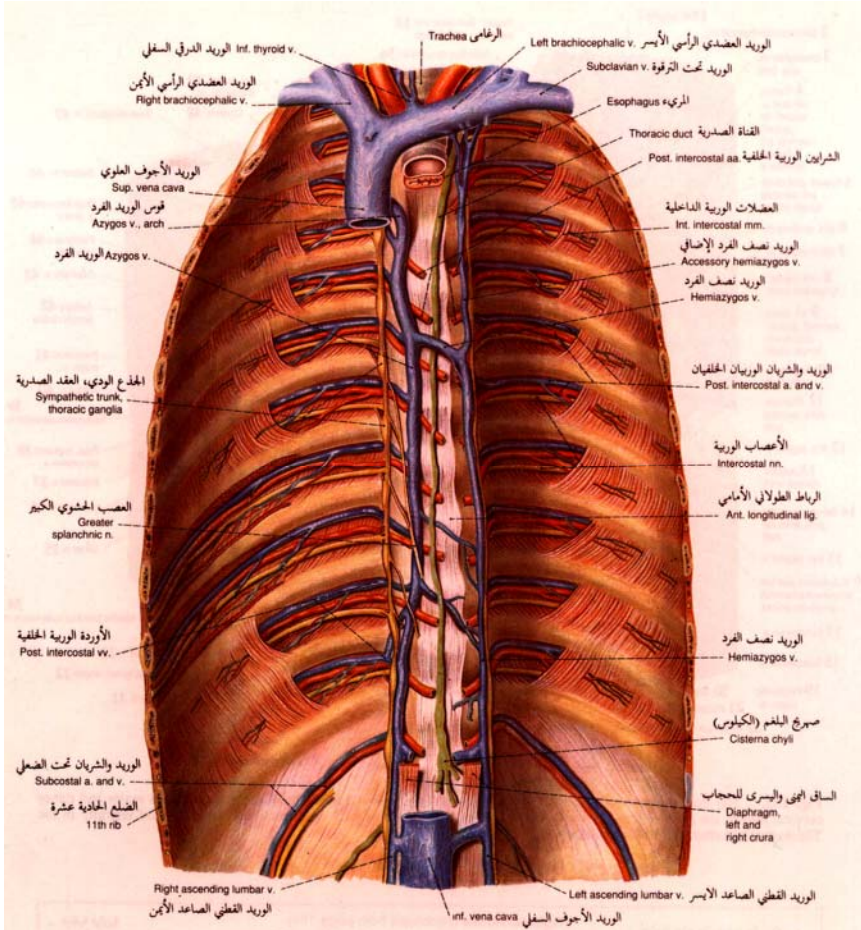


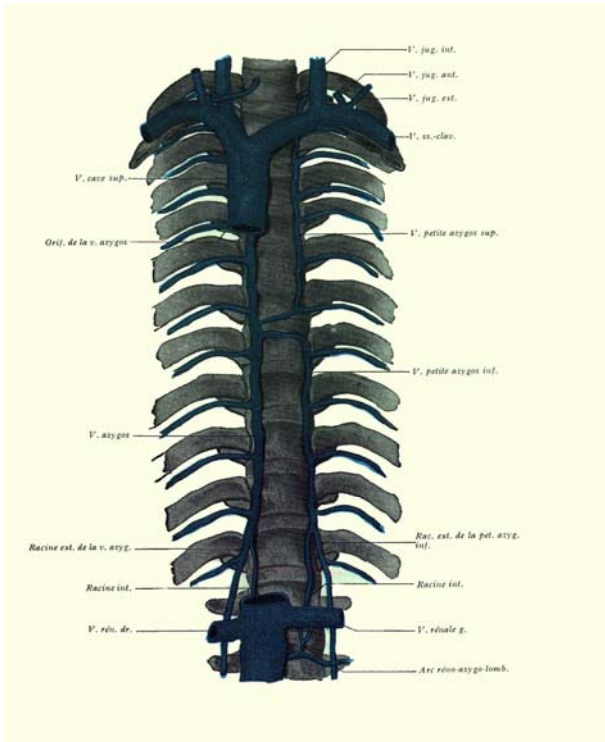
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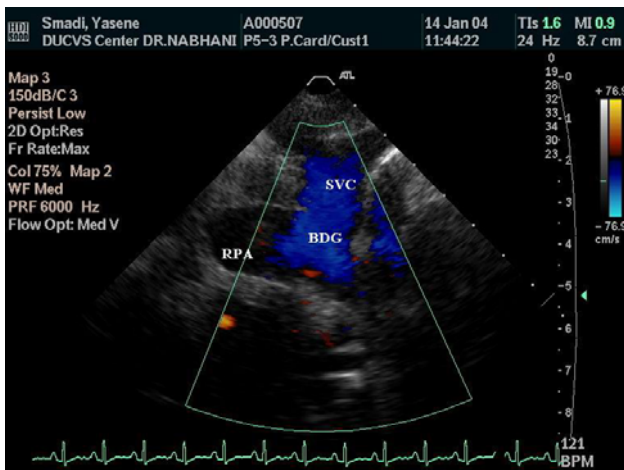
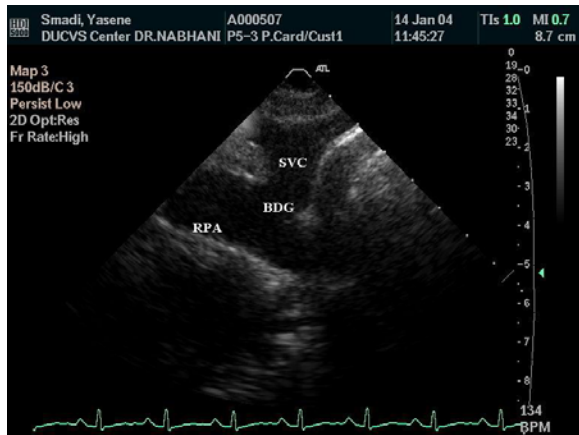
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