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Commentary: Aortic homograft for tension-free caval translocation in adults: The resurrection of the Ehrenhaft operation

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Several techniques have been described for repair of partial anomalous pulmonary venous connections of the right-sided pulmonary veins into the superior vena cava (SVC).¹ A key factor in deciding between these techniques is the location of the anomalous vein(s) in relation to the superior vena caval/right atrial junction. Long-term outcomes between the single-patch, 2-patch, and the Warden procedure have been described previously. Due to the increased risk of sinus node dysfunction with the 2-patch technique,² the majority of the surgical community is beginning to favor the Warden procedure when the anomalous veins are inserted high into the SVC.

Herbert Warden and colleagues reported this technique of caval division and translocation in 1984 in 15 patients with direct connection of the SVC to the right atrial appendage (RAA).³ In fact, the idea of caval translocation is not new and had been reported years before Warden and colleagues with both direct caval-to-right atrial anastomosis and a pedicle conduit of the RAA.⁴ While the Warden procedure has been associated with lower incidence of sinus node dysfunction and pulmonary venous obstruction, a new concern has been rising, which is the occurrence of early or later SVC obstruction, especially in adults.

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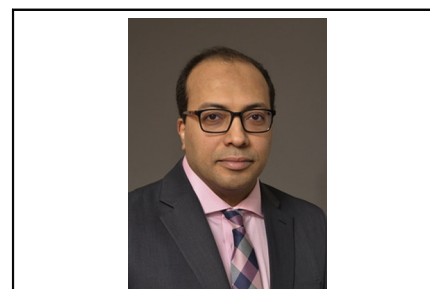
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CENTRAL MESSAGE

Use of an aortic homograft as an interposition conduit for Warden procedure may decrease the risk of superior vena caval obstruction and carries the advantage of avoiding anticoagulation.

Several modifications have emerged to decrease the incidence of SVC obstruction, such as the use of an atrial appendage flap,⁵ a pedicled autologous pericardial flap,⁶ and interposition grafts. While it is important in children to avoid the use of prosthetic materials, it is a reasonable option to consider in adults.

We had experienced early SVC obstruction after the Warden procedure in 1 adult that resulted in modifying the procedure to use a short interposition graft between the SVC and the RAA.⁷ This SVC obstruction can occur despite all the precautions taken with extensive mobilization of the SVC, azygous vein division, and resection of all RAA trabeculations. A short conduit to ensure a tension-free SVC-RAA anastomosis is a reasonable option in adults; however, this adds another burden, which is the need for short-term anticoagulation to avoid graft thrombosis.

I read with interest the case report by Kumar and colleagues⁸ wherein the authors used an aortic homograft to bridge the gap between the SVC and the RAA in a 57-year-old woman who underwent the Warden procedure with excellent result. In 1958, Ehrenhaft and colleagues⁹ reported the use of a homograft interposition between the SVC and the right atrium to treat a patient who developed SVC obstruction early post-repair of partial anomalous pulmonary venous connections.

I have personally used this technique in 2 adult patients with the longest follow-up of 3 years; however, I used a

cryopreserved abdominal aortic homograft instead. This requires clipping of all the branches during preparation, and it represents a very suitable anatomic conduit that matches the size of the adult SVC most of the time. Patients with this modification do not require anticoagulation; however, long-term data with longer-follow-up will be required.

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