Commentary: Expanded polytetrafluoroethylene: Making the reoperative experience easier or making more reoperations?

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Durable left ventricular assist device (LVAD) therapy has become the principal treatment for patients with advanced heart failure (American Heart Association, Stage D) who have significant symptom burden despite optimal medical management. LVADs are intended to support patients for extended periods of time as a bridge to heart transplantation or for destination therapy, but frequently require explantation for heart transplantation, cardiac recovery, or management of device complications such as pump thrombosis, device malfunction, or infection. The reoperation and explant of a durable LVAD can be a formidable operation, particularly in the setting of multiple prior operations or in the setting of hemodynamic instability from device malfunction. To facilitate reoperation in these settings, many surgeons have incorporated protective barriers such as expanded polytetrafluoroethylene (ePTFE) membrane at the time of the initial implant to reconstruct the pericardium or wrap the device to prevent fibrous adhesions and facilitate reoperation and device removal.¹⁻³ Despite the major advantages of pericardial substitutes to facilitate reoperation, their use has been associated with infections or inflammatory processes contributing to seroma formation.

In this issue of the *Journal*, Jackson and colleagues⁴ present an interesting complication of the use of ePTFE membrane in the setting of LVAD implantation where the outflow graft of the LVAD was wrapped with ePTFE membrane. These authors identified late-onset (average 3.4 years) outflow graft obstruction of the LVAD arising from external compression of the outflow graft thought to arise from plasma and serum leak from the outflow graft that was trapped in the virtual space between the ePTFE and the outflow graft. In each case, the outflow graft obstruction was identified with computed tomography

ePTFE and with LVAD implantation.

Central Message

ePTFE membrane used to wrap an outflow graft of a durable LVAD can cause outflow graft obstruction.

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scan with angiography and required reoperation and replacement of the outflow graft to resolve the obstruction. In this case, Jackson and colleagues⁴ have suggested that fenestration of the ePTFE wrap may avoid this complication by preventing entrapment of the plasma and serum leaking from the outflow graft. Other approaches may be to simply limit the amount of ePTFE used or apply the ePTFE anteriorly in the pericardial space without wrapping, or avoid its use. Purists may argue that addition of these barriers adds to the degree of fibrous formation and to the risk of infection.

Although unusual, this complication speaks to the unintended consequences of a simple technique thought to facilitate the operative procedure and highlights the importance of case reports to inform us of these consequences and how to modify our approach.

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