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## Continuous-flow left ventricular assist device outflow graft stenting: Indications and outcomes

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## **Continuous-flow left ventricular assist device outflow graft stenting: Indications and outcomes**

Chelsey T. Wood MFA, Elizabeth J. Maynes MD, Thomas J O'Malley MD, Rohinton J. Morris MD, Louis E. Samuels MD, H. Todd Massey MD, Vakhtang Tchantchaleishvili MD\*

**Introduction:** Stenosis in the continuous-flow left ventricular assist device (CF-LVAD) outflow graft can be caused by various mechanical and anatomical factors. Increasingly, percutaneous management has been utilized to re-establish adequate CF-LVAD flow. We sought to evaluate indications for such interventions and their outcomes.

**Methods:** An electronic search was performed to identify all studies in the English literature reporting CF-LVAD outflow graft stenting for various etiologies. Twenty-one studies consisting of 26 patients were included in the analysis.

**Results:** Median patient age was 59 years [45.8-67.0] and 65.4% (17/26) were male. 58.3% (14/24) of patients had HeartWare HVAD, 37.5% (9/24) had HeartMate II LVAD, and 4.2% (1/24) had HeartMate III LVAS. Median time from device placement to outflow graft stenting was 24.0 months [7.8-30.4]. 76.9% of patients (20/26) presented with heart failure. 34.6% (9/26) had outflow graft thrombosis, 34.6% (9/26) stenosis, 11.5% (3/26) kinking, 11.5% (3/26) pseudoaneurysm, 3.8% (1/26) external graft compression, and 3.8% (1/26) had a bronchial-arterial fistula. 88.5% (23/26) procedures led to immediate flow improvement with the remaining 11.5% (3/26) receiving additional stenting. Post-intervention flows were significantly improved (4.7 L/min [4.1-4.8] post-intervention vs 2.9 L/min [2.0-3.5] initial,  $p=0.01$ ). 96.2% (25/26)

patients were discharged from the hospital. The 30-day mortality was 6.7% (1/15). Overall mortality during the median follow-up of 90 days [7.0-240.0] was 9.5% (2/21).

**Discussion:** Outflow graft stenting appears to effectively alleviate CF-LVAD outflow graft obstruction with low mortality. Longer-term follow up is necessary to determine the longevity of such an intervention but early results are promising.