Impella 5.0 as a Bridge to Implantable Left Ventricular Assist Device

— First Clinical Case in Japan —

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Figure. The Impella 5.0 is positioned in the left ventricle (LV) across the aortic valve using the right subclavian artery approach under (Left) transesophageal echocardiography and (Right) fluoroscopic guidance. Ao, aorta; LA, left atrium.

Short-term mechanical circulatory support has been used to improve the hemodynamics in refractory cardiogenic shock. The Impella 5.0 (Abiomed), a microaxial blood pump, is a minimally invasive heart assist device that can be used to stabilize cardiogenic shock patients by delivering an up to 5-L/min blood flow to the aorta while directly unloading the left ventricle (LV). We describe the first clinical application of the Impella 5.0 for cardiogenic shock in Japan, in which it was used as a

bridge to durable LV assist device (LVAD).

The Impella 5.0 was inserted for refractory cardiogenic shock in a 50-year-old man with acute deterioration of end-stage dilated cardiomyopathy and systolic blood pressure 78 mmHg despite the presence of inotropes (Figure), because the Impella 2.5 or intra-aortic balloon pumping could not provide sufficient circulatory support. Circulatory support by the P6 assist level of the Impella 5.0, which produces a 3.7-L/min pump flow, immediately

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achieved a sufficient increase in the cardiac index, and decrease in pulmonary capillary wedge pressure and right atrial pressure (**Figure S1**). Three days of circulatory support with the Impella 5.0 enabled stabilization of hemodynamic status and recovery of end-organ function, and facilitated durable LVAD (HeartMate II; Thoratec) implantation without right heart failure.

Herein we have described the first successful implantation of the Impella 5.0 in Japan. Although further case experiences are needed, this new device may provide promising outcomes as a bridge to durable LVAD in the case of acute deterioration of end-stage cardiomyopathy.

Disclosures

The authors declare no conflicts of interest.

Supplementary Files

Supplementary File 1

Figure S1. Change in hemodynamic parameters and serum creatinine after implantation of the Impella 5.0 (with circulatory support at the P6 assist level) and HeartMate II (pump speed, 8,600–8,800 r.p.m.).

Please find supplementary file(s);
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