A 58-year-old female with no prior medical history presented with cardiogenic shock due to viral myocarditis. She had angiographically normal coronary arteries. Bedside echocardiogram showed global hypokinesis of the left ventricle (LV) with left ventricular ejection fraction (LVEF) of 10%. Right ventricular (RV) function was severely impaired.

That patient needed biventricular mechanical circulatory support (MCS). Using moderate sedation, an Impella CP (Abiomed) was placed percutaneously through the left axillary artery. Subsequently, a Protek Duo device (LivaNova) was inserted into the right internal jugular (IJ) vein, positioned distally into the main pulmonary artery (PA), and connected to a TandemHeart pump (LivaNova) (Figure 1).

The patient was able to ambulate with careful supervision. Biventricular support resulted in stable hemodynamics. The biventricular support devices were weaned and removed on hospital day 6. LVEF on discharge was 50%.

To our knowledge, this is the first reported case of full biventricular MCS with the combination of Impella and Protek Duo. The Protek Duo is a dual-lumen cannula inserted via the right IJ vein, with its proximal inflow lumen positioned in the right atrium and distal lumen positioned in the main PA. These lumens are connected with the paracorporeal TandemHeart pump, which allows flow of up to 5 L/min. The alternative percutaneous option for RV support is the Impella RP (Abiomed), which must be placed in the femoral vein, preventing ambulation. The axillary and IJ vein positions for devices are probably less prone to infection compared with the femoral area.

The combination of an Impella inserted via the axillary artery with the Protek Duo is a viable option, allowing ambulation while providing biventricular support.

FIGURE 1. Biventricular support with [A] Protek Duo inserted via the right internal jugular vein and [B] Impella CP inserted via the left axillary artery.