A 68-year-old asymptomatic man with a history of heart transplantation for advanced heart failure from ischaemic cardiomyopathy was referred to our institution for scheduled routine follow-up. Retrospectively gated cardiac computed tomography, performed on a 256-slice dual source CT with multiphase reconstruction, revealed heterotopic cardiac transplantation (HHT). The explanted heart from a 12-year-old donor was transplanted 25 years ago in the right side of the chest next to the recipient’s native heart (Supplementary material online, Video S1). Dynamic cine analysis showed asynchronous contraction of both hearts with independent donor and recipient heart rhythms.

The transplant right atrium was connected to the superior vena cava and recipient right atrium remained connected to the inferior vena cava (Panel A). Left atria were connected (Panel B) as well as both ascending aortas using an end-to-side anastomosis (Panels C and D) and pulmonary arterial trunks with a Dacron graft.

Heterotopic heart transplantation has been used since 1974 for highly selected patients such as irreversible high pulmonary vascular resistance and body weight mismatch (over 20%) between recipient and donor. Xenotransplant heterotopic grafts have also been proposed to be used in reversible heart failure as a bridge to recovery. However, drawbacks include well-recognized complications in HHT such as native heart angina, ventricular fibrillation, and thromboembolic events as well as complex surgery.

Cardiac CT and MR are imaging modalities of choice for the follow-up and optimal workup of patients with complex cardiovascular anatomy including patients with HHT.

Supplementary material is available at European Heart Journal online.