

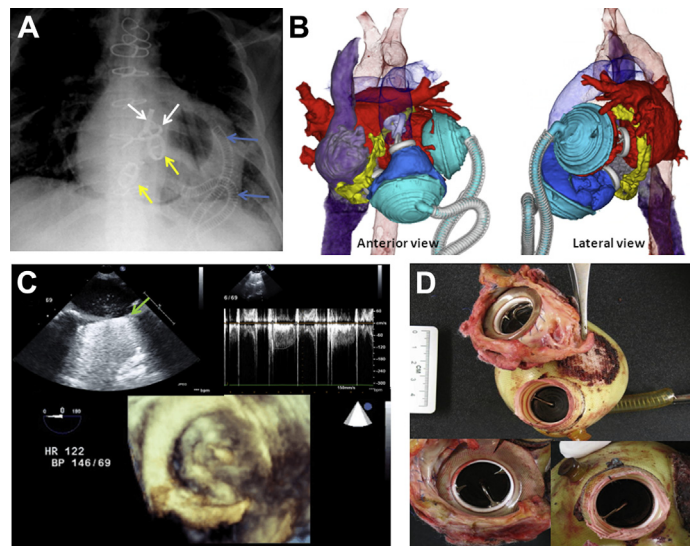
IMAGES IN CARDIOLOGY

Multimodality Imaging for the Assessment of Total Artificial Heart Function

Complementary Utility of 2- and 3-Dimensional Transesophageal Echocardiography and Computed Tomography

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A 37-year-old man with a history of heart transplantation developed graft dysfunction and underwent total artificial heart (TAH) implantation. Post-implantation, the patient developed hypoxemia. Chest radiograph (A) showed normal positioning of the TAH inflow and outflow valves (**yellow and white arrows**, respectively) and drivelines (**blue arrows**). Three-dimensional, volume-rendered images with multiobject segmentation of the TAH and surrounding structures from a pulmonary embolism protocol computed tomography angiography negative for pulmonary embolism showed no evidence of pulmonary vein (**red**) compression by the anastomotic ring (**yellow**) as a cause of hypoxemia (B, [Online Video 1](#)). The patient subsequently developed tea-colored urine and low ventricular fill volumes, raising the suspicion for hemolysis through the inflow valves. Transesophageal echocardiography (TEE) (C, [Online Video 2](#)) showed normal motion of the single-leaflet tilting disc valve and stable transvalvular gradients compared with a previous TEE. En-face views of the inflow valves according to 3-dimensional TEE revealed no evidence of thrombus. Post-explant analysis confirmed the absence of thrombus on the inflow valves (D). This case demonstrates the complementary utility of 2- and 3-dimensional echocardiography and computed tomography in the assessment of TAH function.