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IMAGES IN CARDIOLOGY

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Visualisation of a St Jude prosthetic mitral valve using electron beam tomography

A 58-year-old male patient, with a history of mitral valve replacement and coronary artery bypass surgery 10 years earlier, was treated with a cardiac resynchronisation therapy and defibrillator (CRT-D) device because of poor left ventricular function, left bundle branch block and first-degree atrioventricular block. However, during this procedure a dissection of the coronary sinus occurred. A second attempt to re-implant a ventricular lead of his CRT-D was planned. Two days before this intervention, a contrast-enhanced dual slice electron beam tomographic scan (e-Speed, Imatron, San Francisco, California, USA) was performed to visualise the coronary sinus. The coronary sinus showed a normal calibre and probably a dissection flap proximally.

Moreover, the scan showed the stainless St Jude 31 prosthesis between the left ventricle and the left atrium (panels A, B). A high concentration of contrast is visible in the right atrium. A three-dimensional image of the valve in systole was made using volume rendering (panel C). The orifice area was planimetrically calculated to be 2.4 cm² (mean of three measurements: 2.4, 2.4 and 2.5 cm²; panel D). Echocardiography routinely performed 5 months earlier measured a mitral valve area of 2.4 cm², in accordance with our findings. In conclusion, it is possible to visualise St Jude prosthetic valves with electron beam tomography. Electron beam tomography may be a suitable technique to evaluate some functional aspects of mechanical prosthetic valves.

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