Cardiac Imaging

Successful Implantation of the Left Ventricular Pacing Lead in the Postero-Lateral Cardiac Vein After Coronary Sinus Dissection During Biventricular Pacing

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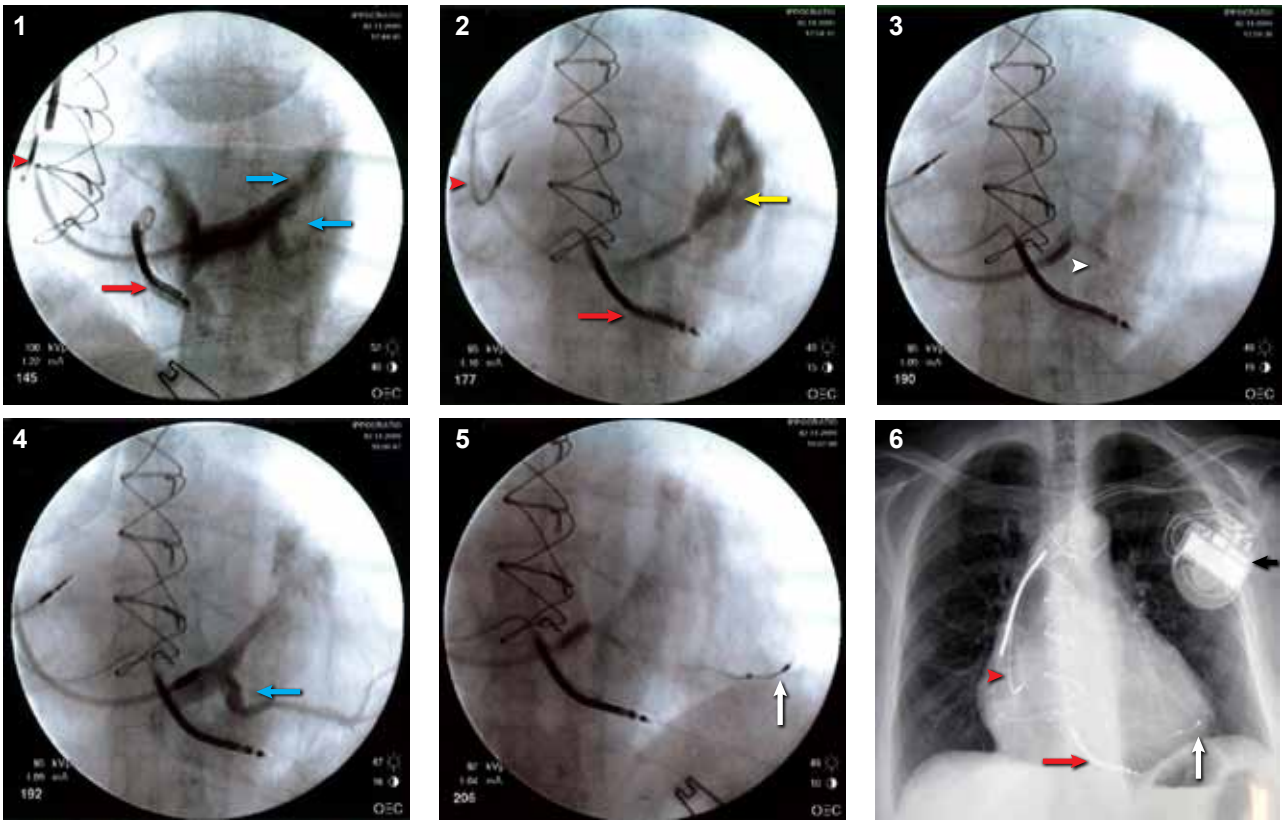
A 72-year-old male with a history of ischaemic cardiomyopathy was admitted to our hospital with symptoms of deteriorating cardiac failure. Despite optimal medical therapy, he remained in New York Heart Association (NYHA) class III-IV. An echocardiographic study demonstrated severe left ventricular dysfunction with a left ventricular ejection fraction of 20% and ventricular dyssynchrony, while his electrocardiogram revealed complete left bundle branch block with QRS duration 230 ms. He was thus considered eligible for cardiac resynchronisation therapy according to the current guidelines.[1]

The procedure took place in the electrophysiology laboratory under strictly aseptic conditions. After cannulation of the left cephalic vein, the right ventricular (Figures 1 & 2, red arrow) and atrial (Figures 1 & 2, red arrowhead) pacing leads were successfully implanted. An angiogram of the coronary sinus and its tributaries was subsequently performed (Figure 1), accessed through the left subclavian vein. The left ventricular pacing lead was easily advanced initially, but during manipulation of the guide wire in order to access the lateral cardiac vein (Figure 1, blue arrowhead), dissection of the coronary sinus occurred (Figure 2, yellow arrow). Although challenging, the procedure was not abandoned and a second catheter was positioned through the original sheath subselectively (Figure 3, white arrowhead) into the ostium of the posterolateral cardiac vein (Figures 1 & 4, blue arrow). An angioplasty wire was smoothly introduced into the vessel, followed by successful implantation of the pacing lead using the "over-the-wire" technique (Figure 5, white arrow). The patient remained haemodynamically stable throughout the procedure. Fluoroscopic exposure and procedural times were within acceptable limits.

Postoperatively, pacing thresholds and sensing values were excellent and a chest radiogram demonstrated adequate positioning of the leads (Figure 6) and generator (Figure 6, black arrow). The patient remained uncomplicated and he was discharged 24 hours after implantation. The patient receives regular follow-up assessments in the outpatient department of our hospital. Eighteen months post-implantation he remains in NYHA functional class II, echocardiography shows decreased dimensions of the left ventricle and the right and left ventricular sensing and pacing thresholds remain stable.



Figures 1-6. For description see text.

Biventricular pacing is the last therapeutic resort for patients with end-stage cardiac failure who are already under optimal medical treatment. Therefore, every effort should be made to overcome any complications or other problems of a technical nature that might appear during implantation. Abandoning the procedure should be well documented. Dissection of the coronary sinus is not an uncommon complication during biventricular pacing; however, it should not necessarily lead to interruption of the left lead implantation.[2-4] The increasing experience of interventional electrophysiologists in combination with the modern technological achievements by industry, in the form of new, reliable catheters for everyday practice, could facilitate the use of alternative branches of the coronary venous system.

References

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