Identification of lateral cardiac veins for cardiac resynchronization therapy

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Introduction
Coronary sinus (CS) venography is used to identify suitable, usually mid-lateral veins, for left ventricular (LV) lead placement. Once CS cannulation has been achieved, contrast injection through a balloon occlusion catheter allows visualization of the CS and its branches.

Case
We present a 59-year-old patient with long standing chronic heart failure with a previous single chamber implantable defibrillator referred for upgrade to resynchronization therapy. Initial images of the CS revealed no lateral veins (Figure 1). The catheter was withdrawn to the ostium and contrast injection proximally revealed the presence of a separate CS (Figures 2 and 3). Manipulation of the catheter eventually allowed cannulation of this vessel, imaging of the lateral branches (Figure 4), and successful lateral LV lead placement.

Discussion
Occasionally, during the LV lead placement, contrast venography will reveal a CS that appears to have no lateral

Figure 1. Initial contrast venogram of coronary sinus identifying no lateral veins.

Figure 2. Further contrast venography following withdrawal of the balloon occlusion catheter to the coronary sinus os suggesting a proximal origin of the lateral vein.
branches. This is usually a consequence of the injection catheter being advanced past the origin of the lateral veins. Withdrawing the sheath and balloon occlusion, catheter back towards the CS ostium and repeating the injection will allow the proximal branch to be imaged. In the present case, there appeared to be two CSs running parallel to each other. Imaging of this vessel required the removal of the sheath to the base of the right atrium.

Lead placement during the cardiac resynchronization therapy can have a large influence on symptomatic benefit. Posterior-lateral positioning is thought to be associated with a greater chance of response. Therefore, every effort should be made to identify veins that pass over these regions, even if initial imaging does not identify them.

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