**Left Ventricular Lead Placement Using Non-Occlusive Venogram for Cardiac Resynchronization Therapy: A Pilot Study**

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**Background**:

Cardiac resynchronization therapy (CRT) improves morbidity and mortality in patients with cardiomyopathy and intraventricular conduction delay1. The most challenging aspect of the procedure is placement of the left ventricular (LV) lead into a branch of the coronary sinus (CS). Traditional implant technique involves an occlusive CS venogram with a balloon tipped catheter to evaluate venous anatomy and guide placement of the LV lead. We aimed to demonstrate that a simpler, non-occlusive venogram guided LV lead placement has procedural outcomes similar to the traditional approach.

**Methods**:

In this observational study, charts of consecutive patients who underwent CRT implant by the investigator between July 2020 and May 2021 were reviewed. Outcome measures included parameters of acute procedural success: successful implant of LV lead, procedure time, fluoroscopy time, amount of contrast used, final LV lead position, paced QRS duration, and intraventricular conduction delay (QLV)2.

**Results**:

CRT implant was performed in 23 patients (age 67.9±13.3 years, BMI 31.0±6.7 kg/m2, 22% prior thoracotomy/cardiac surgery, 70% ischemic heart disease). Number of non-occlusive venograms was 1.7±1.2/implant, and no patient required occlusive venogram for CS branch visualization. Average procedure time, fluoroscopy time, and contrast use was 129.4±43.4 min, 26.4±15.1 min, and 25.3±16.7 mL, respectively. An anterior vein was visualized in 26%, a lateral vein in 96%, a posterior vein in 74% with non-occlusive CS venogram. All patients had acute procedural success along with lateral or posterolateral LV lead position. QRS duration shortened by 16.1±21.4 ms with CRT. One patient had contrast staining due to difficult wire placement in a tortuous CS, which did not affect procedural outcome.

**Conclusion**:

The use of only non-occlusive venogram to guide LV lead placement demonstrated consistent efficacy in this pilot study. A lateral or posterior cardiac vein was identified in all patients using this technique which allowed for proper placement of the LV lead and successful CRT. The method omits the use the occlusive balloon angiographic catheters, lowering the costs of the procedure ($45-80/implant). The results warrant further investigation.

**References**:

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