

# Angled probe for coronary sinus cannulation improves control, precision, and efficiency of cardiac lead placement

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## Technology description

### Summary

Cardiac resynchronization therapy has emerged as the standard of care to reverse cardiac dysynchrony in patients with advanced congestive heart failure. This therapy is administered by inserting endocardial leads directly into the heart via coronary sinus cannulation. However lead insertion is technically challenging and standard cannulation devices are long and flexible, resulting in limited control by the surgeon. This technology is a right-angled cannula probe with a rigid frame that facilitates proper entry into the coronary sinus and allows monitoring of tissue interactions via tactile response. This device can improve the effectiveness of direct coronary sinus cannulation by improving ease of insertion, reducing total operating time, and reducing patient morbidity risks.

### **Surgical failure rates for lead insertion via coronary sinus cannulation can be reduced using angled probe with tactile feedback**

The coronary sinus is radiolucent and its precise location is variable. Current cannulation techniques rely on dye pulses and image guidance to help locate the coronary sinus, which may be problematic for volume-overloaded patients. In addition, precisely steering a flexible catheter is difficult at distances over 50 cm, for which steerable catheters are helpful, but leverage is often inadequate to reach far posterior or angulated coronary sinus locations. The optimized angle and stiffness of this technology allows for the flexibility to navigate cardiac vessels, but also the rigidity necessary to provide leverage for distant access. The cannula does not make use of an obturator but instead has calibration marks to allow the surgeon to exert fine control over the navigation of the cannula. Minimizing the failure rate of this procedure will reduce patient morbidity risks, reduce prolonged patient hospitalization, reduce total operating time, and improve effectiveness of the intervention.

## Publications

Wang DY, Gerrah R, Rusanov A, Yalamanchi, V, Cabreriza SE, Spotnitz, HM. &#8220;Left ventricular packing lead insertion via the coronary sinus cardioplegia cannula: A novel method for temporary

biventricular pacing during reoperative cardiac surgery&#8221; J Thorac Cardiovasc Surg. 2011 Jul; 142(1):73-6.

## Application area

Cardiac lead placement during coronary resynchronization therapy

Insertion of cardiac instrumentation

Insertion of monitoring instruments (e.g. temperature, pressure, oxygen saturation) in the coronary sinus

Insertion of prostheses, including rings, sutures, stiffeners, and pumps to reduce heart failure

Delivery of contrast agents for angiography

Can be adapted for use in other procedures involving coronary sinus, intrapericardial access, intracardiac access (valve repair), transseptal puncture, and to all pacemakers/ICDs

## Advantages

Improves steering and monitoring of catheter position

Ability to catheterize at distances greater than 50cm without losing leverage

Ease of insertion

Reduces pain and morbidity

Reduces cost, procedure time, and training with improved control

Customizable contour geometry and distance markings specific to individual patient anatomy

Applicable to a wide variety of other cardiac intervention procedures

## Institution

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