Cleveland Clinic Innovations

Pacing Lead Connector to Assist with Left Bundle Branch (LBB) Placement

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PRODUCT
Left Bundle Branch (LBB) Pacing Lead

INDICATION
Medical Device, Electrophysiology, Cardiac Resynchronization Therapy

VALUE PROPOSITION
- Easier mechanism to control pacing lead deployment.
- Offers more physiologic pacing.
- Prevents unintended helix deployment/retraction and is easily integrated into workflows.

DEVELOPMENT STAGE
- MVP has been tested ex-vivo.

INTELLECTUAL PROPERTY
Patent Application Pending

RELATED PUBLICATIONS
Vajpaye, R., Amuthan, R., Chung, M., Tchou, P., Rickard, J., Chung, R., Verma, N., Niebauer, M. High predictive value of paced QRS frequency in verification of left bundle branch pacing. Journal of Interventional Cardiac Electrophysiology, 04 April 2023.

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UNMET NEED

Right ventricle (RV) pacing, to treat bradycardia, has been achieved by placing the pacing lead into the RV apex or septum, but this results in ventricular activation via myocardial propagation. Subsequently, long-term RV pacing in this way can lead to cardiomyopathy. Electrophysiologists (EPs) have begun targeting active fixation lead placement in the conduction system, such as the left bundle branch (LBB) to optimize ventricular activation, but that presents technical challenges with the current tools. Currently, when implanting at the LBB position, the lead (extended helix & tip body) penetrates the RV septum to access the LBB; requiring the clinician to torque the entire lead. This can result in the helix being retracted unintentionally if the lead body alone is torqued.

SOLUTION

An accessory that can easily slide over the proximal end of a stylet driven (active) pacemaker lead that has the following benefits:

- Enable EPs to more easily control the body and distal helix of pacing leads during torquing by providing a stable connection.
- Fixes the pacing body and proximal tip to ensure that as the EP rotates the lead, the lead body and helix rotate together.
- Limits the unintended retraction or deployment of the helix.