

# Safe and Stable Temporary Biventricular Pacing After Cardiac Reoperations

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## Technology description

### Problem or Unmet Need:

Millions of cardiac surgeries are performed worldwide each year, so there is high demand for safe and reliable technologies for post-surgical monitoring and regulation of the heart. After surgery, patients who face a high risk of ventricular dysfunction are implanted with temporary pacing leads. These leads may be used to attach a temporary pacemaker, which stabilizes the function of the heart and aids recovery. However, patients who have undergone multiple cardiac operations/procedures typically possess cardiac scar tissue, which makes it impossible to attach pacing leads directly to the surface of the heart. This technology outlines an alternative and reliable pacing method for high-risk patients.

### Details of the Invention:

This invention describes new equipment and an improved methodology for providing temporary post-surgical biventricular heart pacing. Patients are implanted with leads designed and approved for permanent pacing within the venous system of the heart through an implantation tube that is already present during surgery. Such leads are suitable for temporary pacing and can be removed after the crucial part of the recovery. The leads used during this procedure are highly flexible, uniform in diameter, variable in length, and fit inside a catheter. They contain a central channel with a stylet or narrow wire, which not only conforms to the curvature of the venous system but can also be withdrawn after proper positioning. To ease placement and minimize soft tissue damage, the leads are also modified with a soft tip that can be monitored optically. In its totality, this system enables safer pacing in patients undergoing repeat operations.

## Application area

This technology facilitates:

- Temporary cardiac pacing in high-risk patients after surgery
- Routine implantation of devices for permanent cardiac pacing
- Insertion of optical probes and monitoring devices into other organs

## Advantages

Relative to other pacing technologies, this invention affords:

- Cardiac pacing in patients undergoing repeat surgery
- Reduced cost due to adaptation of typical components utilized in permanent cardiac pacing
- Safer and more reliable implantation of pacemakers with minimal soft tissue perforation
- A high degree of modularity and flexibility in pacing device design for each individual

## Institution

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