What Implant Options Can Help With Heart Problems?

By ANNE CURTIS, M.D.
Tribune correspondent

When the first cardiac pacemaker was implanted in a patient almost 50 years ago, the battery was so large the patient had to push it down the hallway with a cart. Implantable devices have become much smaller and more efficient over time, performing functions not even imagined in the early years.

Pacemakers are small electronic devices typically implanted under the skin beneath the collarbone. They are attached to one or two insulated wires, or "leads," inserted into a vein near the shoulder that runs directly into the heart. Patients receive pacemakers because their hearts beat too slowly, which can cause symptoms such as fainting, dizziness, and exercise intolerance. A pacemaker works by monitoring the heart for electrical activity through the implanted leads and then delivering an electrical impulse to make the heart beat if no spontaneous beat occurs.

Another common cardiac device is an implantable cardioverter defibrillator. All ICDs are pacemakers, but a pacemaker does not have all the features of an ICD — a larger, more complicated device. In addition to supporting a patient’s heart rate if it is too slow, an ICD corrects abnormally fast heart rhythms that can cause cardiac arrest if not treated promptly. An ICD may be implanted because a patient has survived a potentially lethal arrhythmia or because he or she is at risk for sudden death from underlying heart disease. When a potentially fatal rhythm is detected, the ICD charges and delivers an electric shock to stop the dangerous rhythm and return the heartbeat to normal.

Also becoming increasingly common is a biventricular device, or cardiac resynchronization therapy. These implantable devices, available as pacemakers and defibrillators, help patients with dyssynchrony — uncoordinated contraction of the lower heart chambers that can contribute to heart failure symptoms. Electrical impulses are delivered through an extra lead on the left side of the heart as well as the standard right-sided lead, making the heart contract in sync and pump blood more efficiently. Biventricular devices can improve symptoms and quality of life in suitable patients who experience significant heart failure symptoms despite appropriate medications.

Whatever kind of device a patient receives, few lifestyle changes are required. Contact sports are not advised because of the risk of trauma to the area where the device is implanted, but other exercise is fine. The slight possibility of electromagnetic field interference is not a practical concern in most instances. For example, cell phone use is OK as long as the phone is not kept in a breast pocket on the same side where the cardiac device is. Microwave ovens are no problem. Airport security scanners won’t interfere with implantable devices as long as you don’t stand near them for long periods. On the other hand, some medical equipment, such as magnetic resonance imaging machines, should be avoided by patients with implantable devices unless absolutely necessary.

Implantable devices do not replace medication; rather, they are often used in addition to medication to treat a patient’s underlying medical condition. Sometimes patients with ICDs must take medication to prevent unnecessary shocks from benign fast heart rhythms that occasionally develop.

Implantable cardiac devices can help correct abnormal heartbeats, whether too fast, too slow or uncoordinated. A cardiologist or an electrophysiologist, a cardiologist specializing in heart rhythm disorders, can help determine whether your medical condition warrants an ICD and which type would be most appropriate.

Dr. Curtis is professor and director of cardiology at USF Health.