UH Ahuja Medical Center advances cardiology care by offering technological advancements

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University Hospitals Ahuja Medical Center (UH) is following the old adage of 'out with the old, in with the new.'

UH cardiologists, led by Dina Sparano, MD, recently completed their first ever implantation of a Subcutaneous Implantable Cardioverter Defibrillator (S-ICD).

The S-ICD system is a defibrillator that is implanted under the skin (subcutaneous). It provides an electric shock to the heart (defibrillation) for the treatment of an abnormally rapid heartbeat that originates from the lower chambers of the heart (ventricular tachyarrhythmias). The S-ICD System consists of:

- a titanium case containing a battery and electronic circuitry that provides defibrillation therapy and pacing at a rate of 50 beats per minute up to 30 seconds after a shock;
- a subcutaneous electrode which has a proximal and distal ring electrode on each side of a 3 inch (8 cm) defibrillation coil electrode;
- accessories including an electrode insertion tool, programmer, telemetry wand, magnet, suture sleeve, torque wrench, and memory card.

Since intravascular leads become tissue fibrosed in place over time, lead

revision and extraction procedures are challenging and not without risk. A system that does not require intracardiac leads may be appealing in other primary prevention settings. The S-ICD is a system without transvenous leads that provides defibrillation for patients at risk of sudden cardiac death due to ventricular tachyarrhythmias.

The S-ICD (pulse generator) is implanted under the skin on the side of the chest below the armpit. The pulse generator is connected to the electrode that is implanted under the skin from the device pocket along the rib margin to the breastbone with the use of the insertion tool.

The S-ICD monitors cardiac rhythms and delivers defibrillation when ventricular tachyarrhythmias are detected. After delivery of a shock, the S-ICD provides post-shock bradycardia pacing therapy when needed. The S-ICD is programmable as a single or dual zone device that allows the doctor to tailor the therapy for the patient.

"The unique aspect of the procedure isn't only the device and its advancements, rather that University Hospitals Ahuja Medical Center can offer a procedure that traditionally requires large institute support,"said Dr. Sparano, who is also a Clinical Assistant Professor of Medicine at Case Western Reserve University School of Medicine. "The regularity of cardiology advancements being adopted at Ahuja Medical Center is rapidly broadening."

In 2012, the Food and Drug Administration approved the first subcutaneous implantable cardioverter defibrillator.

Traditional ICD systems comprise the generator and one or more transvenous (through the veins) leads and have sensing, anti-bradycardia and anti-tachycardia pacing, and shocking capabilities. The need in some patients for a system that avoids the use of transvenous leads has been long recognized. Patients with underlying congenital or structural cardiac

abnormalities or with limited or difficult vascular access that precludes placement of transvenous leads require epicardial leads and patches.

Provided by University Hospitals Case Medical Center