

IMPLANTABLE CARDIOVERTER DEFIBRILLATOR IMPLANTATION AND INTRA-OPERATIVE TESTING

Patient: Lon Chaney
 Hospital ID #: 831335
 Encounter #: 4617649
 Date of procedure: 3/11/2003
 Location of procedure: Electrophysiology Laboratory #2
 Referring physician #1: Ronald Doe5, MD
 Referring physician #2: None
 Implanting electrophysiologist or surgeon: Arthur Green, MD
 Assisting/testing electrophysiologist: None
 Electrophysiology fellow #1: None
 Electrophysiology fellow #2: None
 Indication: Syncope
 Surgical approach: Left pectoral
 ASA Class: IV
 Antiarrhythmic drugs: metoprolol

METHODS

Implantation

The patient was brought to the Cardiac Electrophysiology Laboratory in the post-absorptive state. An intravenous line was established. R2 pads for defibrillation were placed in an antero-posterior configuration. Surface electrocardiographic electrodes were attached to the patient in standard positions. Blood pressure monitoring was performed using an automatic cuff. An intra-arterial catheter. The patient's electrocardiogram, blood pressure, pulse oximetry, and exhaled CO₂ were monitored throughout the procedure. Anesthesia was administered by the anesthesiologists. Local anesthesia was achieved with 0.25% Marcaine subcutaneously. The left pectoral surgical site was prepped using Betadine and draped in a sterile manner. An approximately 5 cm incision was made at the surgical site. This incision was carried down through the subcutaneous tissue to the premuscular fascia using sharp and blunt dissection and electrocautery.

A pocket was created for the ICD generator using blunt dissection. The patient was placed in Trendelenberg position, and additional local anesthesia was administered as necessary. For each lead (total of 1 lead(s)) venous access using a 18 gauge thin-walled needle and insertion of a guide-wire and tear-away sheath was performed as indicated in the table below. The position of each inserted guidewire in the right atrium was confirmed fluoroscopically before each tear-away sheath was inserted. Each lead was inserted through its sheath and the sheath was then torn away.

Lead	Sheath Size (French)	Vessel
Atrial		
Ventricular	10	
Other		

With the use of curved and straight stylets under fluoroscopic guidance, each lead was positioned as detailed below (see *Devices/Leads* table). Each lead was tested with a pacing system analyzer. Each lead was anchored in the subcutaneous tissue with multiple 2-0 silk sutures. Each lead was inserted into the ICD header and the set screws were tightened. The system was then tested as described below. After checking the pocket for hemostasis and flushing the pocket with copious amounts of antibiotic solution, the pocket was closed, as detailed in the table below.

Layer	Closure	Suture
Pocket	Continuous locking	2-0 Dexon
Subcutaneous	Continuous non-locking	2-0 Dexon
Skin	Subcuticular	4-0 Dexon

Steri-strips were applied to the incision and the wound was dressed with a sterile pressure dressing. The patient tolerated the procedure well and left the laboratory in stable condition.

Testing

Device-based ICD testing was performed. Measurements included evaluation of sensing and pacing parameters and defibrillation testing of induced ventricular fibrillation. Methods to induce ventricular fibrillation and/or ventricular tachycardia included: burst pacing. DFT determination was performed using the 2S method. Arrhythmia detection was confirmed at nominal sensitivity. Arrhythmia detection was also confirmed at the minimum sensitivity setting of the ICD.

The attending electrophysiologist was present for the entire procedure.

Complications: None

Procedure Times: Total: 170 min; Cut: 75 min; Fluoroscopy: 3.2 min

EBL (cc): 10

Drugs Administered

Drug	Route	Dose
see anesthesia report		

RESULTS

Devices and Leads

Model/Brand/Name	Use	SN	Status	Implant Date	Explant Date	Location
7230Cx Medtronic Medtronic Marquis VR	I	PKD101354H	F	3/11/2003		L pectoral
6947-65 Medtronic Sprint Quattro Secure	I	TDG045816V	F	3/11/2003		RV

Use=I(ICD), P(Pacemaker), M(Event Monitor), U(Unknown), Status=F(Functional), E(Explanted), C(Capped)

Measurements

PSA Testing

Leads

Measurement	Ventricular Lead	Atrial Lead	Other Lead Site:
Amplitude (mV)	11.6		
Impedance (Ohms)	748		
Voltage pacing threshold (V)	1.0		
Current pacing threshold (mA)	1.7		
Pulse width pacing threshold (ms)	0.5		

Device Testing

Battery and Capacitor

Battery voltage (V): 3.11

Charge time to full charge (s): 7.56

Leads

Measurement	Ventricular Lead	Atrial Lead	Other Lead Site:	Shocking Lead
Amplitude (mV)	6.6			
Impedance (Ohms)	632			
Voltage pacing threshold (V)	1.0			
Pulse width pacing threshold (ms)	0.4			
DFT energy (J)				</= 12
DFT voltage (V)				

Final Programmed Settings

ICD Configuration

ICD mode (on, off, monitor): On

Number of therapy zones: 2

Detection and Therapy

Measurement	VF Zone	VT Zone	Third Zone
Detection CL (ms)	320	360	
Detection rate	188	167	
ATP on	NA	No	No
ATP number of bursts	NA		
Initial shock energy (J)	22	15	
Initial shock voltage (V)			

Special Detection

Dual chamber detection: Off

EGM morphology discrimination: Off

Sudden onset: Off

Rate stability: Off

Shocking Lead

Pulse width (ms):

Polarity: DISTAL NEGATIVE

Bradycardia Pacing

Pacing mode: VVI

Lower rate: 40

Upper rate:

PAV (ms):

SAV (ms):

Measurement	Ventricular Lead	Atrial Lead	Other Lead Site:
Output volts (V)	5.0		
Output pulse width (ms)	0.5		
Sensitivity (mV)	0.3		

Summary: Normal ICD function.

Detailed Results:

Two successful defibrillation shocks for VF at 15J and then 12J.

Next ICD Clinic Appointment: 6/23/2003

Cardiac Electrophysiology Fellow

Arthur Green, MD

Associate Professor of Medicine

Date Signed:

Date Typed: 1/16/2005 8:17:37 PM

CC:

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