

Case Report

PATIENT HISTORY

- 65 Year old male
- Ischemic Cardiomyopathy, LBBB, NYHA class III
- LV Dysfunction on Echo, LVEF< 35
- Previous out-of-hospital VF arrest

IMPLANT DATA

Date of procedure: Tuesday, 29th June 2010

Products: SJM Promote Quadra™ CRT-D, SJM Optisense™ atrial Lead, SJM Durata™ Q
Defibrillation lead, SJM Quartet™ LV lead, SJM Nemo™ PSA

RV Lead position: RV Apex

LV lead Position: Antero-Lateral vein

Procedure Time: 84mins

Cardiologist: Dr Niall Mahon, Consultant Cardiologist and Heart Failure Specialist

IMPLANT EXPERIENCE

- Fluoroscopic angiography revealed a single antero-lateral target vein with an average sized lumen. There was also a 2nd choice posterior vein which was anatomically more difficult to access.
- With a PT-ChoiceTM PTCA guidewire, and a St Jude Medical QuartetTM 4.7F lead a mechanically stable lead position was obtained in the target vein. There was good anatomical and electrical separation between LV and RV leads. See Fig 1.
- Electrical measurements were obtained using the NemoTM PSA system. The lead impedance was 460 ohms. A pacing threshold test was performed using the nominal LV pulse configuration of D1-M2. However, this resulted in an unacceptably high threshold of 3.6 volts and Phrenic Nerve Stimulation (PNS) at 4 volts. Fig 2 illustrates the multi-vector pacing options available with the QuartetTM lead.
- The lead position appeared to be optimal, and there was good lead stability. Therefore, LV Thresholds were tested in different LV pulse configurations as shown in Table 1.

Table 1: Vectors tested during implant on Quadripolar LV lead

Pacing Vector	Cathode	Anode	Threshold (V) @ 0.5ms	PNS @ 5V
Distal 1 – Mid 2	D1	M2	3.0	Yes
Distal 1 – RV coil	D1	RV coil	2.2	Yes
Mid 2 – Proximal 4	M2	P4	3.0	Yes
Mid 2 – RV coil	M2	RV coil	1.3	Yes
Mid 3 – Mid 2	M3	M2	1.8	Yes
Mid 3 – Proximal 4	M3	P4	2.3	Yes
P4 – RV coil	P4	RV coil	1.0	No

N.B. The remaining vectors were tested after implant

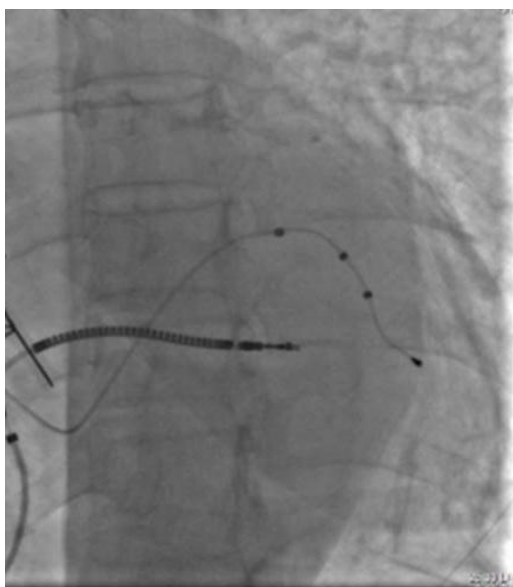


Fig: 1 X Ray showing Quartet Lead placement

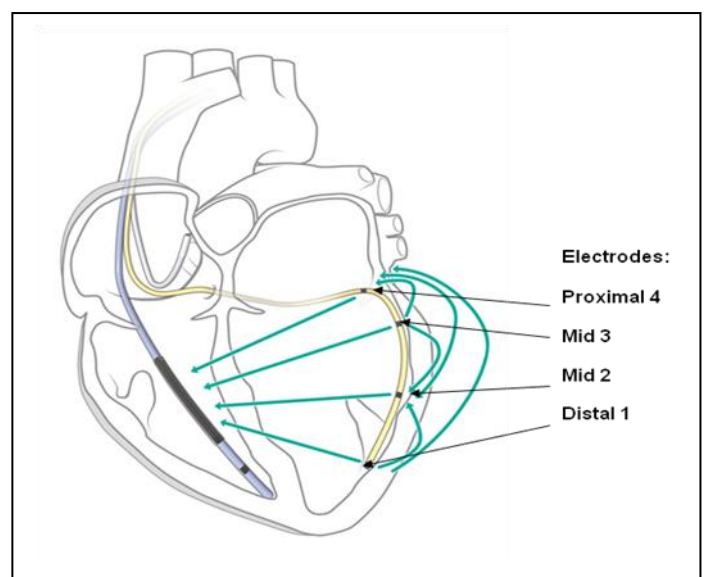


Fig 2: Multi-vector pacing options on Quartet™ LV

OUTCOME

The LV threshold was tested post implant via all 10 vectors with the final programmed LV vector remaining at Proximal 4 – RV Coil. This procedure was a success, and the patient was discharged the following day. 100% Biventricular pacing was achieved post implant using the QuickOpt™ algorithm.

CONCLUSION

The Quartet™ lead tracked the guide wire with little resistance into the target vein to an optimal position. Electrical Testing at this position revealed PNS in the traditional bipolar configuration amongst others. The Quartet™ quadripolar LV lead in this patient allowed the physician to optimise the LV pulse configuration to eliminate PNS, without having to compromise on lead position. The implant was a success due to the extra LV pacing configurations offered by the Quartet™ lead and the high energy output delivered by the Promote Quadra™ CRT-D.

“Quote from Dr Mahon”

“The most significant clinical complication in this particular case was PNS. The Quartet™ lead from St Jude Medical with its 10 multivector pacing options allowed me to overcome this problem without compromising on position or stability”

Dr Mahon received no gratuity for implanting this device or contributing to the study.