REAL WORLD PERFORMANCE OF QUADRIPOLE COMPARED TO BIPOLAR LEFT VENTRICULAR PACING LEADS

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Introduction: When implanting a cardiac resynchronization therapy (CRT) device, the use of a quadripolar (QuadP) left ventricular (LV) lead allows for 10 different pacing configurations over a greater length of the pacing lead. This has the potential to allow for programming around phrenic nerve stimulation and for the lead to be positioned more distally in a target vein for greater stability. A few small studies have suggested that QuadP leads may perform better than bipolar (BiP) leads in the postoperative period. However, whether QuadP leads perform better over the medium term is yet to be convincingly established.

Methods: During a 36-month period, 397 consecutive patients referred to the Oxford Heart Centre for CRT implantation were enrolled in a registry. The performance of QuadP (n = 75) compared to BiP LV leads (n = 322) were compared in terms of complications over at least 6 months of follow-up. Data is presented as mean ± standard error of the mean, and either an unpaired t-test or Fisher’s exact test used to establish statistical significance (p < 0.05).

Results: Patients receiving a QuadP lead were slightly younger on average than those receiving a BiP lead (68 ± 1 vs. 73 ± 1 year old, p < 0.001) but patient characteristics were otherwise similar. Successful LV lead implantation was achieved in 97% and 93% of cases respectively (p = ns) and fluoroscopy times were similar between both groups (25.5 ± 1.7 vs. 25.6 ± 1.0 mins). During follow-up, phrenic nerve stimulation (PNS) occurred in a similar proportion of patients (9.6 vs. 8.2%), however PNS was programmed around in all cases in the QuadP group compared to only 32% of cases of PNS in the BiP group (p < 0.01). LV lead displacement occurred less often in the QuadP group (1.4% vs. 5.3%, p = 0.2) and the requirement for surgical reintervention on the LV lead was also less (1.4% vs. 5.9%; p = 0.14).

Conclusions: In this single center, real world registry the use of QuadP LV leads enabled all PNS to be programmed around and there was a trend for less LV lead displacement and surgical reintervention on the LV lead. This has important implications for LV pacing lead choice.