**OP64-5**  Left Ventricular Pacing with Long Pulse Duration Can Avoid Phrenic Nerve Stimulation

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**Background:** One of the major limitations of left ventricular pacing is phrenic nerve stimulation. We evaluated the characteristics of the strength-duration curves of the left phrenic nerve (PN) and epicardium of the left ventricle (LV).

**Methods:** A total of 12 mongrel dogs were studied. Capture threshold was assessed during pacing with 180 bpm and various pulse durations (0.25-2.0 ms) in an open chest model. A commercially available LV lead was inserted through a small hole created in the pericardium. The tip electrode position was maintained at the course of the left PN with gentle manual pressure under visual inspection. The LV threshold was evaluated at the epicardium just below the PN.

**Results:** The strength-duration curve of the PN had a higher rheobase and shorter chronaxie than that of the LV. The LV threshold was higher than that of the PN at pulse duration >1.0 ms in bipolar pacing, but significantly lower than that of the PN at a pulse duration of 2.0 ms, especially during unipolar pacing (1.3±0.21 vs. 2.0±0.56 V, LV vs. PN, p=0.012).

**Conclusion:** LV pacing without PN stimulation could be achieved in pacing with long pulse duration. The longer pulse duration option can be considered in the development of devices for LV pacing such as cardiac resynchronization therapy.

**Keywords:** phrenic nerve, cardiac resynchronization therapy, pacemaker