Does System Modification “Really” Modify Survival in Patients With High Defibrillation Threshold? Probably Not

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**Abstract**

**Introduction:** Defibrillation threshold (DFT) testing is a routine part of implantable cardiac defibrillator (ICD) placement at most centers. If a patient is found to have a high DFT, many physicians perform system modification by adding subcutaneous or transvenous shocking coil to the ICD in an attempt to lower DFT. It is not clear how patients with system modification fare compared to patients without such modification.

**Hypothesis:** System modification should have an effect of reducing mortality in patients high DFT when compared with those who don’t undergo it.

**Methods:** We retrospectively reviewed demographic and procedural data from 6520 patients who underwent ICD implant at the Cleveland Clinic, between August 1996 and November 2010. The Social Security Death Index was queried to obtain mortality data. High DFT was defined as DFT greater than 25 joules. Among patients with high DFT, survival was compared between those who underwent system modification versus those who did not, using the log-rank test.

**Results:** 191 patients had a high DFT (mean DFT 30.6+/- 3.4J). The types of ICDs were single chamber 64 (33.5%); dual chamber 72 (37.7%) and cardiac resynchronization or CRT-D 55 (28.8%). 120 patients underwent a system modification (mean DFT after modification was 24.3+/- 5.6J). The commonest system modification was subcutaneous coil (70 patients; Medtronic 6996SQ-58). Median follow-up was 1788 days. Kaplan-Meier survival curves of these two groups exhibited no significant difference in mortality between patients with and without system modification (Mantel-Cox Log-rank, p = 0.731).

**Conclusions:** Patients with high DFT at ICD implant managed by system modification have mortality similar to patients without it. This questions the practice of system modification & calls for further analysis.

