Does Ablation in S-ICD Patients with Monomorphic Ventricular Tachycardia Prevent Shocks?

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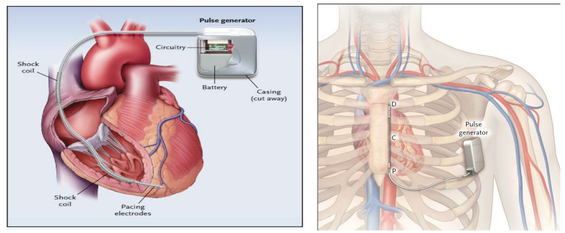
Introduction

- Ventricular tachyarrhythmias are managed with anti-arrhythmic medications, defibrillators, pacing and catheter ablation.
- An entirely subcutaneous defibrillator (S-ICD) is limited currently by its lack of anti-tachycardia pacing (ATP) capability for monomorphic ventricular tachycardia (MVT). Though its efficacy is proven as beneficial when compared to defibrillators that allow for ATP (1).
- Catheter ablation (CA) in S-ICD patients then seems the most logical management option when recurrent or suspected MVT is encountered.
- **We evaluated the safety and efficacy of CA in managing patients and the incidence of shocks from an S-ICD due to MVT.**

Figure 1: ICD Implant Techniques



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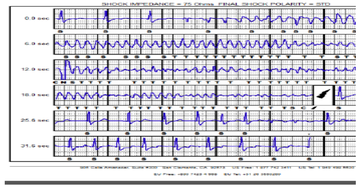
References

1. Knops, Reinoud E., et al. "Subcutaneous or Transvenous Defibrillator Therapy." *New England Journal of Medicine*, vol. 383, no. 6, 2020, pp. 526–536., doi:10.1056/nejmoa1915932.

Methods

111 patients (pts) with S-ICD (82% male; 50% ischemic; implanted between 2009 to 2019) were evaluated (mean follow-up 4 years +/- 2). Pts were divided into two groups: 1) Shock group (26 (23%) unique pts; 2) non-shock group (85 (77%) unique pts. The shock group was assessed for both appropriate and inappropriate shocks. The non-shock group was followed as a contemporary control over time.

Figure 2: MVT to Ventricular fibrillation shock from S-ICD



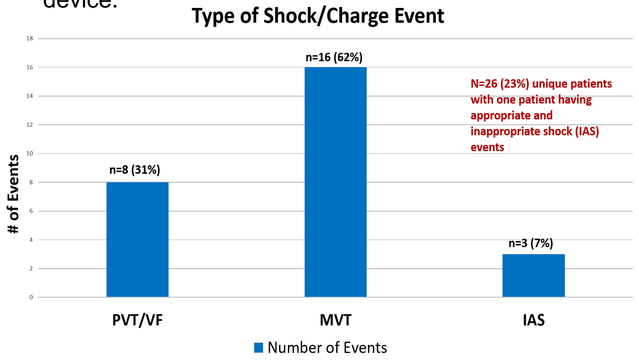
Intervention endpoints were shocks, anti-arrhythmic drugs, ablation, S-ICD reprogramming/revision, and replacement with a transvenous ICD. Type of VT, Incidence of shocks, and mortality pre and post ablation was analyzed.

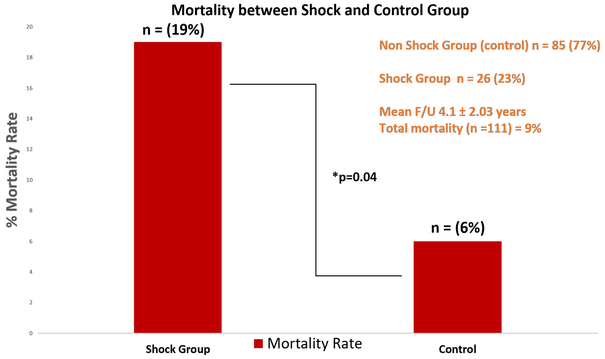
VT ABLATION METHODS

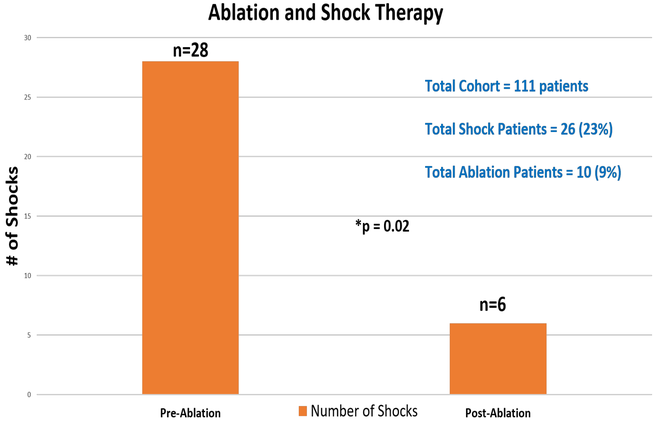
Mapping in VT and sinus rhythm was performed in 10 patients with recurrent MVT. All 10 patients had ablation targeted to the earliest activation when able in either or both ventricles, while mostly targeting the mural scar (**Figure 3**).

Results

Of the 26 patients shocked, 16 (62%) with monomorphic VT (130-250 bpm); 8 (31%) with ventricular fibrillation or polymorphic VT; and, 3 (7%) with inappropriate shocks for cardiac (2) or non-cardiac oversensing (1). In the MVT pts, 10 had ablation; 5 anti-arrhythmic therapy; 16 remained on beta blocker; 2 a negative Electrophysiology study; 4 selected monitoring and 0 had the S-ICD replaced with a transvenous device.







Conclusions

Radiofrequency catheter ablation significantly reduces shocks for monomorphic VT in patients with an S-ICD. Preventing or having no shocks has a significant impact on mortality. The overall mortality rate for this small S-ICD cohort is low. Ablation as a shock-preventing management in high-risk defibrillator patients may impact survival but needs more prospective evaluation.

Conflicts/Acknowledgments

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