

One year follow-up and toxicity review in a series of 6 patients receiving stereotactic arrhythmia radioablation for ventricular tachycardia



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Introduction and Purpose

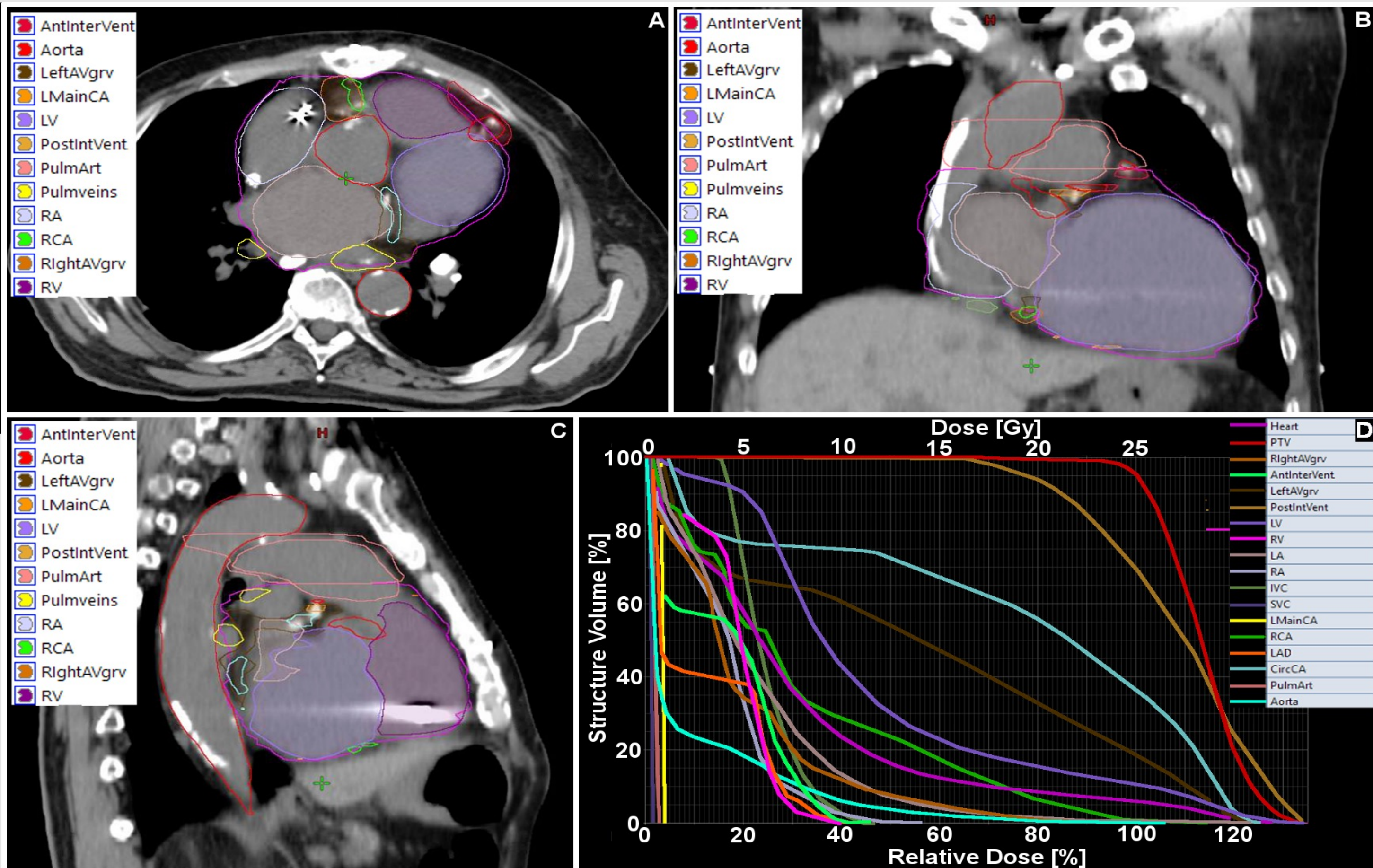
- Ventricular tachycardia (VT) is characterized by electrical re-entry within patches of heterogeneous myocardial fibrosis leading to sustained consecutive ventricular beats at a rate > 100 per minute.
- Catheter ablation is the standard of care adjunctive therapy for patients who are refractory to medical therapy to destroy the pathways responsible for these arrhythmias.
- We describe our experience with 6 patients treated with this technique in our institution along with acute and chronic complications at 1 year post-treatment.

Materials and Methods

- 6 patients treated between 2019 and 2022 with refractory VT with 25 Gy in 1fraction to an arrhythmogenic scar.
- Cardiac microstructure contouring was done following the atlas by Duane et al. 2017 [2].
- Implantable cardioverter defibrillator (ICD) interrogation was performed regularly to assess VT and ICD events.
- Radiation toxicity was evaluated using CTCAE v5.0, CT chest done at 3 months

Results

- The median follow-up time for the 6 evaluated patients is 24 months.
- Three patients (50%) remained VT free during the one year period post SBRT. Two of these patient remain VT free and are either on reduced or discontinued anti-arrhythmic drugs, while another failed at 24 months in an area of the arrhythmogenic substrate that was intentionally not irradiated due to safety concerns.
- Among those that failed, the median time to failure was 4 months (range 3-5 months).
- All 6 patients tolerated treatment with no immediate acute side effects.
- Three (50%) of patients had no acute clinical or radiographic side effects.
- Grade 1 esophagitis, grade 1 fatigue, and grade 1 cough was reported in 1 (17%) patient each (all different patients), and 1 patient required hospitalization 4 months after SBRT for a heart failure exacerbation (potentially SBRT related).
- One patient (17%) died within 3 months following treatment but their death was not attributed to radiation treatment. No cardiac microstructure toxicity has been reported to date.

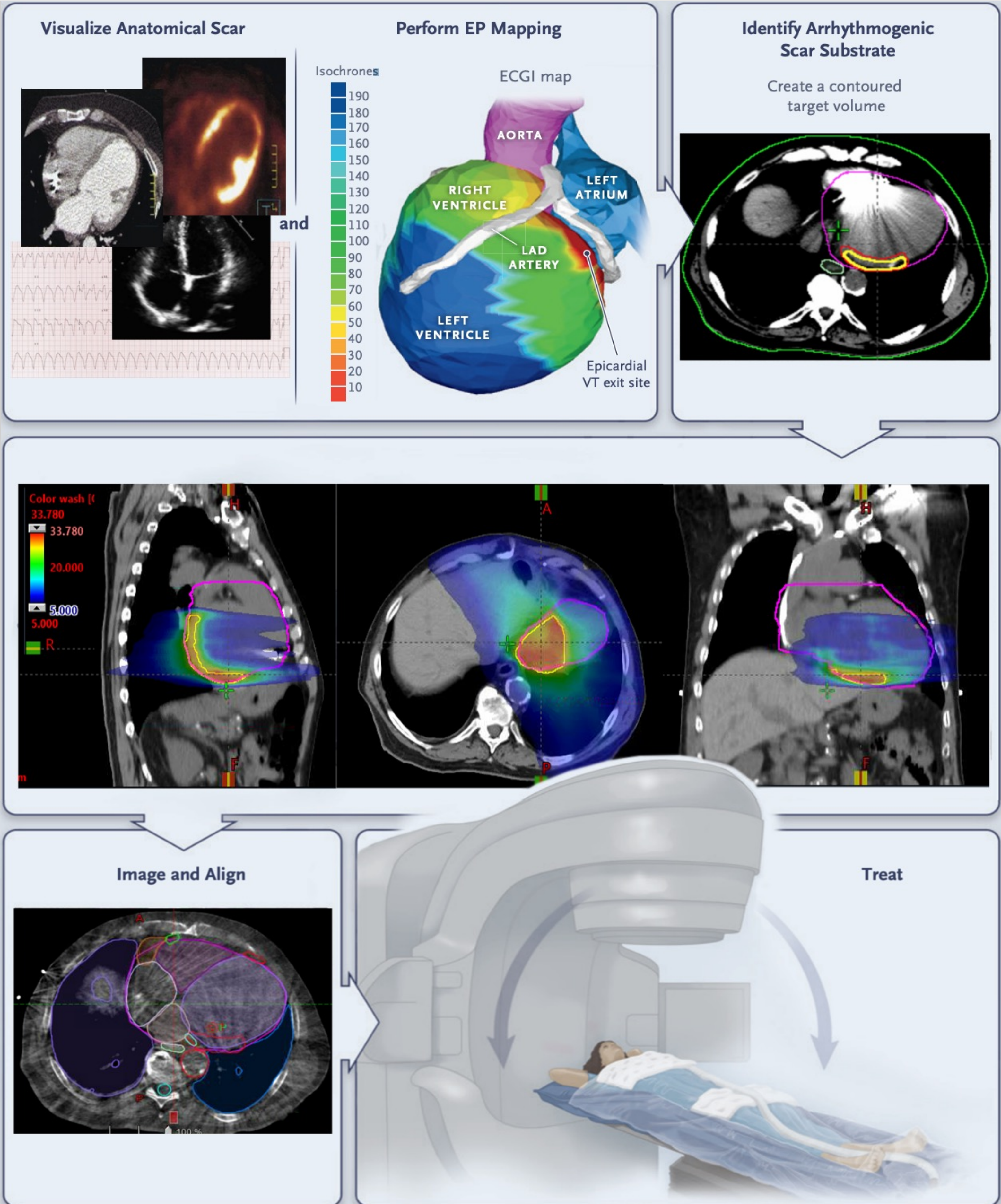


Conclusions and Future Work

- Current limited evidence suggests that this technique may be a relatively safe approach that provides an acute reduction in VT burden for those that have run out of conventional treatment options.
- Future work is focused on prospective clinical evaluation of safety and efficacy of this treatment and continued evaluation of short and long term side effects on cardiac substructures

References

- [1] Cuculich N Engl J Med 2017; 377:2325-2336 DOI: 10.1056/NEJMoa1613773
- [2] Duane, Frances, et al. Radiotherapy and Oncology 122.3 (2017): 416-422.



Adapted from [1]