



Introduction

Catheter ablation has **variable efficacy** for **idiopathic ventricular arrhythmias**¹

Ventricular arrhythmias arising from the **left ventricular (LV) summit** are challenging to ablate with catheter ablation due to the presence of substantial **epicardial fat** and its proximity to the **coronary arteries**.^{2,3}

We report our experience with **surgical epicardial ablation** to assist with management of **ventricular arrhythmias**.

Methods

- Retrospective, single-center study of **5 patients** who underwent **surgical epicardial ablation** of ventricular arrhythmias.
- Surgical approaches used include **sternotomy**, **subxiphoid approach**, and **thoracoscopic approach**.
- Ablation performed in **isolation** and during **concomitant** cardiac surgery.

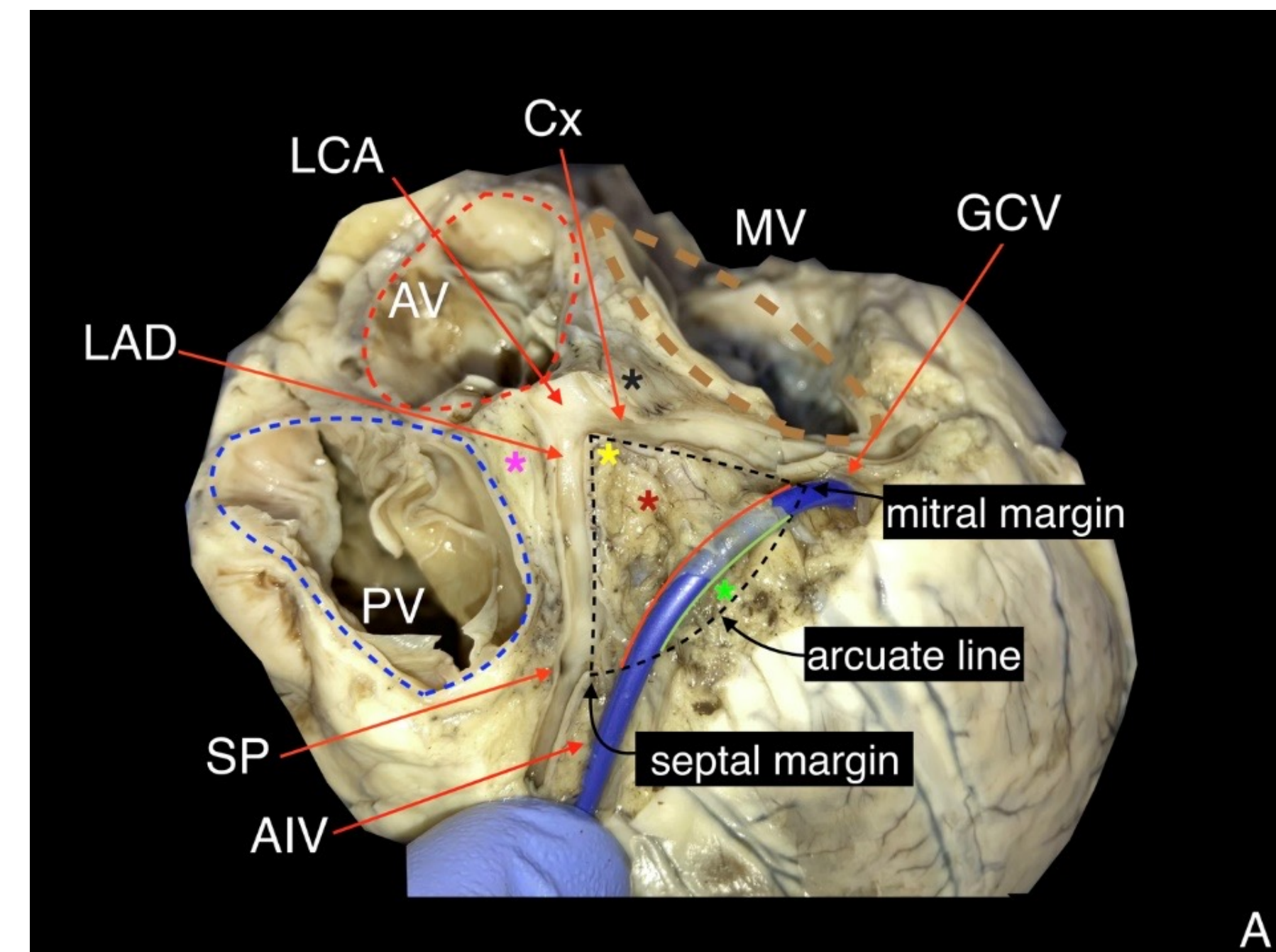
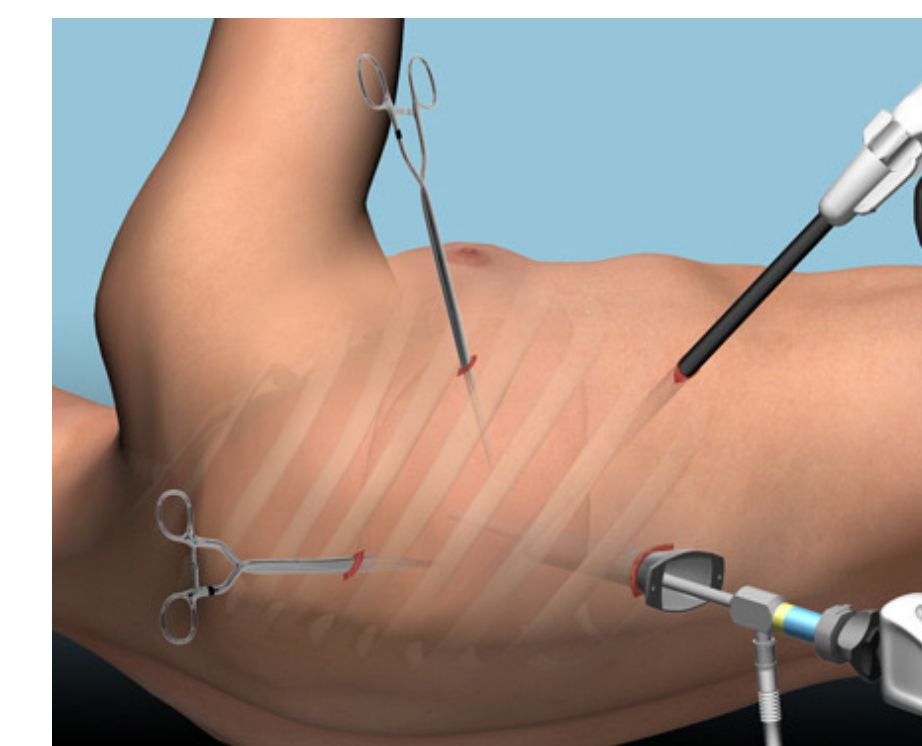
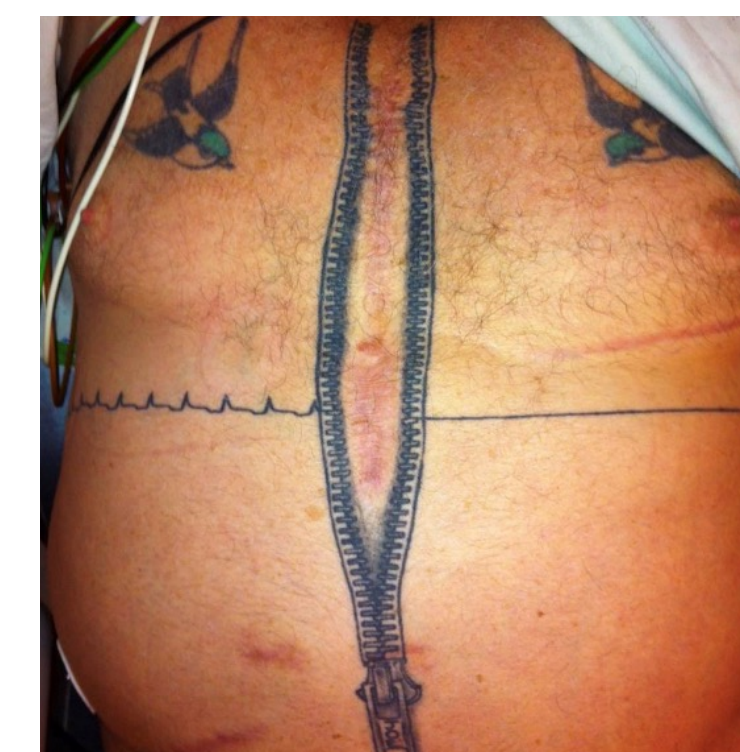
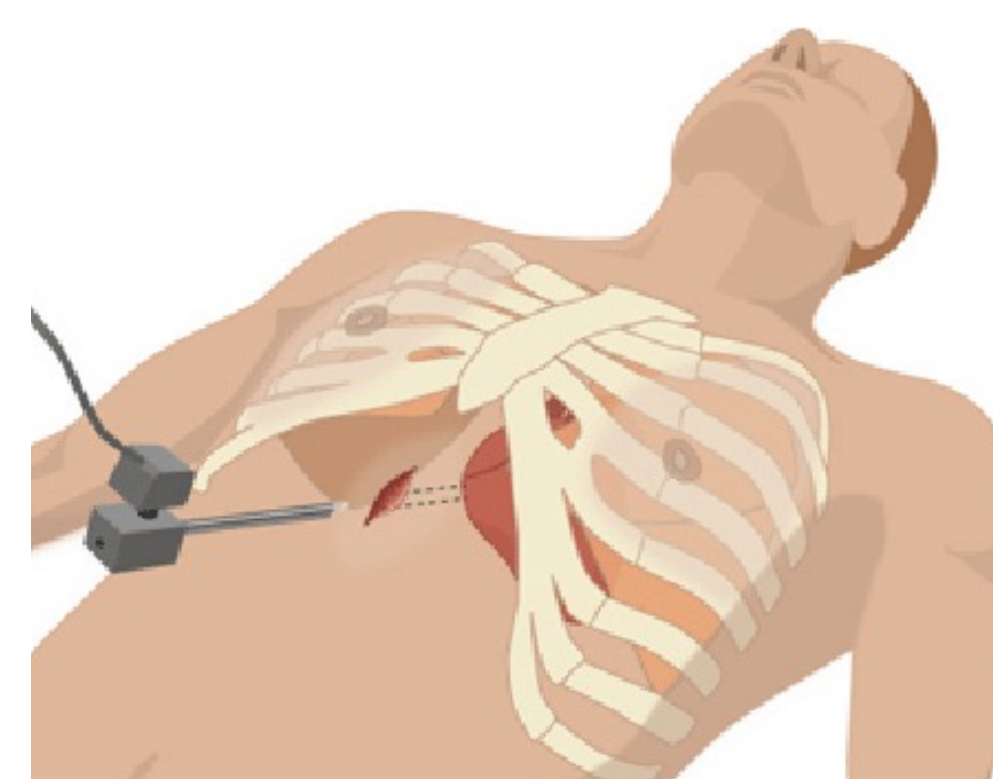


Figure 1. Left ventricular summit.

Surgical access for ventricular arrhythmia ablation can include:

- Sternotomy**
- Subxiphoid Incision**
- Thoracoscopic Approach**



Results

Cases

- Sternotomy**
 - 53-year-old male
 - History of non-ischemic cardiomyopathy and drug-refractory monomorphic VT originating from **LV summit**
 - Prior unsuccessful endocardial cryoablation
 - Underwent epicardial cryoablation via **sternotomy** with **cardiopulmonary bypass**
 - Follow-Up: **One episode** of brief, non-sustained VT on ICD during **2-year follow-up** period
 - 58-year-old male
 - History of ischemic cardiomyopathy, multiple sclerosis, hypertension, diabetes, chronic kidney disease, VT
 - Sympathectomy** for VT one month prior to surgical ablation
 - Underwent **concomitant LVAD implantation** and **surgical endocardial cryoablation** (Figure 2)
 - Follow-Up: **Immediate post-ablation course without ventricular arrhythmia**
- Subxiphoid Incision**
 - 56-year-old female
 - History of **premature ventricular contractions** (PVCs) and **non-ischemic cardiomyopathy**
 - Two prior endocardial ablations** with recurrence of frequent, symptomatic PVCs
 - Underwent hybrid ablation via **subxiphoid approach** (Figure 3)
 - Follow-Up: **Continued palpitations**, required **repeat endocardial ablation**, further follow-up pending
- Thoracoscopic Approach**
 - 35-year-old female
 - History of **non-ischemic drug-refractory PVCs**, hypertension, obesity
 - Mapping shows origin in **LV summit**, **prior endocardial ablation aborted** due to location near coronaries
 - Hybrid **thoracoscopic technique** to allow for simultaneous **mapping during epicardial ablation**
 - Returned with **PVC burden 24%** and underwent **repeat endocardial ablation**
 - Follow-Up: **Low PVC burden** (2 in 48 hours) and **no palpitations** through **1.5 years post-ablation**
 - 69-year-old male
 - History of **ischemic cardiomyopathy** and **monomorphic ventricular tachycardia** encircling **scar tissue** from prior **MI**
 - Prior endocardial ablation** attempted
 - Underwent hybrid **thoracoscopic ablation**
 - Follow-Up: **Two shocks for VT within three days** then **no further episodes of VT** during **one-month** follow-up

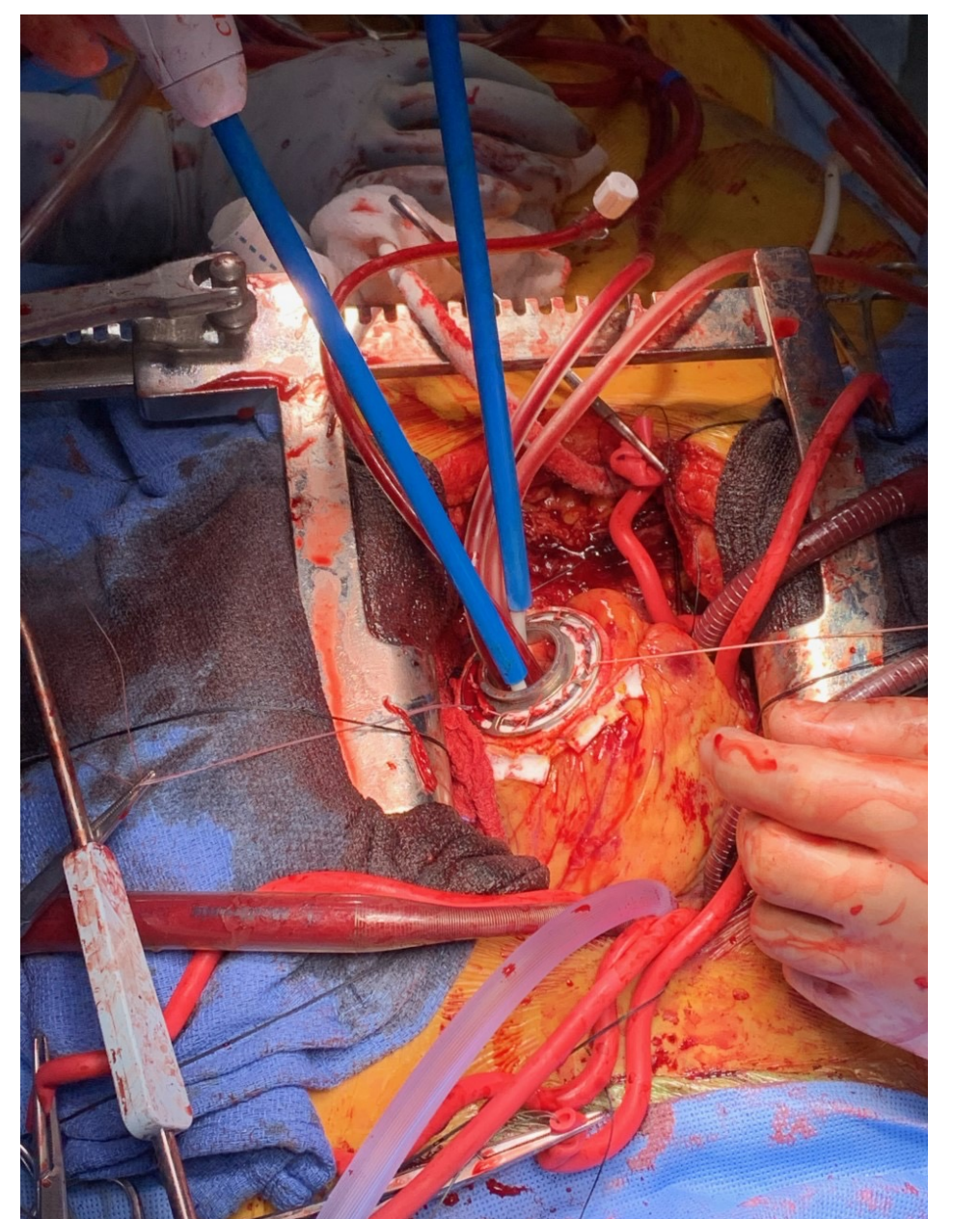


Figure 2. Surgical endocardial ablation during concomitant LVAD implantation.

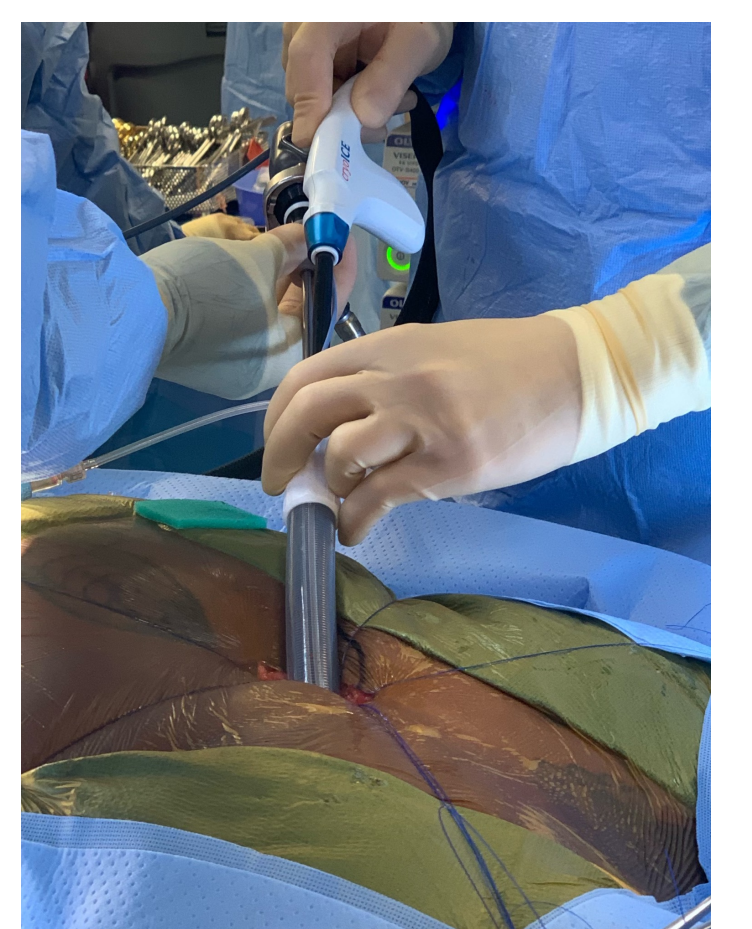


Figure 3. Subxiphoid approach for surgical ablation.

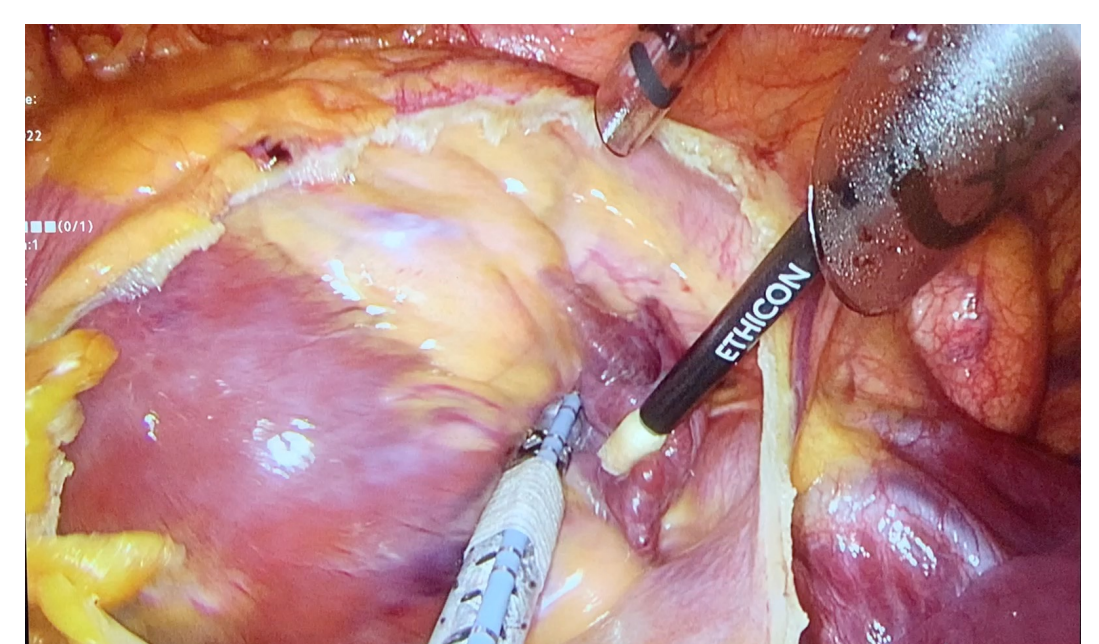


Figure 4. Thoracoscopic approach.

Surgical involvement in management of ventricular arrhythmias can include sternotomy, a subxiphoid approach, or a thoracoscopic approach, and is particularly helpful for arrhythmias that originate in the left ventricular summit, as the summit is particularly challenging to ablate with catheter ablation