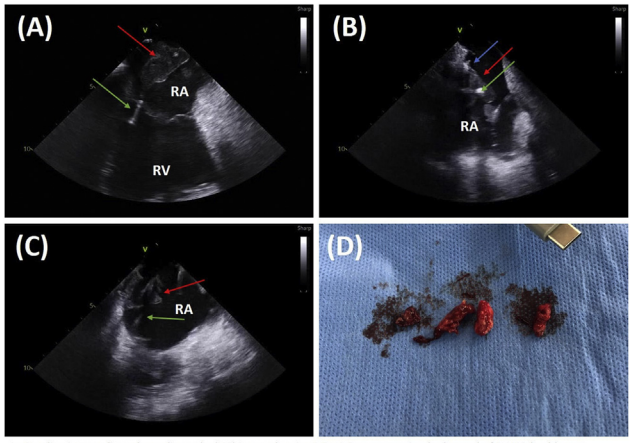
**Results:** 5 patients (2 AV-ICD, 1 VVI-ICD, 1 AV-PPM, 1 CRT-D) were identified. Pathogens were MSSA (3), MRSA (1), and Morganella Morganii (1). The CAT8™ (n=2) and CAT12™ (n=3) catheters, directed through either a Medtronic FlexCath™ (n=4) or Abbott Agilis™ (n=1), were used for debulking. Mean vegetation size was 3.02 cm (2.6 - 3.5 cm) with successful debulking in 5/5 cases (size $<$ 2 cm). TLE was successful with complete removal of all leads. 30-day adverse events included death (1, sepsis complications) and venous thrombosis (1). No embolic complications were observed.
**Conclusion:** The Penumbra Indigo™ aspiration system can be used to debulk large CIED associated vegetations and facilitate safe TLE.

Use of Penumbra System and CAT12 12FR Catheter to Debulk Large Vegetation Prior to Transvenous Lead Extraction




A - Baseline intracardiac echocardiography (ICE) image showing 3.5 x 2.5 cm vegetation (red arrow) of RV ICD lead (green arrow); B – Penumbra CAT12 catheter (blue arrow) engaging vegetation (red arrow) on ICD lead (green arrow); C – Post-debulking imaging showing significant reduction in vegetation size with small multilobular components < 1.5 cm in maximal dimension; D – Vegetation material aspirated (RA – Right Atrium, RV – Right Ventricle)

## B-AB02-02

### OUTCOMES OF CORONARY SINUS TEAR DURING EXTRACTION OF ACTIVE FIXATION CORONARY SINUS LEADS

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**Background:** Active fixation coronary sinus (CS) leads provide additional support within the CS via deployable lobes or a side helix. However, adherence to the CS may lead to higher risk of extraction and CS tear during extraction. There is limited data on outcomes of CS tear during active fixation lead extraction.
**Objective:** To assess outcomes of cardiovascular injury events and CS tear during extraction of active fixation CS leads.
**Methods:** We searched the US Food and Drug Administration's (FDA) Manufacturers and User Defined Experience (MAUDE) database from 8/15/2008 to 8/01/2020 for adverse events of injury or death involving the Attain StarFix lead and Attain Stability lead. Events were reviewed by 2 physicians to identify instances of cardiovascular injury during extraction.
**Results:** There were 25 cases of cardiovascular injury events during extraction of active fixation CS leads and all involved the Starfix lead. In 96% of cases (24/25), there was CS tear. These patients developed hypotension, pericardial effusion, or cardiac tamponade after extraction of the StarFix lead. Overall, 84% of patients (21/24) required emergency sternotomy, while 12% of patients (3/24) were successfully treated with pericardial drainage alone. Among patients who required emergency sternotomy, CS tear was successfully repaired in 86% of patients (18/21). The remaining 14% of patients (3/21) died during the surgical rescue attempt. Among the patients whom the CS was successfully repaired, 83% of patients (15/18) survived till hospital discharge. In the remaining patients, one had consumptive coagulopathy and died 45 minutes after the rescue attempt, one died at post-op day 2, and one died at post-op day 11.
**Conclusion:** These findings suggest that CS tear during StarFx lead extraction often requires emergent sternotomy and repair of the CS tear. Skilled standby cardiothoracic surgery is essential when performing lead extraction of a Starfix lead. Extraction of this lead should only be attempted by highly qualified physicians in specialized centers.

## B-AB02-03

### INTRACARDIAC ECHOCARDIOGRAPHY DURING TRANSVENOUS LEAD EXTRACTION TO AVOID INJURY TO THE TRICUSPID VALVE

*Neil Shah MD and Robert D. Schaller DO, FHRS*

**Background:** Minimal data exist regarding tricuspid valve (TV) damage during transvenous lead extraction (TLE). Most studies have been performed with transesophageal echocardiography.
**Objective:** Assess incidence of TV injury during TLE with intracardiac echocardiography (ICE) and determine if ICE can change procedural strategy.
**Methods:** Single center, prospective analysis of consecutive patients undergoing TLE of right ventricular (RV) leads. TR assessed pre/post with ICE using a mild/moderate/severe/torrential grading system.
**Results:** 71 patients (mean age 59.4±14.8, 66% male) included. Average of 1.04 leads (68.9% ICD) removed with average lead dwell time of 106.7±69.9 months. Thrombi/vegetations seen ≥1 lead in 45 (63%) cases. Dense adhesions noted in 21 (28%) patients including RV(11), TV(5), RV papillary muscle(3) Eustachian ridge(1), and superior vena cava(1). Procedural strategy changed in 13/21 cases including ICE monitoring of bound segment during TLE to avoid avulsion(7), upsizing sheath(2), snaring from below(1) and aborting the procedure(3). TR grade changed in 2 cases (mild to moderate and moderate to severe). There were two TV injuries. First was a partial flail leaflet after removal with gentle traction (no change to baseline torrential TR). Second was a flail leaflet (increase from moderate to severe TR) in a patient with clear adhesion to the papillary muscle despite advancing sheath to lead tip. Thirty-two percent had lead casts in the RV or within the TV after TLE.
**Conclusion:** Significant increase in TR is rare during TLE with an incidence of 2.8% in our series. ICE changed management in a significant number of patients possibly decreasing risk of complication.