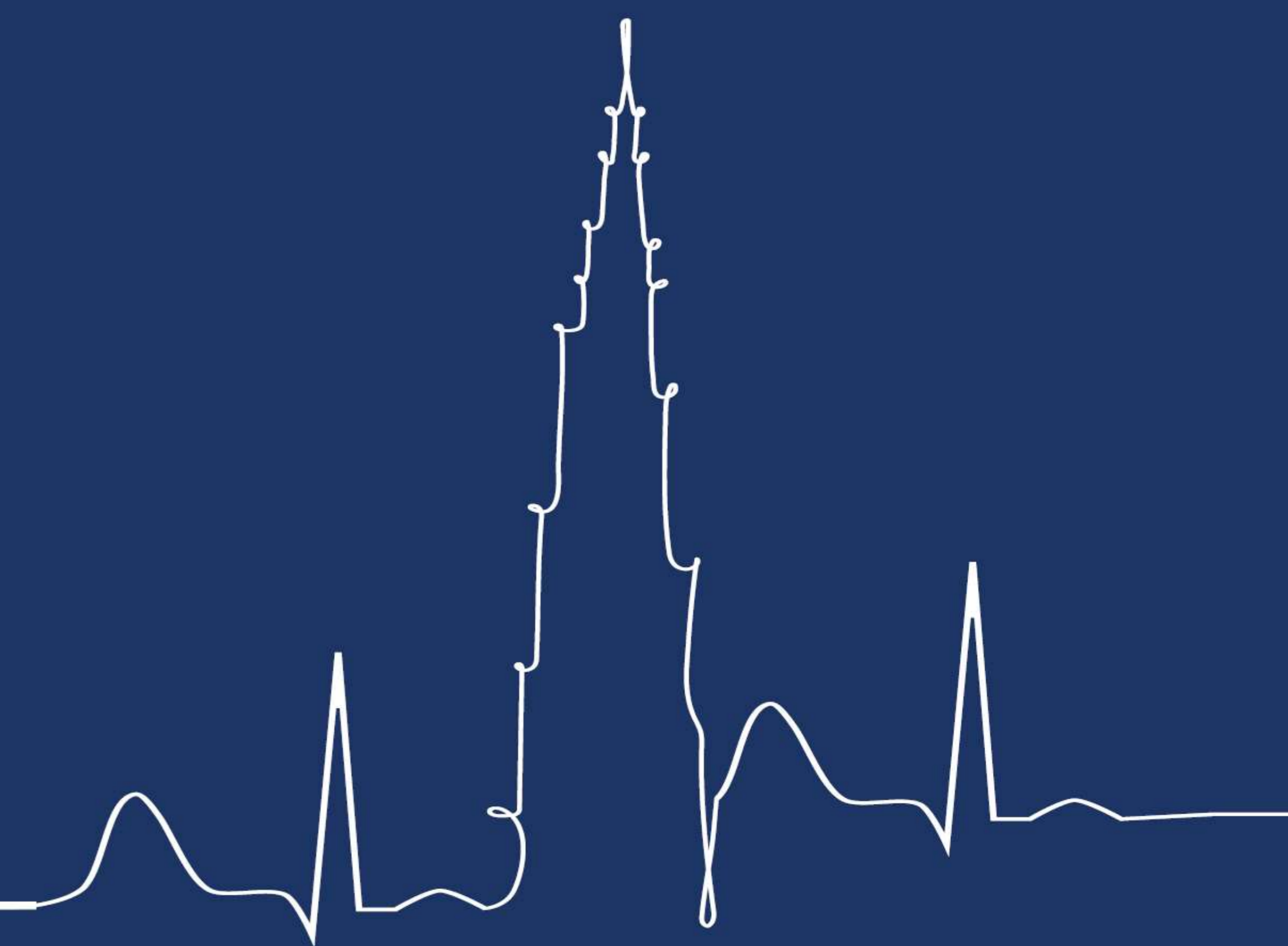




GAC 2025 GULF ARRHYTHMIA CONGRESS

ePOSTER



Lead Extraction: Know Your Enemy and Yourself

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INTRODUCTION

Transvenous lead extraction (TLE) procedures have become increasingly prevalent, driven by the growing number of cardiac implantable electronic devices (CIED) implanted in recent decades. Indications for TLE include infection, lead malfunction, lead-related complications, access to magnetic resonance imaging, chronic pain, and system upgrade.

Fibrous adhesions that develop between the leads and cardiovascular structures can accompany TLE with serious complications. Consequently, TLE procedures typically follow a step-by-step approach, moving from simple to more complex strategies in order to achieve success while minimizing the risk of major complications. (1),(2)

PATIENT PRESENTATION

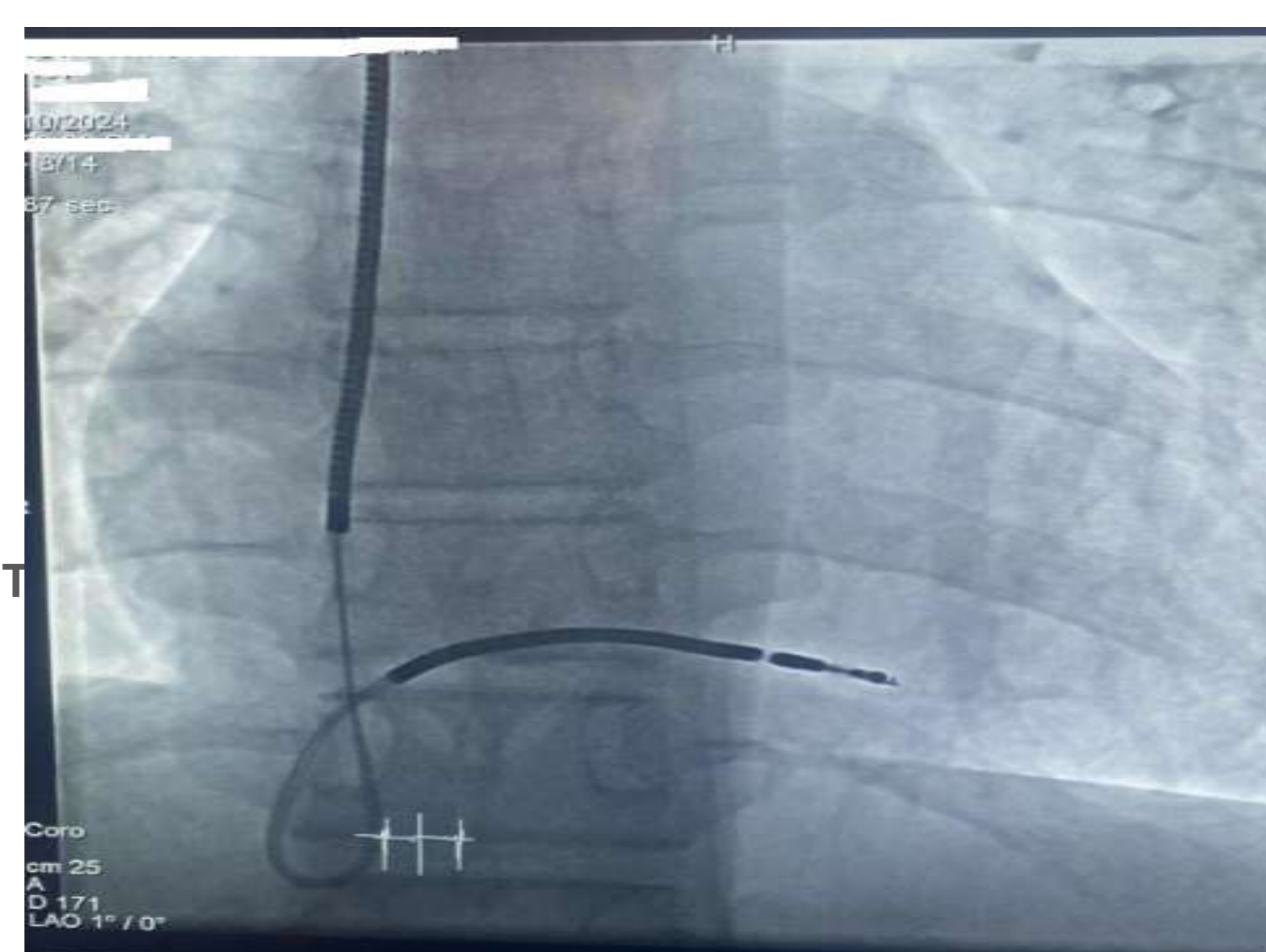
An 18-year-old male patient was diagnosed with long QT syndrome and underwent dual-coil ICD implantation 12 years prior. There was a history of VF episodes, and they received shocks. The patient exhibited pocket erosion, necessitating complete device removal. Comprehensive laboratory tests were conducted, and the blood culture yielded a negative result. A chest X-ray indicated a loop in the inferior vena cava, primarily due to childhood lead implantation. We conducted transesophageal echocardiography, revealing no vegetation.

MANAGEMENT

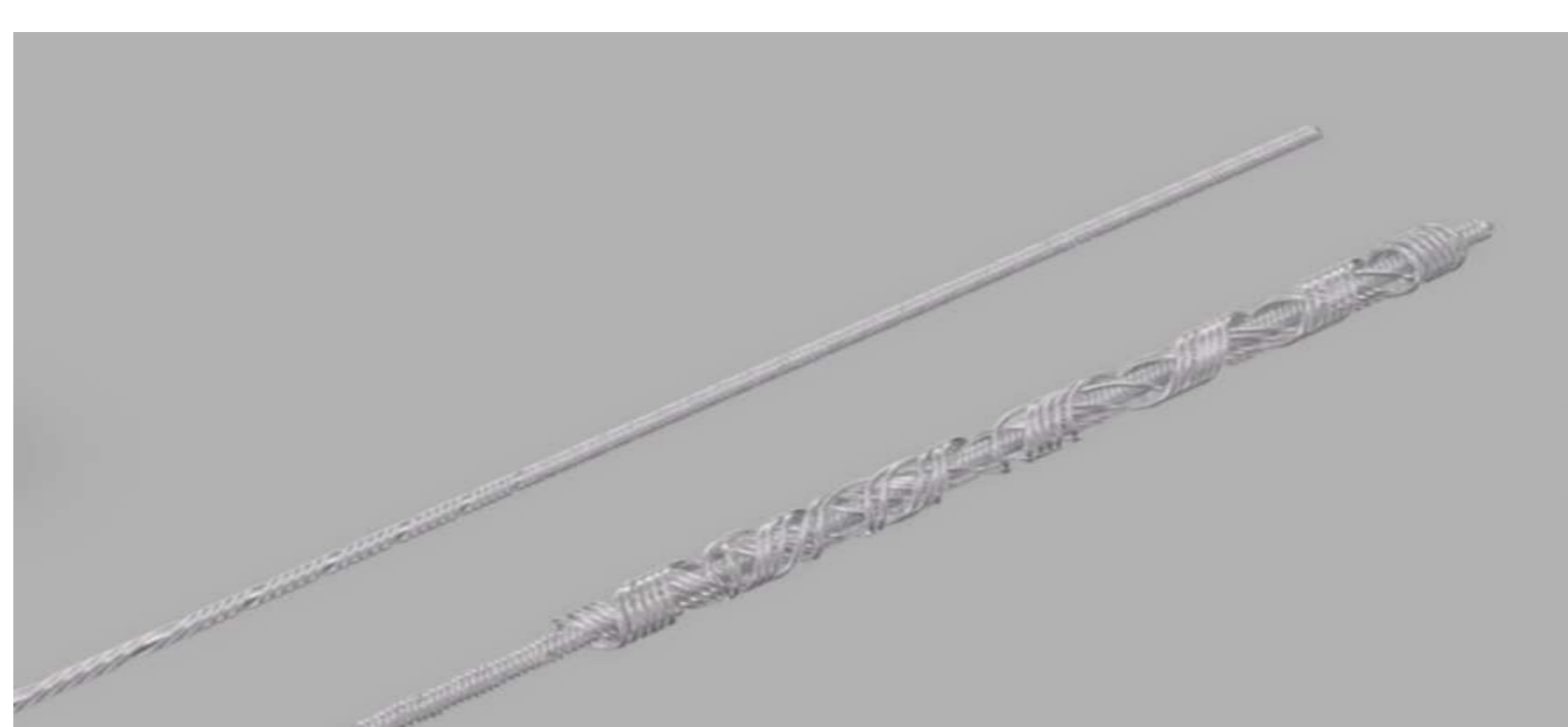
We opted to initiate transvenous lead extraction using the subclavian approach employing a mechanical sheath that did not rectify the IVC loop.

1. Open the pocket, dissect until you reach the battery, disconnect the lead from the battery, and continue dissecting until you reach the sleeve.
2. After using the stylet to reach the tip of the lead, we cut it and inserted the locking stylet.
3. We did a trial of extraction using a non-powered mechanical sheath.
4. We used the Tight Rail mechanical rotating dilator sheath for the extraction, and we also used a rat tooth/alligator grasping forceps for transfemoral access.
5. Using Tandom method with transfemoral straightening of lead to cross the svc coil and we successfully crossing the SVC coil but after many trails to straightening the loop of IVC we decided to abort the procedure especially after we noticed in fluro that we can't catch the loop from IVC, which indicated that there are extensive fibrosis around the IVC loop and indicated that need surgical extraction of lead.
6. Complete lead extraction was done under the supervision of cardiothoracic and abdominal surgeons with a high risk of IVC tear.
7. The patient was scheduled for a subcutaneous ICD, which was implanted later after complete recovery from lead extraction.

.Chest X ray AP view before Extraction



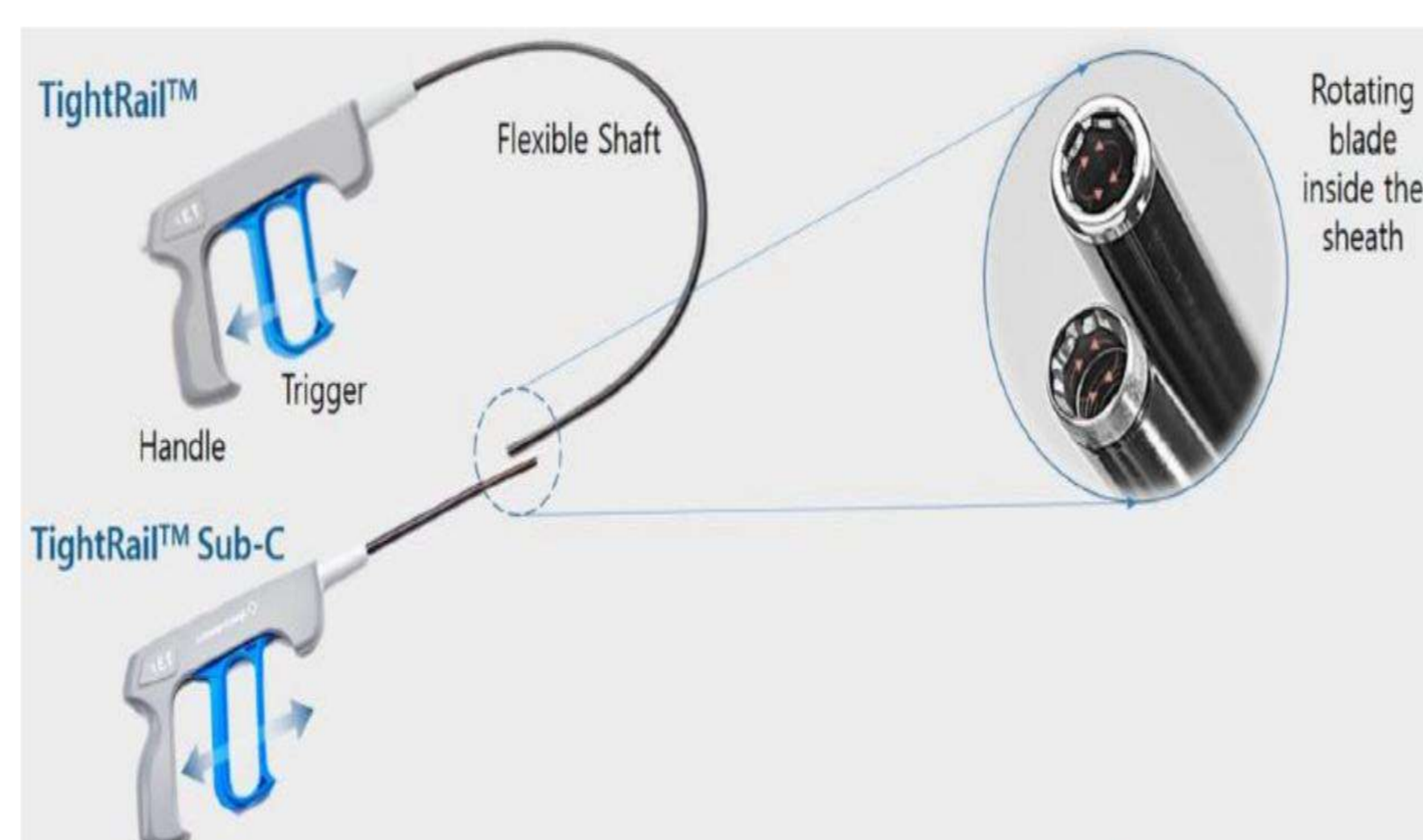
The Liberator Locking Stylet



Telescoping non-powered countertraction sheaths(polypropylene)



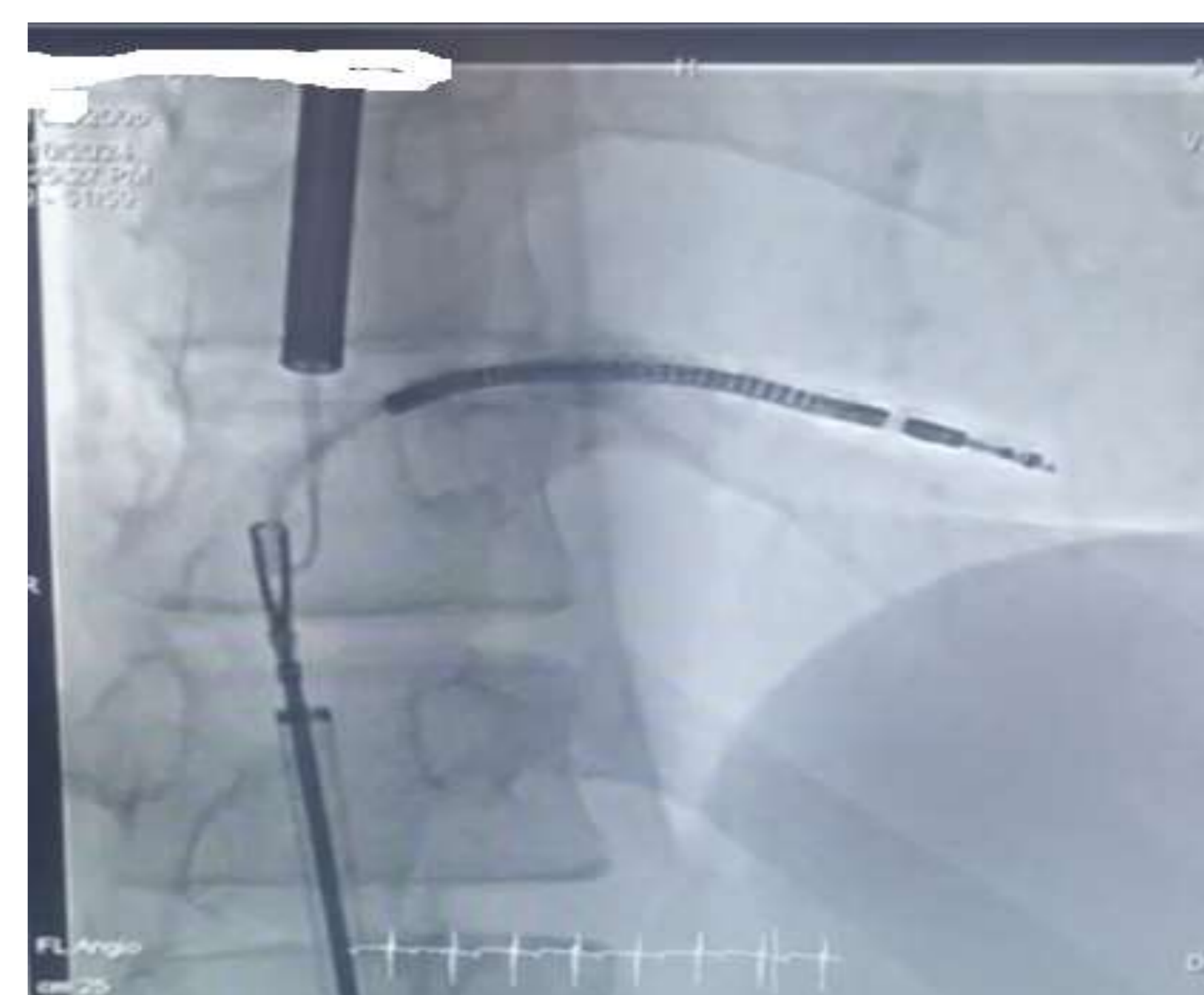
Mechanical sheath of lead extraction tail type



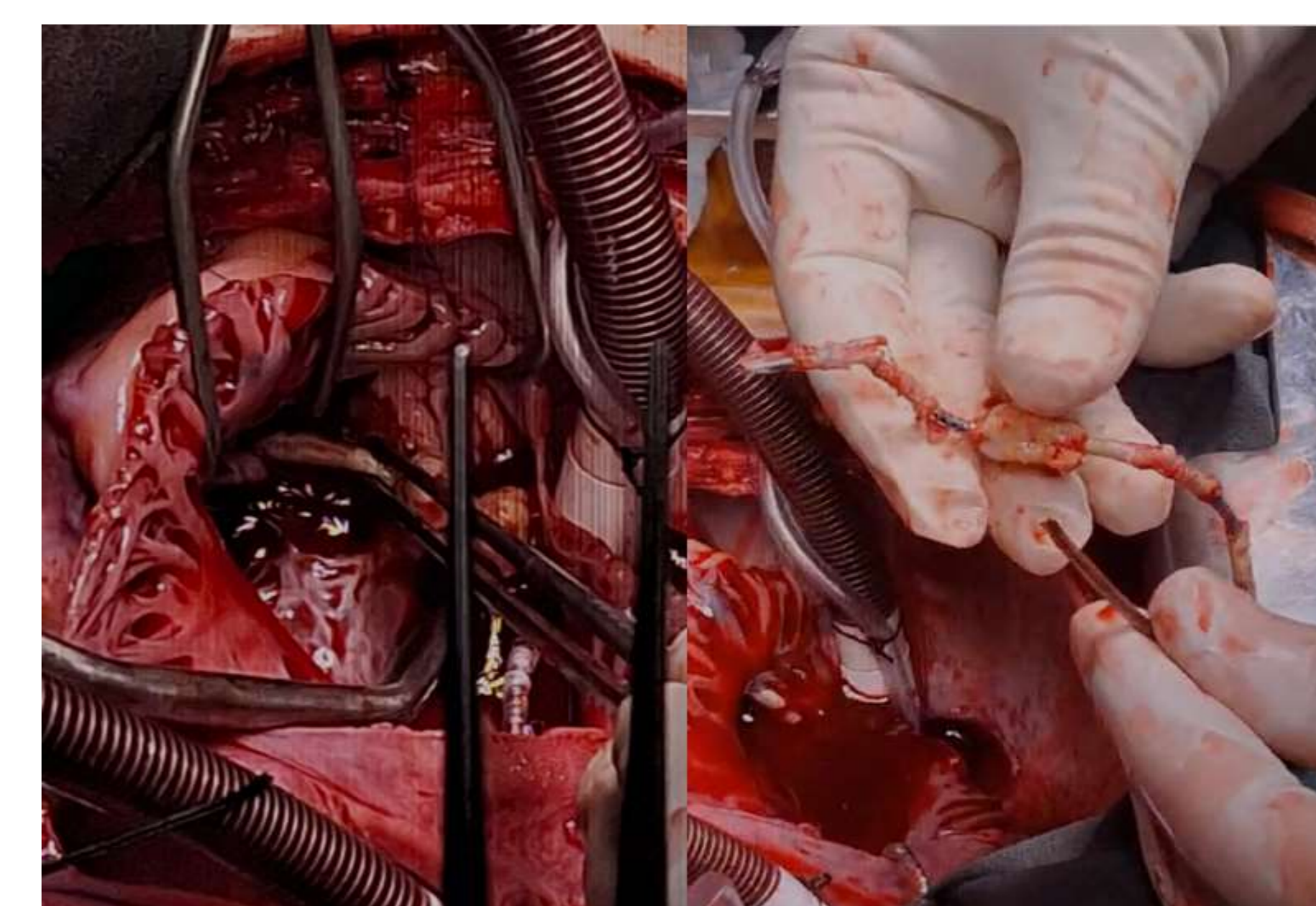
Rat Tooth/ Alligator Grasping Forceps



The Tandem approach



Extensive fibrosis and surgical approach for lead extraction



CONCLUSION

The inferior vena cava loop of the ICD may potentially mitigate growth issues in the pediatric population; nevertheless, it also poses a considerable risk of mortality in cases requiring extraction.

IVC rupture is challenging to predict, but it's more likely to happen if there are big, deep loop in the IVC and the implant is old and difficult to straighten using a transfemoral or subclavian approach.

Before you start lead extraction, you should know your enemies (fibrosis, calcification, type of lead, and date of implantation), and you should know how to win your battery with available weapons (non-power sheath, mechanical sheath, and surgical extraction).

REFERENCES:

1. Bangjornmi MG, Burri H, Deharo JC, Starck C, Kennergren C, Saghy L et al. 2018 EHRA expert consensus statement on lead extraction: recommendations on definitions, endpoints, research trial design, and data collection requirements for clinical scientific studies and registries: endorsed by APhRS/HRS/LAHRs. Europace 2018;20:1217-1217.
2. Bhatia M, Safavi-Naeini P, Razavi M, Collard CD, Tolpin DA, Anton JM. Anesthetic management of laser lead extraction for cardiovascular implantable electronic devices. Semin Cardiothorac Vasc Anesth 2017;21:302-11.