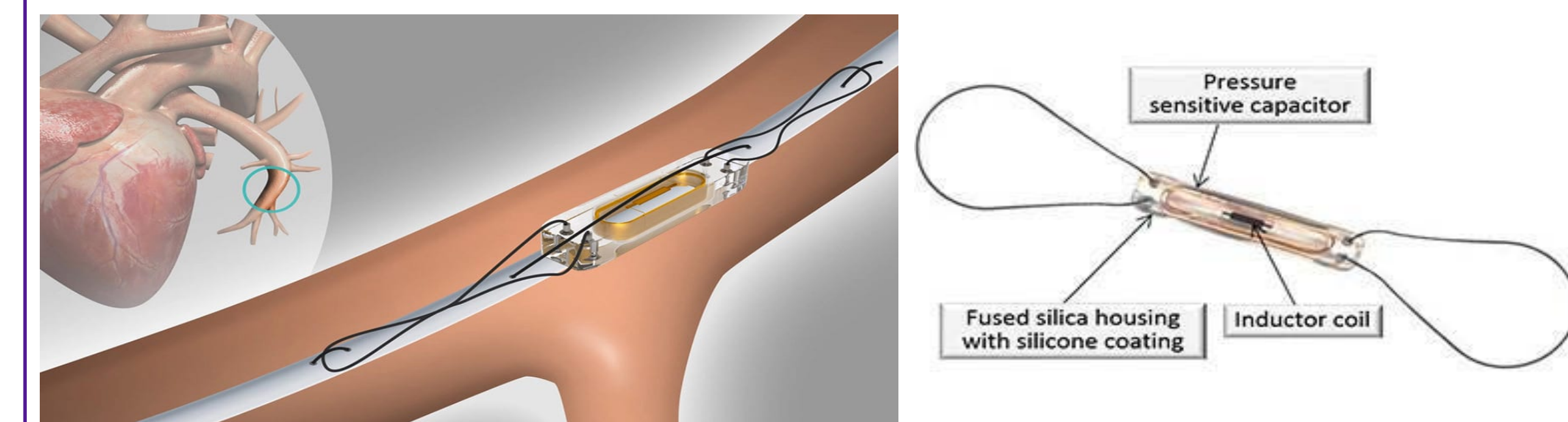


Introduction

An **iatrogenic pulmonary artery pseudoaneurysm (PA PSA)** is a rare, often fatal complication that can be induced by a medical procedure such as Swans Catheter placement. Recognizing the signs of a possible pulmonary artery pseudoaneurysm and consulting multiple hospital teams is crucial to inducing effective intervention and treatment plans.

Case Presentation

We present a 69-year-old female with a history of advanced heart failure, coronary artery disease, and multiple myocardial infarctions. The patient underwent an elective, minimally invasive **CardioMEMS** procedure at another institution in which an implantable wireless device (carried by a Swans Catheter) was placed in the pulmonary artery (PA) to measure pressure and monitor progression of Heart Failure (**Fig. 1 below**).



The patient then developed acute onset hemoptysis from the left lung. The patient was emergently intubated and given TXA and epinephrine to control bleeding. The patient was transferred to our tertiary referral hospital for further evaluation and management. On arrival, the patient was hemodynamically stable.

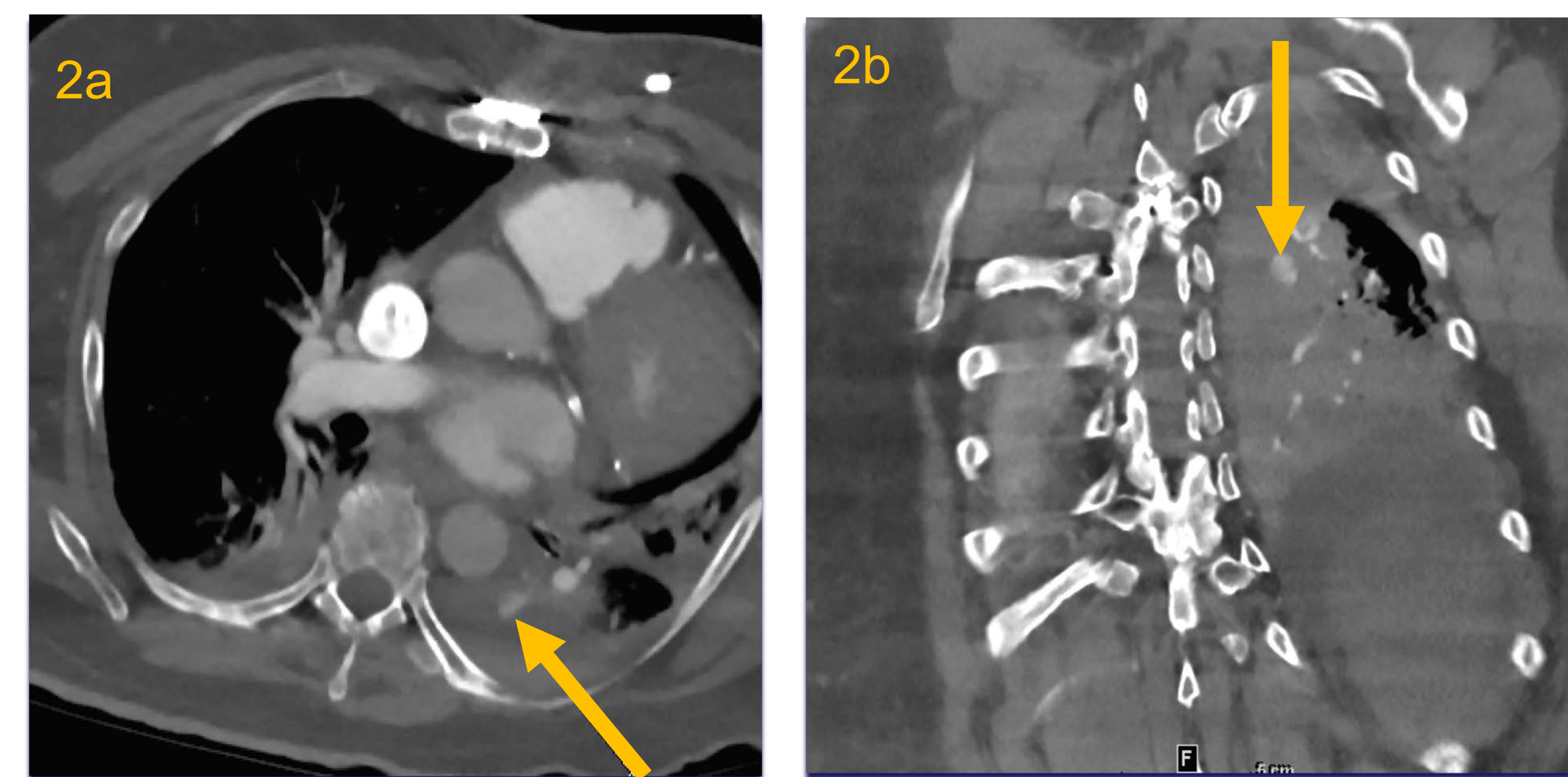
Multidisciplinary Management Course: On arrival, Medical Intensive Care Unit (MICU), Cardiothoracic Surgery (CT), and Interventional Radiology (IR) were consulted. A computed tomography pulmonary angiogram (CT PE) obtained demonstrated a 1.2cm pulmonary artery pseudoaneurysm (PA PSA).

Treatment Plan:

1. Watchful Waiting: Given the PSA size and her underlying PA hypertension, intervention was warranted due to rebleed risk.
2. Surgical resection: Patient was deemed very high risk for surgical resection of the lobe; not a candidate for open sternotomy.
3. Embolization of the PSA: Determined as the best course of action given the cardiac co-morbidities.

Imaging

Pre-Procedure:



Axial (fig 2a) and coronal (fig 2b) images from CT PE demonstrate a 1.2 cm pseudoaneurysm (arrow) arising from a branch of the pulmonary artery within the superior segment of the left lower lobe.

Intra-Procedure:

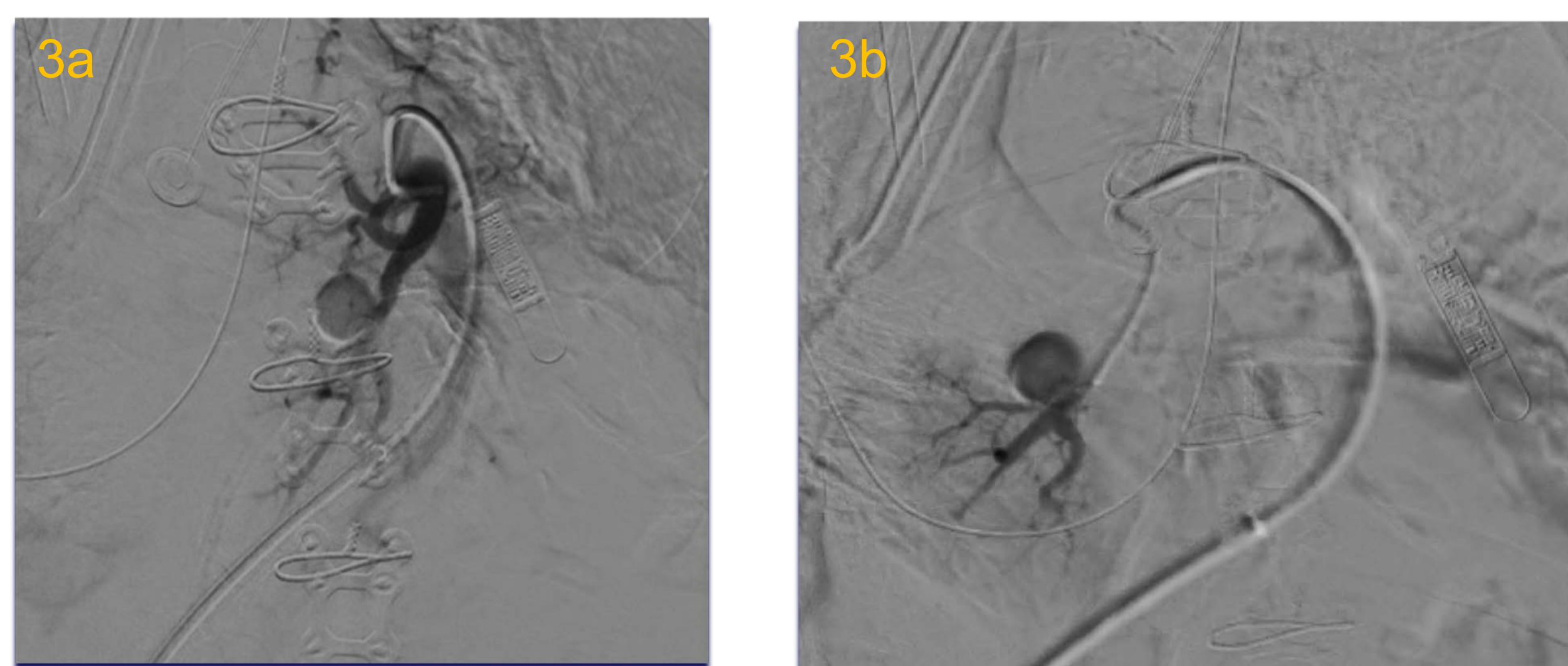


Fig 3a. 7 Fr, 55 cm sheath was advanced into the left pulmonary artery. A **5 Fr angled glide catheter** was used to select a segmental pulmonary artery branch in the superior segment of the left lower lobe.

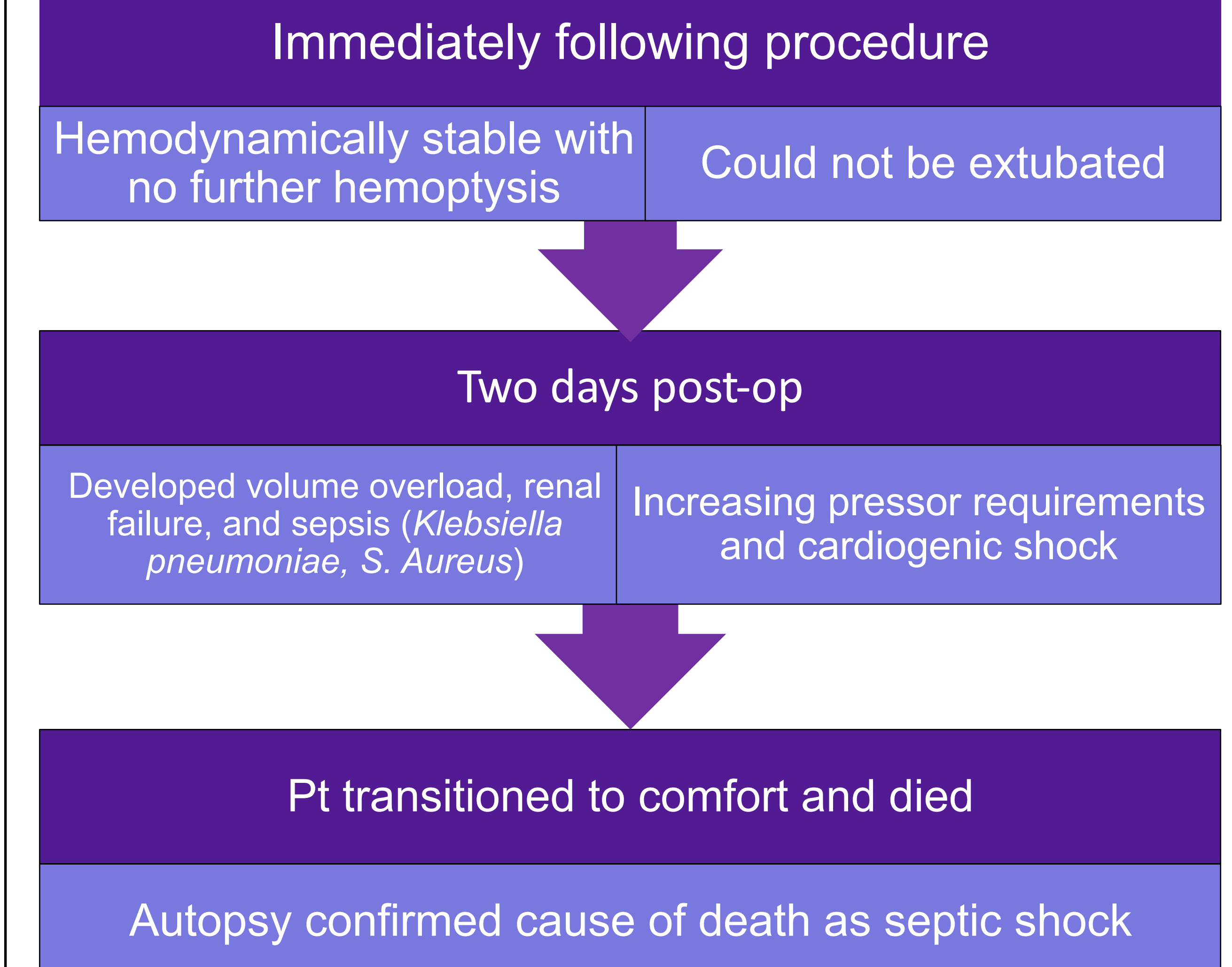
Fig 3b. 2.8 Fr Progreat microcatheter (Terumo Tokyo, Japan) was then used to select the pulmonary artery branch supplying the pseudoaneurysm.

Completion Angiogram:



Fig 4. Completion angiogram following coil embolization of the pseudoaneurysm sac and feeding pulmonary artery branch in a distal-to-proximal fashion with **multiple detachable 3mm Ruby microcoils** (Penumbra Alameda, California) showing stasis within the pseudoaneurysm.

Post-Op Course



Conclusion

Iatrogenic injury is the most common acquired cause of PA pseudoaneurysm. Incidence of PA PSA is a rare (0.2%), but often fatal (50% mortality rate) following complication after Swans Catheter placement. Heart failure weakens all walls of the PA which makes perforation complication during CardioMEMS more likely. Appropriate and timely diagnosis is essential for intervention in heart failure patients with suspected pseudoaneurysms. If PSA has an infectious origin and size is small, aggressive antibiotics may prevent need for surgical intervention. A full patient history is essential to consider when assessing risk for rupture pre-PSA formation and post-PSA intervention. Endovascular repair is the preferred treatment for PA PSA. Glidewires have high risk of perforation; proper placement and technique of devices is essential to preventing PSAs.

References

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2. Yetkin NA, Tutar N. Intravascular coil migration to bronchus: review of the literature with two case reports. *Tuberk Toraks*67: 307-313, 2019