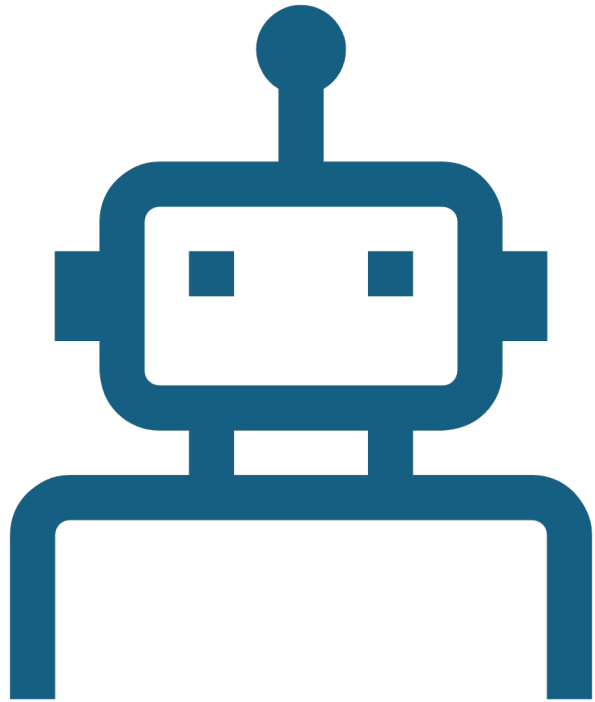




Robotic Thoracic Surgery

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Da Vinci Robot

- The 1st robotic surgery was performed in 1985 using the PUMA 560 robotic arm to perform a brain biopsy.
- Dr. Frederic Moll is considered the Father of Robotic Surgery
- Intuitive is currently working on the 5th generation of the Da Vinci robot.
- Earlier this year, FMC surpassed 1,000 cases since Dr. Scott Johnson first performed a robotic inguinal hernia repair on 11 Jan 2022.
- Platforms exist for many surgical specialties including general surgery, urology, gynecologic surgery, ENT, cardiothoracic surgery, vascular surgery and neurosurgery.
- Minimally-invasive techniques are being requested by patients with increased frequency and gradually becoming the standard of care in terms of preferred surgical technique.
- Since 2000, more than 8.5 million minimally-invasive procedures have been performed world-wide using Da Vinci robotic systems.

The Da Vinci “robot”





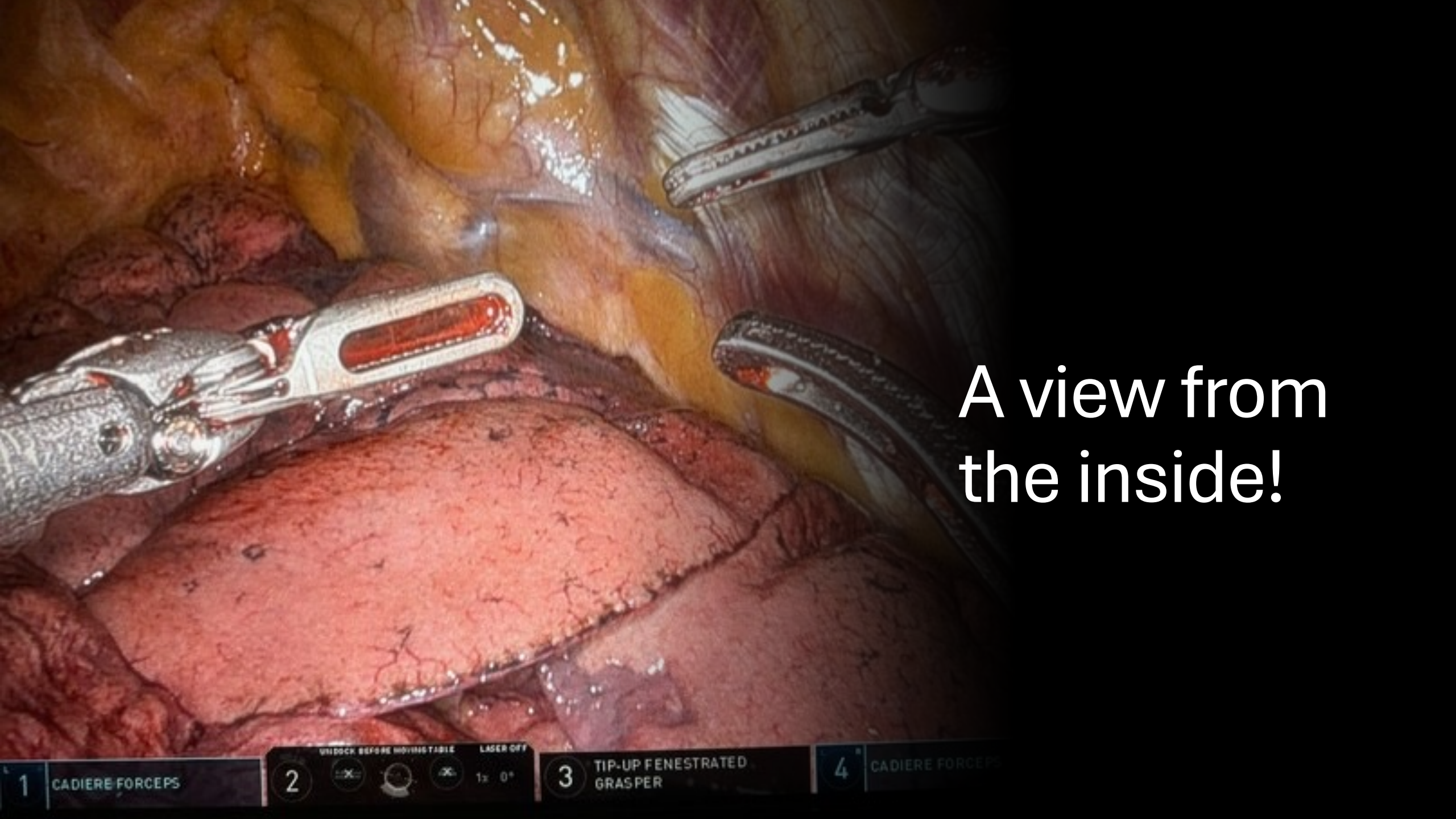
The Da Vinci console

The robot docked and ready to go!





Sitting at the console



A view from
the inside!

This is an intraoperative laparoscopic view showing a surgical site. Several robotic instruments are visible, including a Cadiere forceps on the left and a fenestrated grasper on the right. The surgical field is illuminated, showing various anatomical structures and tissues. A control panel at the bottom of the frame displays various icons and text, including 'UNDOCK BEFORE MOVING TABLE', 'LASER OFF', and instrument labels.

1

CADIERE FORCEPS

2

UNDOCK BEFORE MOVING TABLE

LASER OFF

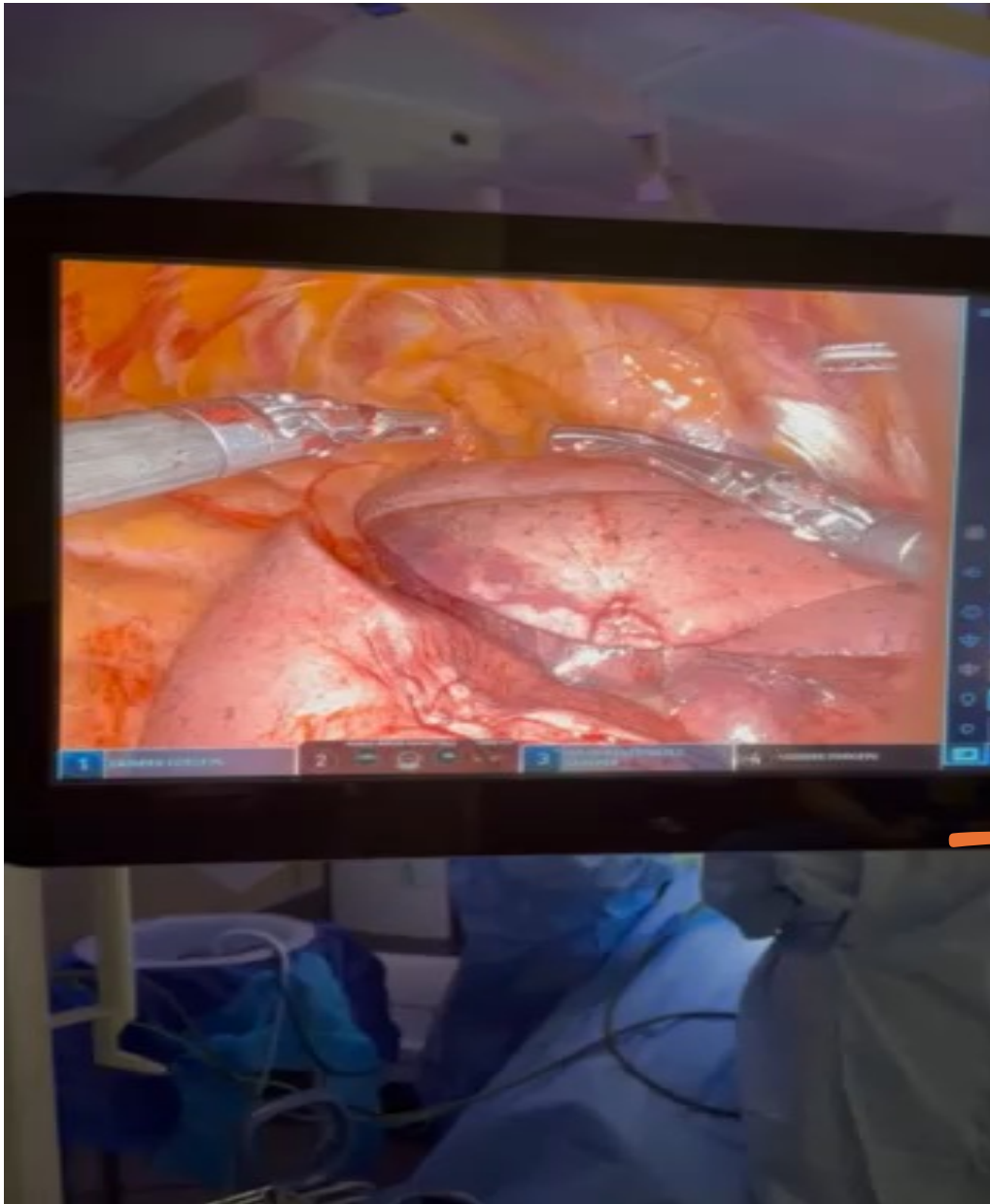
1x 0°

3

TIP-UP FENESTRATED
GRASPER

4

CADIERE FORCEPS



What it looks like
through the eyes of
Da Vinci

Advantages of Robotic Surgery

- Avoidance of larger, more painful incisions.
- Improved visualization with robotic scope/optics.
- Better range of motion over standard laparoscopic instruments.
- One surgeon is able to control multiple instruments.
- Avoidance of painful thoracotomy incisions.
- Less pain / less use of narcotic pain medication after surgery.
- Shorter hospitalization
- Earlier return to full/normal activity.
- Improved lymph node sampling = a “better” cancer operation.
- Decreased surgical site infections (when compared to open surgery).

Disadvantages of Robotic Surgery

- Loss of tactile sensation.
- Requires CO2 insufflation
 - Increases intrathoracic pressure which may cause a functional tamponade effect.
 - May be detrimental for patients with severe underlying pulmonary disease or low EF.
 - May cause hypotension.
- Longer operative time (does NOT impact outcomes or long-term survival)
- Potential for conversion to “open” surgery.

Training

- On-line lectures and didactics
- Computer simulations
- Robotic simulations, exercises, and models
- Animal labs
- Cadaver labs
- Proctored cases

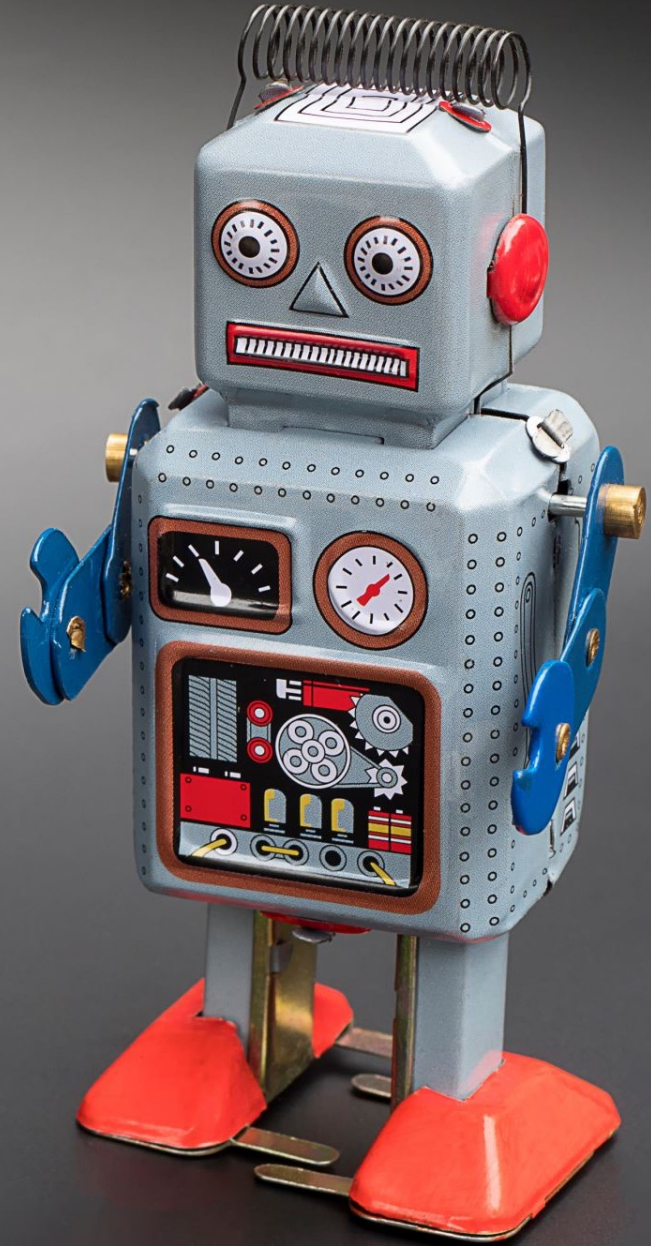
Da Vinci instruments

A variety of thoracic surgical procedures can be performed with Da Vinci

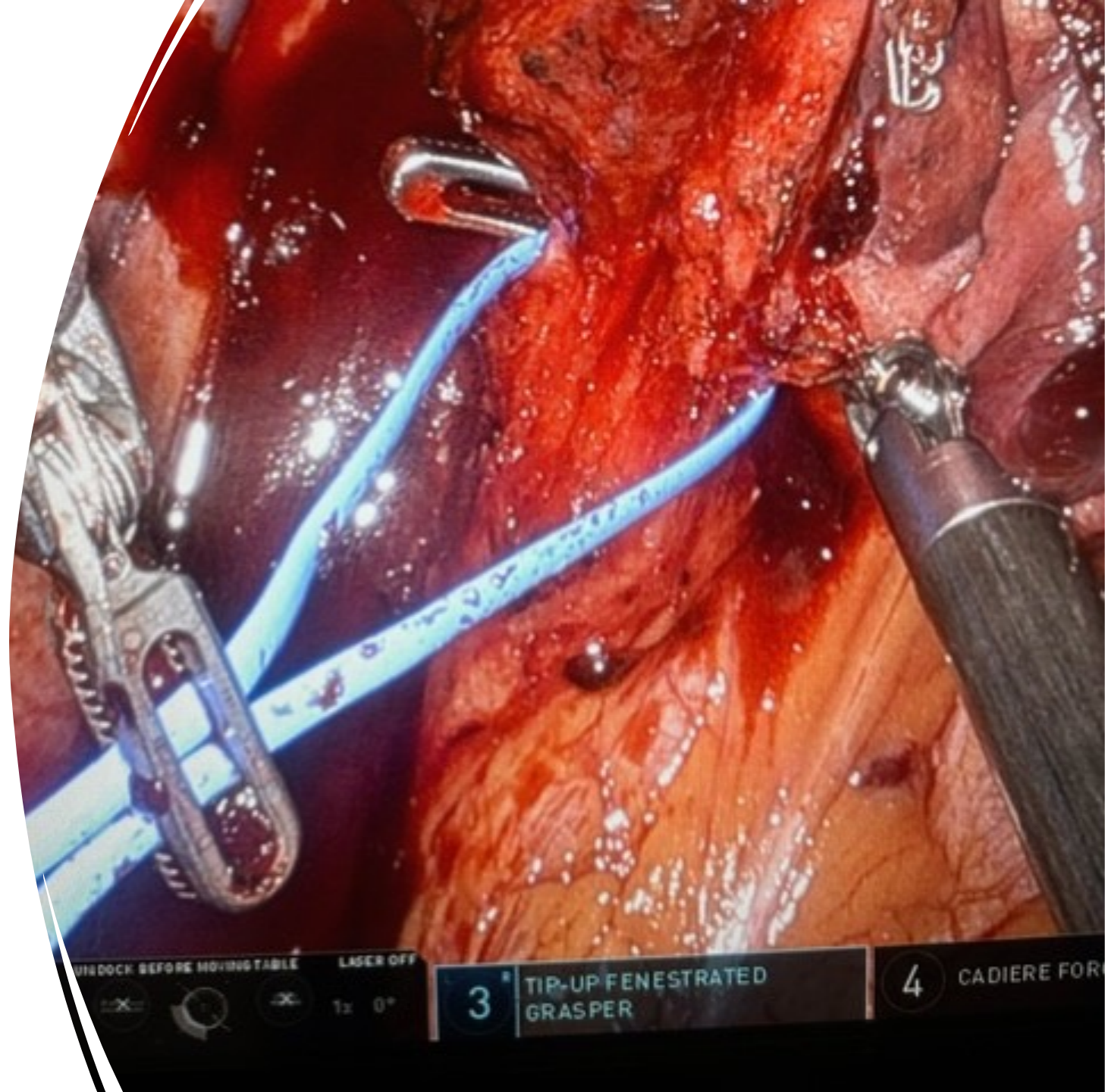
- Lung biopsy
- Lung resection (wedge, segmentectomy, lobectomy)
- Mediastinal lymph node dissection
- Decortication
- Drainage of pleural effusion
- Thymectomy
- Resection of mediastinal tumors
- Pleurodesis
- Esophageal procedures

Robotic right lower lobectomy

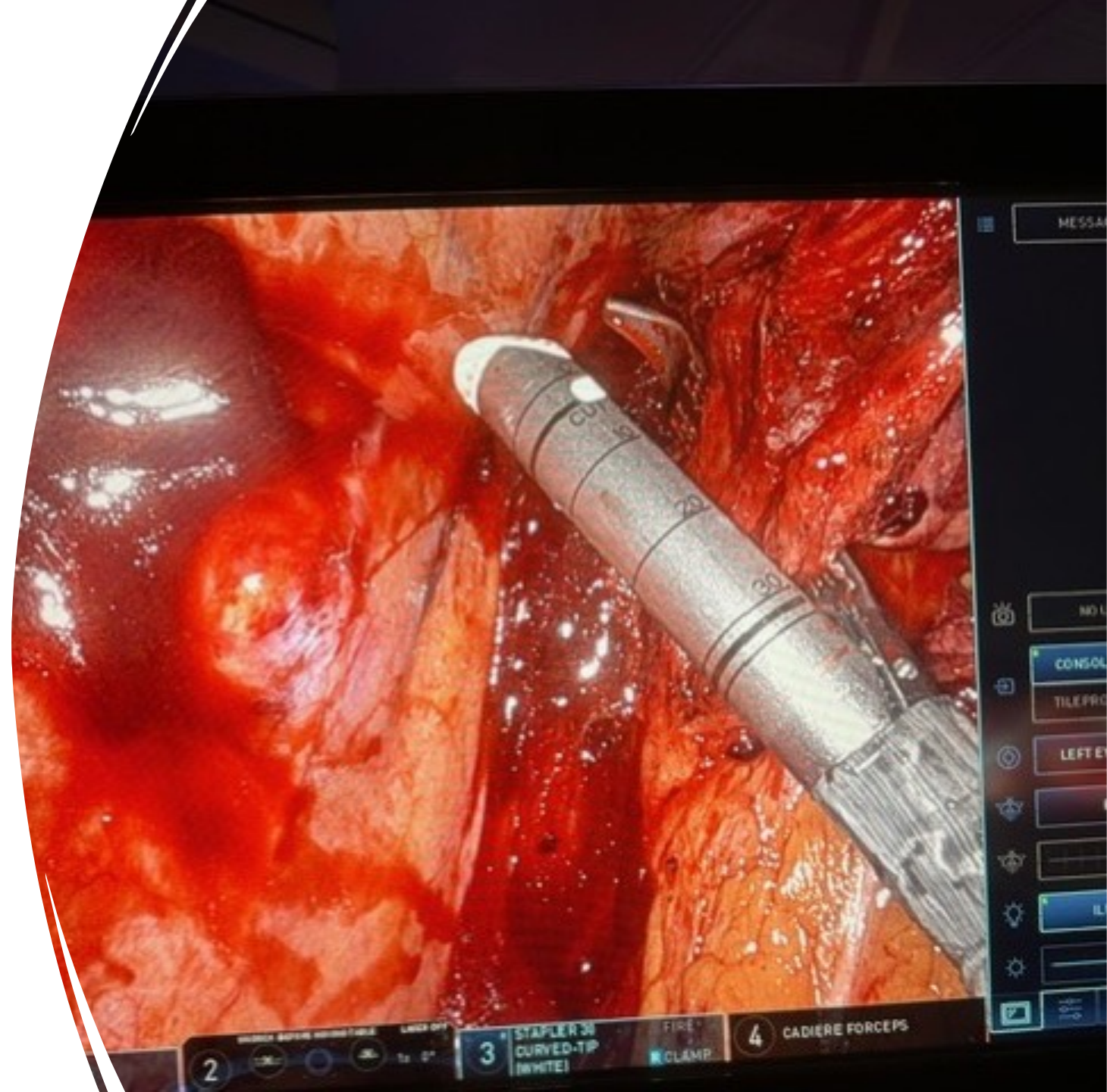
- 66 yo male presents with a 13 x 11 mm spiculated nodule
- Former smoker with 45 pack yr history
- Asympotmatic



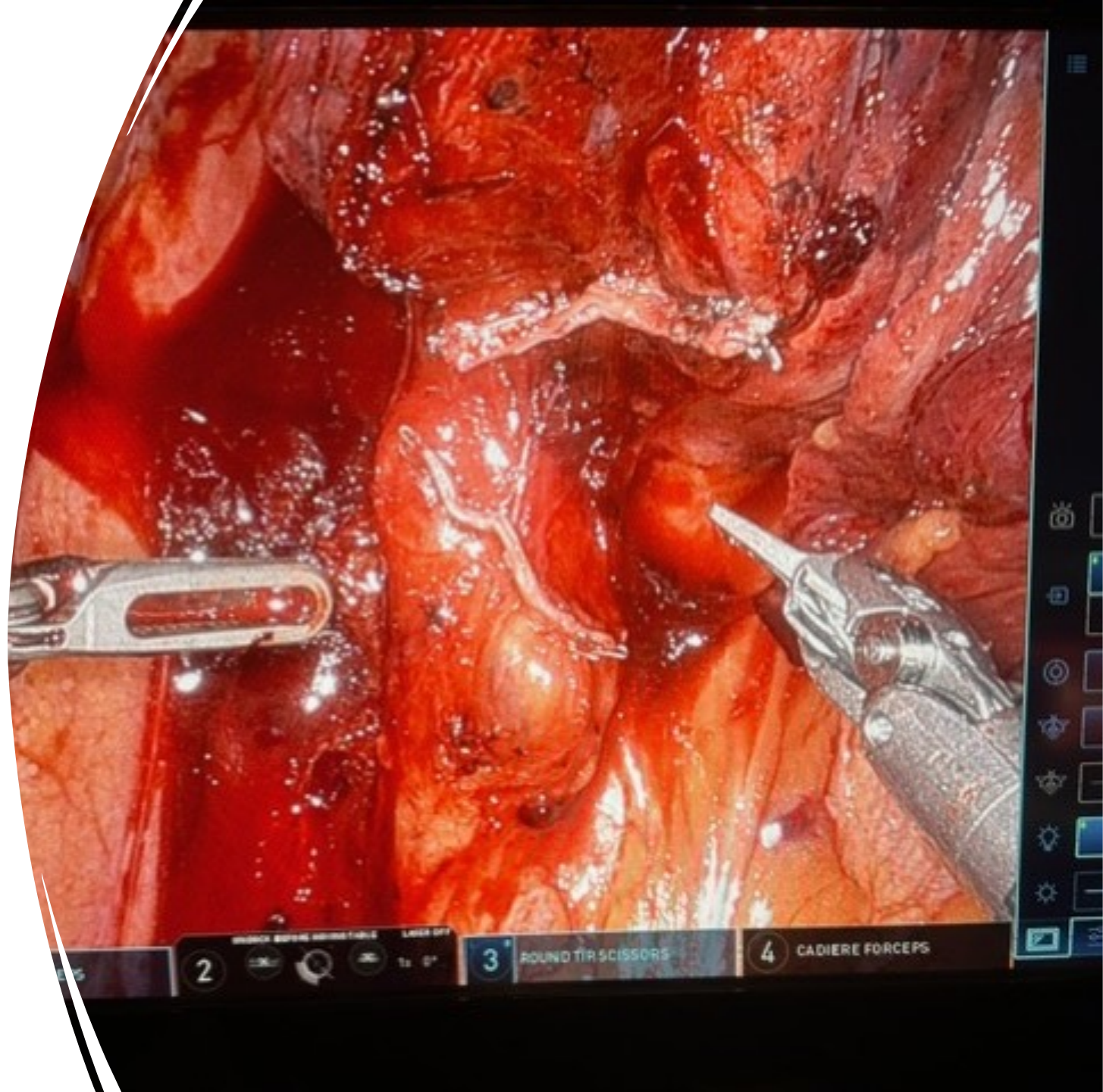
Dissection of the inferior pulmonary vein during lower lobectomy



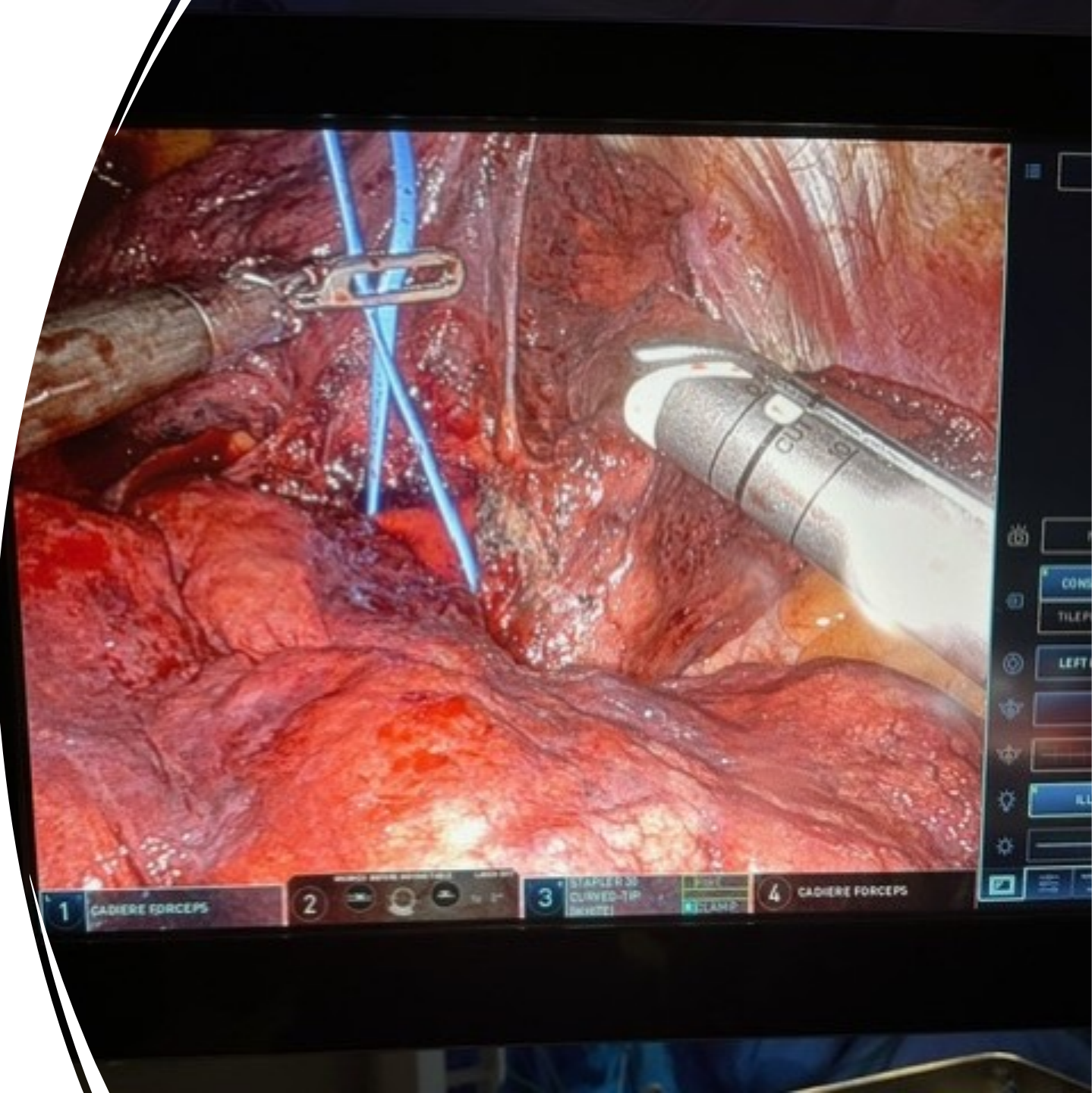
Dividing the
inferior
pulmonary vein
with the robotic
vascular stapler



The inferior
pulmonary
vein divided.



Dissection of
the pulmonary
artery within the
major fissure
during lower
lobectomy



Dividing the
pulmonary
artery to the
lower lobe with
the robotic
vascular stapler



Questions?

