

CASE OVERVIEW

Patient
78-year-old man with metastatic prostate cancer, NSTEMI, and decompensated heart failure.

Diagnosis
Diffuse multivessel CAD: left main, LAD, LCx, and RCA.
Intramyocardial LAD on angiography.

Procedure
IABP-assisted MIDCAB (robotic LIMA harvest + LAD unroofing + LIMA-LAD anastomosis), followed by staged PCI.

OUTCOME

- Successful robotic off-pump LIMA-LAD MIDCAB
- No conversion to sternotomy or CPB
- Satisfactory transit-time flow
- Staged PCI completed; IABP removed
- Discharged home in good condition

KEY MESSAGE

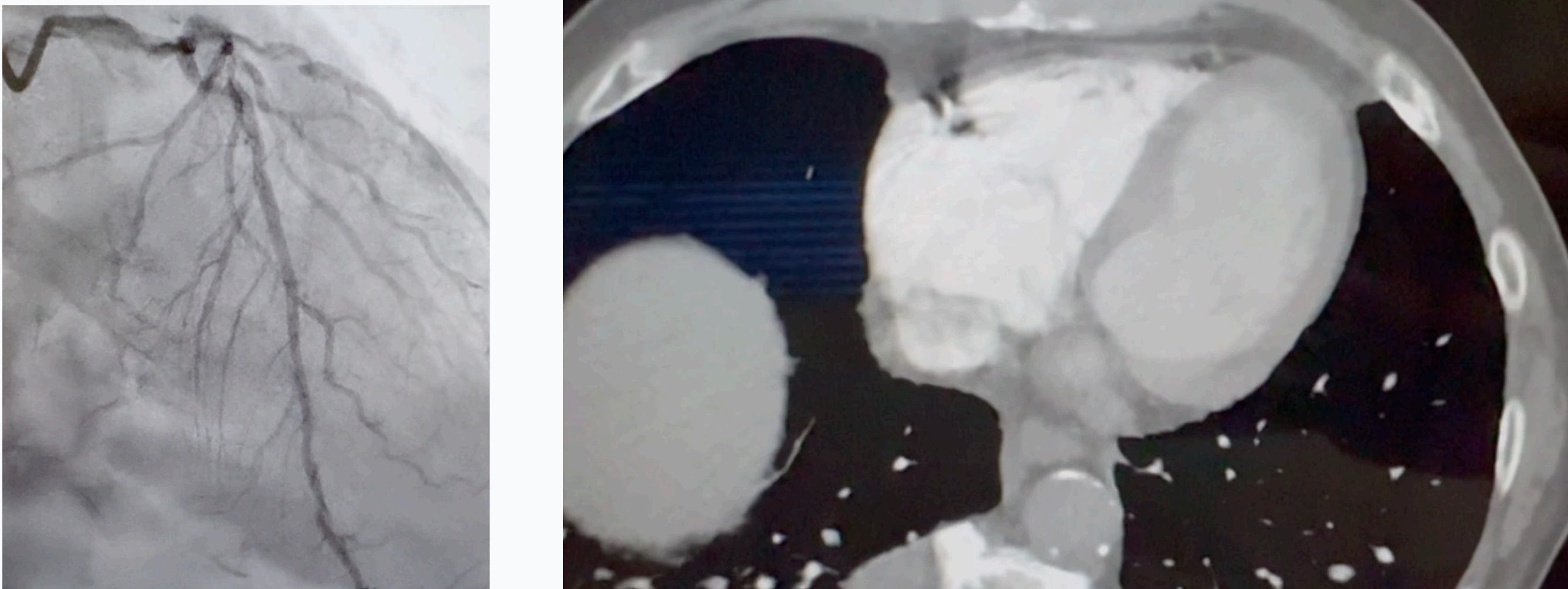
Even in high-risk, frail patients with intramyocardial LAD, MIDCAB with intraoperative unroofing is feasible and avoids sternotomy.

AUTHORS

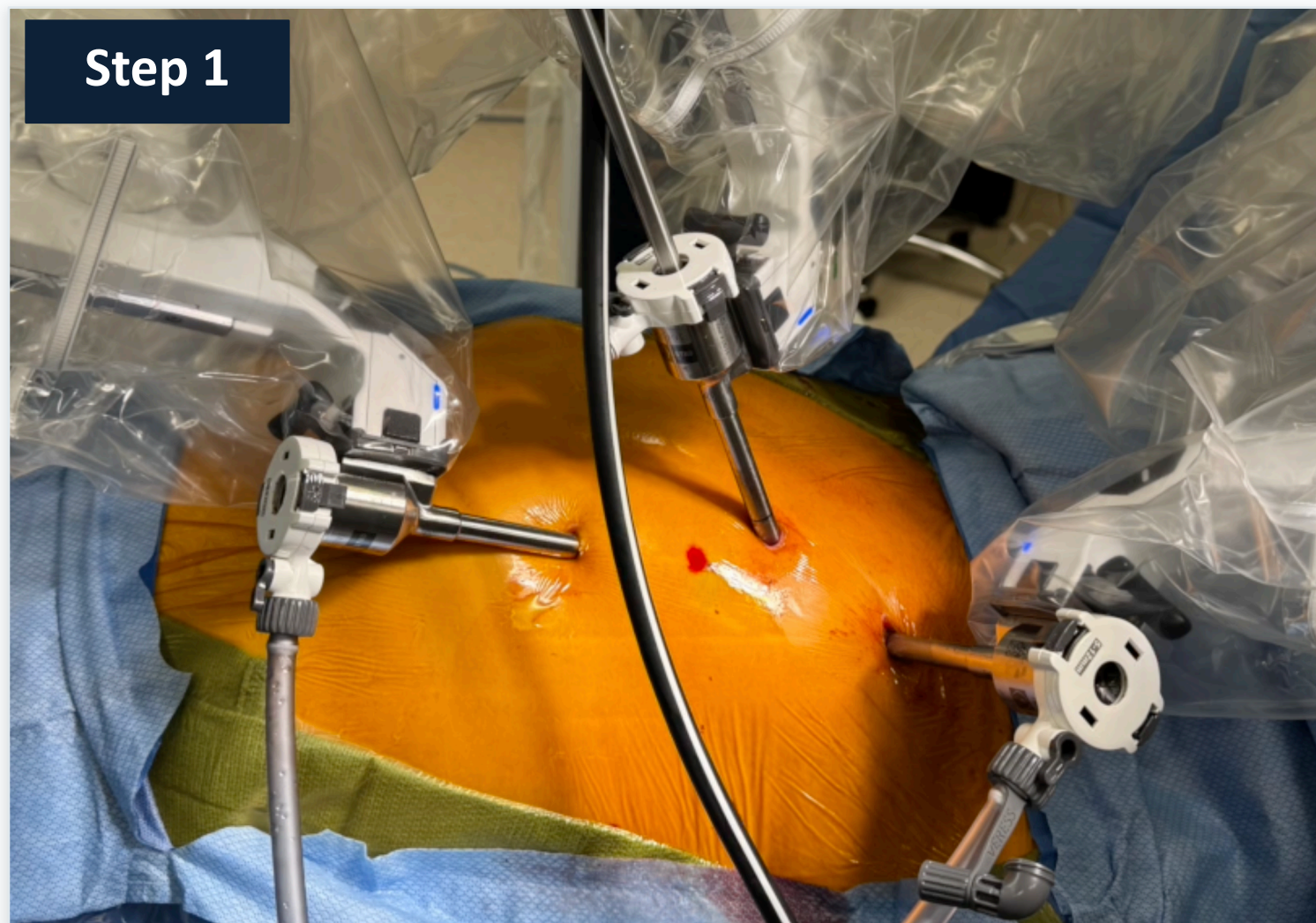
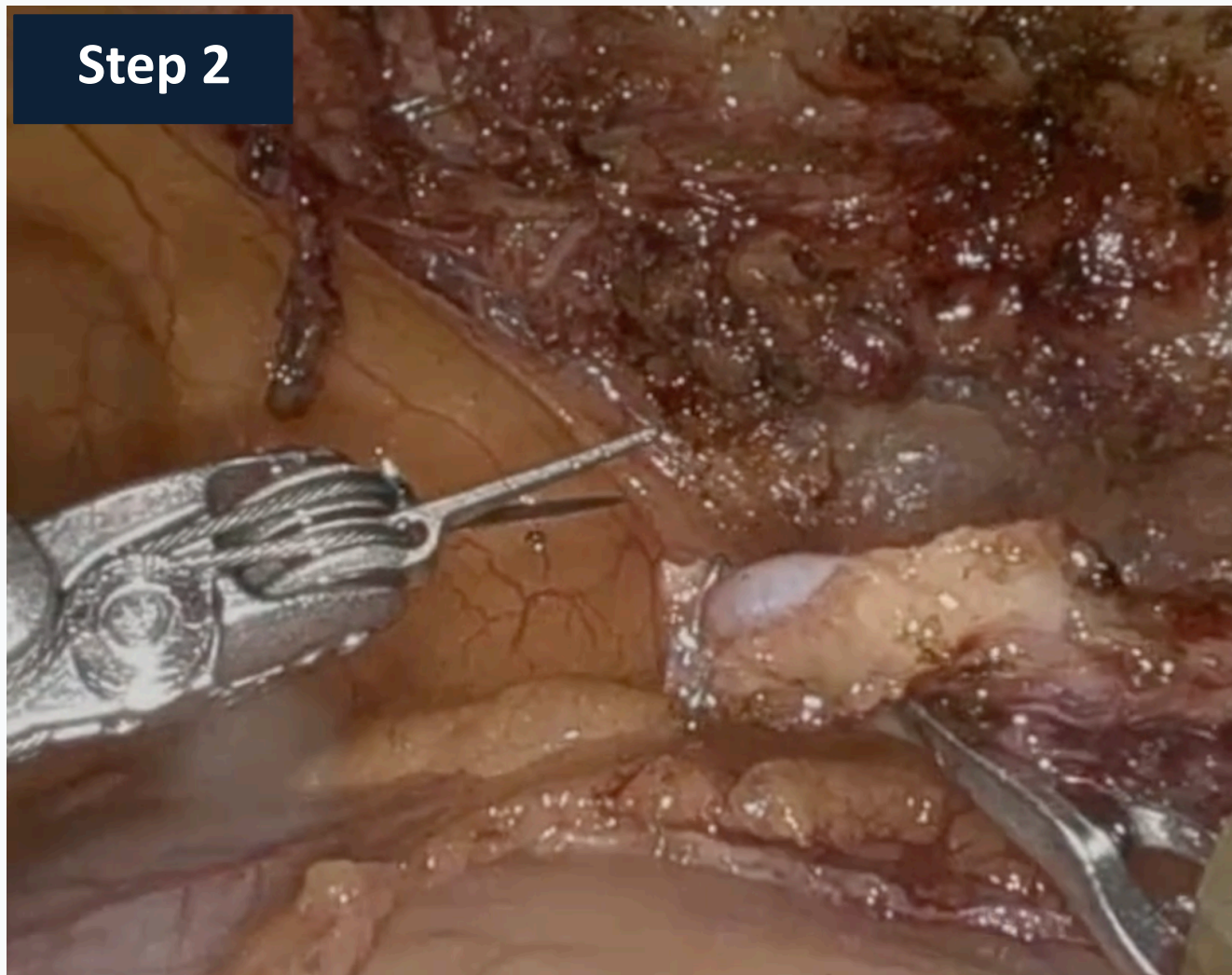
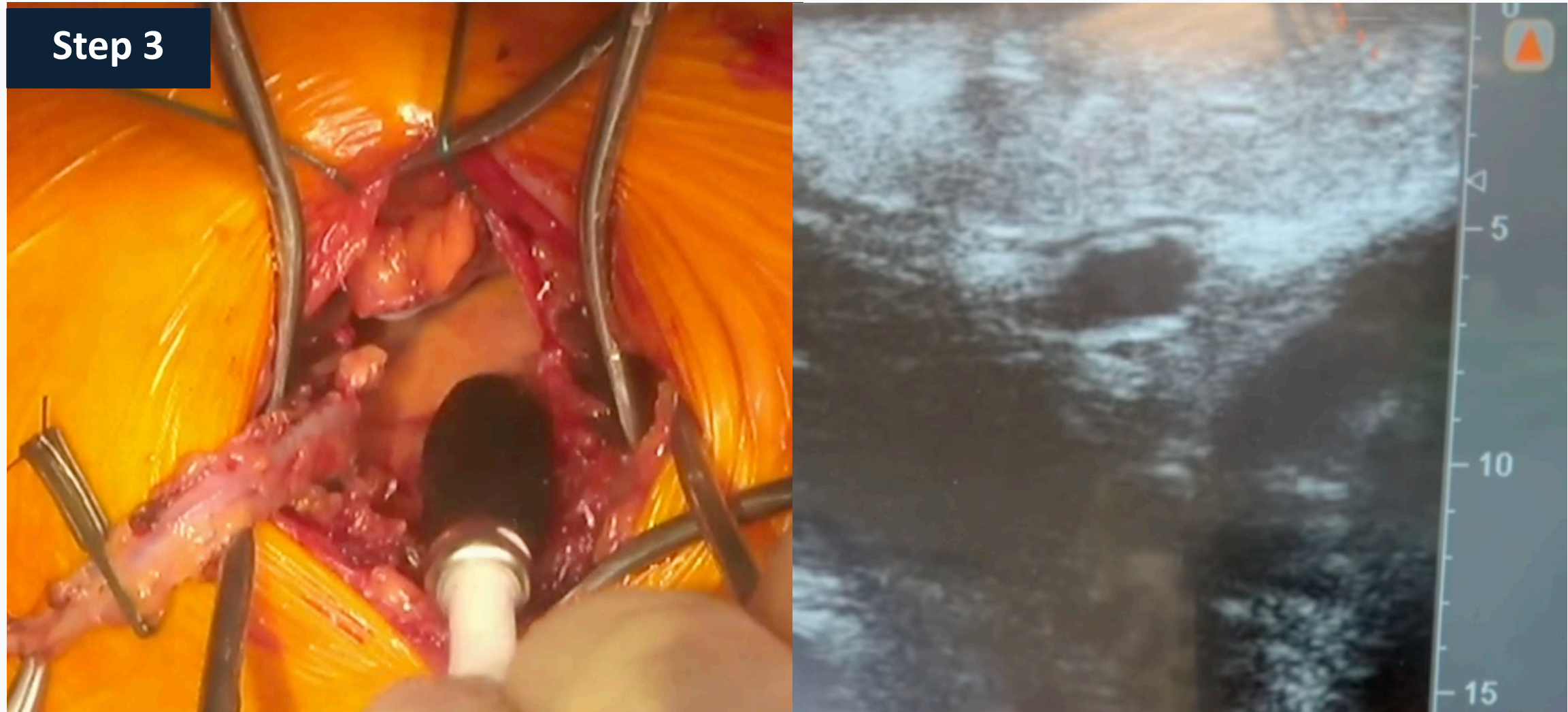
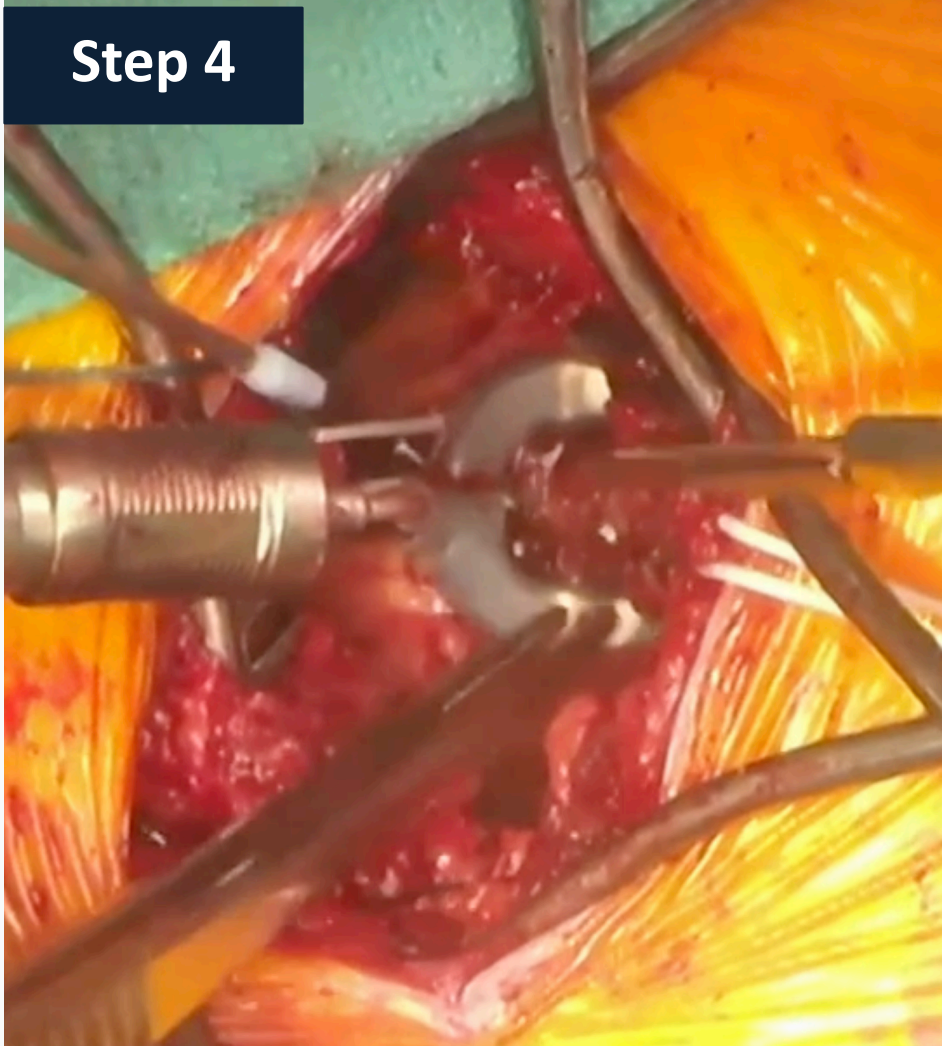
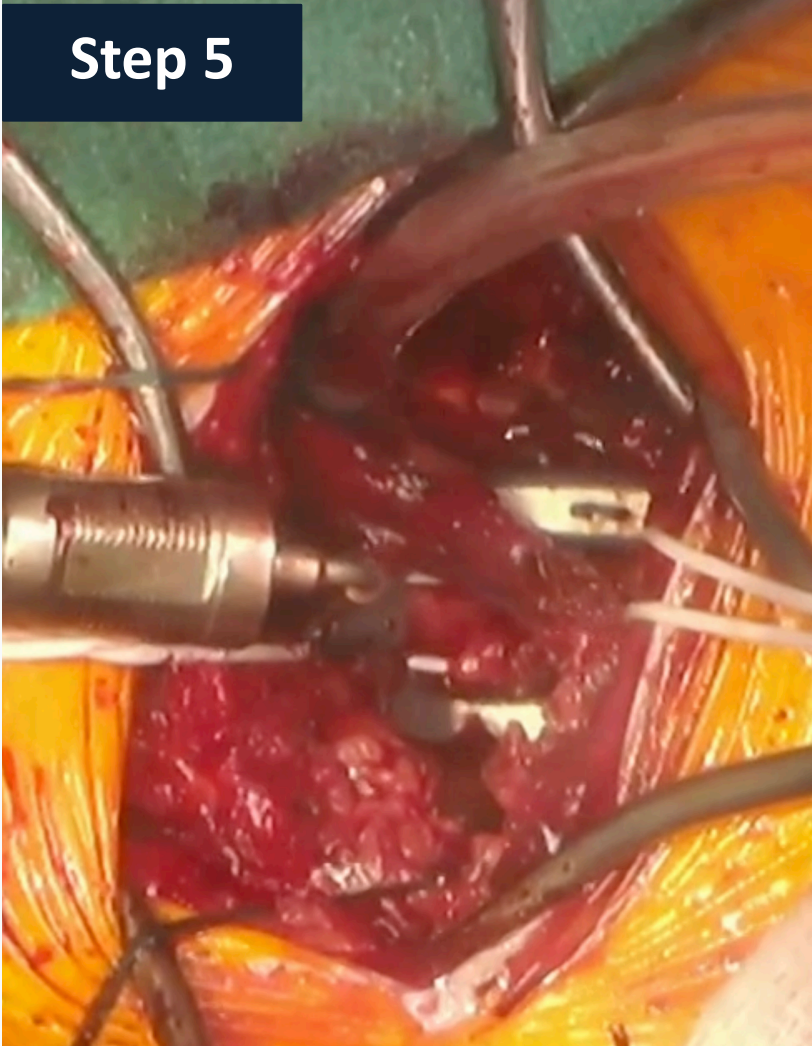
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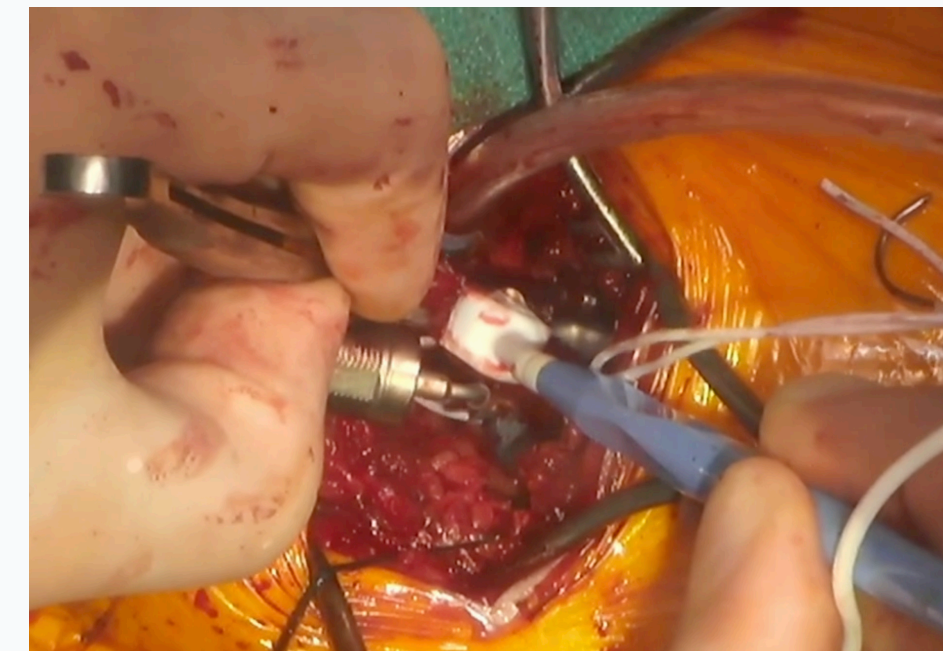
Intramyocardial LAD during MIDCAB: *Staying the Course*

A Surgical Video Case Report | The Christ Hospital Health Network, Heart and Vascular Institute | Cincinnati, Ohio

INTRODUCTION	PRE-OPERATIVE IMAGING	SURGICAL TECHNIQUE
Background Myocardial bridging — in which a segment of the LAD courses within the myocardium rather than along the epicardial surface — occurs in up to 25% of autopsy series and 5% of angiographic studies, and creates challenges during CABG, and even more so during MIDCAB Clinical Context 78-year-old man with metastatic prostate cancer, NSTEMI, and decompensated heart failure was diagnosed with multi-vessel CAD with LAD not amenable to PCI. He was a poor candidate for sternotomy due to frailty and active malignancy. Multidisciplinary discussion favored IABP-supported MIDCAB followed by staged PCI. Imaging Coronary angiography showed intramyocardial appearance of LAD, but CT PE erroneously suggested an epicardial vessel.	 Coronary Angiogram and CT Angiography demonstrated diffuse multivessel disease with intramyocardial LAD appearance. CT determines media-to-lateral location of LAD to minimize incision size. CT PE showed an epicardial vessel, which turned out to be the vein.	1 IABP + Robotic LIMA Harvest IABP inserted pre-op. Standard left chest robotic port access; LIMA harvested in pedicled fashion. 2 Mini-Thoracotomy & Exposure Camera port enlarged to left anterior mini-thoracotomy; retractors and pericardial sutures placed 3 Epicardial Ultrasound Localization Epicardial ultrasound probe scanned anterior surface; LAD located ~5 mm below epicardium. Stabilizer positioned. 4 Unroofing & Shunt Careful dissection with low cautery. Silastic loops placed proximal and distal to LAD. LAD incised; intraluminal shunt inserted. 5 Anastomosis & Hemostasis End-to-side LIMA-LAD anastomosis. Transit-time flow confirmed. Protamine given; hemostatic agents applied to epicardial surface.

INTRAOPERATIVE IMAGES

Step 1  IABP + Robotic ports <i>Standard left chest robotic ports</i>	Step 2  Robotic LIMA harvest <i>LIMA harvested in pedicled fashion</i>	Step 3  Pericardial Opening <i>LAD not visible epicardially</i>	Step 3  Epicardial Ultrasound Localization <i>Probe-guided identification of LAD ~5 mm below epicardial surface</i>	Step 4  Unroofing & Shunt Insertion <i>Low-cautery dissection; silastic loops; LAD incised and shunt placed</i>	Step 5  LIMA-LAD Anastomosis <i>End-to-side anastomosis; transit-time flow confirmed</i>
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POST-OPERATIVE	DISCUSSION	CONCLUSIONS
 Completed LIMA-LAD graft. • Transit-time flow: satisfactory • Epicardial bleeding controlled with hemostatic agents • Staged PCI + IABP removal completed	This case highlights several unique challenges: a frail, elderly patient with active malignancy and multivessel disease who was not a sternotomy candidate, combined with an intramyocardial LAD that was deeper than CT imaging suggested. Key technical principles demonstrated: • CT PE protocol may underestimate LAD depth • Epicardial ultrasound enables precise localization of the intramyocardial vessel • Low-cautery dissection with silastic vessel loops protects the LAD during unroofing • Intraluminal shunting helps with exposure and maintains distal perfusion • Transit-time flow measurement confirms graft patency before chest closure	1. MIDCAB is feasible even in frail, high-risk patients who cannot tolerate sternotomy. 2. CT imaging may underestimate LAD depth; intraoperative epicardial ultrasound is essential for precise vessel localization. 3. Intraoperative unroofing with low-cautery dissection and intraluminal shunting enables safe LIMA-LAD anastomosis. 4. A staged hybrid approach (MIDCAB + PCI) provides a minimally-invasive complete revascularization