



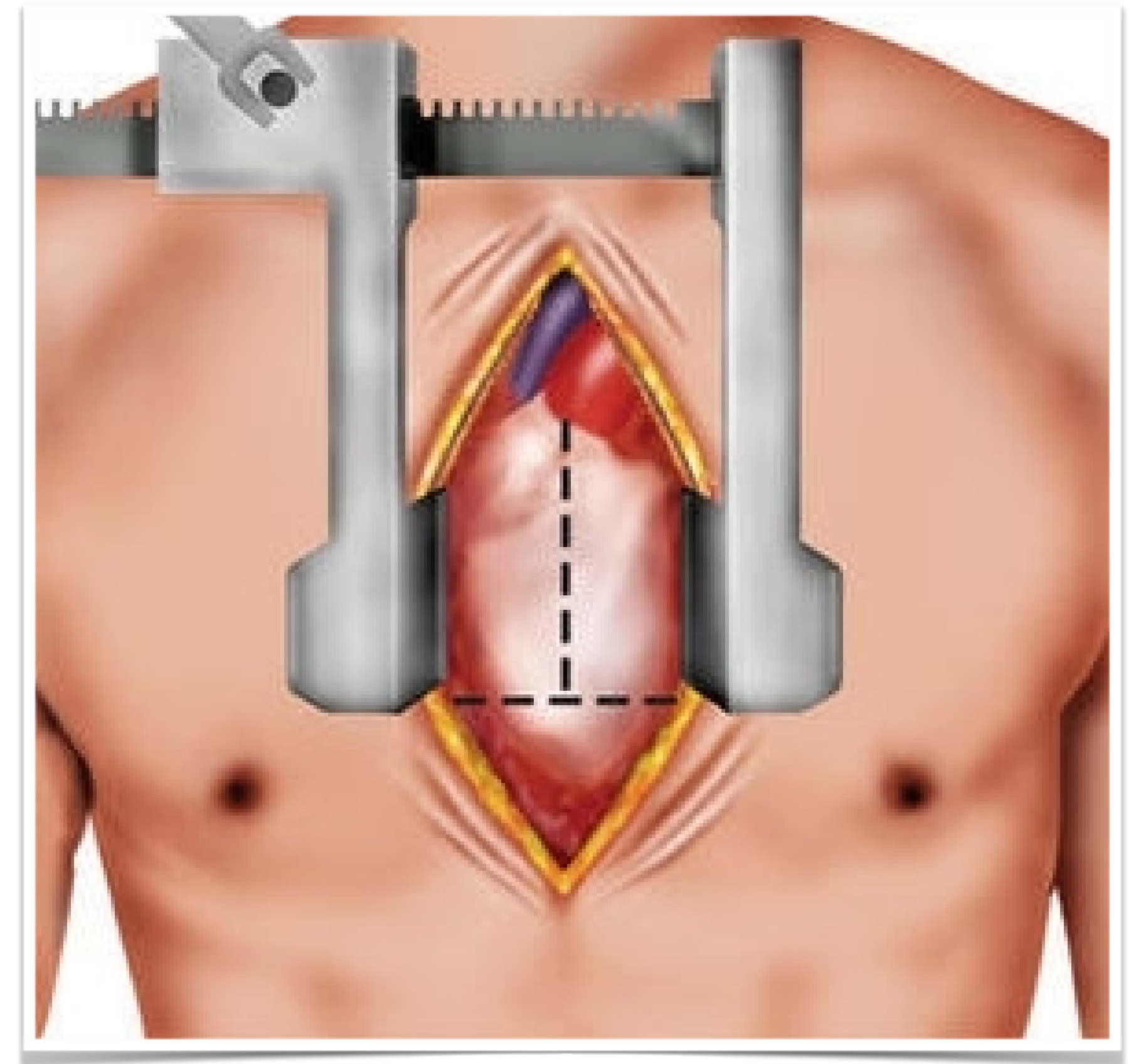
**IS MINIMALLY INVASIVE APPROACH POSSIBLE IN ALL  
PATIENTS WHO REQUIRE CORONARY BYPASS SURGERY?**

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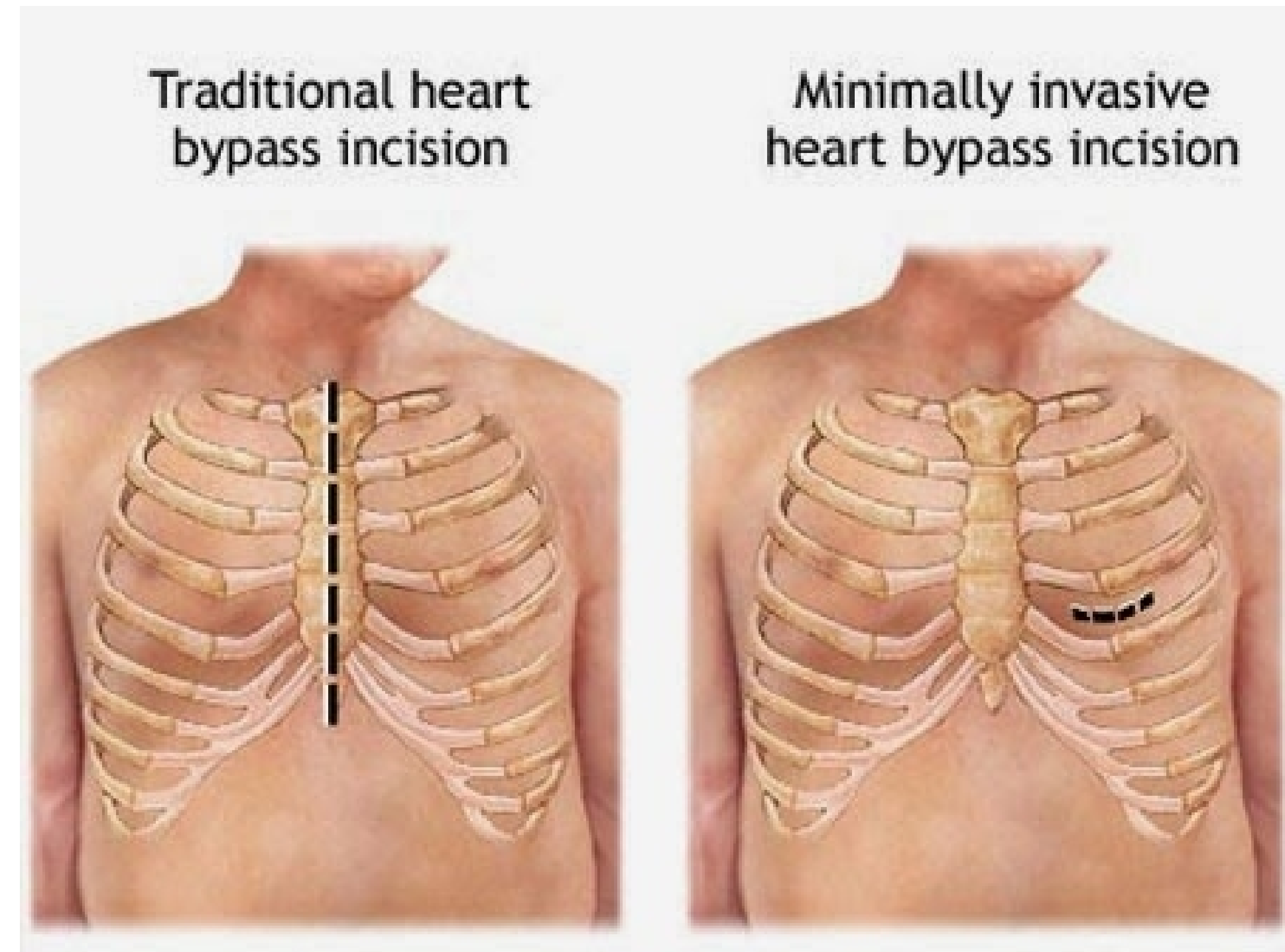
**no conflict of interest to declare**



- Median sternotomy is a standard approach
- limited incisions are being increasingly used in minimally invasive multivessel coronary artery revascularizations.



- Left anterior minithoracotomy through third or fourth intercostal space for treatment of all group of patients with multivessel coronary lesions



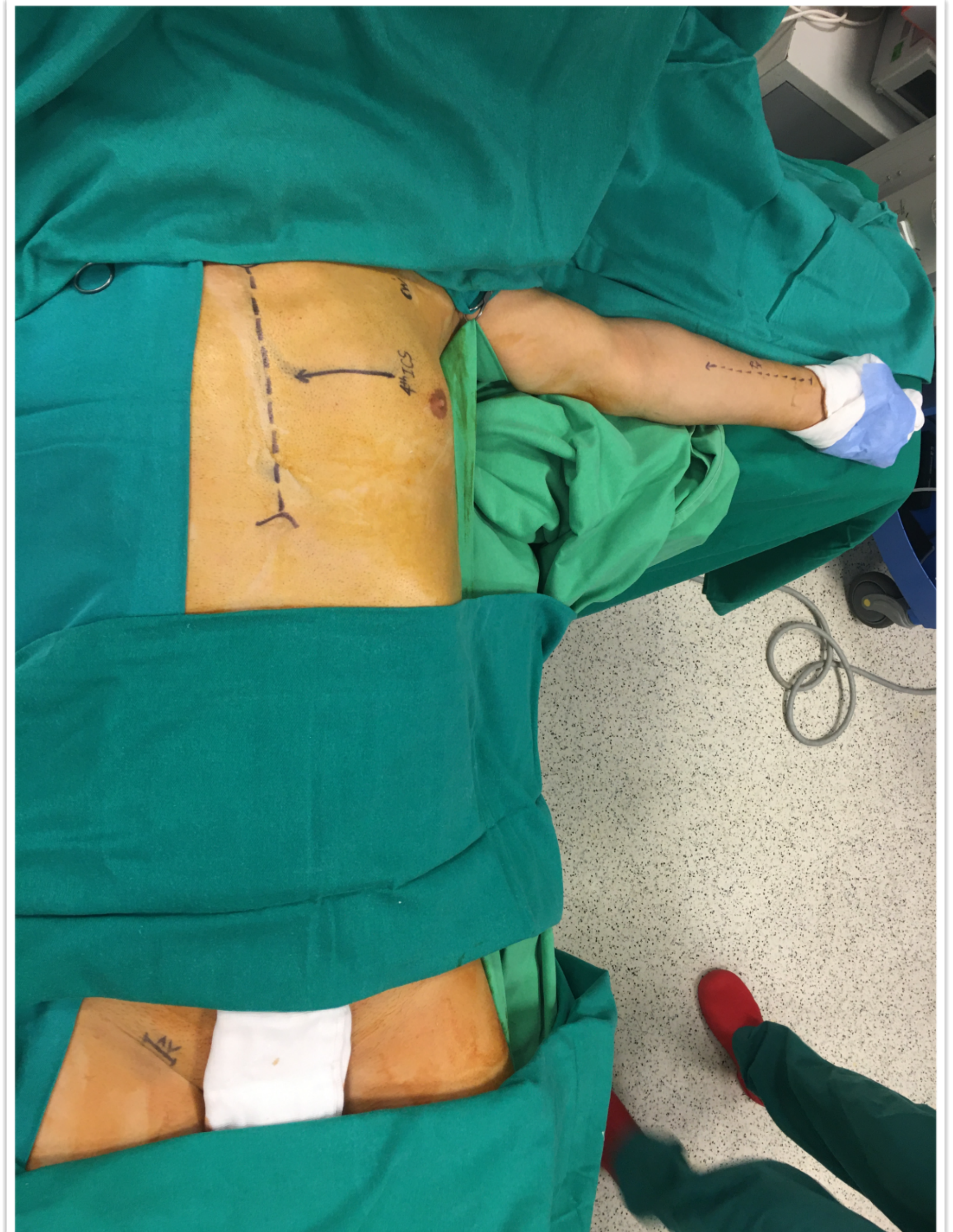


- Double lumen endotracheal entubation
- Supine position with the left chest elevated
- Jugular venous cannulation
- All incisions are marked
- External defibrillating patch pads

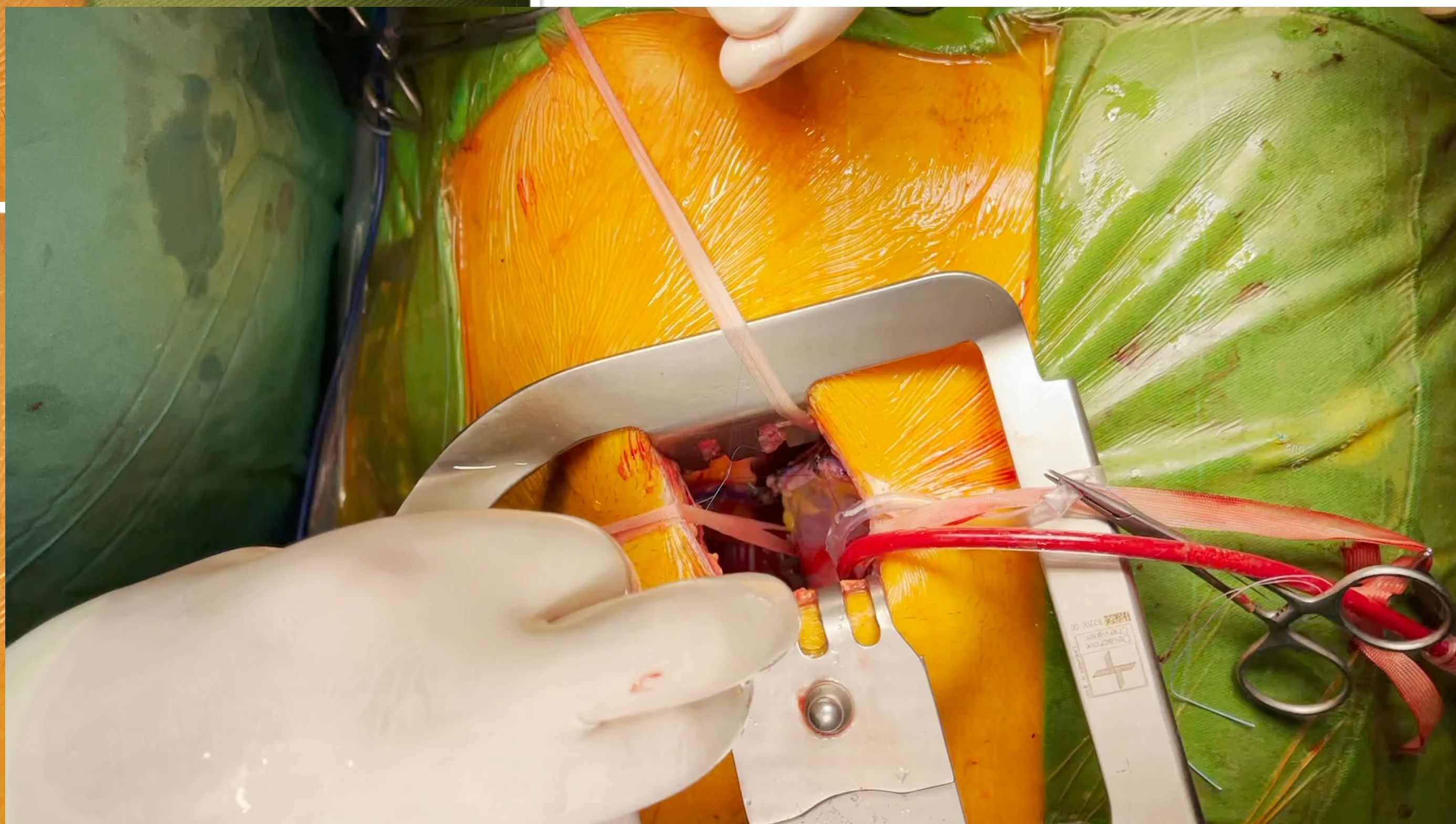
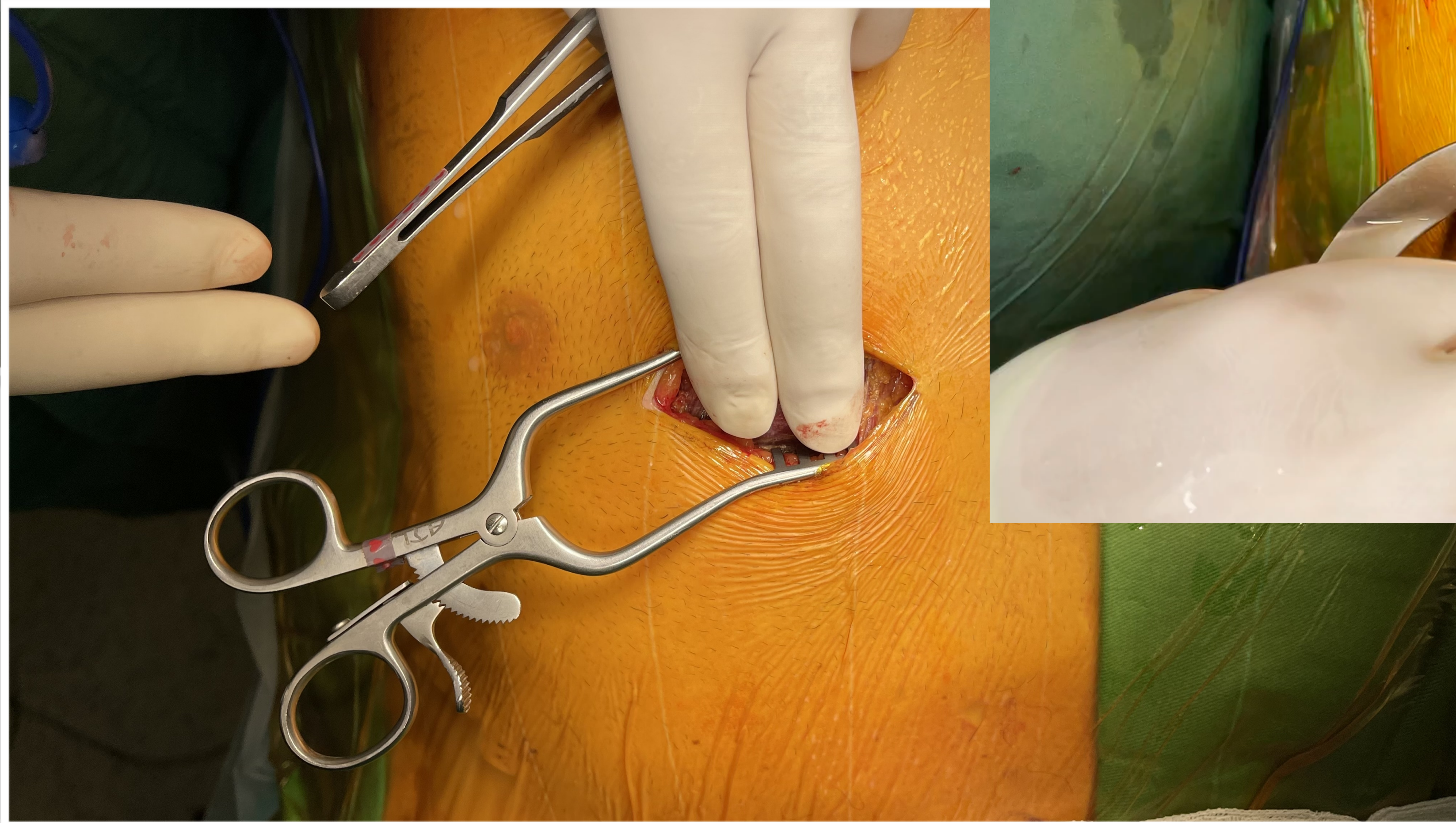
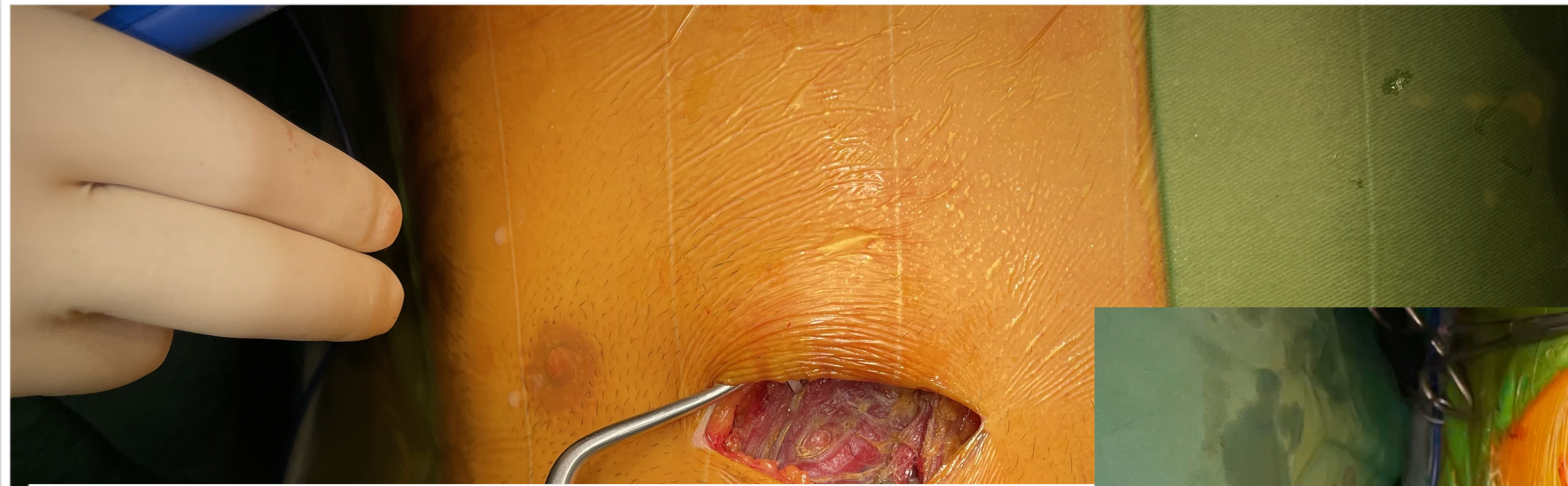




- Sternum borders are determined
- Either third or fourth intercostal space.
- Incision of about 6-7cm
- In women sub-mammary incision is made
- Pectoral muscles are split and no costal bones are resected





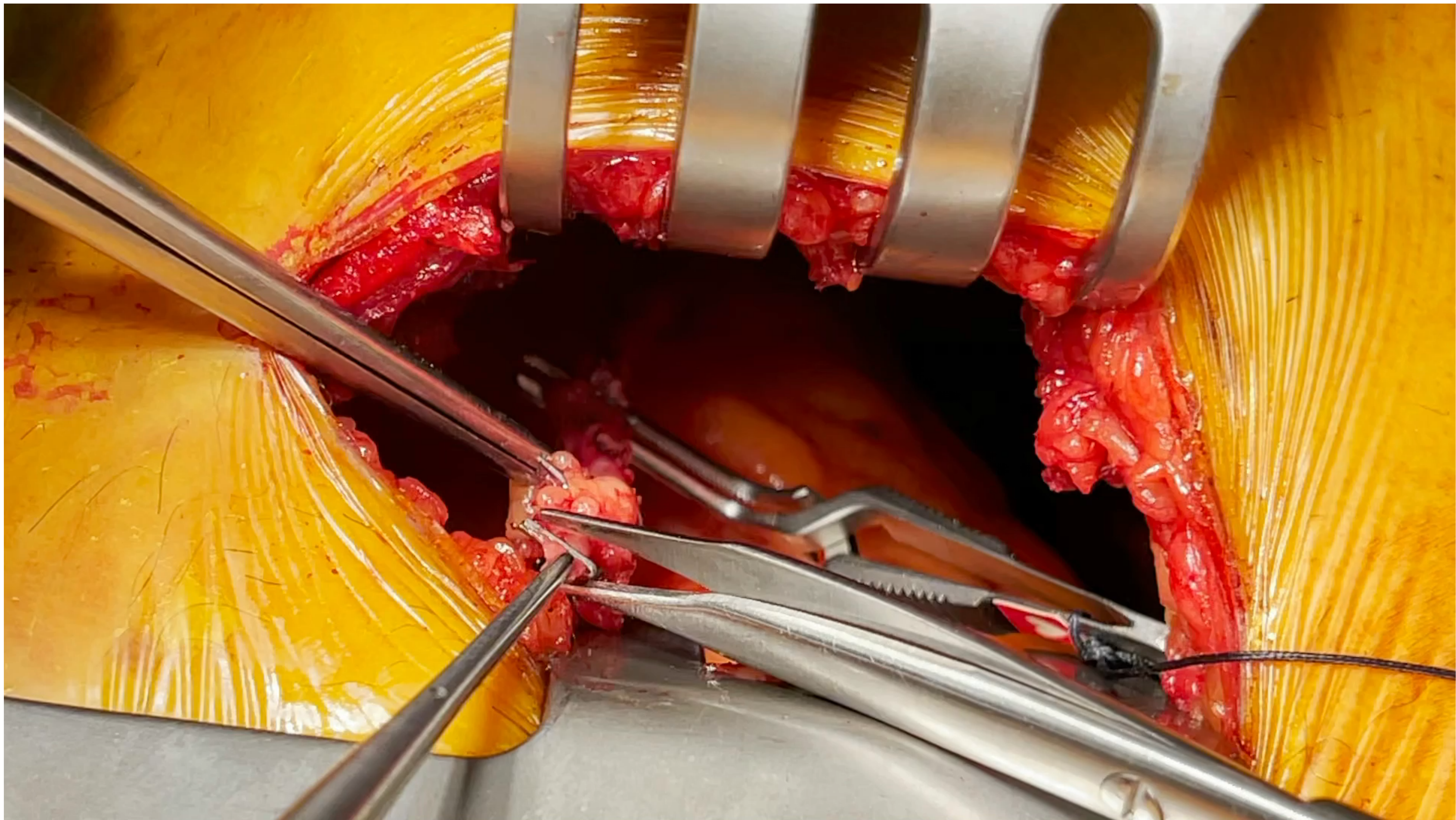




- LITA is transected at the level of thoracotomy incision
- LITA is harvested in skeletonized manner
- A special rib retractor (Delacroix-Chevalier, Sternal ThorAccess MIS Retractor)











- All saphenous vein grafts and radial arterial grafts are harvested endoscopically.

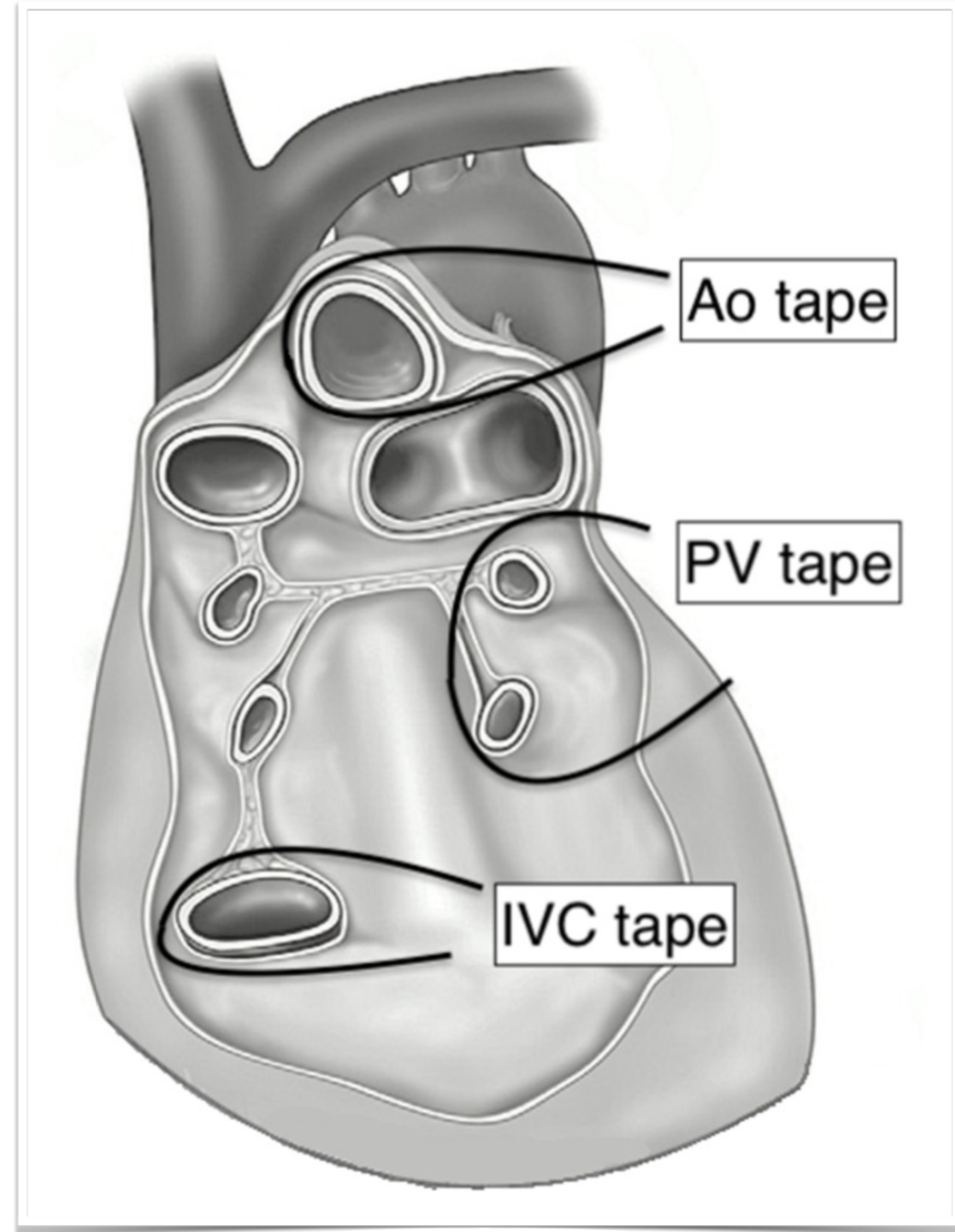


- Encircling ascending aorta
- A chitwood DeBakey cross clamp through anterior axillary line of 2nd intercostal space
- Cardioplegia is given at every fifteen minutes or at the end of each distal anastomosis.



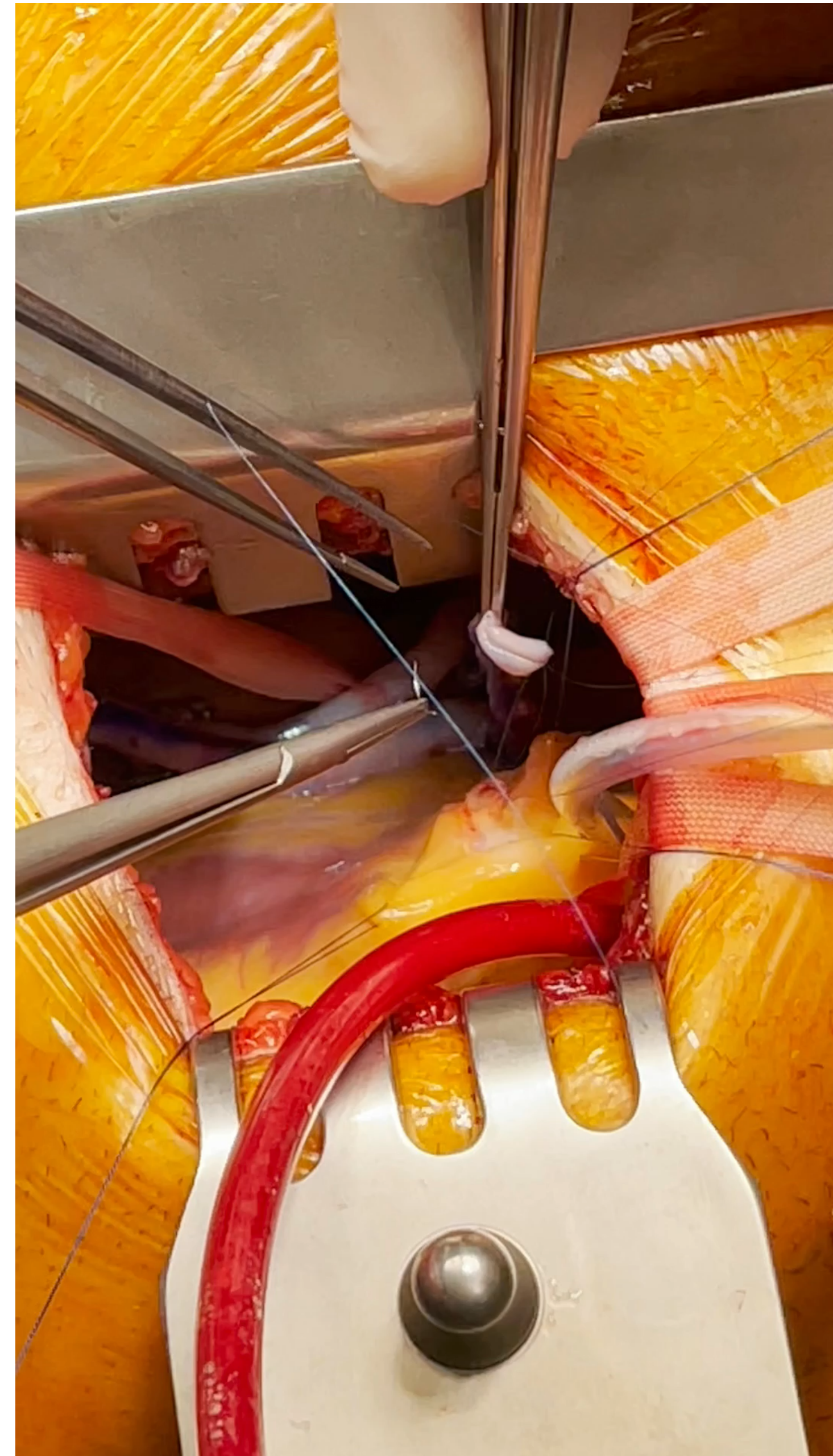


- For exposure of target lesion, **both left pulmonary veins and inferior vena cava** are encircled



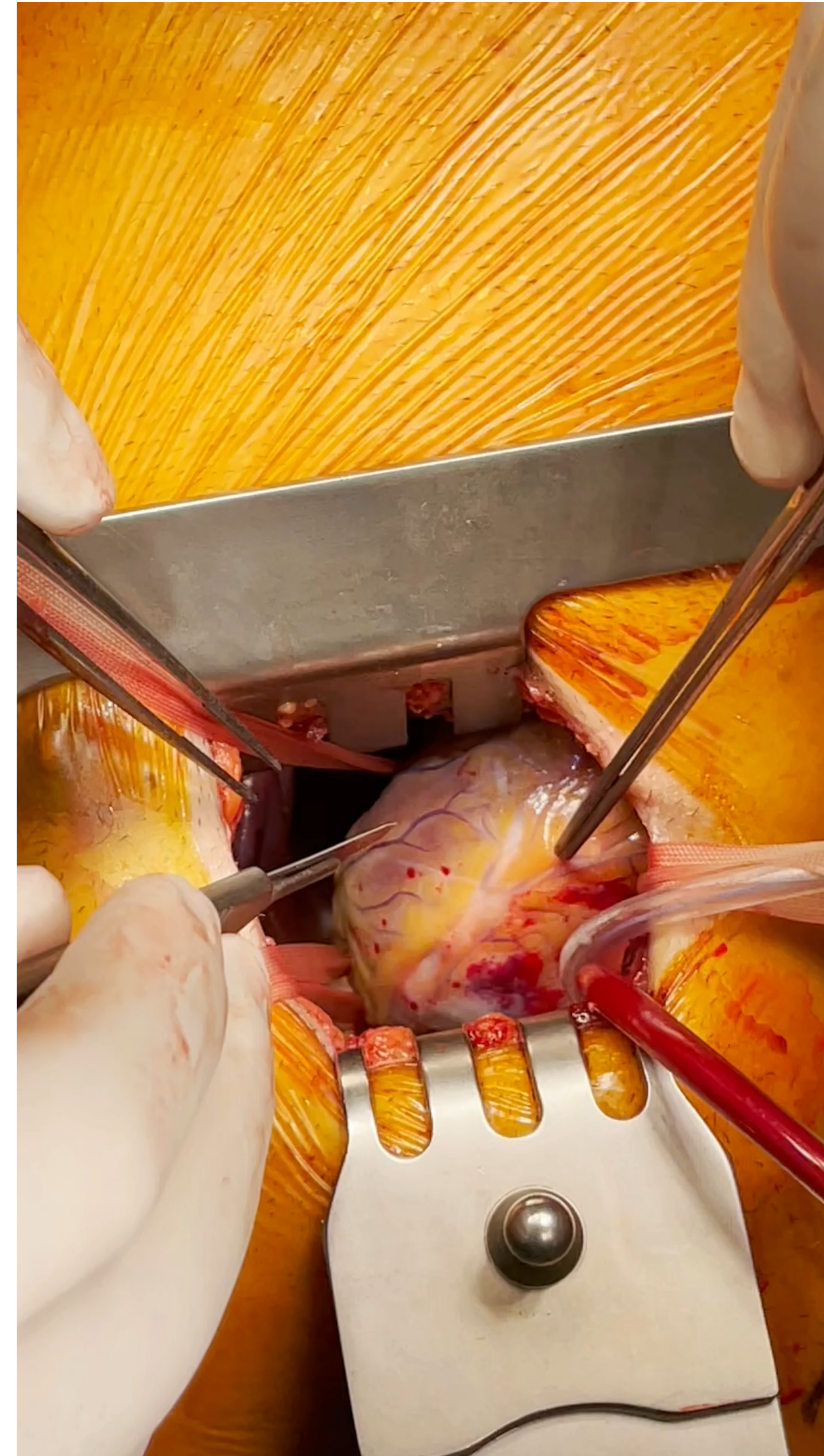


- Exposure of right coronary vessel (RCA) and its branches



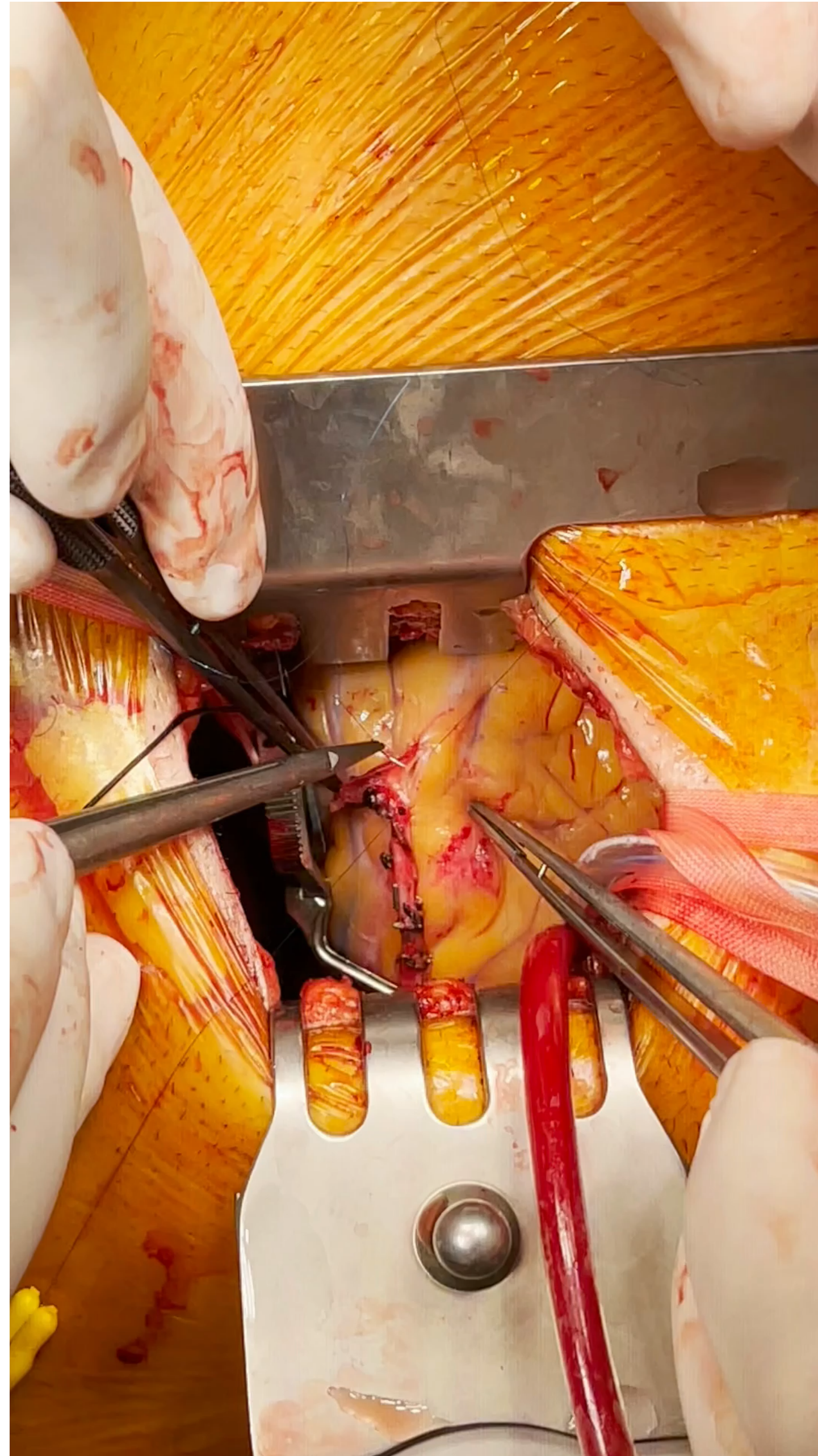


- Exposure of circumflex artery(CX), and its branches



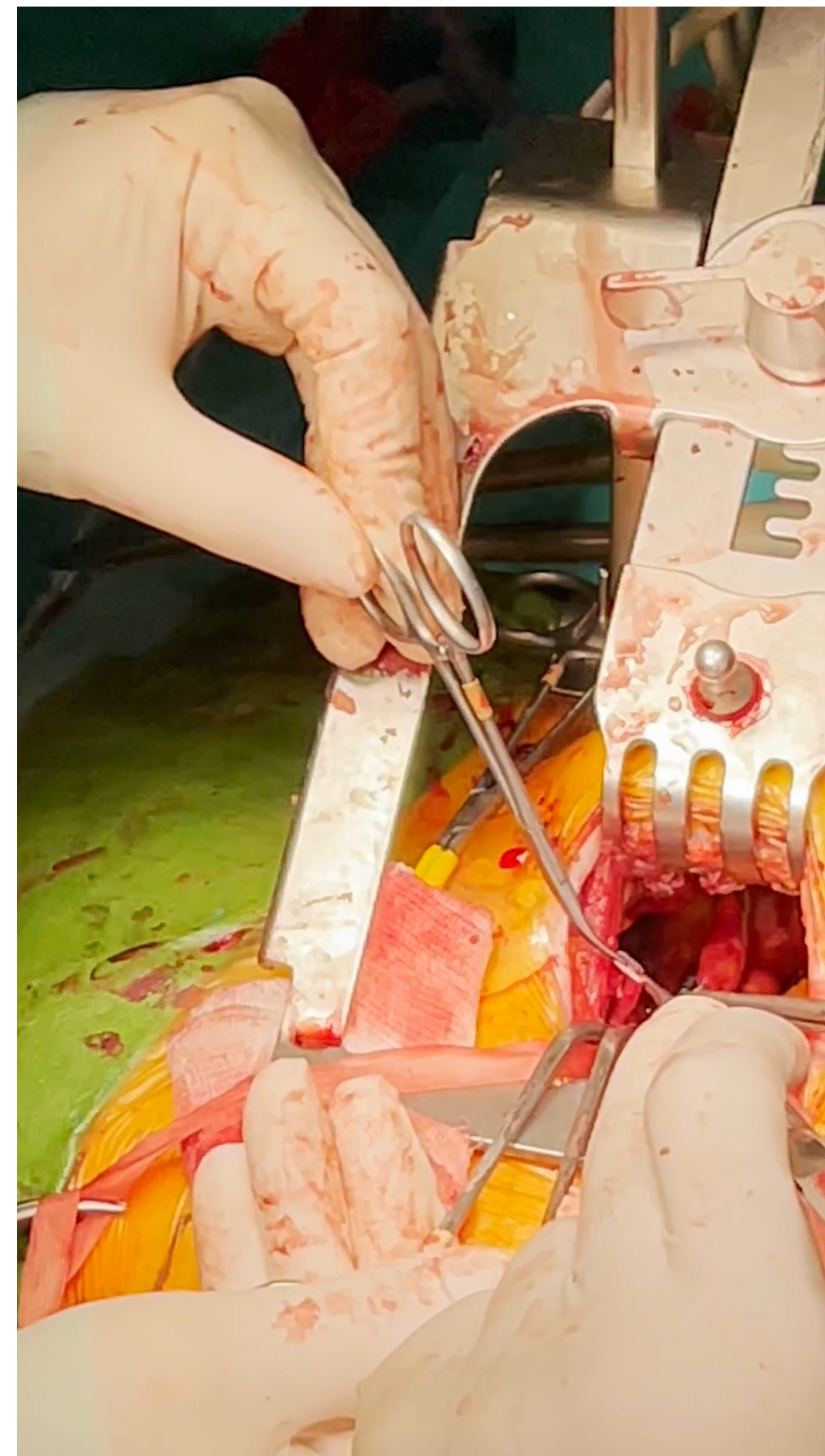


- LIMA-LAD anastomosis in minimally invasive CABG





- Proximal anastomosis are performed with standard instrument





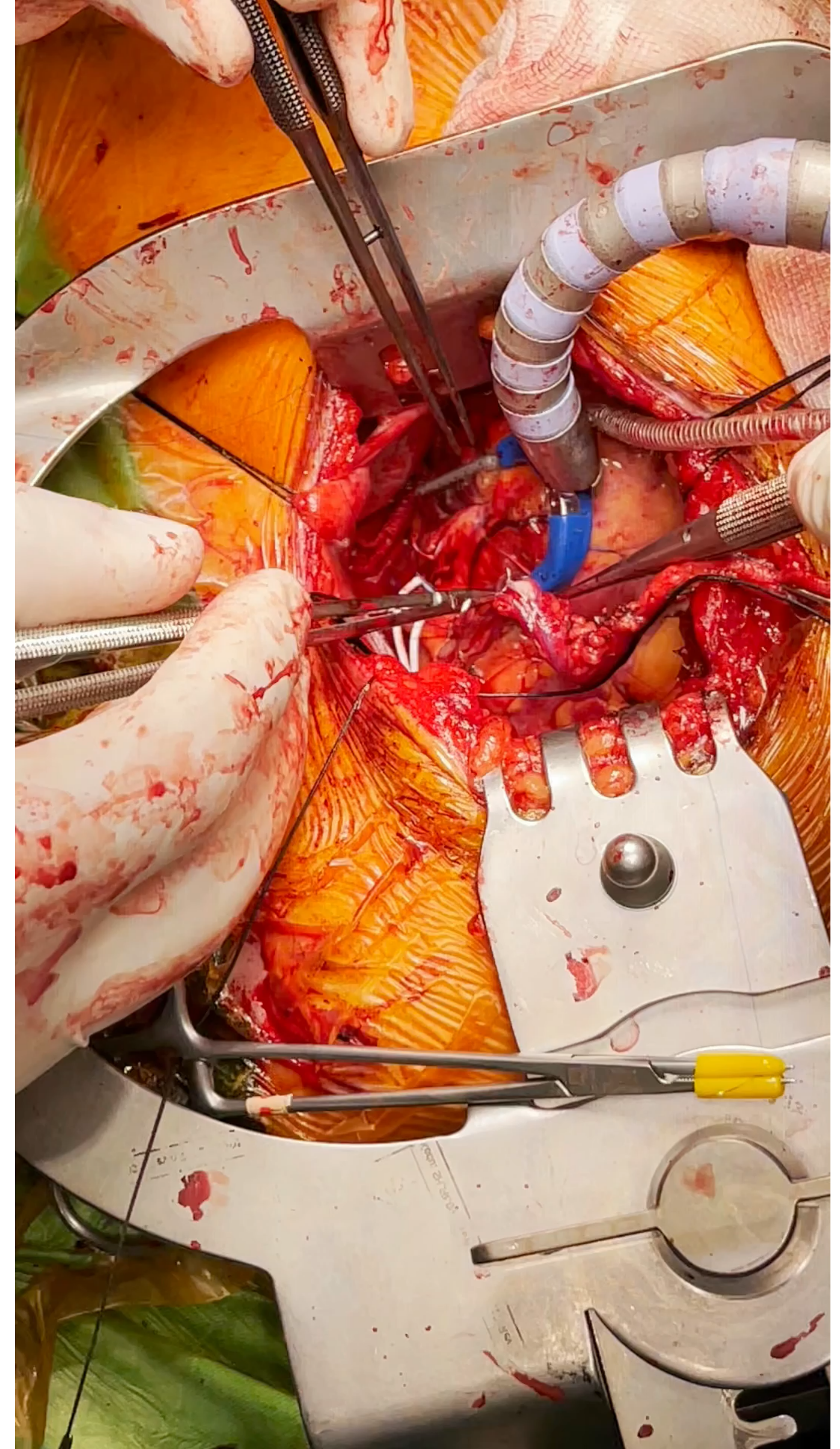
## **Patient Selection**

- All patients indicated for isolated coronary artery bypass grafting (CABG)
- Redo patients cannot be operated under this technique.
- Patients with porcelain ascending aorta can be operated through off pump (Anaortic CABG)



Based on the patient's situations;

- **On pump surgery**
- **Off Pump Surgery**
- **Hybrid therapy**





- **194 patients** were consecutively operated between May 2020 to May 2022



		Min-Max	Median	Mean±sd/n-%	
Age		25,0 - 84,0	60,0	60,20 ± 10,44	
Gender	Female			19	9,8%
	Male			175	90,2%
Height(cm)		142,0 - 191,0	170,0	169,76 ± 8,27	
Weight(kg)		52,0 - 135,0	82,0	82,25 ± 13,95	
BMI		18,6 - 49,6	28,0	28,51 ± 4,29	
DM	(-)			105	54,1%
	(+)			89	45,9%
HT	(-)			72	37,1%
	(+)			122	62,9%
Smoking	(-)			81	41,8%
	(+)			113	58,2%
COPD	(-)			78	40,2%
	(+)			116	59,8%
Preop MI	(-)			118	60,8%
	(+)			76	39,2%
Hyperlipidemia	(-)			82	42,3%
	(+)			112	57,7%
EF		25,0 - 70,0	55,0	53,61 ± 9,51	
Preop Creatinine		0,5 - 5,0	0,8	0,94 ± 0,41	
Postop Creatinine		0,4 - 2,3	0,9	1,01 ± 0,41	
Number of bypass	1			13	6,7%
	2			45	23,2%
	3			69	35,6%
	4			61	31,4%
	5			6	3,1%
On-pump				159	82,0%
Off-Pump				35	18,0%
Post MI VSD				1	
Repair + CABG					
Mitral Valve				2	
Repair + CABG					



		Min-Max	Median	Mean±sd/n-%	
Radial Arter Use	(-)			113	58,2%
	(+)			81	41,8%
Lima Use	(-)			3	1,5%
	(+)			191	98,5%
RCA	(-)			76	39,2%
	(+)			118	60,8%
SEQ	(-)			115	59,3%
	(+)			79	40,7%
CPT		80,0 - 295,0	145,0	150,75 ± 37,79	
CCT		35,0 - 175,0	79,0	79,57 ± 22,61	
CCT Beating				1,00	0,52%
Drainage (ml)		50 - 950	400	427 ± 172	
Blood Transfer	(-)			125	64,4%
	I			57	29,4%
	II			9	4,6%
	III			1	0,5%
Revision	(-)			189	97,4%
	(+)			5	2,6%
Arythmia	(-)			180	92,8%
	(+)			14	7,2%
Ventilation Time (hours)		2,0 - 96,0	4,5	6,15 ± 8,35	
ICU Stay (days)		1,0 - 10,0	1,0	1,52 ± 1,37	
Hospital Stay (days)		1,0 - 21,0	4,0	5,01 ± 2,39	
Total Operation Time (hours)		1,0 - 7,0	4,0	4,32 ± 1,00	



	n	%
<b><i><u>Postoperative outcomes</u></i></b>		
Hematoma(saphenous vein incision)	2	1,03%
Chylothorax	1	0,51%
CVE(cerebrovascular event)	3	1,54%
Phrenic nerve paralysis	2	1,03%
Pneumonia	2	1,03%
Renal insufficiency	1	0,51%
Vascular complication	2	1,03%
Mortality	2	1,03%



# Complete Coronary Revascularization via Left Anterior Thor

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Yevheni  
Oleksii S

## Abstract

### Objective

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patients, ra  
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care stay w  
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of grafts, q

### Keywords

coronary a

<http://dx.doi.org/doi: 10.5606/tgk>

Video Article / Video Makal

## Minimally inv

Minimal invaziv to

It has been over five dec  
artery bypass grafting ((  
thoracic artery (LITA) to t  
(LAD) artery was describ  
The use of the saphenous  
conduits and the feasibil  
bypass grafts was describe  
CABG is accepted as recor  
vessel disease requiring rev  
approach toward this goa  
sternotomy. While being th  
reproducible, this approac  
significant morbidity in bo

Alternative approaches  
been described in the pas  
direct coronary artery by  
either due to limited ap  
of revascularization, or th  
of conduits.<sup>[5,6]</sup> Minimally  
(MICS) CABG which was

## ORIGINAL ARTICLE

## Routine minimally invasive approach via left anterior mini-thoracotomy in multivessel ca

Barış Ça

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<sup>2</sup>Department o  
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Kırklareli, Turke

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## Minimally invasive cor internal thoracic arter angiographic patency

Piroze M. Davierwala, MD,<sup>a</sup> Alex  
Elham Hasheminejad, MD,<sup>b</sup> Konst  
Michael A. Borger, MD, PhD<sup>a</sup>

### ABSTRACT

**Objective:** Multivessel minimally inva  
formed chiefly with left internal thorac  
a left anterolateral thoracotomy, has re  
tional coronary artery bypass grafting.  
rience with respect to early postopera  
arterial multivessel off-pump minimall  
with bilateral internal thoracic arteries

**Methods:** A total of 88 consecutive p  
minimally invasive coronary artery byp  
arteries without ascending aortic mani  
internal thoracic arteries were harveste  
lateral thoracotomy and used as Y or  
formed off pump. Postoperative graft

**Results:** The mean age of patients wa  
were male. The mean body mass inde  
m<sup>2</sup> and 57.6% ± 6.6%, respectively, an  
No intraoperative conversions to cardic  
A total of 209 distal anastomoses (me  
tients undergoing double, 29 patients u  
quadruple coronary artery bypass graft  
patients underwent reexploration for  
wound infections. Predischarge coronary angiography revealed an overall

Innovations  
2019, Vol. 14(4) 330–341  
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## Minimally Invasive Coronary Revascularisation Surgery: A Focused Review of the Available Literature

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Cardiac Surgery, Leipzig, Ge  
Chicago, Chicago, IL, US; 6. D  
Cardiovascular Technologies, I

### Abstract

Minimally invasive coronary rev  
(MIDCAB) grafting is a less invas  
anterior descending coronary art  
multivessel bypass procedures.  
CABG and percutaneous corona  
blood transfusions, shorter hospi  
This article reviews the available  
and patient selection, diagnostic

### Keywords

Coronary artery bypass grafting,  
artery bypass, revascularisation,

## Can Minimally Invasive Multivessel Coronary Revascularization Be a Routine Approach?

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<sup>3</sup> Depa  
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Thora



Ab

## Minimally Invasive coronary surgery compared to STernotomy coro artery bypass grafting: The MIST trial

Ming Hao Guo<sup>a</sup>, George A. Wells<sup>b</sup>, David Glineur<sup>a</sup>, Jacqueline Fortier<sup>a</sup>, Piroze M. Davi  
Keita Kikuchi<sup>d</sup>, Massimo G. Lemma<sup>e</sup>, Yugal K. Mishra<sup>f</sup>, Joseph McGinn<sup>g</sup>, Mahesh Ramch  
Prem Rabindra<sup>i</sup>, Sathyaki Nambala<sup>j</sup>, Kuan Ming Chiu<sup>k</sup>, Bob Kiaii<sup>l</sup>, Sarah Gibson<sup>a</sup>, Marc

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Key



## **Conclusions**

- CABG via left anterior mini- thoracotomy can be routinely performed with less surgical trauma, quick recovery
- This technical approach is reproducible with a much shorter learning curve and can be performed with standard instruments
- Further studies are needed for the standardization of our technique









Thank you