Minimally Invasive Removal Of Left Ventricular Thrombus In Acute Myocardial Infarction

Kazimierz Widenka[1], **Monika Kosiorowska**[1], Janusz Bąk[1], Bartłomiej Belina[1], Nikodem Stożyński[1], Mateusz Surowiec[1], Maciej Kolowca[1]

[1]Department of Cardiac Surgery, Clinical Hospital No.2, Rzeszow, Poland

BACKGROUND

Left ventricular thrombus is a complication of acute myocardial infarction and is associated with systemic thromboembolism.
Contemporary data suggest the incidence of LV thrombus, detected using optimal imaging modalities, may be as high as 15% in patients with ST-segment elevation MI and up to 25% in patients with anterior MI.[1]
Currently, thrombus removal is performed through left ventriculotomy and sternotomy.[2]

METHODS

A 43-year-old man with acute myocardial infarction and mobile and protruding ventricular thrombus, was operated through right minithoracotomy (Figure 1-3).
During routine Echo assessment low EF of 27% and mobile thrombus in the LV was found (Figure 4).
The access through left atrium was used.

Figure 1. Operative setup



Operative procedure
The right minithoracotomy was used (Figure 1).

The right femoral vein was used for venous drainage and femoral artery for arterial return under TEE guidance (Figure2 & 3).

Table 1. Operative details	
CPB	56 min
X-CLAMP	34 min
Intubation Time	5h 40 min
Total chest tube drainage	380ml
Transfusion	2 units FFP 2 units PC
Left pleural effusion	1300 ml drained
In-hospital stay	7 days

Figure 2. Venous cannulation

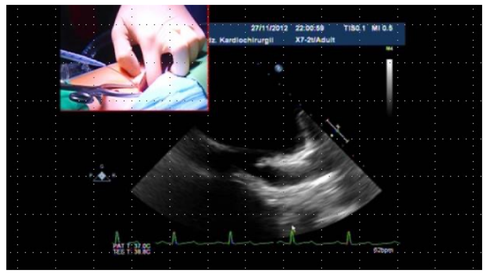
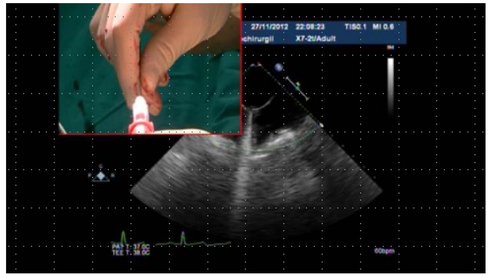


Figure 3. Arterial cannulation



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RESULTS

Through a right minithoracotomy, a left ventricular thrombus behind the papillary muscles and trabeculation was completely visualized with the aid of thoracoscopy, and removed without difficulty (Figure 5).
With the minimally invasive approach patients in acute myocardial infarction have excellent outcomes, can be extubated earlier, and have a quick functional recovery after (Table 1).

Figure 4. Preoperative echokardiography

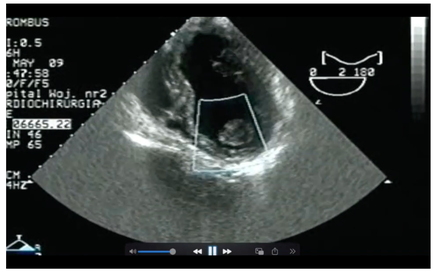
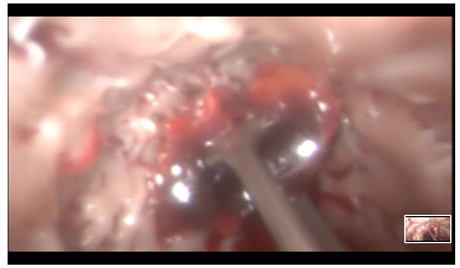


Figure 5. A left ventricular thrombus removal



CONCLUSIONS

The minimally invasive approach seems to be a useful alternative to a left ventriculotomy and median sternotomy, avoiding the resultant compromised left ventricular function. This sternal-sparing and minimally invasive approach is a safe treatment option and allows patients with acute myocardial infarction to benefit from a faster recovery.

Reference:
1.McCarthy CP, Vaduganathan M, McCarthy KJ, Januzzi JL, Bhatt DL, McEvoy JW. Left Ventricular Thrombus After Acute Myocardial Infarction: Screening, Prevention, and Treatment. *JAMA Cardiol.* 2018;3(7):642–649.
2.Mauro Massussi, Andrea Scotti, Gregory Y H Lip, Riccardo Proietti, Left ventricular thrombosis: new perspectives on an old problem, European Heart Journal - Cardiovascular Pharmacotherapy, Volume 7, Issue 2, March 2021

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