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Case Report

Giant Post-Infarction Left Ventricular Aneurysm of the Lateral Wall

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Abstract

Background: Left ventricular aneurysm is an uncommon but important late mechanical complication of transmural myocardial infarction. Giant aneurysms can cause heart failure, angina, ventricular arrhythmia, thromboembolism, and diagnostic confusion with pseudoaneurysm or mediastinal masses. *Case presentation:* A 58-year-old male with a history of acute myocardial infarction in 2022 treated abroad by percutaneous coronary intervention/angioplasty with two stents in the left circumflex artery was evaluated for a large left ventricular outpouching. Earlier surgical advice had reportedly been declined, and the patient was managed medically until re-presentation in 2026. Echocardiography showed a large cystic aneurysmal lesion communicating with the posterior left ventricular wall through an approximately 3 cm neck, with left ventricular ejection fraction around 40%, mild left ventricular systolic dysfunction, grade I diastolic dysfunction, mild aortic regurgitation, and mild tricuspid regurgitation with an estimated right ventricular systolic pressure of approximately 36 mmHg. CT cardiac chamber imaging demonstrated cardiomegaly and a giant outpouching arising from the left lateral wall of the left ventricle, measuring approximately 131 x 90 x 115 mm with a 20 mm neck. CT coronary angiography showed mild plaque burden in the LAD, LCx, and RCA, with uncertain distal LCx stent patency. The patient underwent open surgical repair with exclusion of the aneurysmal cavity and ventricular reconstruction with primary multilayer closure of neck using Teflon felt under cardiopulmonary bypass. *Conclusion:* This case highlights the value of multimodality imaging for defining aneurysm size, neck anatomy, coronary status, and associated thoracic findings. Giant post-infarction aneurysms, especially when large, symptomatic, or anatomically high risk, require individualized heart-team assessment and often surgical reconstruction to restore ventricular geometry and reduce complications.

Keywords

Left Ventricular Aneurysm, Giant Post-infarction Aneurysm, Myocardial Infarction, Ventricular Reconstruction, Cardiopulmonary Bypass, Multimodality Imaging, Case Report

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1. Introduction

Left ventricular aneurysm (LVA) is a localized, scarred, thinned, non-contractile or dyskinetic segment of the left ventricular wall that usually develops after a transmural myocardial infarction [1]. The aneurysmal wall is typically fibrotic and may bulge paradoxically during systole, impairing left ventricular geometry and stroke volume.

With modern reperfusion therapy, post-infarction LVA is less common than in the pre-reperfusion era; however, delayed presentation is still encountered, particularly when myocardial infarction is large, reperfusion is incomplete, or follow-up imaging is delayed [2-4]. Clinical consequences include recurrent angina, progressive heart failure, mitral regurgitation, ventricular arrhythmias, mural thrombus, systemic embolization, and diagnostic overlap with left ventricular pseudoaneurysm [2, 3, 5].

True LVAs most often involve the anterior or apical wall, whereas posterior or lateral aneurysms are less common and demand careful imaging assessment because pseudoaneurysm, a contained free-wall rupture, carries a substantially higher risk of rupture and may require more urgent repair [6]. The present case describes a giant post-infarction aneurysmal outpouching from the lateral/posterolateral left ventricular wall in a 58-year-old man with prior LCx stenting, managed by surgical ventricular reconstruction.

2. Case Presentation

2.1. Patient Information

A 58-year-old male manual worker, with a history of acute myocardial infarction in 2022 while abroad, underwent percutaneous coronary intervention/angioplasty. Available records mention two stents in the left circumflex artery. Subsequent assessment identified a large left ventricular aneurysmal lesion, and surgery was reportedly advised. The patient initially declined operative treatment and continued medical management.

In May 2026, after an intercurrent pneumonia and local medical treatment, he underwent CT thorax, which showed cardiomegaly with query LV Aneurysm. He was subsequently admitted under cardiovascular and thoracic surgery and 2D-echocardiography, CT Cardiac Chambers and CT Coronary Angiography done and planned for operative management of the left ventricular aneurysm.

2.2. Timeline

Table 1. *Timeline of Patient's Clinical Course.*

Date/period	Clinical event
October 2022	Acute myocardial infarction while abroad; PCI/PTCA performed with two LCx stents according to later records.
Late 2022	Returned to India; evaluated for cough/cold/pulmonary symptoms and known post-PCI status; medical therapy continued.
March 2023	Repeat cardiac evaluation reportedly showed a left ventricular aneurysm; surgery was advised, but the patient opted for medical management.
20 May 2026	Developed pneumonia; received local treatment; repeat evaluation was initiated.
27-29 May 2026	Cardiothoracic review and hospital admission for definitive management.
30 May-2 June 2026	Laboratory testing, echocardiography, HRCT thorax, CT cardiac chamber imaging, and CT coronary angiography performed.
05 June 2026	Open repair of the aneurysmal cavity with left ventricular reconstruction with primary closure of aneurysm neck using Teflon felt under cardiopulmonary bypass.

3. Diagnostic Assessment

3.1. Echocardiography

The transthoracic echocardiography described a large approximately 7 x 10 cm cystic lesion connected to the posterolateral/posterior wall of the left ventricle through an approximately 3 cm neck. Regional wall motion abnormality was noted in inferolateral/inferior-posterior segments, with akinesia. The left ventricular ejection fraction was reported around 40%, consistent with mild left ventricular systolic dysfunction. Additional findings included grade I left ventricular diastolic

dysfunction, mild aortic regurgitation, and mild tricuspid regurgitation with an estimated right ventricular systolic pressure of approximately 36 mmHg. The interatrial and interventricular septa were marked as intact, and no pericardial effusion was recorded.

3.2. HRCT Thorax

Cardiomegaly with a large isodense lesion lateral to the left ventricle, measuring approximately 128 x 84 x 110 mm, interpreted as possible left ventricular aneurysm (Figure 1). Additional thoracic findings included bilateral fibrotic bands, peribronchial cuffing with ground-glass haziness/mosaic attenuation, calcified mediastinal lymph nodes, no pleural effusion, mild aortic atherosclerosis, left lower-lobe plate atelectasis, and a small right kidney.

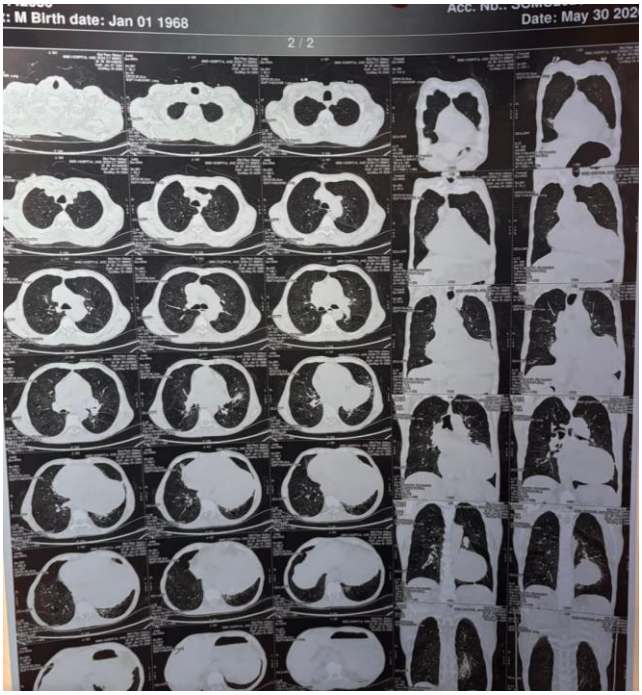

Figure 1. *HRCT Chest showing Cardiomegaly with a large isodense lesion lateral to the left ventricle.*

3.3. CT Cardiac Chamber

Large dilatation/outpouching arising from the left lateral wall of the left ventricle, measuring approximately 131 x 90 x 115 mm, with a neck of approximately 20 mm; abutting the left mediastinal pleura and left dome of diaphragm; suggestive of left ventricular aneurysm [7] (Figure 2). Mild hypertrophy of the remaining left ventricle was noted. Right and left SVCs draining to the right atrium were reported. Main pulmonary artery measured about 38 mm with mild bilateral branch pulmonary artery dilatation, raising possible pulmonary hypertension.

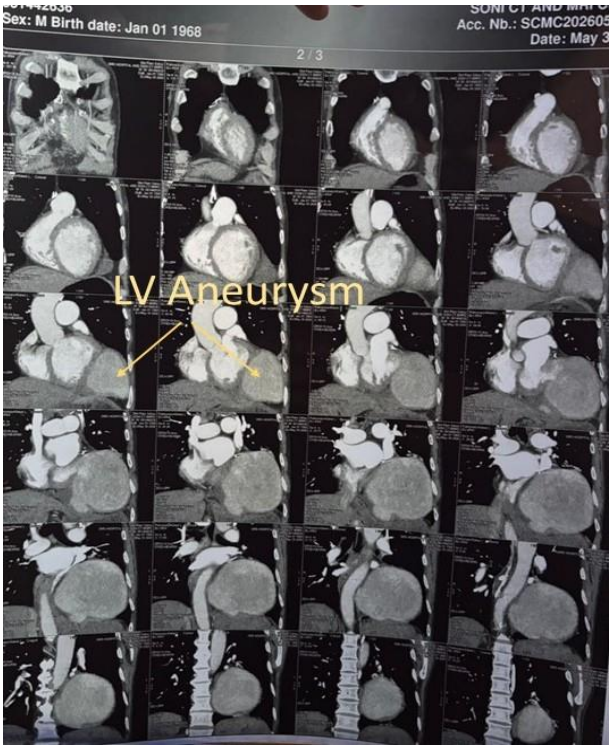

Figure 2. *CT cardiac chambers showing outpouching arising from the left lateral wall of the left ventricle with irregular hyperdensities suggestive of thrombus.*

3.4. CT Coronary Angiography

Technically suboptimal study due to venous filling, poor contrast opacification, and motion blur. Left main artery was normal. LAD was type I with few proximal calcified/soft plaques causing mild 30-40% luminal narrowing. LCx showed mild 20-30% proximal stenosis with two stents in the mid and distal segments; distal contrast opacification was not clearly seen, so blocked stent could not be excluded. RCA had mild 20-30% stenosis in mid/distal segments; distal RCA/PDA/PLV were obscured. Right dominance. CAD-RADS: inconclusive study.

3.5. Chest Radiograph

Figure 3. *Chest radiograph showing left-sided cardiac contour enlargement.*

Cardiomegaly/left-sided cardiac contour enlargement on radiographs (Figure 3). No definite pleural effusion was apparent.

3.6. Laboratory Summary

Table 2. Summary of Laboratory Investigations.

Domain	Notable values
Serology	HBsAg negative; anti-HCV negative: HIV non-reactive.
Hematology	Mild anemia was present (hemoglobin approximately 10.9-11.2 g/dL). Platelets were within range (approximately 249-301 $\times 10^3$/uL). WBC ranged from approximately 9.4 to 11.3 $\times 10^3$/uL with neutrophil predominance. ESR was 24 mm/hour.
Coagulation	PT was reported as 18.2 sec with INR around 1.02.
Renal/electrolytes	Creatinine ranged from approximately 0.96 to 1.24 mg/dL. Mild hyponatremia was noted (Sodium approximately 132.5-133 mmol/L). One chloride value was low (approximately 93 mmol/L).
Biochemistry	Mild hyperbilirubinemia was recorded (total bilirubin approximately 1.8 mg/dL). LDH was elevated (approximately 537 IU/L). Total protein was low (approximately 4.89 g/dL). Random glucose was 86 mg/dL on one report and 139 mg/dL on another.
Lipid profile	Total cholesterol approximately 90 mg/dL, LDL approximately 41 mg/dL, HDL approximately 27.9 mg/dL, triglycerides approximately 116.5 mg/dL.

4. Differential Diagnosis

True post-infarction left ventricular aneurysm: supported by remote myocardial infarction, chronic course, ventricular outpouching, regional wall motion abnormality, and operative repair anatomy.

Left ventricular pseudoaneurysm: important alternative diagnosis because the lesion is lateral/posterolateral and has a relatively narrow neck; definitive differentiation depends on imaging, intra-operative findings, and histopathology of the aneurysmal wall.

Pericardial cyst or mediastinal mass: less likely because imaging demonstrated communication with the left ventricular cavity and associated post-infarction regional wall abnormality.

Congenital left ventricular diverticulum/aneurysm: less likely in the setting of prior myocardial infarction and LCx stenting, but can be considered if operative histology does not show post-infarction scar.

5. Operative Notes

The patient was prepared for surgery under standard cardiac anesthesia and positioned in supine position. median sternotomy done. Cardio-pulmonary bypass was instituted by ascending Aorta and right atrial appendage cannulation. Delnido cardioplegia solution was used to arrest the heart. A giant LV lateral wall aneurysm was found after extensive dissection of pericardial adhesions (Figure 4).

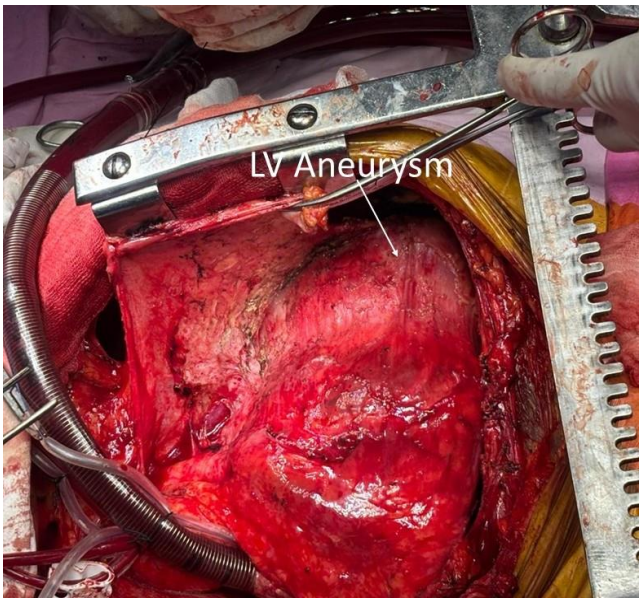

Figure 4. Intra-operative picture showing giant LV aneurysm attached to lateral wall of LV after removing pericardial adhesions.

Longitudinal incision of aneurysm (Figure 5) and removal of thrombus (Figure 6) were performed. The aneurysm was connected to lateral wall of LV through a neck approximately 3×5 cm.

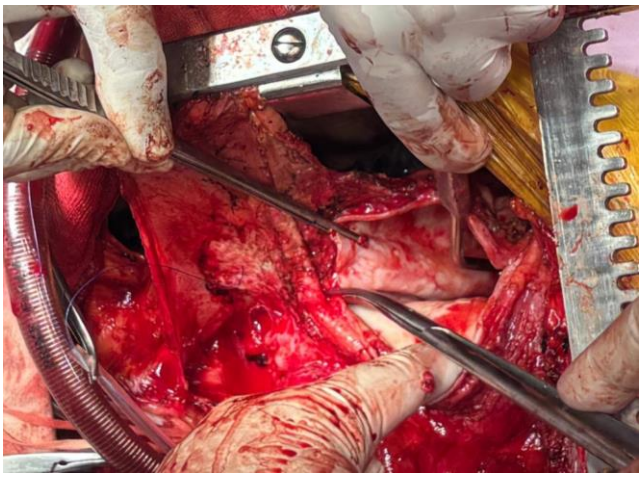

Figure 5. *Intra-operative picture of incision of aneurysm.*

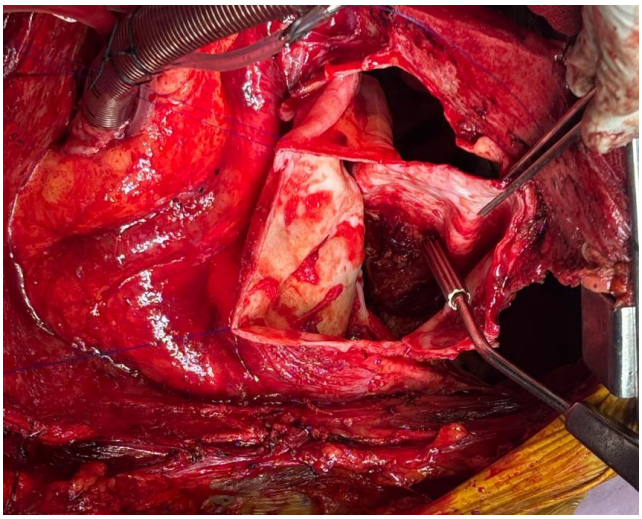

Figure 6. *Open aneurysm with thrombus present.*

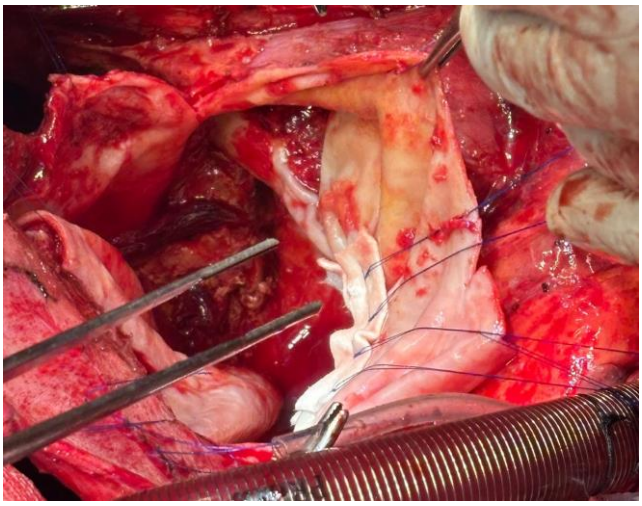

Figure 7. *Closure of aneurysm neck with Teflon felt strips and polypropylene sutures.*

Two strips of Teflon felt taken and placed around both the sides of oval shaped neck, five polypropylene 4-0 sutures taken in mattress fashion involving both the felt strips and neck margins (Figure 7). Second layer taken with polypropylene 3-0 running sutures. Pericardial patch of same size taken and sewn around the closed neck with polypropylene 4-0 running sutures. there was no bleeding after surgical reconstruction. Smoothly taken patient off Cardio-pulmonary bypass. Total cross-clamp time was 47minutes. Total bypass time was 85minutes. Intra-aortic balloon pump (IABP) was placed before closure. Total 3 units of blood (PRBC) transfused intra-operatively.

6. Postoperative Course and Outcome

The patient was shifted to ICU after completion of surgery with IABP and heavy ionotropic supports (dobutamine, epinephrine and nor-epinephrine) and remained vitally stable throughout the intubation period. He was extubated twenty hours after surgery and remained stable after extubation and slowly ionotropic supports were tapered down. Postoperative echocardiographic LVEF was 35%, no residual aneurysm and mitral/tricuspid/aortic valve working normal. ICU stay of patient was 4 days post operative period and then patient shifted to ward for 1 day and discharged with stable vitals on oral antibiotics, pain killers, tablet aspirin 75mg, tablet clopidogrel 75mg, tablet rosuvastatin 10mg, tablet nitroglycerine 2.6mg and tablet torsemide 10mg. At 15 days follow-up, patient remained asymptomatic with satisfactory wound healing.

7. Discussion

7.1. Pathogenesis and Clinical Importance

Post-infarction left ventricular aneurysm develops when a transmural infarcted segment undergoes thinning, fibrosis, expansion, and paradoxical systolic bulging [1]. The resulting dyskinetic segment increases wall stress and may reduce effective stroke volume. In large aneurysms, this can produce heart failure symptoms, recurrent ischemic symptoms, mitral regurgitation due to altered geometry, ventricular arrhythmias from scar border zones, and stasis-related mural thrombus with embolic risk [2, 3, 8].

This patient had a remote myocardial infarction treated with LCx stenting and later developed a giant aneurysmal outpouching from the lateral/posterolateral left ventricle. A lateral location is clinically important because LCx-related infarction can involve the lateral or posterolateral wall, and because posterior/lateral outpouchings overlap radiologically with pseudoaneurysm, especially when the neck is relatively narrow.

7.2. Role of Imaging

Multimodality imaging is central to diagnosis and surgical

planning [2, 7]. Echocardiography can assess ventricular function, regional wall motion, valve regurgitation, pericardial effusion, thrombus, and flow across the aneurysmal neck. CT provides excellent anatomic definition of aneurysm size, neck, relation to pleura/diaphragm, coronary stents, extracardiac thoracic findings, and vascular anomalies such as persistent left SVC. Cardiac MRI, if available and not contraindicated, is valuable for scar characterization, thrombus detection, and differentiation of true aneurysm from pseudoaneurysm [7].

In the present case, echocardiography and CT were concordant in identifying a giant LV outpouching. CT coronary angiography, however, was inconclusive because of poor contrast and motion blur, leaving uncertainty regarding distal LCx stent patency and distal RCA/PDA/PLV visualization.

7.3. True Aneurysm Versus Pseudoaneurysm

A true aneurysm contains scarred myocardium/fibrous ventricular wall and usually has a lower risk of rupture once mature. A pseudoaneurysm is a contained rupture of the left ventricular free wall bounded by pericardium or adherent scar; it is more prone to rupture and generally warrants early surgical consideration. Features suggesting pseudoaneurysm include a narrow neck relative to sac size, abrupt discontinuity of myocardium, posterior/inferior/lateral location, and a history of recent infarction or cardiac surgery. Although histopathological examination of aneurysmal wall was not available till the time of discharge, the chronic clinical course, multimodality imaging findings and intraoperative appearance favoured a chronic post-infarctiom true left ventricular aneurysm over pseudoaneurysm [6, 7, 9, 10].

7.4. Indications for Surgery and Operative Strategy

Management of LVA is individualized. Small, asymptomatic aneurysms may be observed with optimized medical therapy [2, 3]. Surgical repair is usually considered when there is large aneurysm size, progressive expansion, heart failure, angina or ischemia, ventricular arrhythmia, systemic embolism or thrombus, significant valve dysfunction, pseudoaneurysm, or diagnostic/rupture concern. The operative goal is not only to remove or exclude the aneurysmal segment but also to restore a more physiological left ventricular shape and volume [11].

Surgical techniques include linear aneurysmorrhaphy, aneurysmectomy, endoventricular circular patch plasty/Dor-type repair, and other ventricular reconstruction techniques, with or without concomitant coronary artery bypass grafting or valve repair. Patch reconstruction is particularly useful in large aneurysms because it excludes non-contractile scar while preserving a more elliptical ventricular cavity and avoiding excessive reduction of LV volume [3, 12-14].

7.5. Antithrombotic and Secondary Prevention Considerations

Patients with large LV aneurysms are at risk of mural thrombus because of blood stasis [8, 15]. If thrombus is documented, anticoagulation strategy should be individualized alongside antiplatelet requirements for coronary stents and postoperative bleeding risk. Guideline-based secondary prevention after myocardial infarction and PCI should include antiplatelet therapy, high-intensity statin unless contraindicated, beta-blocker when appropriate, renin-angiotensin system inhibition/ARNI as indicated, risk-factor control, and supervised cardiac rehabilitation.

8. Unique Aspects of This Case

1) Giant size: the aneurysmal sac measured approximately 13 cm in maximum dimension on CT, making it a giant lesion with mass effect on adjacent thoracic structures.
2) Lateral/posterolateral location: this is less common than typical apical/anterior aneurysms and requires careful pseudoaneurysm differentiation.
3) Prior LCx stenting: the aneurysm location and LCx stents support an ischemic etiology involving the lateral wall.
4) Delayed presentation: presented nearly four years after myocardial infarction.

9. Conclusion

A giant post-infarction left ventricular aneurysm is a rare and potentially serious delayed complication of myocardial infarction. This case demonstrates the importance of integrating clinical history, echocardiography, CT cardiac chamber imaging, coronary assessment, and operative findings. In large lateral/posterolateral aneurysms, pseudoaneurysm must remain in the differential diagnosis until imaging and surgical inspection clarify the anatomy. The present lesion was most consistent with a giant chronic post-infarction left ventricular aneurysm based on multimodality imaging and intraoperative findings. Patch-based ventricular reconstruction under cardiopulmonary bypass is a rational surgical strategy for excluding the dyskinetic cavity and restoring left ventricular geometry [2, 3, 10].

10. Learning Points

1) Remote myocardial infarction can lead to delayed, giant left ventricular aneurysm formation, especially when infarction is transmural or reperfusion is incomplete.
2) Lateral or posterior LV outpouchings need careful differentiation between true aneurysm and pseudoaneurysm because management urgency and rupture risk differ.

3) Echocardiography defines function and valve status, while CT/MRI better define sac size, neck anatomy, relation to adjacent structures, and thrombus or scar characteristics.
4) Large or symptomatic LV aneurysms should be evaluated by a multidisciplinary heart team for surgical reconstruction, coronary management, and postoperative antithrombotic planning.
5) Surgical repair with aneurysm exclusion and left ventricular reconstruction remains an effective treatment for giant chronic post-infarction left ventricular aneurysms, restoring ventricular geometry and improving clinical outcomes.

11. Patient Consent and Ethics

This draft has been anonymized by removing patient name, identifiers, and hospital numbers. Written informed consent was obtained from the patient for publication of this case report and the accompanying clinical images. Ethical approval was not required for this single-patient case report in accordance with the institutional policy.

Abbreviations

CT	Computed Tomography
LAD	Left Anterior Descending Coronary Artery
LCx	Left Circumflex Coronary Artery
RCA	Right Coronary Artery
LVA	Left Ventricular Aneurysm
PCI	Percutaneous Coronary Intervention
PTCA	Percutaneous Transluminal Coronary Angioplasty
HRCT	High-Resolution Computed Tomography
SVC	Superior Vena Cava
PDA	Posterior Descending Artery
PLV	Posterolateral Ventricular Branch
CAD-RADS	Coronary Artery Disease–Reporting and Data System
HBsAg	Hepatitis B Surface Antigen
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
WBC	White Blood Cell Count
ESR	Erythrocyte Sedimentation Rate
PT	Prothrombin Time
INR	International Normalized Ratio
LDH	Lactate Dehydrogenase
LDL	Low-Density Lipoprotein
HDL	High-Density Lipoprotein
IABP	Intra-Aortic Balloon Pump
PRBC	Packed Red Blood Cells
LVEF	Left Ventricular Ejection Fraction
ICU	Intensive Care Unit
MRI	Magnetic Resonance Imaging

Author Contributions

Utsav Nandwana: Conceptualization, Data curation, Formal Analysis, Visualization, Writing – original draft

Sanjeev Devgarha: Methodology, Supervision, Validation, Writing – review & editing

Anula Sisodia: Formal Analysis, Methodology, Writing – review & editing

Krishna Kumar Mawar: Formal Analysis, Writing – review & editing

Dhruv Sharma: Formal Analysis, Writing – review & editing

Swapnil Panchal: Data Curation, Investigation

Mohit Singhal: Data Curation, Investigation

Data Availability Statement

The data supporting the findings of this case report are available from the corresponding author upon reasonable request. To protect patient privacy and confidentiality, the data are not publicly available.

Conflicts of Interest

The authors declare no conflict of interest.

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