

# Lifestyle-Associated Physiologic and Biomarker Improvements with Hemodynamic Stability and Medication Reduction in Severe Multivessel Coronary Artery Disease: A Case Report

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## ABSTRACT

**Background:** Lifestyle patterns strongly influence cardiometabolic physiology in patients with coronary artery disease. Improvements in body weight, lipid metabolism, and circulatory stability reflect reduced disease burden and may influence long-term medication requirements.

**Case Presentation:** A 46-year-old male with obesity (BMI 30.3 kg/m<sup>2</sup>), post-COVID-19 hypertension, and severe multivessel coronary artery disease (CAD) sustained an acute myocardial infarction in 2023 requiring multiple percutaneous coronary interventions. Following clinical stabilization, the patient initiated a structured lifestyle intervention centered on dietary time restriction (One Meal A Day, OMAD) beginning 21 May 2025.

**Results:** Lifestyle modification was associated with broad physiologic and biomarker improvements, including approximately 9.8% body-weight reduction, significant reduction in triglycerides (1.4 → 0.9 mmol/L), improvement in HDL cholesterol, and sustained blood-pressure stability within recommended targets. Renal, hepatic, electrolyte, and hematologic parameters remained stable. As these improvements were maintained, cardiovascular medications were progressively reduced under cardiologist supervision. No clinical events were observed.

**Conclusion:** Lifestyle-centered intervention can drive meaningful improvements across multiple cardiometabolic biomarkers while preserving circulatory stability, with medication reduction occurring as a downstream response to improved physiologic demand.

## INTRODUCTION

Coronary artery disease is a chronic condition whose clinical expression is shaped not only by coronary anatomy but also by the underlying physiologic environment in which it operates. Body weight, lipid handling, vascular tone, insulin sensitivity, and blood-pressure regulation play central roles in determining disease burden and therapeutic demand.

## CASE PRESENTATION

Patient Information:

Age: 46 years

Sex: Male

Height: 175 cm

Baseline weight (21 May 2025): 92.7 kg

Baseline BMI: 30.3 kg/m<sup>2</sup>

Relevant medical history:

Post–COVID-19 hypertension, obesity, poor sleep quality, and hemorrhoids.

Detailed Cardiovascular History:

In September 2023, the patient experienced an acute myocardial infarction during moderate exertion and was transported to hospital within approximately 90 minutes. Coronary angiography revealed complete occlusion of the main coronary artery with severe multivessel disease. Emergency percutaneous coronary intervention was performed with stent placement in the main artery. On 5 September 2023, staged angioplasty was performed with additional stents placed in the left and right coronary arteries.

In November 2023, recurrent exertional chest discomfort prompted repeat coronary angiography, demonstrating in-stent restenosis. Two additional stents were placed, including one overlapping an existing stent in the main artery.

## LIFESTYLE INTERVENTION

On 21 May 2025, following stabilization of cardiac symptoms, the patient transitioned from multiple daily meals to a One Meal A Day (OMAD) dietary pattern incorporating structured fasting.

## OUTCOMES

Anthropometric Changes:

Baseline weight: 92.7 kg

Lowest recorded weight: 83.6 kg

Absolute reduction: 9.1 kg

Relative reduction: ~9.8%

Metabolic Biomarkers:

Triglycerides: 1.4 → 0.9 mmol/L

HDL cholesterol: 1.1 → 1.2 mmol/L

LDL cholesterol: low and stable

Hemodynamic Stability:

Systolic blood pressure: ~102–125 mmHg

Diastolic blood pressure: ~60–79 mmHg

Organ Function:

Renal, hepatic, electrolyte, and hematologic parameters remained stable.

Medication Reduction:

Cardiovascular medications were progressively reduced under cardiologist supervision with no clinical events observed.

## DISCUSSION

This case demonstrates a biomarker-first, lifestyle-centered sequence where physiologic remodeling preceded medication reduction.

## CONCLUSION

Lifestyle-driven physiologic remodeling can support biomarker improvement, hemodynamic stability,

and safe medication reduction in severe coronary artery disease.

## **KEY CLINICAL MESSAGE**

Lifestyle intervention can drive meaningful improvement across multiple cardiometabolic biomarkers, reshaping physiologic demand and allowing pharmacologic therapy to be reduced responsively rather than serving as the primary determinant of disease control.

## **REFERENCES**

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