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DAMIAN RASCH, D.O.

ENCINITAS · LA JOLLA, CALIFORNIA



MINOCA

A real heart attack without a blocked artery on the angiogram, where finding the cause shapes the treatment.

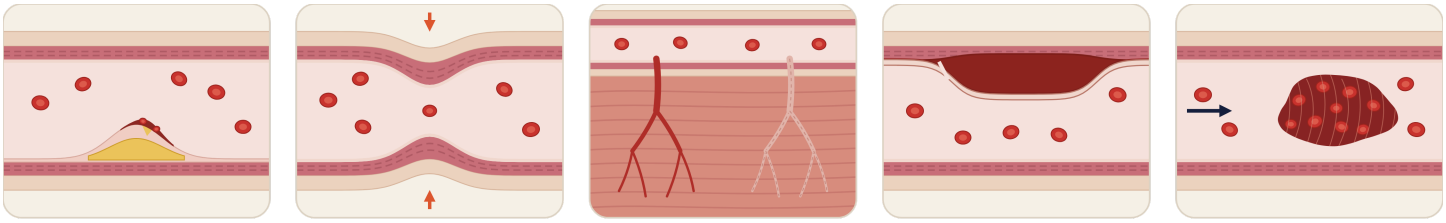
6–10%
roughly, of apparent heart attacks, and up to 15% in some studies

5
main causes, each with a different treatment and outlook

~3–5%
one-year mortality, lower than after a classic heart attack, but not benign

WHAT IT MEANS

A real heart attack, a clean-looking angiogram



1 **Plaque disruption** — a clot that clears
2 **Vasospasm** — it squeezes shut
3 **Microvascular** — smallest vessels
4 **SCAD** — a tear in the wall
5 **Embolism** — a clot travels in

Each panel shows a heart artery cut lengthwise. In panel 3, the pale branches are tiny vessels not delivering blood.

MINOCA stands for Myocardial Infarction with Non-Obstructive Coronary Arteries. Your troponin rose, you had symptoms or EKG changes, and the heart muscle was injured, yet the angiogram showed no blockage of 50 percent or more. MINOCA is a working diagnosis. The label says the angiogram looked clean, and the workup that follows is there to find out why the heart got hurt. The 2019 American Heart Association statement groups the causes into five main buckets, shown above, and most patients fall into one of them.

FINDING THE CAUSE

The workup, step by step

1 **Rule out look-alikes**
Myocarditis, takotsubo (stress) cardiomyopathy, a large pulmonary embolism, sepsis and a severe hypertensive emergency can all raise troponin.

2 **Cardiac MRI**
The workhorse test. Ideally within a week or two, it sorts a true heart attack from myocarditis and takotsubo.

3 **Find the mechanism**
Tests chosen to fit your history, such as imaging inside the artery, spasm or small-vessel testing, rhythm monitoring, an ultrasound through the esophagus or clotting labs.

Keep digging

The MINOCA label isn't an answer by itself. Once the underlying cause is found, the treatment plan usually comes together quickly, and the long-term outlook is much better than it was a generation ago.

TREATMENT BY CAUSE AND WHEN TO CALL 911 ARE ON THE BACK

MATCHING TREATMENT TO THE CAUSE

Each cause has its own test and treatment

THE FIVE CAUSES

how it's found, then how it's treated

1. Plaque disruption	Imaging inside the artery (OCT or IVUS) finds the torn or eroded plaque. Treated like classic coronary disease. Aspirin plus clopidogrel or ticagrelor for at least a year, then aspirin alone, a high-intensity statin for an LDL below 55 mg/dL (70 if not very high risk) and cardiac rehab.
2. Coronary vasospasm	Provocation testing with acetylcholine in the cath lab. A calcium channel blocker, such as amlodipine 5 to 10 mg or diltiazem 240 to 360 mg daily, plus a long-acting nitrate if symptoms continue. Stop smoking and avoid cocaine and amphetamines. Beta-blockers, especially nonselective ones like propranolol, are usually avoided because they can worsen spasm.
3. Microvascular dysfunction	Small-vessel testing with a pressure wire, or PET perfusion imaging. Treated like stable angina with beta-blockers, calcium channel blockers, ranolazine for hard-to-control angina, ACE inhibitors or ARBs, statins and aspirin, along with cardiac rehab and exercise.
4. SCAD	A tear in the inner layer of the artery wall, seen with imaging inside the artery. No stent if possible, beta-blockers, tight blood pressure control and no heavy lifting for at least a year. Aspirin is often continued. Screening for fibromuscular dysplasia, found alongside SCAD in roughly half of patients.
5. Embolism or thrombosis	A Holter monitor or loop recorder for hidden AFib, an echo through the esophagus and clotting labs. Treated with blood thinners (anticoagulation), often long-term, and care for the source. For AFib, that means lifelong anticoagulation with a DOAC like apixaban or rivaroxaban.

CARDIAC REHAB

Almost always, yes	It builds exercise capacity, helps with risk factors and the anxiety and depression that often follow, and is safe for nearly every cause, with rare exceptions like active SCAD healing. If you weren't offered cardiac rehab, ask about it.

WHEN TO GET HELP

after a MINOCA event

Call 911	Chest pain that comes back (at home you can't tell it from a new heart attack), severe shortness of breath, or palpitations with lightheadedness.
Get evaluated promptly	New shortness of breath, or palpitations.

CALL YOUR CARDIOLOGIST WITHIN 24 HOURS

New mild symptoms	New exertional shortness of breath, new palpitations without other symptoms, or any concern that something might be off.

QUESTIONS TO ASK

Was a cardiac MRI done? Was imaging done inside the artery? Was testing for spasm considered? Was a clotting workup done? Which cause is being treated, and which medicines target it?

READ THE FULL ARTICLE

damianrasch.com/minoca

For education only, and not a substitute for advice from your own physician. Sources include the 2019 American Heart Association scientific statement on MINOCA, the 2020 ESC acute coronary syndrome guidelines, Reynolds and colleagues (Circulation 2021) and the 2018 AHA statement on SCAD.

DR. DAMIAN RASCH, D.O. · BOARD-CERTIFIED INVASIVE CARDIOLOGIST · ENCINITAS AND LA JOLLA, CA

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