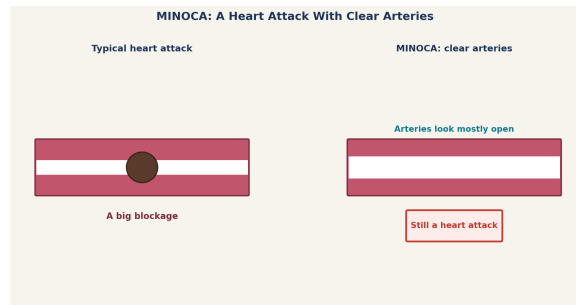


Understanding MINOCA

A heart attack when the arteries look clear (non-obstructive)

MINOCA is a real heart attack even though the arteries are not badly blocked. The key is finding the true cause so the right treatment can begin.



Online: <https://go.riasalimd.com/minoca-guide>

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Names & Terms You Will Hear

Term	Meaning
MINOCA	Myocardial Infarction with Non-Obstructive Coronary Arteries. A real heart attack when the angiogram shows the arteries are less than half blocked.
Myocardial infarction (MI)	A heart attack — heart muscle is injured because it did not get enough blood.
Non-obstructive	The arteries are open enough that a blockage of 50 percent or more is not seen. Small narrowings can still be present.
Angiogram	A dye X-ray of the heart's arteries. In MINOCA it does not show a big blockage to explain the heart attack.
Troponin	A protein that leaks into the blood when heart muscle is injured. A rise helps confirm a heart attack, including MINOCA.
Cardiac MRI (CMR)	A detailed heart scan. It helps find the cause of MINOCA and can spot look-alikes like myocarditis.
Coronary spasm	A sudden, brief tightening of a heart artery that can cut off blood flow. One cause of MINOCA.
SCAD	Spontaneous coronary artery dissection — a tear in an artery wall. Another cause of MINOCA.

MINOCA is a real heart attack. For heart attack warning signs — chest pressure, shortness of breath, or discomfort in the arm, jaw, neck, or back — **call 911**. If someone collapses and is not breathing normally, start Hands-Only CPR: push hard and fast in the center of the chest, about 100 to 120 pushes a minute, to the beat of the song 'Stayin' Alive,' and send someone for an AED. An AED will not shock a normal heart, so it is safe to use.



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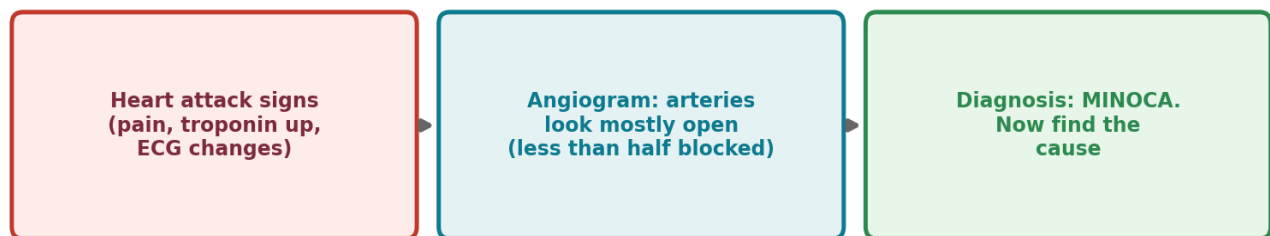


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What Is MINOCA?

- MINOCA is a real heart attack. Your troponin rose and your heart muscle was injured.
- The surprise is that the angiogram — the dye X-ray of your arteries — does not show a big blockage.
- Doctors call the arteries 'non-obstructive' when they are less than half blocked.
- It is not 'nothing' and it is not 'all in your head.' The injury is real; the usual cause is just not visible at first.
- MINOCA is a working diagnosis. It means: this was a heart attack, and now we must find the true cause.
- It accounts for roughly 1 in 20 heart attacks that go to the cath lab, and it is more common in women.
- Because the cause is hidden, MINOCA takes a bit of detective work to sort out.

How MINOCA Is Diagnosed



MINOCA is diagnosed when you have the signs of a heart attack, but the angiogram shows arteries less than half blocked. The next job is to find the true cause.



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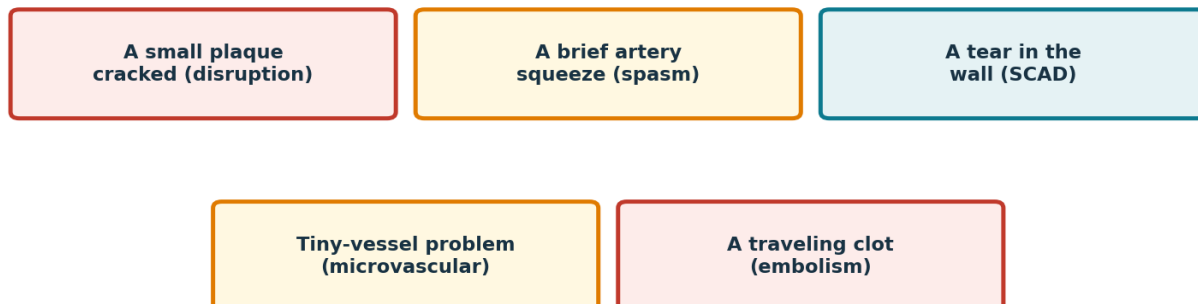


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Why It Matters

- Finding the cause matters because the treatment depends on it. A spasm, a tear, a clot, and a tiny-vessel problem are treated differently.
- Without the right cause, you could be under-treated or given a medicine that does not fit the problem.
- MINOCA is not harmless. There is a real risk of another event, so it deserves careful treatment and follow-up.
- The outlook is usually better than a heart attack from a big blockage, but 'better' does not mean 'ignore it.'
- Some MINOCA causes, like SCAD or a clotting problem, need very specific care and testing of family members or blood.
- Getting the diagnosis right also rules out look-alikes, such as an inflamed heart muscle (myocarditis) or a stress-triggered heart (takotsubo).
- The clearer the cause, the better we can lower your risk and answer your questions.

The Main Causes of MINOCA



The main causes of MINOCA: a small plaque that cracked, a brief artery squeeze (spasm), a tear in the wall (SCAD), a tiny-vessel problem, or a clot that traveled to the artery.



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MINOCA Causes and How We Find Them

Cause	How we find it
A plaque cracked or eroded	Imaging from inside the artery (IVUS or OCT)
Coronary artery spasm	History and, if needed, spasm testing
A tear in the wall (SCAD)	A careful angiogram and inside-artery imaging
Tiny-vessel (microvascular)	Special blood-flow tests of the small vessels
A clot or embolism	Blood clotting tests and a rhythm check



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Finding the Cause Is the Whole Point

- MINOCA is a starting label, not the final answer. The real work is finding why it happened.
- The cause decides the treatment — spasm, a plaque crack, a tear, and a clot are handled differently.
- A careful second look at the angiogram often reveals a clue the first look missed.
- The 2019 American Heart Association statement lays out this step-by-step search for the cause.
- A clear cause means a clear plan, less worry, and lower risk of another event.



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Cardiac MRI and Inside-Artery Imaging

- Cardiac MRI is the key test. It shows the pattern of muscle injury and points to the cause.
- It can also reveal a look-alike, such as an inflamed heart muscle (myocarditis).
- Inside-artery imaging (IVUS or OCT) uses a tiny camera or sound probe to spot a crack or tear the angiogram missed.
- Spasm testing can show if an artery squeezes down and cuts off flow.
- Blood tests can find a clotting problem that sent a clot to the artery.



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MINOCA Look-Alikes: Myocarditis and Takotsubo

- Not every heart attack with clear arteries is MINOCA. Some are different problems that mimic it.
- Myocarditis is inflammation of the heart muscle, often after a virus. Cardiac MRI usually tells it apart.
- Takotsubo is a stress-triggered weakening of the heart that can look just like a heart attack.
- Sorting these out changes the treatment, so the workup is worth doing.
- See our cardiac MRI and takotsubo guides to learn more.



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Risk Factors

Some patients are more likely to develop this condition. Knowing your risk helps your care team take extra precautions.

Risk Factor	Why It Increases Risk
Being a woman	MINOCA is more common in women than in men, unlike most heart attacks from big blockages.
Younger age	MINOCA more often strikes people who are younger and have fewer classic risk factors.
A clotting tendency	An inherited or acquired clotting disorder can send a clot to a heart artery.
Spasm triggers	Cold, stress, migraine, smoking, and some stimulant drugs can trigger artery spasm.
Conditions linked to SCAD	Pregnancy, hormonal shifts, and connective-tissue or artery conditions raise the risk of an artery tear.



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Treatment Options

- Treatment is aimed at the cause we find, not a one-size-fits-all plan.
- If a plaque cracked, we treat like a usual heart attack: a statin, aspirin or another blood thinner, and heart-protective pills.
- If spasm is the cause, calcium channel blockers and nitrates relax the arteries; quitting smoking is key.
- If a tear (SCAD) is found, we often treat gently with medicines and avoid a stent when we can.
- If a clot traveled to the artery, we look for a clotting problem and may use a blood thinner.
- If tiny-vessel disease is the cause, we treat the risk factors and the symptoms.
- Everyone gets risk-factor care: blood pressure, cholesterol, blood sugar, no smoking, and cardiac rehab.

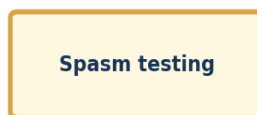
The Detective Workup: Finding the Cause



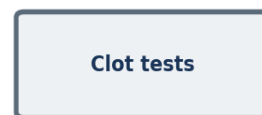
shows the muscle injury and cause



IVUS or OCT finds a crack or tear



checks for artery squeeze



checks blood for clotting problems

The detective workup finds the cause: a cardiac MRI, imaging from inside the artery, spasm testing, and blood-clot tests. The cause then guides the treatment.



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Risks, Benefits, and Alternatives

Every choice has trade-offs. Use this table to start the shared decision conversation.

Option	Risks	Benefits	Alternatives
Doing the full workup (cardiac MRI, artery imaging)	Extra tests, time, and cost. Cardiac MRI is not available everywhere.	Finds the true cause so the right treatment starts. Rules out look-alikes.	Treat with general heart medicines without a clear cause — less precise.
Cause-specific medicines	Each medicine has its own side effects. The plan depends on the cause.	Targets the real problem — spasm, plaque, tear, or clot — for the best result.	General heart-attack medicines only, which may not fit the true cause.
Treating as a plaque event when the cause is unclear	May not fit a spasm, tear, or clot cause.	Covers the most common cause and is a safe default while testing continues.	Wait for the cardiac MRI and imaging to guide a tailored plan.
Cardiac rehab and risk-factor control for everyone	Takes time and effort.	Lowers the chance of another event no matter the cause. Builds confidence.	None — this is recommended for essentially all MINOCA patients.



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Common Misconceptions

Myth	Reality
Clear arteries mean it was not a real heart attack.	It was real. Your troponin rose and heart muscle was injured. MINOCA simply means the usual big blockage was not the cause.
MINOCA is a mild problem I can forget about.	No. There is a real risk of another event. MINOCA needs the right treatment and follow-up, just aimed at a different cause.
If the angiogram was normal, no more tests are needed.	Often the opposite is true. A cardiac MRI and inside-artery imaging are how we uncover the real cause and rule out look-alikes.
It was just stress or anxiety.	Stress can play a role in some causes, but MINOCA is a physical heart injury. It deserves a real workup, not dismissal.
Everyone with MINOCA gets the same treatment.	No. A spasm, a plaque crack, a tear, and a clot are treated very differently. That is why finding the cause matters so much.
MINOCA cannot happen again.	It can. That is why we treat the cause, control risk factors, and follow you over time to lower the chance of another event.



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Possible Complications

Knowing what can go wrong helps you spot problems early. Most complications are uncommon, especially with treatment.

Where / What	What Can Happen
Another heart attack	MINOCA can recur, especially if the cause is not found and treated. The right diagnosis lowers this risk.
A weakened heart	A large or repeated injury can lower the heart's pumping strength over time. Follow-up imaging watches for this.
Ongoing chest pain	Spasm and tiny-vessel causes can keep causing chest pain. Targeted medicines usually help.
Missed specific cause	Without the full workup, a treatable cause like SCAD or a clotting problem can be missed. Cardiac MRI and artery imaging reduce this.
Anxiety and uncertainty	Not knowing 'why' is stressful. A clear diagnosis and a plan ease the worry and guide your recovery.



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Points to Know

If you remember nothing else, remember these key points.

- MINOCA is a real heart attack, even though the arteries look mostly open.
- It means the arteries are less than half blocked — the usual cause is hidden.
- Finding the true cause is the whole point, because treatment depends on it.
- Common causes: a plaque crack, a spasm, a tear (SCAD), a tiny-vessel problem, or a clot.
- Cardiac MRI and inside-artery imaging are the key detective tests.
- Look-alikes like myocarditis and takotsubo must be sorted out.
- The outlook is usually better than an obstructive heart attack, but it is not harmless.
- Cardiac rehab and risk-factor control help everyone with MINOCA.



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When to Call Us - and When to Call 911

If you are not sure, call. We would rather hear from you twice than miss a real problem.

- Chest pressure, tightness, or pain that does not ease — call 911. Treat it as a heart attack.
- Shortness of breath, a cold sweat, nausea, or discomfort in the arm, jaw, neck, or back — call 911.
- Fainting, or a collapse where someone is not breathing normally — call 911 and start Hands-Only CPR.
- Chest pain that keeps coming back, even if brief — call us this week; it may be spasm or tiny-vessel disease.
- New or worse shortness of breath or swelling — call us this week.
- Questions about your workup, your cause, or your medicines — call us; we want you to understand your diagnosis.

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Trusted Resources

The links below are the trusted resources Dr. Ali used to write this guide and that he recommends you visit for more information. Each is a clickable link in the digital version and a Short.io tracked URL on the printed version.

- [American Heart Association — What Is a Heart Attack?](#) - Heart attack basics — the starting point for understanding MINOCA.
- [American Heart Association — CPR and Hands-Only CPR](#) - How to do Hands-Only CPR if someone collapses.
- [PulsePoint — Find a Nearby AED](#) - An app that helps find the nearest AED and alerts CPR-trained bystanders.
- [Our Heart Attack / ACS Guide](#) - How heart attacks are recognized and treated.
- [Our SCAD Guide](#) - A tear in an artery wall — one cause of MINOCA.
- [Our Coronary Vasospasm Guide](#) - Artery spasm — another cause of MINOCA.
- [Our Coronary Microvascular Dysfunction Guide](#) - Tiny-vessel disease that can injure the heart with clear main arteries.
- [Our Cardiac MRI \(CMR\) Guide](#) - The key test for finding the cause of MINOCA.
- [Our Takotsubo Guide](#) - A stress-triggered heart problem that can look like MINOCA.
- [Our Stable Angina Guide](#) - Chest pain from a strained heart, and how we treat it.
- [Our Sudden Cardiac Arrest Guide](#) - What to do if someone collapses — CPR and AED steps.



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Sources Used to Build This Guide

Every recommendation in this guide is grounded in one or more of the studies, guidelines, or trusted resources below. Short links are tracked so Dr. Ali can see which references patients are reading; nothing personally identifying is captured.

- [Tamis-Holland et al. — Diagnosis and Management of MINOCA: A Scientific Statement From the American Heart Association \(Circulation 2019\) \[Guideline\]](#)
The definitive AHA statement: defines MINOCA, notes it is about 5 to 6 percent of heart attacks referred for angiography, and lays out the cause-finding workup.
- [Fourth Universal Definition of Myocardial Infarction \(Thygesen et al., Circulation 2018\) \[Guideline\]](#)
The formal definition of a heart attack that MINOCA must still meet — troponin rise plus evidence of ischemia.
- [American Heart Association — What Is a Heart Attack? \[Clinical\]](#)
Heart attack basics — the starting point for explaining a heart attack with clear arteries.
- [MedlinePlus — Heart Attack \[Clinical\]](#)
Patient background on heart attack symptoms and evaluation.
- [MedlinePlus — Coronary Artery Disease \[Clinical\]](#)
Explains obstructive plaque so the reader understands what non-obstructive means.
- [American Heart Association — Angina \(Chest Pain\) \[Clinical\]](#)
Chest-pain presentation shared by MINOCA and typical heart attacks.
- [NHLBI — What Is Coronary Heart Disease? \[Clinical\]](#)
Background on coronary blood flow and ischemia mechanisms behind MINOCA.
- [American Heart Association — Ischemic Heart Disease and Silent Ischemia \[Clinical\]](#)
Coronary microvascular dysfunction — one of the main MINOCA causes — as a form of ischemia without a blockage.



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About This Guide

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Version: 2026-08-15

Reviewer note: Reviewed: American Heart Association, MedlinePlus, and NHLBI patient pages. This guide adds a diagnosis-flow diagram, a causes figure, a workup map, a causes-and-tests table, and sections grounded in the 2019 AHA Scientific Statement on MINOCA (Tamis-Holland et al., Circulation).

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This guide is for educational purposes only and does not replace medical advice from your physician. Recommendations may not apply to every patient. Always follow the specific instructions of Dr. Ali and your care team. In an emergency call 911 or go to the nearest emergency department.



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