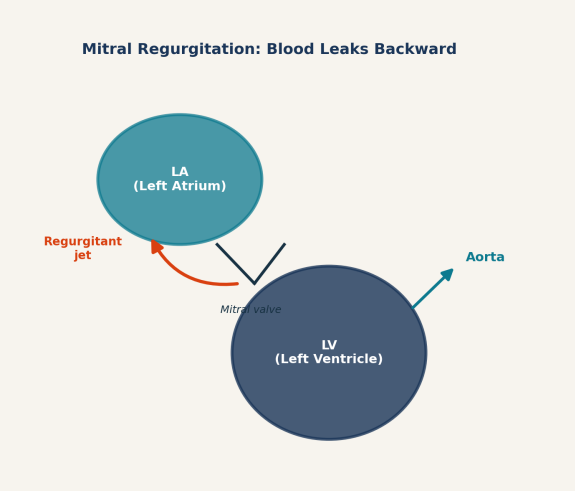
Understanding Mitral Regurgitation

When the mitral valve leaks — primary vs secondary, and what to do

A leaky valve is not always a sick valve. The cause changes everything.



Online: https://go.riasalimd.com/mr-guide

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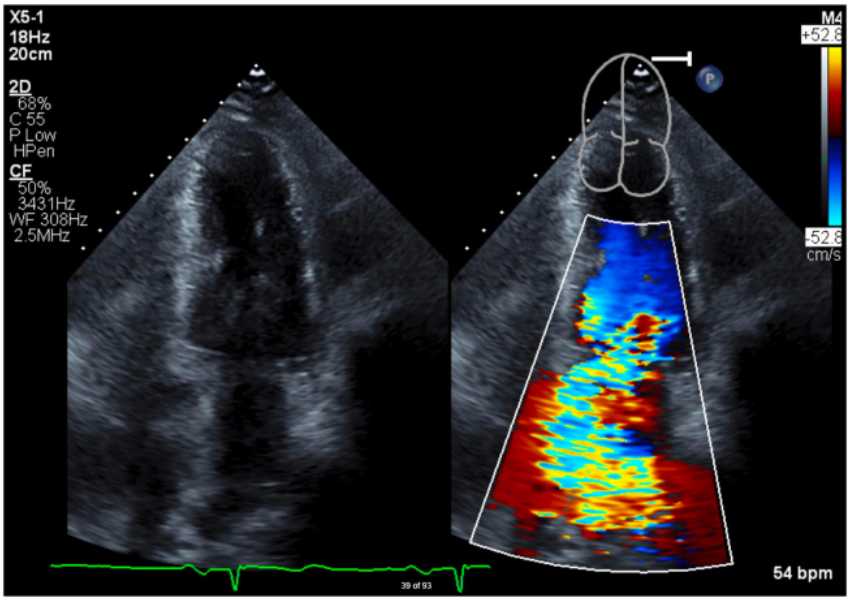
Names & Terms You Will Hear

Term	Meaning
Mitral regurgitation (MR)	The medical name. The mitral valve does not close all the way, so blood leaks backward.
Mitral insufficiency	Same thing. An older term.
Leaky mitral valve	The plain-language name. This is what most patients hear.
Primary (degenerative) MR	The valve itself is broken — a torn cord, a floppy leaflet, or scarring.
Secondary (functional) MR	The valve is fine. But the heart around it has stretched and pulls the valve open.
Mitral valve prolapse (MVP)	A floppy leaflet bulges back into the top chamber. It is a common cause of primary MR.
Barlow disease	A type of MVP with thick, bulky leaflets. It carries a higher MR risk.
Fibroelastic deficiency	A type of MVP in older adults. The cords are thin and weak and can snap.

What Is Mitral Regurgitation?

- Your **mitral valve** sits between the left atrium (top chamber) and the left ventricle (bottom chamber). It has two flaps, called leaflets. It also has a ring, thread-like cords, and small muscles that hold it in place.
- When the valve does not close all the way, blood leaks **backward** with each heartbeat. It flows from the bottom chamber back up into the top chamber. That leak is mitral regurgitation.
- **Primary MR** means the valve itself is the problem — a torn cord, a floppy leaflet (MVP), an infection, or scarring.
- **Secondary MR** means the valve is fine. But a weak, stretched left ventricle pulls the leaflets apart. This is common after a heart attack or in heart failure.
- MR is graded mild, moderate, or severe. The grade comes from echo numbers, such as how much blood leaks and the **regurgitant fraction** (the share that leaks back).
- Many people with mild or moderate MR feel fine **for years**. But severe MR catches up in time.



A real echocardiogram with color Doppler — the bright jet is blood leaking backward through the mitral valve with each heartbeat. Image: CASE (Cardiovascular Imaging Case Reports), 2024 (CC BY 4.0).

Why It Matters

- Severe MR that is left alone slowly stretches both left chambers. The heart pumps harder to push enough blood forward. Over time, the muscle gets weak.
- A stretched top chamber sets off **atrial fibrillation** (AFib). AFib raises stroke risk and makes MR worse. It becomes a vicious cycle.
- Severe MR causes shortness of breath, first with activity and later at rest. It also causes tiredness. Some people land in the ER, gasping for air, after a cord snaps all at once.
- It is best to treat MR **before** the bottom chamber stretches (to 40 mm across) or gets weak (pump function below 60%). That timing gives the best result.
- For **secondary MR** from heart failure, the right first step is heart-failure medicine. A procedure like MitraClip comes only after that.

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
Mitral valve prolapse (MVP)	A floppy or thick leaflet bulges back. Over years, the cords can stretch or snap, and MR gets worse.
Prior heart attack	Scar in the heart wall, or harm to a small muscle, can pull a leaflet open. This causes secondary MR.
Heart failure / weak, stretched heart	A stretched left ventricle pulls the leaflets apart. The valve itself is fine.
Rheumatic heart disease	A childhood strep throat can scar and stiffen the valve. It is still common around the world.
Valve infection (endocarditis)	It can wreck a leaflet in days or weeks. This is a surgical emergency.
Inherited tissue disease (Marfan, Ehlers-Danlos, Loeys-Dietz)	These weaken the valve cords and leaflets. MVP and snapped cords happen more often.
Atrial fibrillation (AFib)	Ongoing AFib stretches the top chamber and the valve ring. That makes any MR worse.
Older age	Worn-out valves and snapped cords are more common as we age.

Treatment Options

- **Mild or moderate primary MR, no symptoms.** We watch and rescan, often with a yearly echo. Keep your blood pressure in check.
- **Severe primary MR with symptoms.** We advise surgery. We **repair** the valve instead of replacing it when we can. At skilled centers, more than 80% of these valves can be fixed.
- **Severe primary MR, no symptoms.** We may still advise surgery. We act if pump function drops below 60%, if the bottom chamber reaches 40 mm across, if new AFib starts, or if lung pressures rise.
- **TEER (MitraClip).** A thin tube carries a clip up to the valve. The clip pinches the two leaflets together. We use it in chosen patients who are not a good fit for surgery. The COAPT trial showed it helps in chosen secondary MR.
- **Secondary MR.** Step 1 is full heart-failure medicine for 3 to 6 months. The mix often includes a beta-blocker, an ARNI or ACE inhibitor, an MRA, and an SGLT2 inhibitor. Many leaks shrink on these drugs alone.
- **Secondary MR that lasts after medicine.** We may add a MitraClip. The COAPT trial showed fewer hospital stays and longer life. Another trial, MITRA-FR, did not help — those patients had more stretch than leak. So choosing the right patient is key.
- **Annuloplasty ring.** Most repairs add a small ring. It braces the valve ring so it does not stretch out again.
- **Replacement.** We replace the valve when we cannot repair it. A metal valve needs the blood thinner warfarin for life. A tissue valve lasts 10 to 15 years and needs no warfarin.

Risks, Benefits, and Alternatives

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

Option	Risks	Benefits	Alternatives
Watch and wait, with a yearly echo, for mild or moderate MR	MR may grow between visits. A cord can snap on its own, but this is rare.	No procedure and no drug. Most mild or moderate MR stays steady for years.	Surgery sooner; or medicine.
Surgery to repair the valve (the top choice for primary MR)	Open-heart surgery. Stroke risk near 1 in 100. Also bleeding, infection, and a 6 to 8 week recovery. A redo is rarely needed.	The best choice for a worn-out valve. It lasts a long time and keeps your own valve. No warfarin.	Replace the valve; or TEER if you cannot have surgery.
Surgery to replace the valve	Same risks as a repair, plus valve risks. A metal valve needs warfarin for life. A tissue valve needs a redo in 10 to 15 years.	Used when the leaflets cannot be fixed, such as a hard, chalky valve or a scarred valve.	Repair if the valve allows; or TEER if you are high-risk.
TEER (MitraClip) — a clip placed through a thin tube	Some leak may stay. A leaflet may slip off the clip. The leg vein can bleed. Not every valve fits a clip.	No open surgery. Quick recovery. The COAPT trial showed longer life in chosen secondary MR.	Surgery if you are a good fit; or medicine alone.
Heart-failure medicine for secondary MR	Side effects from these drugs, such as low blood pressure, kidney strain, or high potassium.	It can shrink the leak by 30% to 50%. It is the first step in current guidelines.	Add TEER if a bad leak lasts; or weigh a transplant.

Common Misconceptions

Myth	Reality
"All mitral regurgitation is the same."	Primary and secondary MR are two different problems with two different fixes. Primary is a valve problem. We repair it. Secondary is a heart-muscle problem. We treat it first with heart-failure medicine.
"Mitral valve prolapse always needs surgery."	Most MVP causes only a mild leak and never needs a fix. Only a few cases grow into severe MR. Those get surgery, but only once symptoms or warning numbers show up.
"Surgery always means cracking the chest."	Many mitral repairs today use a small cut on the right side. And TEER skips surgery for good — it works through a vein in the leg.
"If I feel fine, my MR cannot be severe."	Many people with severe MR feel fine for years. The heart makes up for it. By the time you feel it, the heart may be hurt. That is why we watch echo numbers, not just how you feel.
"A MitraClip is just as good as surgery."	TEER is great for the right patient — older, high-risk, or chosen secondary MR. But a surgical repair lasts longer. It is still the top choice for younger patients with a worn-out valve.
"My MR will get better on its own."	Severe primary MR does not get better. Secondary MR can shrink with heart-failure medicine — but only if you take it.

Possible Complications

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

Where / What	What Can Happen
Atrial fibrillation (AFib)	A stretched top chamber sets off AFib. AFib makes MR worse and raises stroke risk.
Heart failure	The steady extra blood load wears out the left ventricle. It can lead to heart failure over time.
High lung pressure	The backed-up pressure harms the lung's blood vessels. It can stick around even after we fix the MR.
Valve infection (endocarditis)	Hurt or man-made valves face a higher risk. We give antibiotics before some dental work.
Stroke	It can come from AFib, or from a clot that breaks off a hurt valve.
A cord snaps all at once	This causes a sudden bad leak and a flooded lung. It is an emergency. We often operate within days.
Waiting too long for surgery	If the pump drops below 50% or the chamber reaches 50 mm across, the heart may not bounce back, even after a perfect repair.

Points to Know

If you remember nothing else, remember these key points.

- MR comes in two types. Primary means a broken valve. Secondary means a stretched heart that pulls the valve open. We treat them in different ways.
- We fix severe primary MR best by **repair**, not replacement. At skilled centers, we can repair more than 80% of worn-out valves.
- Timing matters. We operate before the pump drops below 60% or the chamber reaches 40 mm across — even if you feel fine.
- Secondary MR is a heart-failure problem first. Push the medicine for 3 to 6 months before you weigh a procedure.
- **TEER (MitraClip)** is a real choice for many people, above all those who are older or high-risk. But the right fit matters.
- A yearly echo and a yearly visit with our office keep small problems from turning into big ones.

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.

- **Call 911** for sudden, bad shortness of breath, above all when you lie flat. A cord may have snapped.
- **Call 911** for chest pain, fainting, or signs of a stroke.
- **Call our office** if you get short of breath during daily tasks, like walking, stairs, or dressing.
- **Call our office** if you feel a new fast or skipping heartbeat. This could be AFib.
- **Call our office** if you gain 3 or more pounds in a few days, or your ankles swell.
- **Call our office** before any dental work or procedure. We will check if you need antibiotics first.
- **Call our office** for a fever that lasts more than 2 days. A valve infection is rare but serious, and it can not wait.

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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.

- AHA — Problem: Mitral Valve Regurgitation - Patient-facing overview from the American Heart Association.
- Mayo Clinic — Mitral Valve Regurgitation - Plain-language symptoms, causes, and diagnostic approach.
- 2020 ACC/AHA Valve Guideline (patient summary materials) - Current US standard for valve-disease decision-making.
- Society of Thoracic Surgeons — Patient Resources - Plain-language explanations of mitral valve surgery and risk calculators.
- Mended Hearts — Patient Support Network - Peer-support community for valve and heart-surgery patients.

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.

- 2020 ACC/AHA Valvular Heart Disease Guideline (Otto et al, JACC 2021) *[Guideline]*
  Definitive US guideline for MR severity grading, primary vs secondary MR management, surgical and TEER timing.
- 2021 ESC/EACTS Valvular Heart Disease Guideline *[Guideline]*
  European counterpart; nuances in secondary MR thresholds and TEER candidacy.
- COAPT trial — TEER for secondary MR (Stone et al, NEJM 2018) *[Clinical Trial]*
  Landmark RCT showing MitraClip reduces hospitalizations and mortality in selected HF patients with severe secondary MR on GDMT.
- MITRA-FR trial — TEER for secondary MR (Obadia et al, NEJM 2018) *[Clinical Trial]*
  Neutral RCT that, paired with COAPT, defines the proportionate vs disproportionate MR concept and patient-selection criteria.
- EVEREST II — MitraClip vs surgery (Feldman et al, NEJM 2011) *[Clinical Trial]*
  Foundational TEER trial establishing safety of percutaneous repair for selected MR.
- Mitral valve repair vs replacement — long-term outcomes (David et al) *[Original Research]*
  Supports surgical repair as gold standard for degenerative MR with >80% repairability in expert centers.
- Mitral valve prolapse — natural history and risk stratification (Freed et al, NEJM 1999) *[Original Research]*
  Population-based natural history of MVP; the realistic prognosis context for the misconceptions section.
- Echocardiographic quantification of MR (Zoghbi et al, JASE 2017) *[Guideline]*
  ASE recommendations for ERO, RV, RF cutoffs cited in the severity table.
- Mayo Clinic — Mitral Valve Regurgitation *[Patient Education]*
  Lay-language validation for symptom and cause framing.
- AHA Patient Education — Problem: Mitral Valve Regurgitation *[Patient Education]*
  Trusted-resources section.
- Carpentier classification of MR (1983, reviewed by Adams et al) *[Review]*
  Mechanistic classification (Type I/II/III) underpinning repair planning.

About This Guide

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Reviewer note: Reviewed against Mayo Clinic, AHA, and Cleveland Clinic MR pages. Ours adds: clear primary-vs-secondary framing, the 2020 ACC/AHA trigger thresholds (LVEF <60, LVESD >=40, new AFib/pulmonary HTN), the COAPT vs MITRA-FR lesson on patient selection, and a real explanation of TEER vs surgery.

Disclaimer

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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