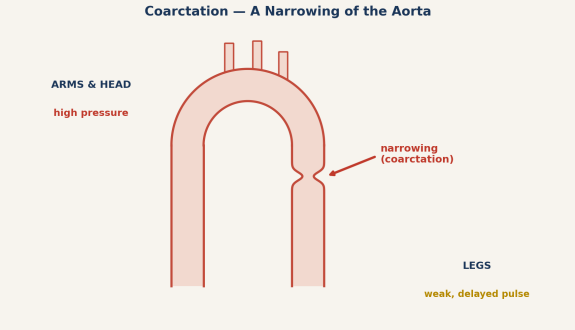
Understanding Coarctation of the Aorta

A narrowing of the body's main artery — a heart condition you are born with

A narrow spot in the aorta raises blood pressure in the arms. Fixing it helps — and lifelong checkups keep it fixed.



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

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Names & Terms You Will Hear

Term	Meaning
Coarctation of the aorta (CoA)	A narrowing of the aorta, the large artery that carries blood from the heart to the body. It is present from birth.
Aorta	The body's main artery. It leaves the heart, arches over the top, and runs down through the chest and belly to feed the whole body.
Congenital	Present from birth. Coarctation forms as the heart and aorta develop before a baby is born.
Aortic arch	The curved top of the aorta. The narrowing usually sits just past the arch, right after the vessels that feed the head and arms.
Bicuspid aortic valve	A valve with two flaps instead of three. About half or more of people with coarctation also have one, so we always check the valve.
Gradient	The pressure drop across the narrow spot. A bigger gradient means a tighter narrowing. We measure it to decide if a repair is needed.
Re-coarctation	When the narrow spot comes back, or stays tight, after a repair. It is one reason follow-up never ends.
Aneurysm	A weak, bulging spot in an artery wall. The aorta near a coarctation, and arteries in the brain, can form one over time.
Collateral vessels	Small side-channels the body grows over years to carry blood around the narrow spot. They are a sign the body has been adapting.

What Is Coarctation of the Aorta?

- Coarctation means the aorta — the body's main artery — is narrowed in one spot. You are born with it; it forms before birth.
- The narrow spot is usually just past the arch of the aorta, right after the vessels that branch off to the head and arms.
- Because the narrowing blocks flow, the heart must push harder. Blood pressure runs high in the arms and upper body.
- Below the narrowing, the legs get less flow. The leg pulses feel weak and arrive a beat late compared with the arm.
- Many cases are found in childhood. Milder ones can hide for years and first show up in an adult as high blood pressure that is hard to control.
- Coarctation often travels with a bicuspid aortic valve (a two-flap valve), so we always look at the valve too.
- The good news: the narrowing can be fixed. The lifelong job after that is steady checkups, because pressure and the aorta still need watching.

Clues That Point to Coarctation

Clue	What it means
Higher blood pressure in the arms than the legs	Blood is blocked at the narrow spot, so pressure builds up above it. This is the single most useful sign.
Weak or delayed pulse in the legs or groin	Less blood reaches the lower body, and it arrives a beat late compared with the arm.
High blood pressure that is hard to control in a young adult	A fixable cause like coarctation should be ruled out, not just treated with more pills.
A bicuspid (two-flap) aortic valve already known	The valve and coarctation travel together, so finding one prompts a look for the other.
Headaches, nosebleeds, or cold, tired legs with walking	Symptoms from high pressure above and low flow below the narrowing.

At a Glance — Coarctation Through Life

Found in childhood

- Often picked up early
- Weak leg pulses, a murmur
- Repaired by surgery or catheter
- Follow-up starts for life

Found in adulthood

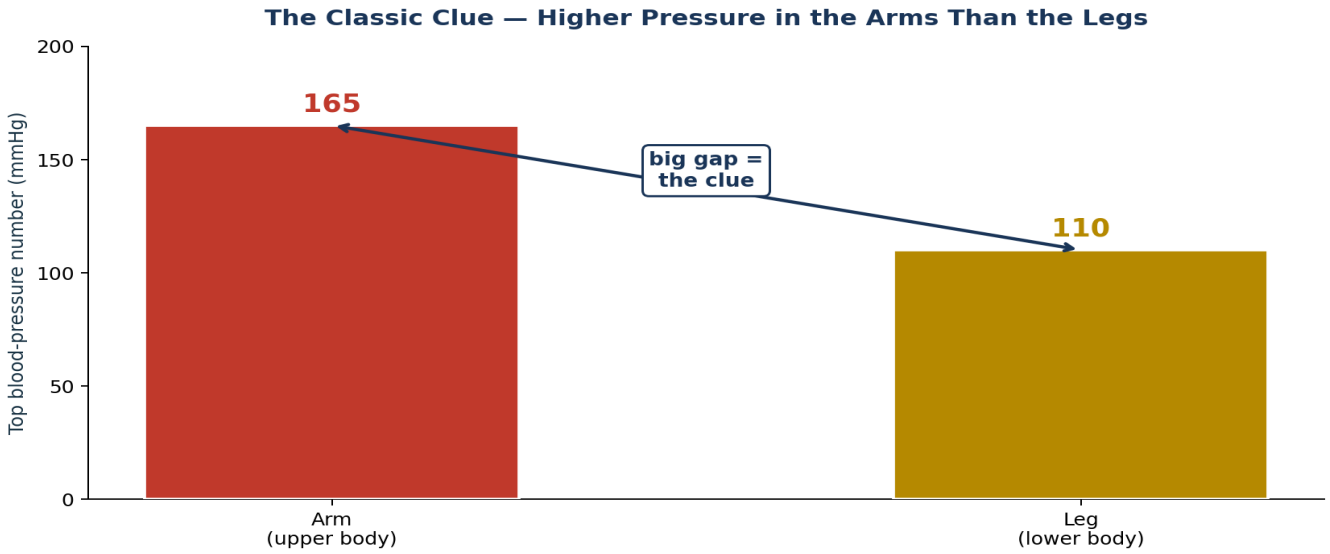
- Milder narrowing hid for years
- Hard-to-control high pressure
- Arm-vs-leg pressure gap found
- Repaired by catheter or surgery

After repair

- Pressure can persist or return
- Spot can re-narrow
- Aneurysm can form
- Lifelong imaging continues

Why It Matters

- The narrowing forces high pressure on the upper body. Years of high pressure strain the heart, brain, and arteries if it is not treated.
- The simplest clue is a blood-pressure gap: higher in the arms than the legs, with weak, delayed leg pulses. The chart below shows it.
- About half or more of people with coarctation also have a bicuspid aortic valve, which has its own monitoring needs.
- People with coarctation have a higher chance of a brain-artery aneurysm — about 1 in 10 — so a one-time brain scan is often advised.
- Even after a successful repair, high blood pressure can persist or return. Many people still need blood-pressure medicine for life.
- The narrow spot can come back (re-coarctation), or the aorta nearby can form an aneurysm. That is why imaging continues for life.
- Caught and treated early, coarctation is very manageable. The whole point of follow-up is to keep small problems small.



The classic clue: blood pressure is higher in the arms than the legs, and the leg pulse feels weak and a beat late. In a normal aorta the leg reading is usually a touch higher — so this reversal is a red flag.

How a Narrowed Aorta Raises Blood Pressure (Arm vs Leg)

- The narrow spot acts like a kink in a hose. Blood backs up above it, so pressure climbs in the arms and head.
- Below the narrowing, less blood gets through. The leg pulse feels weak and arrives a beat later than the arm.
- Your kidneys, sensing low flow below the narrowing, signal the body to hold onto salt and water — which pushes pressure even higher.
- This is why coarctation should be ruled out in a young adult whose high blood pressure is hard to control with pills alone.
- See our secondary high blood pressure guide for fixable causes like this: https://go.riasalimd.com/secondary-htn-guide

The lifelong message: Fixing the narrowing is the start, not the finish. After a good repair, blood pressure can still run high, the spot can re-narrow, and an aneurysm can form. None of these may cause symptoms. That is exactly why imaging and checkups continue for the rest of your life.

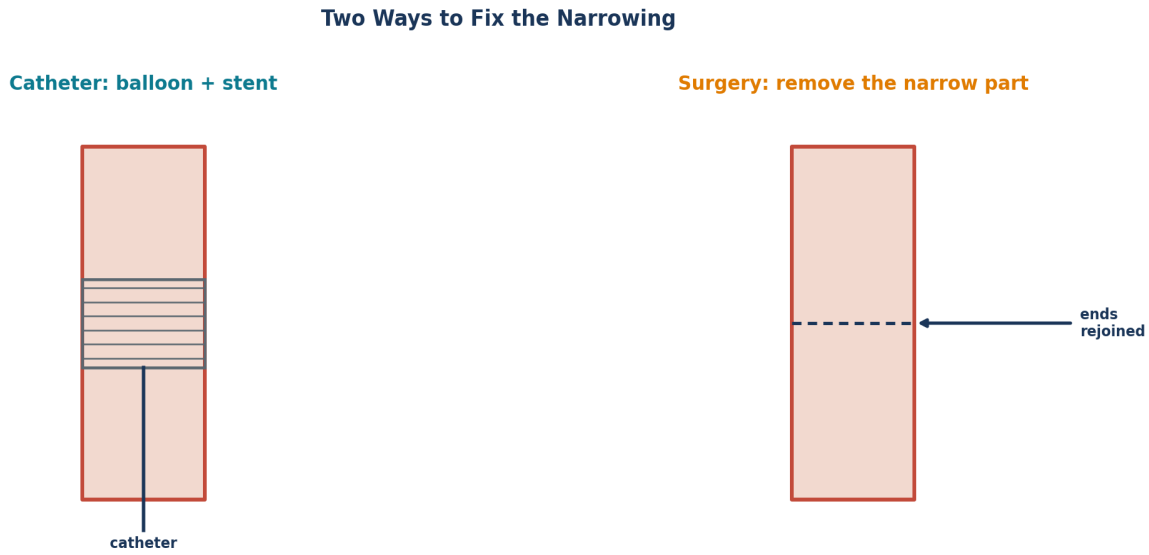
Risk Factors

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
Born with it (congenital)	Coarctation forms before birth as the aorta develops. You did not cause it and could not prevent it.
Bicuspid aortic valve	A two-flap aortic valve travels with coarctation in about half or more of people. The two conditions share a vulnerable aortic wall.
Family history of heart defects	Congenital heart differences can run in families. A relative with a heart defect raises the chance.
Turner syndrome	This genetic condition (in some women) carries a much higher rate of coarctation and bicuspid valve, so screening is routine.
Other congenital heart defects	Coarctation often comes alongside other defects, such as a hole in the heart (VSD) or valve problems.
Male sex	Coarctation is somewhat more common in men, though women with it need the same careful care.

Treatment Options

- The goal is to open the narrow spot so blood flows freely and the arm-vs-leg pressure gap closes.
- One route is a catheter: a thin tube is threaded up to the narrow spot, a balloon widens it, and a small mesh stent props it open.
- The other route is surgery: the tight segment is removed and the healthy ends are sewn together, or a patch widens the spot.
- Which route fits depends on your age, the shape and length of the narrowing, and whether nearby areas also need work. The picture below shows both.
- In adults and older children, a balloon-and-stent through a catheter is often preferred when the anatomy allows.
- Surgery is often chosen in babies and small children, or when the narrowing is long, very tight, or close to other vessels.
- Blood pressure is treated before and after the repair. Many people keep taking blood-pressure medicine even after a good fix.
- Because coarctation rarely travels alone, the bicuspid valve and the aorta are checked and planned for at the same time, often with a Heart Team.



Two ways to fix the narrowing. A catheter can widen the spot with a balloon and prop it open with a small mesh stent. Surgery removes the tight segment and rejoins the healthy ends. Your age and anatomy decide which fits best.

Fixing It — Stent vs Surgery

- Catheter repair: a thin tube is threaded to the narrow spot, a balloon widens it, and a small mesh stent holds it open. No chest incision.
- Surgical repair: the tight segment is removed and the healthy ends are sewn together, or a patch widens the spot.
- Older children and adults with suitable anatomy are often treated by catheter. Babies and small children, and very long or tight narrowings, are often treated by surgery.
- The choice is made with a Heart Team that also plans for the aortic valve and any aneurysm at the same time.

Why Repair Is Not the End — Lifelong Follow-Up

- Persistent high blood pressure: many people still need blood-pressure medicine for life, because years of strain leave their mark.
- Re-coarctation: the spot can tighten again, mostly after repair in infancy. It is found on imaging and can often be re-opened by catheter.
- Aneurysm: a weak, bulging spot can form at or near the repair, and brain-artery aneurysms are more common too. Imaging finds these before they cause harm.
- Valve watch: if you have a bicuspid valve, it needs its own checkups for narrowing or leaking over time.
- See our aortic aneurysm and resistant high blood pressure guides: https://go.riasalimd.com/aortic-aneurysm-guide, https://go.riasalimd.com/resistant-htn-guide

Rarely travels alone: Coarctation so often comes with a bicuspid aortic valve that we check the valve every time. We also weigh a one-time brain scan, because a small brain-artery aneurysm is more common with coarctation. See our bicuspid valve guide: https://go.riasalimd.com/bav-guide.

Comfort Measures at Home (No Medication Needed)

These simple steps support healing and ease symptoms. Use them alongside any medication your doctor prescribes.

- Keep every follow-up scan and clinic visit for life — even when you feel completely well and even decades after a repair.
- Check your blood pressure at home and bring the numbers to your visits. Ask which arm to use.
- Take blood-pressure medicine exactly as prescribed. Good control protects the heart, brain, and the repaired aorta.
- Stay active with steady aerobic exercise — walking, biking, swimming. Ask your team what intensity is safe for you.
- If you have a widened aorta, avoid very heavy lifting and intense straining until your team clears it.
- Do not smoke, and limit alcohol. Both raise blood pressure and stress the aorta wall.
- Tell every new doctor and dentist that you were born with coarctation and (if you have one) a bicuspid valve.

Risks, Benefits, and Alternatives

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

Option	Risks	Benefits	Alternatives
Catheter repair (balloon + stent)	Possible re-narrowing later, a leak, or a weak spot (aneurysm) at the site. Needs lifelong imaging. Not ideal for very small children.	No chest incision. Shorter stay and faster recovery. Opens the narrow spot and closes the pressure gap. Good for many adults and older children.	Surgical repair, especially for long or very tight narrowings or in small children. Keep watching if the narrowing is mild.
Surgical repair	Open surgery with the usual risks of bleeding, infection, and recovery time. The spot can still re-narrow, mainly when done in infancy.	A long, proven track record. Removes the tight segment fully. Often the best choice for babies, small children, and complex anatomy.	Catheter balloon-and-stent in suitable older children and adults. Keep watching if the narrowing is mild.
Blood-pressure medicine	Treats the pressure but not the narrowing itself. Does not remove the underlying block.	Lowers strain on the heart and arteries before and after a repair. Often needed for life even after a good fix.	Repair of the narrowing is what fixes the cause. Medicine works alongside it, not instead of it.
Watchful monitoring (mild cases)	Skipping checkups risks missing re-narrowing, a new aneurysm, or rising pressure. Mild can become severe quietly.	Avoids a procedure when the narrowing is mild and pressure is controlled. Lets a repair be planned calmly if needed later.	Repair if the gradient or blood pressure crosses a threshold. Imaging type varies (echo, CT, MRI).

Common Misconceptions

Myth	Reality
Once the narrowing is repaired, I am cured and can stop follow-up.	Not so. A repair is a great start, but the work is not over. Blood pressure can persist or return, the spot can re-narrow, and an aneurysm can form. Imaging and checkups continue for life.
My blood pressure is high because of stress or salt — it has nothing to do with my heart.	In coarctation, the narrowing itself drives the high arm pressure. That is why hard-to-control high blood pressure in a young adult should prompt a check of the aorta.
If I feel fine, the narrowing must not be serious.	Coarctation can be silent for years while pressure quietly strains the body. Feeling well does not rule it out. The arm-vs-leg pressure gap and imaging tell the real story.
Only the aorta needs watching.	The aortic valve matters too. About half or more of people with coarctation also have a bicuspid valve, and the brain arteries carry a higher aneurysm risk. We watch all three.
A stent fixes it forever and never needs checking.	A stent opens the narrow spot well, but it can re-narrow or a weak spot can form beside it. That is exactly why lifelong imaging is part of the plan.
Coarctation is purely a childhood problem.	Many cases are found in childhood, but milder ones surface in adults as high blood pressure. Adults who were repaired as children still need lifelong follow-up.

Possible Complications

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

Where / What	What Can Happen
High blood pressure (upper body)	The narrowing raises arm and head pressure. Left untreated for years it strains the heart and arteries. It can persist even after a good repair.
Re-narrowing (re-coarctation)	The treated spot can tighten again or stay tight, especially after repair in infancy. It is found on routine imaging and can often be re-opened by catheter.
Aortic aneurysm	The aorta near the coarctation, or at a repair site, can weaken and bulge over time. It usually causes no symptoms, so imaging is the only way to track it.
Brain-artery aneurysm	People with coarctation have a higher chance of a small aneurysm in a brain artery — about 1 in 10. A one-time brain scan is often advised to check.
Aortic valve problems	Because a bicuspid valve so often travels with coarctation, the valve can narrow or leak over time and needs its own monitoring.
Heart strain	Years of high pressure can thicken and tire the heart's main pumping chamber. Fixing the narrowing and controlling pressure protects the heart.

Why Follow-Up Never Ends — A Lifelong Watch List

What we watch for	How we watch	Why it matters
Persistent high blood pressure	Home and clinic readings	Can stay high even after a good repair; protects the heart and brain
Re-narrowing (re-coarctation)	Echo, CT, or MRI imaging	Often fixable by catheter if caught early
Aneurysm at or near the repair	CT or MRI imaging	Usually silent — imaging is the only way to find it
Brain-artery aneurysm	One-time brain scan	About 1 in 10 risk; finding it early can prevent a bleed

Points to Know

If you remember nothing else, remember these key points.

- Coarctation is a narrowing of the aorta you are born with, usually just past the vessels to the head and arms.
- The classic clue is higher blood pressure in the arms than the legs, with weak, delayed leg pulses.
- It often travels with a bicuspid aortic valve (about half or more), so we always check the valve.
- There is a higher chance of a brain-artery aneurysm — about 1 in 10 — so a one-time brain scan is often advised.
- The narrowing is fixed by catheter (balloon and stent) or by surgery, chosen by your age and anatomy.
- A repair is not the end. Blood pressure can persist or return, the spot can re-narrow, and an aneurysm can form.
- Lifelong imaging and checkups are the heart of the plan — keep every visit, even decades after a good repair.

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.

- Sudden, severe chest or upper-back pain that feels like tearing or ripping — call 911. This can signal an aortic tear.
- The worst headache of your life, sudden and severe — call 911. This can signal a brain-artery aneurysm.
- Fainting or passing out — call 911.
- New or worsening shortness of breath, especially with activity or lying flat — call us this week.
- Blood-pressure readings that stay high despite your medicine — call us; the plan may need adjusting.
- Cold, painful, or very tired legs with walking that ease with rest — call us; this can signal the narrowing.
- Chest pressure or tightness with effort — call us this week.
- If you are ever unsure, call us. We would rather hear from you twice than miss a real problem.

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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.

- Cleveland Clinic — Coarctation of the Aorta - Patient-friendly overview of the narrowing, the arm-vs-leg pressure gap, and repair options.
- Mayo Clinic — Coarctation of the Aorta - Clear explanation of symptoms, causes, complications, and treatment by balloon, stent, or surgery.
- American Heart Association — Coarctation of the Aorta - Frames coarctation within congenital heart disease and the need for lifelong follow-up.
- Our Bicuspid Aortic Valve Guide - The two-flap valve that so often travels with coarctation — what it means and how it is watched.
- Our Aortic Aneurysm Guide - Full detail on the widened-aorta risk that is part of lifelong coarctation follow-up.
- Our Secondary High Blood Pressure Guide - Coarctation is a fixable cause of high blood pressure — see how we look for causes like it.

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.

- Cleveland Clinic — Coarctation of the Aorta *[Patient Education]*
  Plain-language overview of aortic narrowing, presentation in infants vs adults, arm-leg blood-pressure gap, and repair options.
- Mayo Clinic — Coarctation of the Aorta *[Patient Education]*
  Patient-facing symptoms, causes, complications (hypertension, aneurysm), and treatment by balloon, stent, or surgery.
- American Heart Association — Coarctation of the Aorta (Congenital Heart Defects) *[Patient Education]*
  Frames coarctation within congenital heart disease, association with bicuspid aortic valve, and lifelong follow-up.
- 2018 AHA/ACC Guideline for the Management of Adults With Congenital Heart Disease *[Guideline]*
  Authoritative basis for intervention thresholds (peak-to-peak gradient over 20 mmHg, hypertension), repair modality choice, and long-term surveillance for re-coarctation and aneurysm.
- MedlinePlus — Coarctation of the Aorta *[Patient Education]*
  NIH/NLM plain-language reference for definition, symptoms, the arm-vs-leg pulse and pressure difference, and treatment.
- Coarctation of the Aorta: Diagnosis and Management (Review) *[Review]*
  Contemporary review of diagnosis (gradient, imaging), stent vs surgical repair selection, and lifelong complications including persistent hypertension.
- Bicuspid Aortic Valve and Aortic Coarctation in Congenital Heart Disease — Aortic Vasculopathy *[Review]*
  Documents the 50-60% co-occurrence of bicuspid aortic valve with coarctation and the shared aortic-wall vulnerability behind aneurysm risk.
- Prevalence of Intracranial Aneurysms in Patients With Coarctation of the Aorta (Meta-Analysis) *[Review]*
  Evidence basis for the brain-artery (intracranial) aneurysm association and the rationale for one-time brain imaging in coarctation.
- Management of Adults With Coarctation of Aorta (Review) *[Review]*
  Adult-focused review supporting the lifelong-surveillance message: persistent or recurrent hypertension, re-coarctation, and aneurysm formation after repair.
- American Heart Association — High Blood Pressure (Hypertension) *[Patient Education]*
  Background on high blood pressure for the arm-vs-leg pressure explanation and the persistent-hypertension-after-repair message.

About This Guide

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Reviewer note: Reviewed: Cleveland Clinic, Mayo Clinic, and AHA patient pages. This guide adds an aorta-narrowing diagram, an arm-vs-leg blood-pressure chart, a stent-vs-surgery repair picture, per-step deep dives, and an RBA section grounded in the 2018 AHA/ACC Adult Congenital Heart Disease guideline — with the lifelong follow-up message front and center.

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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