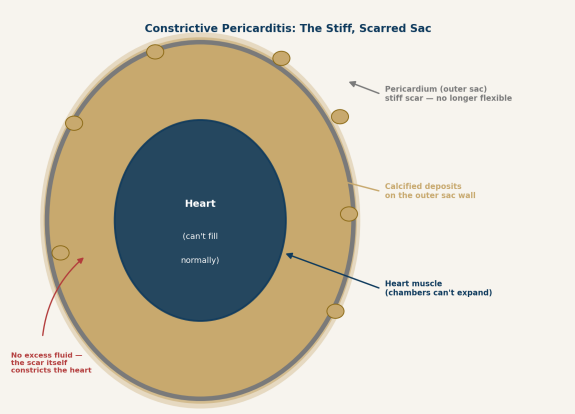
Understanding Constrictive Pericarditis

When the heart's protective sac scars and stiffens — causing hidden right-heart failure

The pericardium is the sac around your heart. When it scars and stiffens, it traps the heart like a tight shell. Surgery to remove it can be curative.



Online: https://go.riasalimd.com/constrictive-pericarditis-guide

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Last Updated: August 2026

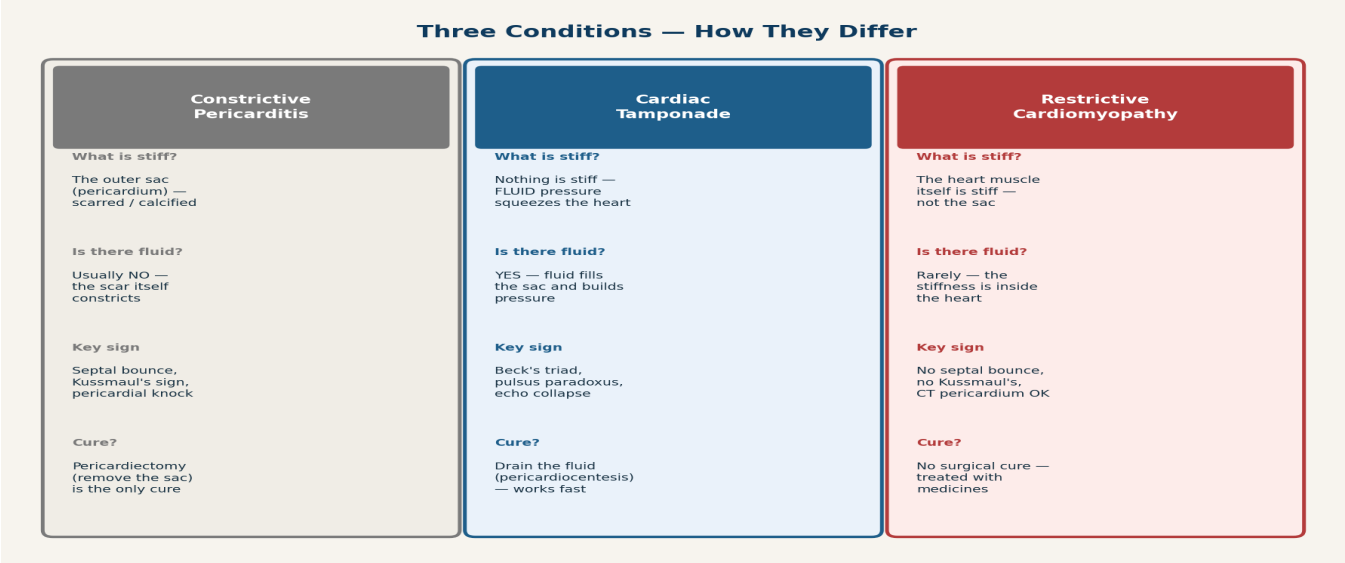
Names & Terms You Will Hear

Term	Meaning
Constrictive pericarditis	The pericardial sac has scarred and stiffened. It squeezes the heart so it can't fill. The problem is scar, not fluid — this is different from tamponade.
Pericardial constriction	Another name for the same condition. Constriction means tightening or squeezing.
Calcific constrictive pericarditis	A form where calcium builds up in the scarred sac. It is visible on CT or chest X-ray.
Transient constrictive pericarditis	An early form that can still be reversed. Anti-inflammatory medicines may resolve it before the scar becomes permanent.
Effusive-constrictive pericarditis	A mixed form. The sac has both fluid (effusion) and early stiffness (constriction).
Pericardiectomy	Surgery to remove the stiff pericardial sac. It is the only cure for the chronic form.
Kussmaul's sign	A unique finding in this disease. The neck veins bulge bigger when you breathe in. This is the opposite of normal. It happens because the rigid sac blocks blood from entering the heart.
Pericardial knock	A heart sound your doctor hears with a stethoscope. It happens when the heart suddenly stops filling — the rigid sac cuts off expansion.

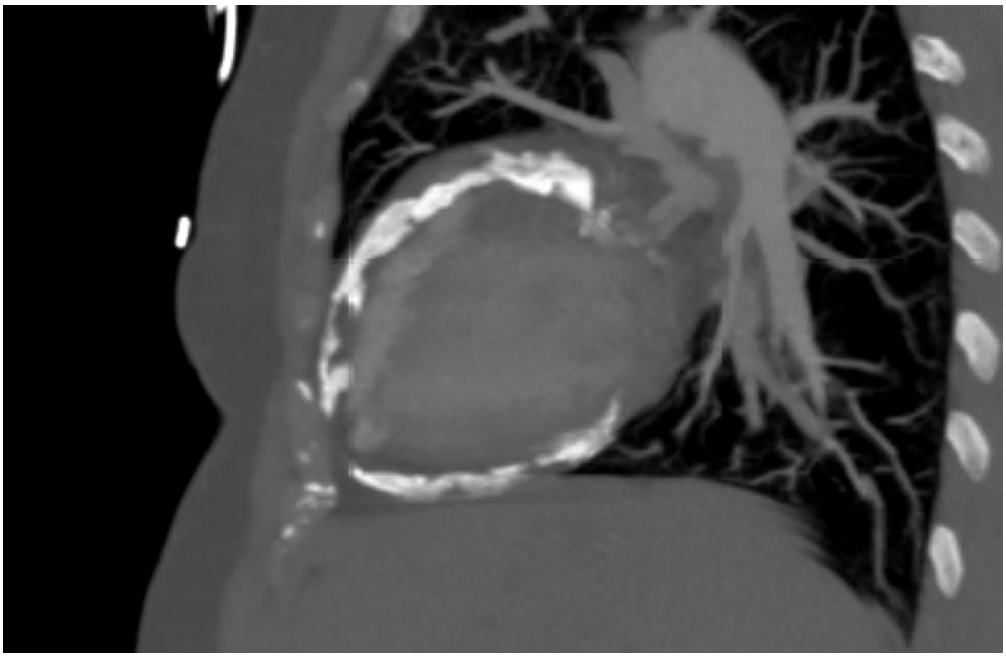
Not Tamponade — A Very Different Problem.
Tamponade is caused by *fluid* around the heart. Drain the fluid — the heart is free. Constrictive pericarditis is caused by a *stiff scar.* No fluid to drain. The scar must be removed by surgery. These two conditions look alike but need different treatment.

What Is Constrictive Pericarditis?

- Your heart sits inside a thin, flexible sac called the **pericardium**. It holds 15–50 mL of fluid so the heart can glide freely.
- In constrictive pericarditis, the sac has **scarred and stiffened**. It can also fill with calcium. The sac becomes rigid — like a tight shell around the heart.
- The rigid shell lets the heart fill at first — then **abruptly stops it**. Doctors see this as a sudden pressure drop and flat line on heart cath. They call it the "dip-and-plateau" pattern.
- **No excess fluid is needed.** The scar itself is the problem. This is different from tamponade, which is caused by too much fluid.
- The rigid sac is a fixed size. **The two heart chambers compete for space.** When one fills, the other is crowded. This is called ventricular interdependence.
- Blood backs up into the body. Neck veins, the liver, the belly, and the legs all swell. **Symptoms can look just like right-heart failure or liver disease.** It is often missed for months.
- Chronic constrictive pericarditis **does not go away on its own.** Medicines ease symptoms. The only cure is surgery — removing the rigid sac (pericardiectomy).



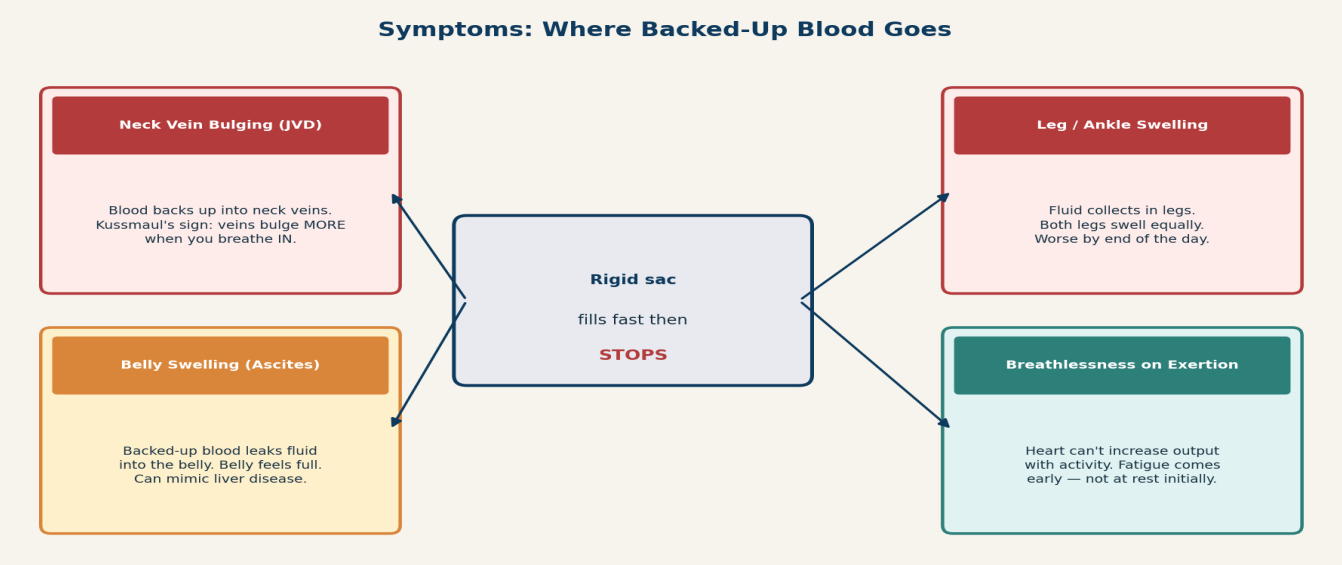
How constrictive pericarditis differs from cardiac tamponade and restrictive cardiomyopathy — three conditions with similar symptoms but different causes and treatments.



A real cardiac CT scan (sagittal view) showing severe pericardial calcification — the bright white ring encasing the heart. This is the stiff, calcified sac that prevents the heart from filling normally. Image: Kaur et al., Methodist DeBakey Cardiovascular Journal 2023 (CC BY 4.0).

Why It Matters

- Constrictive pericarditis is **one of the most missed heart diagnoses.** Patients are often treated for heart failure or liver disease for months before the right diagnosis is made.
- It is **surgically curable.** Pericardiectomy removes the stiff sac. About 70–80% of patients improve after surgery.
- If caught early (transient form), a course of anti-inflammatory medicines can reverse it. This avoids surgery — but only before the scar becomes permanent.
- The difference from **restrictive cardiomyopathy** is critical. Surgery cures constrictive disease. Medicines — not surgery — treat restrictive. Getting this wrong harms patients.
- Worldwide, **tuberculosis (TB) is the most common cause.** In the US, prior heart surgery and chest radiation lead the list.



The rigid pericardial sac stops the heart from filling. Backed-up blood causes neck vein bulging (JVD), belly swelling (ascites), leg edema, and breathlessness on exertion.

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
Prior pericarditis (viral / idiopathic)	Most common cause in the US. Most pericarditis heals fully. A small fraction scars and becomes constrictive over months to years.
Heart surgery (CABG, valve repair)	Pericardial scarring after surgery. Risk is about 0.2–0.3%. It can appear years after the operation.
Chest radiation therapy	A major cause. Radiation injures the pericardium. The damaged tissue heals as stiff scar. This can take 10–20 years to appear. Breast cancer and lymphoma survivors are most at risk.
Tuberculosis (TB)	The leading cause worldwide. TB infects the pericardium and causes thick fibrous scarring. Rare in the US — more common in immigrants and people with HIV.
Autoimmune disease (lupus, RA, scleroderma)	Years of repeated pericardial inflammation can lead to scarring. Usually a late complication.
Recurrent pericarditis	Multiple pericarditis flares raise the risk of scarring. Risk is higher if each episode is undertreated.
Kidney failure (uremia)	Waste products inflame the pericardium. Risk grows if dialysis is delayed.
Bacterial pericarditis	Infection fills the sac with pus. This leaves thick scarring. High risk of becoming constrictive.

Cause	Who is at Risk	Time to Constriction
Viral / idiopathic pericarditis	Most common in the US	Months to 2 years
Heart surgery (CABG, valve)	Any heart surgery patient	Months to years
Chest radiation therapy	Breast cancer, lymphoma survivors	10–20 years

Cause	Who is at Risk	Time to Constriction
Tuberculosis (TB)	Sub-Saharan Africa, South Asia	Weeks to months
Bacterial pericarditis	Any — after bloodstream infection	Weeks to months
Autoimmune (lupus, RA)	Patients with chronic pericarditis	Years
Kidney failure (uremia)	Advanced kidney disease	Months (if not dialyzed)

Treatment Options

- **Diuretics (water pills) — symptom relief only.** Furosemide or spironolactone reduce leg swelling, belly fluid, and shortness of breath. They do not treat the stiff sac.
- **Anti-inflammatory medicines — for the early (transient) form.** NSAIDs plus colchicine for 3–6 months can reverse constrictive pericarditis. This works when there is still active inflammation — shown by a raised CRP or cardiac MRI findings.
- **Pericardiectomy — the only cure for chronic constrictive pericarditis.** Surgeons remove the stiff pericardial sac through an open-chest operation. This frees the heart to fill and pump normally.
- **When is surgery recommended?** When symptoms are significant (NYHA Class II–IV), the diagnosis is confirmed on echo or cath, and medicines have not helped.
- **Surgery outcomes:** In-hospital death rate is about 6% (Gopaldas, 8,207 cases). Risk is higher with radiation-caused disease (~21%) or when the heart muscle is already damaged. About 70–80% of patients improve. 20–30% have lingering heart failure.
- **Treat the cause.** TB: anti-TB drugs for 6 months; steroids may help prevent scarring. Autoimmune: treat the underlying condition. Radiation damage: no fix for the scar, but further radiation should be avoided.
- **Low-sodium diet** helps diuretics work better and reduces fluid buildup.
- **Activity:** moderate exercise is fine. Avoid heavy exertion before surgery.

Constriction vs Tamponade — Very Different Problems

- Tamponade: excess fluid builds pressure. It squeezes the heart from outside. Fix: drain the fluid with a needle (pericardiocentesis). Works in minutes.
- Constrictive pericarditis: a scar has replaced the flexible sac. No fluid to drain. The scar must be removed by surgery.
- Echo sign of tamponade: large fluid collection; right-side chambers collapse during filling.
- Echo sign of constrictive pericarditis: septal bounce (the septum moves oddly with breathing); thickened pericardium; respiratory changes in valve flow.
- CT or MRI sign: pericardium thicker than 4 mm (normal is under 2 mm); calcium spots on the sac.
- Heart catheterization is the gold standard: equal filling pressures in all four chambers confirm constriction.

Pericardiectomy: The Cure for Chronic Disease

- Surgeons open the chest and carefully peel away the stiff, scarred pericardium from the heart surface.
- The goal: free the heart so both chambers fill normally. A complete removal gives better results than partial.
- Death rate: about 6% at experienced centers. Higher with radiation-caused disease (~21%) or when the muscle is already damaged.
- About 70–80% of patients improve after surgery.
- 20–30% have ongoing heart failure. This is usually because years of constriction caused muscle damage before surgery.
- Earlier surgery gives better results. Do not wait until the muscle is severely damaged.
- Recovery: 4–8 weeks. Water pills are tapered slowly as the heart learns to fill freely again.

Finding the Cause: TB, Surgery, and Radiation

- TB: test anyone from a high-TB region, with HIV, or with night sweats and weight loss. TB is the #1 cause worldwide.
- Post-cardiac surgery: the most common cause in the US. It usually appears 6 months to 2 years after bypass or valve surgery.
- Radiation: ask about any prior chest radiation. Breast cancer and lymphoma survivors are most at risk. The delay can be 10–20 years.
- Autoimmune: check blood tests for lupus and RA in patients with joint pain, rash, or dry eyes. These are treatable.
- No cause found (idiopathic): 20–30% of cases in the US have no clear cause. Treatment is the same.
- Cause affects outcomes: TB and idiopathic cases do better after surgery than radiation-caused disease.

Risks, Benefits, and Alternatives

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

Option	Risks	Benefits	Alternatives
Pericardiectomy (remove the sac — surgery)	Open-chest surgery. Death rate ~6%; higher with radiation (~21%) or damaged muscle. Recovery 4–8 weeks. 20–30% have lingering heart failure.	The only cure for chronic disease. Frees the heart to fill normally. 70–80% improve. Best results at high-volume centers.	Medicines only (symptom relief). Anti-inflammatory trial if transient form.
Anti-inflammatory medicines — transient form only	Stomach upset (NSAIDs). Diarrhea (colchicine). Only works when inflammation is active. Does not work for calcified or chronic disease.	Can reverse early constrictive pericarditis and avoid surgery. Haley (Mayo, 2004): 17 of 36 patients resolved with medicines alone.	Surgery if CRP is normal and constriction stays.
Diuretics (water pills) — symptom control only	Low potassium. Dizziness. Dry mouth. Kidney strain if overdone. Too much diuresis worsens output.	Reduces leg swelling, belly fluid, and shortness of breath. Improves day-to-day comfort.	Surgery for definitive cure. Taper diuretics slowly after pericardiectomy.
Watchful waiting — mild or high-risk patients only	Symptoms may worsen over time. Heart muscle can be damaged. Surgery is harder if delayed.	Avoids surgical risk. Right for mild stable symptoms or patients too ill for surgery.	Repeat echo every 6–12 months. Move to surgery if worse.

Common Misconceptions

Myth	Reality
"Constrictive pericarditis is the same as cardiac tamponade."	They are very different. Tamponade is caused by **fluid pressure**. Drain the fluid and the heart is free. Constrictive pericarditis is caused by a **stiff scar** around the heart. No fluid to drain. Surgery is needed for the chronic form.
"Water pills will cure it."	Water pills **ease symptoms** — they reduce swelling and fluid. But they do not treat the stiff sac. The scar stays. Surgery (pericardiectomy) is the only cure for the chronic form.
"This is weak heart muscle (heart failure)."	The heart muscle is usually normal. The problem is **outside the muscle** — the rigid sac blocks filling. Treatment is surgery, not heart-failure medicines.
"If it looks like right-heart failure, it must be heart failure."	Constrictive pericarditis looks just like right-heart failure. Doctors look for: **Kussmaul's sign** (neck veins rise on inhaling), a pericardial knock, a septal bounce on echo, thick pericardium on CT, and equal pressures on heart cath.
"Surgery is too risky — I should just take pills."	Surgery has real risks (~6% death rate). But the alternative — years of worsening heart failure — also carries serious risk. An experienced cardiac surgeon at a high-volume center gives the best results. The right choice depends on stage and overall health.
"Medicines never reverse this condition."	In the early **transient form**, full-dose NSAIDs and colchicine can reverse constriction before the scar becomes permanent. Active inflammation on cardiac MRI is a good sign that medicines may work.

Possible Complications

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

Where / What	What Can Happen
Progressive right-heart failure	The rigid sac limits filling. Blood backs up. The liver, belly, and legs swell more over time. Without surgery, this gets worse over months to years.
Liver damage (cardiac cirrhosis)	Backed-up blood injures the liver. Liver enzymes rise. Cirrhosis can develop over time. This is often mistaken for liver disease rather than heart disease.
Atrial fibrillation (AFib)	Pressure on the upper chambers triggers abnormal rhythms. AFib is common. It makes symptoms worse.
Protein loss (protein-losing enteropathy)	Rare but serious. Backed-up pressure causes protein to leak into the gut. Patients have very low protein levels and severe swelling.
Muscle wasting and fatigue	Years of low heart output cause muscle loss. Some weakness may persist even after successful surgery.
Residual heart failure after surgery	20–30% of patients still have heart-failure symptoms after pericardiectomy. This happens when the muscle was damaged before surgery.
Surgical risks	Death rate ~6%; higher with radiation-caused disease (~21%) or damaged muscle. Risks also include bleeding, infection, and lung problems.

Points to Know

If you remember nothing else, remember these key points.

- **The problem is the sac, not the muscle.** Constrictive pericarditis is caused by a stiff, scarred pericardium — not by weak heart muscle.
- **It is surgically curable.** Pericardiectomy removes the stiff sac. About 70–80% of patients improve significantly.
- **If caught early** (transient form, active inflammation), anti-inflammatory medicines can reverse it — avoiding surgery.
- **Three key bedside clues:** Kussmaul's sign (veins rise on inhaling), pericardial knock, septal bounce on echo.
- **CT scan often shows calcium** deposits on the pericardium — an important diagnostic clue.
- **It is commonly mistaken** for right-heart failure or liver disease. Tell your doctor about prior heart surgery, radiation, TB, or repeated pericarditis.
- **Diuretics ease fluid symptoms** but do not cure the disease. Surgery is the definitive treatment for the chronic form.

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 our office** for new or worsening leg swelling, belly bloating, or weight gain over 3 lbs in a day.
- **Call our office** if you are more short of breath with simple tasks than you were last week.
- **Call 911** for sudden severe shortness of breath, fainting, rapid weak pulse, or cold sweating — signs of a cardiac event.
- **Call 911** for chest pain with one-sided weakness, slurred speech, or vision loss — stroke signs.
- **Call our office** for fever above 101°F or chills — may signal new infection or a post-surgery issue.
- **Call our office** if diuretics cause bad lightheadedness, muscle cramps, or very low urination — possible over-diuresis.
- **Call our office** before any planned surgery or procedure. Constrictive pericarditis changes how fluids and anesthesia are managed.

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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 — Constrictive Pericarditis - Plain-language overview of causes, symptoms, and pericardiectomy.
- Mayo Clinic — Constrictive Pericarditis - Symptoms, diagnosis (echo, CT, cath), and treatment overview.
- NIH MedlinePlus — Constrictive Pericarditis - NIH-curated patient overview with trusted plain-language content.
- AHA — Pericarditis and Pericardial Disease - AHA patient education on pericardial diseases including constrictive pericarditis.
- 2015 ESC Guideline on Pericardial Diseases - European guideline on diagnosis and management of all pericardial diseases.
- Companion Guide — Pericarditis - Guide on pericardial inflammation — the most common cause of constrictive disease.
- Companion Guide — Pericardial Effusion - Guide on fluid around the heart — the related condition.
- Companion Guide — Cardiac Tamponade - Guide on fluid-pressure emergency — what constrictive pericarditis is NOT.

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.

- ESC 2015 Guidelines on Pericardial Diseases *[Guideline]*
  Definitive European guideline for diagnosis and management of constrictive pericarditis including pericardiectomy indications
- Mayo Clinic — Constrictive Pericarditis Overview *[Patient Education]*
  Plain-language patient overview; used for symptoms, causes, and patient framing
- Cleveland Clinic — Constrictive Pericarditis *[Patient Education]*
  Symptoms, diagnosis, and treatment overview including surgical outcomes
- AHA — Pericarditis and Pericardial Disease *[Patient Education]*
  AHA patient-facing pericardial disease content; authoritative for patient literacy
- NIH MedlinePlus — Constrictive Pericarditis *[Patient Education]*
  NIH-curated patient overview with trusted plain-language content
- Pericardiectomy Outcomes — Gopaldas et al. Ann Thorac Surg 2013 *[Clinical Trial]*
  Large National Inpatient Sample study: in-hospital mortality 6.1%; predictors of adverse outcomes
- Constrictive vs Restrictive Cardiomyopathy — Oh et al. Mayo Clin Proc 2004 *[Review Article]*
  Authoritative Mayo review distinguishing constrictive from restrictive; echo and cath features
- Tuberculous Pericarditis — Mayosi et al. Lancet 2005 *[Review Article]*
  TB pericarditis epidemiology, treatment, and progression to constrictive disease
- Radiation-Induced Constrictive Pericarditis — Bertog et al. JACC 2004 *[Review Article]*
  Radiation as etiology; latency, outcomes, and pericardiectomy indications in radiation cases
- Differentiation of Constrictive Pericarditis from Restrictive Cardiomyopathy — Hatle et al. Circulation 1989 *[Review Article]*
  Foundational reference on Doppler respiratory variation, septal bounce, and ventricular interdependence
- Pericardiectomy Long-Term Outcomes — Bertog et al. J Am Coll Cardiol 2004 *[Clinical Trial]*
  Long-term survival and residual heart failure after pericardiectomy including radiation etiology
- Effusive-Constrictive Pericarditis — Sagristà-Sauleda et al. NEJM 2004 *[Clinical Trial]*
  Effusive-constrictive overlap, diagnostic criteria, outcomes, and spontaneous resolution data
- Transient Constrictive Pericarditis and Anti-inflammatory Therapy — Haley et al. Mayo Clin Proc 2004 *[Clinical Trial]*
  Evidence that recent/inflammatory constrictive pericarditis can resolve with NSAIDs/colchicine

About This Guide

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Version: 2026-08-15

Reviewer note: Reviewed against Mayo Clinic, Cleveland Clinic, and AHA pericardial disease pages. This guide adds: Kussmaul's sign in plain English, the dip-and-plateau pattern, transient vs chronic disease, anti-inflammatory reversal evidence, pericardiectomy rates from Gopaldas 2013 (n=8,207), and the constrictive vs restrictive distinction.

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