CONDITION

Pericarditis - constrictive

Constrictive pericarditis is scarring around the heart that restricts filling and causes fluid buildup.

WHAT IT IS
Stiff heart lining that restricts heart filling

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
Breathlessness, leg swelling, abdominal swelling, fatigue

WHAT CAUSES IT
Inflammation, surgery, radiation, infection, or unknown cause

HOW IT IS DIAGNOSED
Echocardiogram plus CT or MRI; sometimes cardiac catheterization

MAIN TREATMENT
Diuretics, anti-inflammatory treatment, or surgical pericardiectomy

CAN IT BE CURED?
Sometimes - surgery removes the constricting sac

IS IT AN EMERGENCY?
Sometimes - severe breathlessness or fainting needs emergency care

LONG-TERM OUTLOOK
Often improves after surgery; advanced illness carries greater risk

Overview

Constrictive pericarditis is a condition in which the pericardium becomes stiff, scarred, or sometimes calcified. The pericardium is the thin, protective sac around your heart.

A healthy pericardium stretches as the heart fills with blood. In constrictive pericarditis, the stiff sac limits this movement. The heart muscle may still squeeze normally, but the lower chambers cannot fill properly between beats. This raises pressure in the veins and can cause fluid to collect in the legs, abdomen, or around the lungs.

Despite its name, active inflammation is not always present. Some people have ongoing inflammation that may improve with medical treatment. Others have permanent scarring that is more likely to require surgery.

The condition can resemble heart failure, liver disease, or restrictive cardiomyopathy, which is stiffness within the heart muscle itself. Correctly identifying the cause matters because treatment is different. Pericardial thickness can also be normal, so a normal-looking pericardium on one scan does not always rule out constriction.

Symptoms

Symptoms often develop gradually. They usually come from raised pressure in the veins rather than weak squeezing by the heart.

Common symptoms include:

Fluid may also collect around a lung, which is called a pleural effusion. This can make breathing more difficult.

Some people notice a fast heartbeat or prominent neck veins. A healthcare professional may find that the neck vein pressure rises rather than falls when you breathe in. This is called Kussmaul's sign, but it is not unique to constrictive pericarditis.

Chest pain is less typical once permanent constriction has developed. However, it may occur when there is still active pericardial inflammation.

- Shortness of breath, especially during activity
- Swelling of the ankles, feet, or legs
- Abdominal swelling or discomfort from fluid buildup
- Tiredness and reduced ability to exercise
- Rapid weight gain caused by retained fluid
- Reduced appetite or feeling full after small meals

Causes and risk factors

Constrictive pericarditis usually follows inflammation or injury of the pericardium. Scar tissue can form as the area heals. In many people, no definite cause is found.

Recognized causes include:

Most people who have pericarditis, heart surgery, or chest radiation do not develop constriction.

The timing can differ considerably. Constriction may appear within weeks or months of inflammation, but it can also emerge years after surgery or radiation. Radiation-related

constriction may occur alongside damage to heart valves, coronary arteries, or the heart muscle, which can make treatment more complex.

- Previous pericarditis, sometimes after a viral illness
- Heart surgery or another procedure involving the chest
- Radiation treatment to the chest, sometimes many years earlier
- Tuberculosis, particularly in places where it is more common
- Bacterial or fungal infection
- Autoimmune conditions, in which the immune system attacks healthy tissue
- Previous bleeding into the pericardial space
- Certain cancers involving the pericardium

Diagnosis

Diagnosis begins with your symptoms, medical history, and a physical examination. Your healthcare professional may look for leg or abdominal swelling, raised pressure in the neck veins, or unusual heart sounds.

An electrocardiogram, or ECG, records the heart's electrical activity. It may show changes, but it cannot confirm constrictive pericarditis. Blood tests can check kidney and liver function, look for inflammation, and help identify another cause of swelling or breathlessness.

An echocardiogram uses sound waves to show the heart in motion. It can reveal characteristic changes in how the heart chambers fill during breathing. Doppler measurements assess the direction and speed of blood flow. The scan also checks heart valves, squeezing function, and fluid around the heart.

CT and cardiac MRI provide more detail about the pericardium. CT is particularly useful for finding calcium and measuring pericardial thickness. MRI can show inflammation, scarring, and the effect of breathing on heart movement. A thick or calcified pericardium supports the diagnosis, but some people with constriction do not have obvious thickening.

If non-invasive tests do not provide a clear answer, cardiac catheterization may be used. During this procedure, thin tubes are passed through blood vessels to measure pressures inside the heart. The pressure pattern can help distinguish pericardial constriction from restrictive cardiomyopathy.

Tests may also be needed to investigate the cause, such as tuberculosis testing when exposure or local risk makes this relevant.

Treatment and management

Treatment is based on whether the condition is caused by active, potentially reversible inflammation or established scarring.

If imaging and blood tests suggest active inflammation, anti-inflammatory treatment may be considered. This is most useful in temporary, or transient, constriction. It is less likely to reverse a heavily scarred or calcified pericardium. The medicine chosen and the length of treatment require medical supervision.

Diuretics like furosemide or hydrochlorothiazide , sometimes called water tablets, help the kidneys remove excess salt and water. They can reduce leg swelling, abdominal fluid, and breathlessness. They control symptoms but do not remove the constriction. Excessive fluid loss can reduce heart filling too much, so treatment is monitored with symptoms, blood pressure, kidney tests, and body weight.

Any identified cause also needs attention. For example, constriction related to tuberculosis requires treatment for that infection. Treatment of an autoimmune condition may help when active inflammation is present.

For persistent constriction causing significant symptoms, the main definitive treatment is pericardiectomy. This is an operation to remove as much of the stiff pericardium as safely possible. It allows the heart to expand more freely.

Pericardiectomy is major heart surgery. Its risks are influenced by the cause of constriction, how advanced the fluid congestion is, liver and kidney health, and whether the heart muscle or valves are also affected. Recovery of heart filling may be gradual rather than immediate.

Some people cannot have surgery because its risks outweigh the likely benefit. In that situation, care focuses on controlling fluid retention, treating the cause where possible, supporting nutrition, and monitoring heart, liver, and kidney function.

Complications

Long-standing constriction can keep pressure high in the veins. This may lead to repeated pleural effusions, severe leg swelling, or large amounts of abdominal fluid called ascites.

Ongoing congestion can affect the liver. Over time, liver scarring may develop. Kidney function can also worsen because of altered blood flow and the effects of fluid retention. Poor appetite and abdominal congestion can contribute to weight and muscle loss.

Abnormal heart rhythms, including atrial fibrillation, may occur. Some people develop low blood pressure or worsening heart failure symptoms.

Pericardiectomy can provide major improvement, but complications can include bleeding, infection, abnormal heart rhythms, or low heart output after surgery. Your surgical team should explain the risks in relation to your health and the cause of the constriction.

Prevention

Constrictive pericarditis often cannot be prevented. It may occur after an illness or treatment that was necessary, and many cases have no known cause.

Prompt diagnosis and appropriate treatment of bacterial or tuberculosis-related pericarditis may reduce the chance of lasting damage, but it cannot guarantee prevention. Following the recommended treatment plan for inflammatory pericarditis may also help control ongoing inflammation.

If you have previously had pericarditis, heart surgery, or chest radiation, new swelling, abdominal enlargement, or unexplained breathlessness should be assessed. Routine screening is not the same for everyone and is based on your treatment history and current symptoms.

Living with it and what to expect

The course differs according to the cause and whether the pericardium is inflamed or permanently scarred. Transient constriction can improve over weeks or months as inflammation settles. Established constriction usually does not disappear without surgery.

Diuretics may keep symptoms manageable for a time, but they do not correct the stiff sac. Persistent or worsening swelling, reduced exercise tolerance, and changes in kidney or liver tests may signal that the condition is having a greater effect.

After successful pericardiectomy, many people have less swelling and can be more active. Improvement may continue for months as the heart adjusts and retained fluid clears. Surgery does not always remove every symptom, particularly when there is additional heart muscle, valve, lung, or liver damage.

Long-term outlook is generally better when treatment occurs before severe organ congestion develops. Outcomes may be less favorable when constriction follows chest radiation or when advanced liver, kidney, or heart muscle damage is present.

Routine follow-up may include review of your weight, swelling, breathing, blood pressure, medicines, kidney and liver tests, and heart imaging. Report gradual changes rather than waiting until fluid buildup becomes difficult to manage.

When to get medical help

Arrange a routine medical appointment if you develop gradually increasing ankle swelling, abdominal enlargement, breathlessness during activity, unexplained weight gain, or persistent tiredness. These symptoms have many possible causes and do not confirm constrictive pericarditis.

Seek prompt medical advice if known symptoms worsen quickly, you become breathless at rest, swelling increases over a few days, urine output falls noticeably, or a fast or irregular heartbeat causes weakness or dizziness.

Call emergency services for:

These emergency symptoms may have causes other than constrictive pericarditis, but they need immediate assessment.

- Severe or sudden difficulty breathing
- Fainting or difficulty staying awake
- New chest pressure or pain that does not settle
- Blue or grey lips, marked confusion, or severe weakness

Common questions

Is constrictive pericarditis the same as ordinary pericarditis?

No. Pericarditis means inflammation of the sac around the heart. Constrictive pericarditis is the restriction of heart filling caused by a stiff pericardium, often after inflammation has healed. Active inflammation may still be present in some cases.

Can constrictive pericarditis go away on its own?

Temporary constriction linked to active inflammation can improve with time and appropriate treatment. Permanent scarring or heavy calcification usually does not resolve on its own.

Can constrictive pericarditis be cured without surgery?

Sometimes. Medical treatment may reverse transient inflammatory constriction. Diuretics can ease symptoms but do not cure established scarring. Persistent, symptomatic constriction often requires pericardiectomy for definitive treatment.

How serious is pericardiectomy?

It is major surgery and has meaningful risks. Risk is higher when constriction is advanced or accompanied by radiation damage, poor nutrition, or liver, kidney, or heart muscle problems.

Many people improve after successful surgery, but results cannot be guaranteed.

Why do my legs and abdomen swell if my heart still pumps normally?

The heart may squeeze normally but have trouble filling because the stiff pericardium restricts it. Blood then backs up in the veins, raising pressure and pushing fluid into the legs and abdomen.

Can constrictive pericarditis come back after surgery?

Complete removal usually prevents the same constricting tissue from causing problems again. Symptoms can persist or return if some constricting pericardium remains or if another heart, liver, lung, or kidney problem is present.

Sources

- Adler Y, Charron P, Imazio M, et al. 2015 ESC Guidelines for the diagnosis and management of pericardial diseases. European Heart Journal . 2015;36:2921-2964
- Welch TD. Constrictive pericarditis: diagnosis, management and clinical outcomes. Heart . 2018;104:725-731
- Klein AL, Abbara S, Agler DA, et al. Clinical recommendations for multimodality cardiovascular imaging of patients with pericardial disease. Journal of the American Society of Echocardiography . 2013;26:965-1012 00519-1/fulltext)
- Merck Manual Professional Edition. Constrictive pericarditis
- Cleveland Clinic. Constrictive pericarditis