CONDITION

Myocardial contusion

A myocardial contusion is an injury to the heart muscle caused by a forceful blow or compression to the chest.

WHAT IT IS
Bruising or injury of the heart muscle

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
Chest pain, palpitations, breathlessness, dizziness

WHAT CAUSES IT
Blunt force or compression to the chest

HOW IT IS DIAGNOSED
ECG, troponin blood tests, and sometimes echocardiography

MAIN TREATMENT
Heart monitoring and supportive care

CAN IT BE CURED?
Yes - most uncomplicated injuries heal

IS IT AN EMERGENCY?
Sometimes - fainting or breathing trouble after chest trauma

LONG-TERM OUTLOOK
Usually good after mild injury, poorer with complications

Overview

A myocardial contusion is an injury to the heart muscle caused by blunt chest trauma. "Myocardial" means heart muscle, and "contusion" means a bruise. The injury may range from minor muscle damage to a more serious problem that affects the heart's rhythm or ability to pump blood.

Clinicians now often use the broader term blunt cardiac injury . This is because chest trauma can affect more than the heart muscle. It may also injure the heart's electrical system, valves, surrounding sac, or coronary arteries that supply blood to the heart.

A myocardial contusion can happen in a road crash, fall, crush injury, or forceful impact during sport. It may occur even when there is little or no bruising on the skin. A broken breastbone, called a sternal fracture, does not by itself prove that the heart is injured.

The main concern is that damaged heart tissue can cause an abnormal heartbeat or reduced pumping ability. These problems usually appear soon after the injury, but some people have no obvious symptoms. Medical assessment after a significant chest impact helps identify who needs heart monitoring.

Symptoms

Symptoms can be difficult to separate from pain caused by injured ribs, chest muscles, or the breastbone. Some people with a myocardial contusion have no symptoms directly related to the heart.

Possible symptoms include:

Chest pain may be caused by the chest wall rather than the heart. Pain that becomes worse when you press the area, move, or take a deep breath often comes from the ribs or muscles, but this cannot reliably rule out a heart injury.

Signs of a more serious injury can include very low blood pressure, confusion, fainting, worsening breathing, or a heartbeat that is extremely fast, slow, or irregular. These symptoms need emergency assessment.

- Pain, pressure, or discomfort in the chest
- A fast, pounding, fluttering, or irregular heartbeat
- Shortness of breath
- Dizziness, weakness, or fainting
- Unusual sweating or pale, cool skin
- Extreme tiredness after the injury

Causes and risk factors

A myocardial contusion is caused by physical force rather than infection, an inherited condition, or the usual cholesterol-related process behind many heart attacks.

The heart can be injured when it is compressed between the breastbone and spine. It may also be damaged when the body stops suddenly but the heart continues moving inside the chest. A direct blow can briefly raise pressure inside the heart and damage muscle cells or the electrical pathways that control the heartbeat.

Situations linked with blunt cardiac injury include:

The amount of visible bruising does not show how much internal injury is present. The direction and strength of the impact, how quickly the body stopped, and other chest injuries are more important.

- Motor vehicle and motorcycle crashes, especially impacts with a steering wheel, dashboard, or seat belt
- Pedestrian or cycling collisions
- Falls from height
- Crush injuries
- Forceful contact during sport
- Explosions or strong pressure waves
- Cardiopulmonary resuscitation, although lifesaving chest compressions should never be delayed because of this risk

Diagnosis

There is no single test that proves or excludes every type of blunt cardiac injury. Assessment usually begins with details of the accident, a physical examination, an electrocardiogram, and a blood test.

An electrocardiogram , or ECG, records the heart's electrical activity. It can show an abnormal rhythm or changes that suggest heart muscle injury. An ECG is painless and takes only a few minutes.

A blood test measures cardiac troponin , a protein released when heart muscle cells are damaged. Troponin can rise after a myocardial contusion, but an elevated result does not show the exact type or location of the injury. Because the level may change over time, the ECG or blood test may be repeated.

When both the ECG and appropriately timed troponin results are normal, a clinically important blunt cardiac injury becomes much less likely. Abnormal results may lead to observation in hospital with continuous heart-rhythm monitoring.

An echocardiogram uses sound waves to show the heart moving and pumping. It may be needed if you have low blood pressure, a persistent abnormal rhythm, signs of heart failure, or concern about damage to a valve or the wall of the heart. Depending on the situation, images may be taken through the chest or with a probe passed into the food pipe under sedation.

CT scans are often used to look for other chest injuries. In selected cases, cardiac CT, coronary

artery imaging, or cardiac MRI may help distinguish a traumatic injury from a heart attack or identify structural damage. These tests are not required for everyone.

Treatment and management

Treatment is based on how the injury affects the heart rather than on the word "contusion" alone.

If the ECG and troponin results are reassuring and there are no other serious injuries, prolonged heart treatment may not be needed. Pain from associated rib, muscle, or breastbone injuries can still require treatment and follow-up.

If testing suggests a significant blunt cardiac injury, care may include:

Most rhythm disturbances are managed using the same general approaches used when they occur for other reasons. A temporary pacemaker may occasionally be required if the heart becomes dangerously slow because its electrical signals are blocked.

Rare injuries, such as a torn heart chamber, damaged valve, coronary artery injury, or blood collecting around the heart and restricting its movement, may require urgent procedures or surgery.

Before leaving hospital, you may be given advice about physical activity, driving, work, and follow-up. These instructions should reflect the severity of the heart injury and any fractures or other trauma. Do not restart strenuous exercise solely because the chest pain has improved.

- Continuous monitoring of heart rate and rhythm
- Repeated ECGs and troponin blood tests
- Oxygen or breathing support when needed
- Fluids or other support for low blood pressure
- Treatment for a persistent or dangerous abnormal rhythm
- Echocardiography and specialist assessment for impaired pumping or structural damage

Complications

Many myocardial contusions are mild and heal without lasting heart problems. Complications are more likely when the original impact was severe or tests show significant electrical or structural damage.

Possible complications include:

Serious complications usually become apparent during the early period after injury. Delayed problems are possible but less common. New palpitations, breathlessness, fainting, swelling, or reduced exercise tolerance after discharge should be medically assessed.

- An abnormal heartbeat, called an arrhythmia
- Reduced heart pumping strength
- Heart failure, meaning the heart cannot pump as effectively as the body needs
- Electrical conduction block, in which signals move too slowly or stop
- Damage to a heart valve, chamber wall, or coronary artery
- Blood collecting in the sac around the heart
- A clot forming in an injured area of heart muscle

Prevention

A myocardial contusion cannot always be prevented because it often results from an unexpected accident. Risk can be reduced by limiting the force of chest impacts.

Wear a correctly positioned seat belt on every journey. Airbags and seat belts work together; an airbag is not a replacement for a seat belt. Children should use a car seat or booster suited to their age, height, and weight.

Use appropriate protective equipment for contact sports, cycling, motorcycling, and hazardous work. Follow fall-prevention and machinery safety measures where relevant. Chest protectors may reduce some impacts, but they cannot prevent every internal injury.

Do not avoid lifesaving CPR because it could cause injury. If someone is unresponsive and not breathing normally, calling emergency services and starting CPR is more important than the possibility of chest or heart trauma.

Living with it and what to expect

The course over the following weeks and months depends on the depth of the injury and whether it affected the heartbeat, pumping function, or heart structures.

After a mild injury with reassuring tests, chest wall soreness may last longer than any heart muscle irritation. Bruised ribs and muscles can make deep breathing, sleeping, lifting, and driving uncomfortable for several weeks. This does not necessarily mean the heart injury is worsening.

People who had an abnormal rhythm or reduced pumping function may need follow-up ECGs, an echocardiogram, or specialist review. Some abnormalities improve as inflammation and injured tissue settle. Structural damage or a significant rhythm problem may require longer follow-up and ongoing treatment.

Return to exercise, heavy lifting, and physically demanding work may be gradual. The timing is different for someone with only chest wall pain than for someone whose tests showed heart dysfunction. Follow the activity plan given at discharge rather than testing your limits with intense exercise.

Most people with an uncomplicated myocardial contusion return to their usual activities. A severe blunt cardiac injury can have lasting effects, but this is not the expected course for every person with chest trauma.

When to get medical help

Call emergency services after a chest injury if you have:

A forceful chest impact also needs prompt medical assessment even if symptoms seem limited, particularly after a high-speed collision, major fall, crush injury, or direct high-energy blow. Do not drive yourself if you feel faint, breathless, or unwell.

After discharge, seek urgent advice for new palpitations, increasing breathlessness, fainting, worsening chest pain, or a clear decline in your ability to walk or carry out routine activities.

Routine follow-up is appropriate if symptoms are steadily improving and no warning signs are present. Attend planned appointments, especially if you had an abnormal ECG, raised troponin, reduced heart function, or another significant chest injury.

- Fainting, severe dizziness, confusion, or difficulty staying awake
- New or worsening trouble breathing
- Chest pressure or severe chest pain
- A very fast, slow, or irregular heartbeat with weakness or dizziness
- Pale, cold, clammy, or bluish skin
- Coughing up blood or signs of severe internal bleeding

Common questions

Is a myocardial contusion the same as a heart attack?

No. A myocardial contusion is caused by physical trauma. Most heart attacks happen when a blood clot blocks a coronary artery. Both can cause chest pain, ECG changes, and raised troponin, so further testing may sometimes be needed to tell them apart.

Can I have a bruised heart without knowing it?

Yes. A mild injury may cause no clear symptoms, or chest wall pain may hide them. This is why an ECG and troponin testing may be used after a significant chest impact.

Will a myocardial contusion show on a chest X-ray?

Usually not. A standard chest X-ray can show broken bones, collapsed lung, or other chest injuries, but it does not reliably show bruising of the heart muscle. ECGs, troponin tests, and sometimes echocardiography are more useful.

How long does a bruised heart take to heal?

There is no single healing time. Mild muscle injury may settle over days to weeks, while rhythm changes, reduced pumping function, or structural damage can require longer monitoring and recovery. Chest wall pain may continue after heart tests have returned to normal.

Can I exercise after a myocardial contusion?

Avoid strenuous activity until you have been medically assessed and given return-to-activity guidance. The safe timing depends on your ECG, troponin results, heart function, symptoms, and other injuries. Light daily activity may be introduced earlier when the injury is uncomplicated.

Can a myocardial contusion cause problems years later?

Most mild injuries do not cause long-term heart problems. Lasting rhythm disturbances, reduced pumping function, or valve problems can follow a severe injury, although they are less common. New heart-related symptoms later still deserve assessment rather than being assumed to come from the old injury.

Sources

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