



UNIVERSITY OF OTTAWA
HEART INSTITUTE
INSTITUT DE CARDIOLOGIE
DE L'UNIVERSITÉ D'OTTAWA

A GUIDE FOR PATIENTS AND FAMILIES



What is Spontaneous Coronary Artery Dissection (SCAD)?

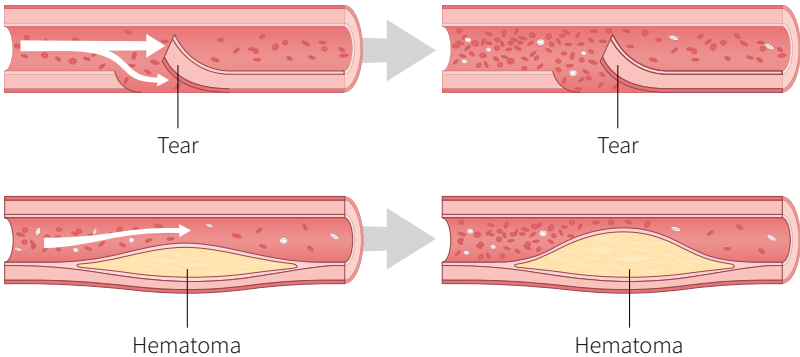
Spontaneous coronary artery dissection (SCAD) is a type of heart attack caused by a separation (dissection) in one or more arteries of the heart. This separation may be between the layers of the arterial wall, causing a build-up of blood (hematoma), or it may be a tear in the innermost layer. Either type of dissection can block blood flow, causing a heart attack and sometimes death. SCAD may also cause heart damage or heart rhythm abnormalities.

Prompt diagnosis and treatment are crucial to decrease the risk of irreversible damage.

Spontaneous coronary artery dissection (SCAD) can trigger a dangerous domino effect in the heart.

SCAD is caused by a small tear or a bulging hematoma within the wall of the artery.

Blood accumulates within the arter wall. As it grows, the space for blood flow narrows, which can cause a heart attack or sudden heart death.



SCAD occurs most often in women aged 30 to 55, but it can occur in women and men of any age. People who develop SCAD often have no coronary artery disease risk factors or symptoms before their SCAD event.

SCAD is still a relatively new diagnosis, and ongoing research continues to help us learn more about it. It is believed that 25 to 40% of heart attacks in women under 50 may be attributed to SCAD.

Signs and Symptoms

It is unlikely you will experience another SCAD event, but it could happen. Signs and symptoms of SCAD may include:

- chest pain or intense pressure.
- rapid heartbeat.
- pain in the arms, shoulders or jaw.
- shortness of breath.
- sweating.
- unusual, extreme tiredness.
- nausea.
- dizziness or light-headedness.

In addition, up to 50% of people with a history of SCAD may experience recurrent chest pains after the event, even though the arteries heal in 90% of patients. In women of reproductive age who have had a SCAD, chest pain may occur monthly starting one to two days before the period. If this happens to you, speak to your doctor, who can then determine the appropriate testing and treatment for post-SCAD chest pain.

Potential Causes and Risk Factors

It is unclear what causes SCAD, but several risk factors have been identified.

- **Being female:** SCAD can occur in both women and men, but 80 to 90% of SCAD patients are women.
- **Hormonal changes, such as in pregnancy:** SCAD can occur in women who have recently given birth, most often in the first few weeks or months after delivery. There may also be some association with perimenopausal symptoms, oral contraception, menopausal hormone therapy and infertility treatments, although this is not as well established.
- **Fibromuscular dysplasia (FMD):** FMD is a rare condition that causes irregular growth of cells in the walls of one or more of the arteries, which can weaken the artery walls and reduce blood flow. FMD can also cause high blood pressure, stroke and tears in other blood vessels.

- **Extreme emotional stress:** Many people have reported severe emotional anxiety or stress (e.g., from losing a loved one, a job or a relationship) in the period before their SCAD. This is commonly observed in women.
- **Extreme physical stress:** Extreme physical exertion such as intense aerobic or weight exercise, or the strain associated with vomiting, difficult bowel movements or harsh coughing has been reported by some SCAD survivors. This is more commonly observed in men.
- **Inflammatory conditions:** Conditions that cause inflammation of the blood vessels, such as lupus and polyarteritis nodosa, have been associated with SCAD.
- **Genetic conditions:** Rare conditions that cause problems with the body's connective tissues and may weaken the blood vessel wall, such as Ehlers-Danlos syndrome and Marfan syndrome, have been found to occur in some people with SCAD.
- **Very high blood pressure:** Untreated, severe high blood pressure is associated with SCAD.
- **Recreational drug use:** Cocaine or methamphetamine use has been associated with SCAD.
- **Genetics/family history:** A very low proportion of SCAD patients have a family history of SCAD.

Treatment and Recovery

SCAD is distinct from the more familiar heart attack caused by plaque build-up over time. Treatment for SCAD is not the same as for other heart attacks.

The immediate goal of treatment for SCAD is to repair the tear in your damaged artery and restore blood flow to your heart. This occurs spontaneously in most SCAD patients. More invasive treatments, such as stents or even bypass surgery, are reserved for very severe cases threatening the patient's life.

Your personal treatment will depend on your specific situation, including the size of the tear in your artery and its location, damage that may have occurred and the symptoms you are experiencing. Whenever possible, doctors allow the damaged artery to heal on its

own rather than repairing it through invasive procedures. However, if necessary, they may insert a stent or even do cardiac surgery.

Medical management

After a SCAD, your doctor may prescribe medications to restore blood flow and promote healing. These medications may be temporary or permanent depending on your personal situation and the opinions of your doctors.

Here are some medications you may be prescribed.

- **Anti-platelet agents** reduce the number of blood-clotting platelets in your blood to lessen the risk of a clot forming in your torn artery. The most commonly used anti-platelet agent is aspirin. You may also be prescribed an additional anti-platelet agent, such as Clopidogrel or Ticagrelor, which are typically given for one year after the heart attack if it is well tolerated.
- **Beta-blockers** decrease the heart rate and force contraction of your heart, which decreases the pressure on the torn vessel and promotes healing. One clinical study showed SCAD patients who were taking beta-blockers had a lower risk of SCAD recurrence than patients who were not taking these medications.
- **ACE inhibitors** open the blood vessels leading out of the heart, which decreases the workload of the heart muscle. This class of medications is prescribed if your blood pressure is too high despite beta-blockers, or if the SCAD led to damage to the heart, causing the heart muscle to weaken.
- **Nitroglycerin spray** opens blood vessels and is prescribed on an as-needed basis in case you have a recurrence of chest pain.

Medications may relieve symptoms and promote healing without further treatment. If chest pain or other symptoms continue, your doctor will discuss treatment options with you.

Stenting (percutaneous coronary intervention, or PCI)

To diagnose your SCAD, you will have undergone an angiogram. During this angiogram, if your SCAD occurred in the left main coronary artery or is so severe that it is threatening your life, your doctor may

have placed one or more tiny mesh tubes (stents) inside your artery to hold it open and help restore blood flow to your heart muscle.

To place the stent, doctors insert a long, thin tube (catheter) into an artery—usually in your leg or wrist—and thread the tube to the arteries in the heart. The catheter is guided to your damaged artery using X-rays or other imaging tests.

A wire with a deflated balloon is passed through the catheter to the tear in the artery. The balloon is then inflated, expanding the stent against your artery walls. The stent is left in place to hold the artery open. If you were treated with one or more stents, further education will be provided.

Cardiac surgery

If other treatments have not worked and SCAD is threatening your life, surgery may be the best treatment depending upon the location of the tear. Coronary artery bypass grafting (CABG) is done to create a new passage for blood to reach your heart, and is rarely done in the setting of SCAD.

CABG is a procedure that involves removing a blood vessel from another part of your body, such as your chest wall or leg. That blood vessel is stitched onto the coronary artery so that it bypasses blood flow around your damaged artery. If this treatment is recommended for you, further education will be provided.

Recovery Resources

After your SCAD, you will be offered a variety of supports from the Division of Cardiac Prevention and Rehabilitation at the University of Ottawa Heart Institute. If you do not receive a referral, ask your doctor to provide one. Some of the available programs do not require a referral.

Useful supports may include the following.

- **Cardiac rehabilitation:** This exercise and education program is designed to help you recover in a safe environment. You can re-establish your personal limits with medical oversight, regardless of your fitness level. Our nurses and physiotherapists are experienced in rehabilitation guidelines and recommendations

after SCAD. Check our website for more information:
<https://www.ottawaheart.ca/patients-visitors/clinics-programs/cardiacc-rehabilitation>

- **Information sessions:** Please check <https://pwc.ottawaheart.ca/> for more information about the programs below.
 - **Diet and nutrition classes and counselling.**
 - **Psychology services/stress management program:** Some patients face issues with anxiety, depression or stress after SCAD. As part of our rehabilitation program, psychology services are available to help you.
 - **Women@Heart Peer Support Program:** Most patients with SCAD are women. Women@Heart is a structured community-based, peer-support program for women with heart disease, led by women with heart disease. Some of the program's participants and leaders have suffered SCAD.
 - **Women's Heart Health Clinic:** Patients with SCAD (men and women) can be referred to this clinic for ongoing care after the hospitalization, given our cardiologists' expertise in SCAD.

When You Go Home

When you leave the hospital, your dissection will still be healing. You should take precautions to ensure your heart is protected while it heals. Talk about these points with your cardiologist before you go home to determine if these general guidelines apply to you.

Medications: Understand your medications and why they have been prescribed. Take your medications as directed and talk about any side effects or other concerns with your cardiologist. Do NOT stop taking them without talking to your cardiologist.

Physical activity: Ask your doctor for specific instructions, but most people can resume usual activities of daily living in a gradual fashion over the first week or two. Build up exercise slowly once your doctor has indicated it is safe to do so. Do not lift more than 10 pounds (4.5 kilograms) for the first two weeks after discharge, and always avoid isometric exercise and straining to lift.

Driving: Do not drive for one month if you have a private driver's license or three months if you have a professional license.

Pregnancy: Use birth control (as advised by your doctor) to prevent pregnancy after discharge until you have discussed the risks of future pregnancy with your cardiologist. Barrier methods (condoms, diaphragms), tubal ligation or IUDs are often preferred methods of birth control after a SCAD.

Sexual activity: Refrain from sexual activity until cleared by your cardiologist.

Self-care: Take care of yourself and listen to your body—rest when you need to, sleep well, eat well, exercise as instructed, spend time with family and friends, and find healthy ways to cope with stress.

Preparing for Your Appointments

Best practices for SCAD are being updated as research advances, so always feel comfortable asking your doctor specific questions about any new information that may have been released since your last visit.

To get the most from your appointments, be prepared. Create a list ahead of time. Here are some common questions:

- What caused my SCAD?
- Do I need any further tests?
- What alternative treatments might be available in my situation?
- What is my risk of having another SCAD?
- How will my SCAD impact my other health conditions?
- Are there restrictions I should follow (e.g., lifting, heart rate limits, isometric or inversion exercises)?
- Is it safe for me to be pregnant again?
- How do I know if my symptoms are an emergency?

If you continue to experience symptoms, be sure to ask your doctor if there is cause for concern. Common continuing symptoms include:

- ongoing chest pain.
- ongoing fatigue.
- feelings of depression, anxiety or fear.
- difficulty concentrating.

When to Seek Medical Attention

Call 911 if you experience any of the symptoms noted above in a sudden or unexplained way. Trust your own sense of emergency.

When you call 911, identify yourself as a heart attack survivor who has had a spontaneous coronary artery dissection in the past. This will help emergency responders.

When to make an appointment with your cardiologist.

- Listen to your body. If you feel more fatigued than usual, you have new symptoms, or something just does not feel right, get checked out.
- If you do not have a cardiologist, seek an appointment with your family doctor. They will assess your situation and refer you if necessary.

Where can I get more information about SCAD?

You can get more information about SCAD from several reputable sources, including these below.

- Your cardiologist.
- **The University of Ottawa Heart Institute:** <https://www.ottawaheart.ca/heart-condition/spontaneous-coronary-artery-dissection>
- **The SCAD Alliance:** <https://www.scadalliance.org/>
- **The Heart and Stroke Foundation:** <https://www.heartandstroke.ca/heart/conditions/spontaneous-coronary-artery-dissection>
- **The Mayo Clinic:** <https://www.mayoclinic.org/diseases-conditions/spontaneous-coronary-artery-dissection/symptoms-causes/syc-20353711>

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