CONDITION

Thromboangiitis obliterans

Thromboangiitis obliterans causes inflammation and clotting in blood vessels supplying the hands and feet.

WHAT IT IS
Inflammation and clotting in small and medium limb arteries

BODY SYSTEM
Heart and circulation

MAIN SYMPTOMS
Hand or foot pain, color changes, ulcers, coldness

WHAT CAUSES IT
Unknown process strongly linked to tobacco exposure

HOW IT IS DIAGNOSED
Clinical assessment, vessel imaging, and exclusion of other causes

MAIN TREATMENT
Complete tobacco and nicotine cessation, wound and pain care

CAN IT BE CURED?
No - stopping exposure can halt progression

IS IT AN EMERGENCY?
Sometimes - a suddenly cold, pale, painful limb

LONG-TERM OUTLOOK
Often stabilizes after cessation; continued tobacco raises amputation risk

Overview

Thromboangiitis obliterans is a condition in which small and medium-sized blood vessels become inflamed and blocked by blood clots. It mainly affects arteries and veins in the hands, feet, arms, and legs.

Blocked arteries cannot deliver enough oxygen-rich blood to nearby tissue. This can cause pain, coldness, skin color changes, and sores that are slow to heal. Severe loss of blood flow can lead to tissue death, called gangrene.

The condition is strongly associated with tobacco exposure. Cigarettes are the most common source, but other forms of tobacco can also keep it active. Nicotine may contribute by narrowing blood vessels.

Thromboangiitis obliterans is different from atherosclerosis, the common condition in which fatty deposits build up inside arteries. It usually affects younger adults than atherosclerosis and often involves vessels farther down the arms and legs.

Why it matters depends largely on whether exposure to tobacco and nicotine continues. Complete cessation can relieve symptoms and prevent further damage for many people. Continued exposure greatly increases the chance of ulcers, gangrene, and amputation.

Symptoms

Symptoms usually begin in the fingers, toes, hands, or feet. More than one limb may be affected, although symptoms may not start everywhere at the same time.

Common symptoms include:

Pain caused by walking or using a limb is called claudication. Rest pain happens when blood flow is so limited that the tissue does not receive enough oxygen even when you are not active. It may be worse at night or when a foot is raised.

Some people have Raynaud-type episodes. The fingers or toes become pale or blue when exposed to cold or stress, then turn red as blood flow returns.

Inflammation can also affect veins near the skin. This may cause a tender, red cord or lump that appears in one area and later develops elsewhere. This is called migratory superficial thrombophlebitis.

Advanced loss of blood flow can cause an ulcer, which is an open sore, or gangrene, meaning tissue has died. These changes often begin at the tip of a finger or toe.

- Pain or cramping in a foot, calf, hand, or forearm during activity
- Burning or aching pain in the fingers, toes, or feet at rest
- Fingers or toes that feel unusually cold
- Pale, red, or bluish skin color changes
- Tingling, numbness, or increased sensitivity to cold
- Painful sores on the fingers or toes that heal slowly

Causes and risk factors

The exact biological cause is not fully understood. Tobacco exposure appears to trigger inflammation, abnormal clotting, and injury to the inner lining of blood vessels in susceptible

people.

Almost everyone diagnosed has used tobacco or had substantial exposure to it. Cigarettes are the best-established risk factor, but cigars, pipes, chewing tobacco, and other tobacco products are also relevant. Even limited continued use may allow the condition to progress.

Thromboangiitis obliterans has also been reported in association with cannabis use, although the evidence is less clear than it is for tobacco. Tell your healthcare team about all smoked, inhaled, or nicotine-containing products you use.

The condition most often begins before age 50. It has historically been reported more often in men, but anyone with relevant exposure can develop it.

It is not considered an infection, and it does not spread from person to person. It is not usually described as a directly inherited condition. Researchers suspect that immune and genetic differences may help explain why only a small proportion of tobacco users develop it.

Diagnosis

There is no single blood test or scan that proves someone has thromboangiitis obliterans. Diagnosis is based on the pattern of symptoms and vessel changes, together with tests that rule out other causes of poor circulation.

Your assessment may include questions about tobacco, nicotine, cannabis, symptoms, and past medical conditions. The clinician may compare pulses, skin temperature, color, wounds, and blood pressure in different limbs.

An Allen test may be used to check blood flow into the hand. During this test, pressure is briefly placed over the wrist arteries before blood flow is released. An abnormal result supports poor circulation but does not establish the cause.

Blood tests may look for other explanations, such as diabetes, autoimmune conditions, abnormal blood clotting, or inflammation. Heart tests may be needed if a clot could have traveled from the heart.

Imaging may include ultrasound, CT angiography, MR angiography, or catheter angiography. Angiography creates pictures of blood flowing through the arteries. The condition often causes several blocked segments in smaller vessels, with winding alternative vessels around the blockages. These findings are supportive but are not unique to this condition.

A tissue biopsy is rarely required. It may be considered when the features are unusual or another form of blood-vessel inflammation is possible.

Treatment and management

The central treatment is complete cessation of tobacco and nicotine exposure. Cutting down is not enough to reliably stop progression. This includes cigarettes, cigars, pipes, chewing tobacco, and nicotine-containing vaping products.

Stopping can be difficult, especially when nicotine dependence is strong. Behavioral support, counseling, quit programs, and non-nicotine stop-smoking medicines may help. Because nicotine can narrow blood vessels, nicotine replacement products are generally avoided in this condition unless a specialist has carefully assessed their use.

Other care focuses on protecting tissue, controlling pain, and helping wounds heal. This may involve:

Intravenous iloprost, a medicine that relaxes blood vessels and affects platelets, may help relieve rest pain and support ulcer healing in some people with severe symptoms. Its availability and suitability differ between healthcare systems.

Procedures used for atherosclerosis, such as bypass surgery or angioplasty, are often difficult because the blocked vessels are small and far from the center of the body. Revascularization, meaning restoration of blood flow, may still be possible for selected people with a suitable vessel.

Other procedures, including operations that interrupt certain nerve signals to blood vessels, have uncertain long-term benefit. If tissue has died or an infection cannot be controlled, amputation may be necessary. The goal is to remove only the tissue that cannot recover while preserving as much function as possible.

- Specialist foot, hand, or wound care
- Comfortable footwear and protection from pressure or injury
- Medicines for pain
- Treatment of an infected ulcer when infection is present
- Medicines that improve blood-vessel relaxation in selected cases
- Supervised activity or rehabilitation when safe

Complications

Reduced blood supply can make minor cuts, blisters, and pressure injuries difficult to heal. Open ulcers can be painful and may become infected.

Possible complications include:

Pain, smoking cessation, wound care, and concern about limb loss can also affect sleep and mental health. Support for anxiety, low mood, work limitations, or dependence is an appropriate part of care.

The condition mainly affects the limbs. Involvement of blood vessels supplying internal organs is uncommon.

- Persistent pain at rest
- Recurrent or nonhealing ulcers
- Skin and soft-tissue infection
- Gangrene of a finger, toe, hand, or foot
- Loss of part of a finger, toe, or limb
- Reduced ability to walk, work, or use the hands

Prevention

There is no known way to guarantee prevention because it is not clear why only some exposed people develop the condition. The most effective way to reduce risk is not to use tobacco.

If the condition has already started, complete and lasting cessation is the main way to prevent further vessel damage. Switching to another tobacco product is not protective. Continued use of even a small amount can keep the inflammation active.

Protecting hands and feet does not treat the underlying problem, but it can reduce preventable injuries. Keep them warm without using heating pads or very hot water, which can burn skin with reduced sensation. Check for blisters, cuts, pressure areas, or color changes, and use footwear that does not rub.

Living with it and what to expect

The course over months and years is closely tied to tobacco and nicotine exposure. For many people who stop completely, inflammation settles, symptoms improve, and new tissue damage stops developing. Recovery is not immediate, and existing ulcers, nerve symptoms, or tissue loss may not fully reverse.

Returning to tobacco can reactivate the condition, even after a long symptom-free period. Continued exposure makes repeated ulcers, gangrene, and amputation more likely.

Regular follow-up may include checks of circulation, skin condition, wounds, pain, and progress with cessation. People with an active ulcer may need more frequent wound appointments. Routine reviews are also a chance to adjust footwear, activity, pain support, or rehabilitation.

Activity may improve once blood flow-related pain and wounds are controlled. Some people continue to have limits on walking, cold exposure, or work involving their hands. Rehabilitation, mobility aids, adaptive equipment, and workplace changes can help preserve independence.

If amputation is needed, recovery may include wound healing, physiotherapy, occupational therapy, and sometimes a prosthesis. Many people remain active, but the outcome is shaped by the level of tissue damage, infection, other health conditions, and whether tobacco exposure has stopped.

When to get medical help

Arrange a routine medical appointment if you develop repeated color changes, coldness, pain during walking or hand use, or a sore on a finger or toe that is not healing. These symptoms have several possible causes and need proper assessment.

Seek prompt, same-day care for:

Call emergency services for a limb or digit that suddenly becomes very painful, pale or blue, cold, numb, or weak. Sudden inability to move the affected area also needs emergency assessment. These signs can mean a severe, abrupt loss of blood flow.

Routine follow-up remains important even when symptoms are stable. It is not a substitute for urgent assessment when circulation changes suddenly.

- A new or worsening ulcer
- Increasing rest pain
- Spreading redness, warmth, swelling, or discharge around a wound
- Fever or feeling unwell with a hand or foot wound
- Black or clearly dead-looking skin

Common questions

Is thromboangiitis obliterans curable?

There is no treatment that repairs every damaged blood vessel or removes the condition permanently. Complete tobacco and nicotine cessation can stop active progression for many

people. Existing tissue damage may remain.

Can I just cut down on smoking?

Cutting down does not reliably protect the blood vessels. Even small amounts of tobacco may keep the condition active. The treatment goal is complete cessation of all tobacco products.

Can I use nicotine patches or nicotine gum to quit?

Nicotine can narrow blood vessels, so replacement products may be unsuitable when circulation is already severely reduced. Do not start or stop a cessation treatment based only on general advice. A clinician or tobacco-dependence service can discuss non-nicotine options and provide support.

Will I need an amputation?

Not everyone does. The risk is much lower when tobacco exposure stops before severe tissue damage develops. Amputation may be needed if tissue dies, an infection cannot be controlled, or pain from irreversible damage is severe.

Can blood-flow surgery fix it?

Often, the affected vessels are too small or widespread for standard bypass surgery or angioplasty. A vascular specialist may still look for a treatable vessel, particularly when a limb is threatened.

Can the condition come back after I stop smoking?

Symptoms may remain stable for years after complete cessation, but returning to tobacco can reactivate vessel injury. Long-term support for staying tobacco-free is an important part of management.

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