

# OBLITERATIVE VASCULAR DISEASES, OBLITERATIVE ENDARTERITIS, AND MODERN TREATMENT METHODS

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## Abstract

The latest achievements and innovative approaches in the field of medicine have significantly expanded the possibilities for effective treatment of these diseases. Types of obliterative vascular diseases, causes, diagnostic methods, and the most modern treatment methods.

**Keywords:** Obliterative vascular diseases, Obliterative Endarteritis, Thromboangiitis obliterans, Doppler Ultrasound, MRA and CTA

## Introduction

Obliterative vascular diseases are pathologies characterized by the narrowing or complete blockage of blood vessels, often leading to the development of gangrene as a result of thrombosis. This disease primarily affects the blood vessels in the legs and is more common in men than in women.

**Etiology and Pathogenesis:** The etiology of the disease has not yet been clearly defined, and there are many theories regarding it. The American surgeon L.B. Yurgen proposed the inflammation theory in the early 20th century. According to this theory, the occurrence of thrombi and thromboangiitis in peripheral arteries is associated with infections, changes in the chemical composition of the blood, and disturbances in metabolic processes.

Subsequent findings have shown that the exacerbation of obliterative endarteritis may not always be related to inflammation. The hyperplasia and proliferation of the arterial intima can develop due to unknown factors without being related to inflammation.

The progression of the disease can be divided into three stages: 1. Initial Stage (Compensatory Stage): In this stage, due to spasms of the leg blood vessels, the patient feels like their toes are cold, their legs tire quickly, and sometimes experiences a sensation in their feet as if “pins and needles” are crawling. Pain occurs in the calves while walking or running, and the legs become somewhat weak, leading to fatigue while walking. The pathological process is compensated by the expansion of collateral circulation during this first stage.

2. Second Stage (Decompensatory Stage): In this stage, the patient is forced to stop periodically due to pain, experiencing weakness, paresthesia, and cramps in the muscles. Pain in the toes and the soles persists for a longer time, while the pulse in the arteries on the back of the foot weakens and eventually disappears. The soles may become pale and often cold, and the skin takes on a bluish hue. The trophic status of the tissues begins to deteriorate (swelling, peeling of the skin, nail abnormalities). When the disease progresses, pain intensifies in the evening, especially at night.



The patient cannot sleep and instinctively positions their legs, usually bending them at the knee and dangling them off the bed. Pain relief medications become ineffective, and trophic ulcers may develop.

3. Third Stage (Necrotic Stage): In this stage, gangrene of the toes or foot may develop alongside the previously mentioned conditions. Necrosis begins at the distal part (fingertips or a segment of a finger or toe), typically affecting the big toe. Granulation tissue formation is sluggish, and serous or bloody fluid may drain from the necrotic area. In rare cases, dry gangrene and mummification of the tissues may be observed.

Obliterative endarteritis results from prolonged exposure to cold temperatures, leading to the freezing of the limbs. Atherosclerotic occlusion of the arteries is observed in older individuals and gradually worsens over time.

Methods for diagnosing obliterative endarteritis:

Physical Examination:

Pulse Check: Assessing the pulse.

Observation of Limb Color: Monitoring the color of the legs.

Pain Level Assessment: Evaluating the level of pain.

Instrumental Examinations:

Doppler Ultrasound: Used to measure blood flow velocity.

Angiography: A radiographic examination to obtain images of blood vessels.

MRA and CTA: Techniques for obtaining 3D images of blood vessels.

Laboratory Tests:

Cholesterol Levels: Determining the cholesterol content in the blood. Blood Glucose Levels: Measuring the amount of glucose in the blood.

Future possible treatments for obliterative endarteritis:

Gene therapy, stem cells, 3D-Printed implants, nanorobots.

Conservative measures aim to alleviate the functioning of the central nervous system and reduce the inhibition of peripheral nerve receptors. In the initial stages of circulation disturbances, arterial spasms play a significant role. Sympathectomy, the surgical removal of sympathetic nerve ganglia, was proposed by the French surgeon Z. Jaboulay. Currently, lumbar sympathectomy is performed extraperitoneally by resecting the second, third, or fourth lumbar sympathetic nerve ganglia. Thoracic sympathectomy is recommended for the treatment of spastic forms of obliterative endarteritis.

Surgical treatment methods involve the removal of sympathetic ganglia and endocrine glands affecting the leg blood vessels, or the excision of nerve plexuses from the walls of the blood vessels.

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