pISSN:2349-5707 Volume:13,Issue 3, March -2026 eISSN:2349-5715

METHODS OF TREATMENT OF ATHEROSCLEROTIC PLAQUES IN THE CAROTID ARTERY

Achilov Sh. Sh.
Asian International University (OXU)

Abstract: This article presents the views of domestic and foreign researchers on modern methods of treating atherosclerotic plaques in the carotid artery.

Keywords: Atherosclerotic plaques in the carotid artery, stenosis, risk of thrombosis, hypertension, endovascular procedures, accumulation of cholesterol deposits, laser atherectomy and ultrasound atherectomy, multidisciplinary approach.

Introduction

Atherosclerotic plaques in the carotid artery are a specific type of deposits that can form within the carotid artery due to atherosclerosis. Let us examine what this condition is and how it affects health:

1. What is atherosclerosis and atherosclerotic plaques:

- **Atherosclerosis:** A chronic disease of the arteries in which cholesterol, fatty deposits, and other substances accumulate on their inner walls.
- **Atherosclerotic plaques:** Formations composed of cholesterol, lipids, and cellular elements within the arteries. They can grow, thickening the arterial wall and narrowing its lumen.

2. Causes and risk factors:

- **High cholesterol:** Elevated cholesterol levels contribute to plaque formation.
- **Smoking:** Nicotine and other harmful substances in tobacco smoke damage arterial walls and promote atherosclerosis.
- **Hypertension:** High blood pressure is also a significant risk factor.

3. Impact on health:

- **Stenosis:** Enlargement of plaques can narrow the arterial lumen, impairing normal blood flow.
- **Risk of thrombosis:** Damaged plaques may rupture, forming clots that can block the artery and lead to serious complications such as stroke.

4. Diagnosis and treatment:

- **Diagnosis:** Methods such as ultrasound, angiography, and MRI are commonly used to detect plaques and assess their size.
- **Treatment:** Depending on severity and symptoms, treatment may include medication, endovascular procedures, or surgical intervention.

Atherosclerotic plaques in the carotid artery have a complex origin associated with multiple factors. The main aspects include:

1. Atherosclerosis as a chronic disease:

pISSN:2349-5707 Volume:13,Issue 3, March -2026 eISSN:2349-5715

- **Complex mechanism:** Atherosclerosis involves cholesterol accumulation, inflammation, smooth muscle proliferation, and fibrous tissue formation in arterial walls.
- **Cholesterol deposition:** Plaques form from cholesterol, lipids, and cellular debris deposited over time.

2. Risk factors and causes:

- **High cholesterol:** Promotes plaque formation.
- **Smoking:** Enhances inflammatory processes in arteries.
- **Hypertension:** Damages vascular walls and contributes to plaque development.

3. Inflammatory processes and immune response:

- **Inflammation and macrophages:** Damaged vascular areas attract inflammatory activity; macrophages accumulate cholesterol, forming plaques.
- **Immune response:** The immune system's reaction to proteins and lipids in plaques contributes to their persistence and growth.

4. Smooth muscle and fibrotic response:

- **Smooth muscle proliferation:** Occurs in response to injury and contributes to plaque structure.
- **Fibrous cap:** Formation of a fibrous capsule around plaques may act as both a protective and stabilizing factor.

5. Consequences and risks:

- **Stenosis and thrombosis:** Plaque growth narrows arteries and increases the risk of clot formation, leading to stroke and other cardiovascular diseases.
- **Plaque rupture:** Can result in acute thrombosis and critical impairment of blood flow.

Modern Methods of Treatment

This is a serious condition, and medical science continues to evolve, offering new treatment approaches. Current methods include:

1. Endovascular procedures:

- **Angioplasty with stenting:** Expansion of the narrowed artery segment followed by stent placement to maintain vessel patency and restore normal blood flow.

2. Endarterectomy:

- **Atherectomy-assisted endarterectomy:** Removal of plaque from the arterial wall using specialized devices to restore vessel function.

3. Drug therapy:

- **Cholesterol-lowering medications:** Used to reduce blood cholesterol levels and slow plaque progression.

pISSN:2349-5707 Volume:13,Issue 3, March -2026 eISSN:2349-5715

4. New technologies:

- **Laser and ultrasound atherectomy:** Use of laser or ultrasound to remove plaques effectively without damaging surrounding tissues.

5. Preventive measures:

- **Lifestyle modification:** Physical activity, healthy diet, smoking cessation, and regular cholesterol monitoring play a key role in prevention and risk reduction.

6. Multidisciplinary approach:

- **Team-based care:** Effective treatment requires collaboration among cardiologists, vascular surgeons, rehabilitation specialists, and other professionals to develop individualized treatment plans.

References

1. Carotid endarterectomy in the acute period of ischemic stroke (2018) / Kazantsev A.N., Burkov N.N., Tarasov R.S., Anufriev A.M., Shabaev A.R., Ruban E.V., Mironov A.V., Kheraskov V.Yu.
2. Predictors of adverse events in the mid-term postoperative period in patients undergoing carotid endarterectomy (2017) / Tarasov R.S., Kazantsev A.N., Shabaev A.R., Mironov A.V., Burkov N.N., Anufriev A.I., Barbarash L.S.
3. Effectiveness of carotid endarterectomy in elderly and senile patients after ischemic stroke (2012) / Gavrilenko A.V., Kuklin A.V., Kravchenko A.A., Piven A.V.
4. Comparative assessment of geometric stability in the arteriotomy repair zone during carotid endarterectomy (2016) / Vakhitov K.M.
5. Modern methods of surgical correction of ischemic brain lesions (2011) / Strepetov N.N., Pchelintsev K.E., Ponomarev E.A., Maskin S.S.
6. Reconstruction of the internal carotid artery in experiment (2016) / Salimgireeva B.Zh., Almabaev Y.A., Yermentaeva Zh.M., Kaketaeva I.Z., Fakhradiev I.R., Almabaeva A.Y., Tanabaev B.D., Serikpaev Zh.Zh.
7. Surgical treatment strategy for patients with contralateral occlusion of the internal carotid artery (2016) / Telepneva M.L., Loginov O.E., Chebotar E.V., Katynov V.V., Ivanov L.N.
8. Immediate and long-term results of endovascular treatment of carotid atherosclerosis in high surgical risk patients (2011) / Suslin Yu.V., Korymasov E.A.