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Formed Atherosclerotic Valve as One of the Reasons for Unsuccessful Balloon Angiodilation of Leg Vessels in Patients with Diabetes Mellitus Complicated by Occlusion of Leg Arteries

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Annotation: The analysis involved 54 patients with diabetic foot syndrome and occlusion of the arteries of the lower leg, who underwent endovascular balloon angiodilation. It was found that in 4 patients the cause of unsuccessful angiodilation was the presence of a formed atherosclerotic valve. The article discusses this problem and suggests methods for solving it.

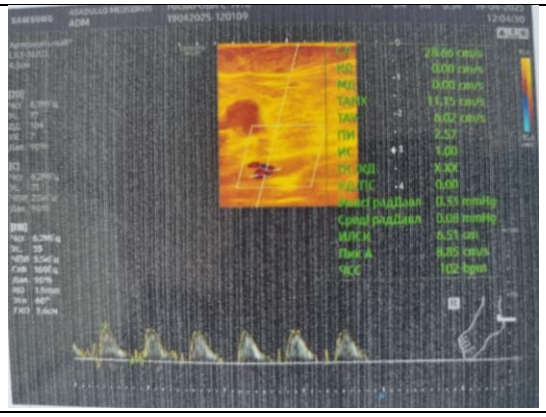
Keywords: diabetic foot, formed atherosclerotic valve, endovascular treatment.

Introduction: Due to the increase in the world's population, there is a tendency for the population of people with diabetes mellitus and complications of this disease to increase. The most common complication of diabetes mellitus is diabetic foot syndrome, which in most cases leads to disability of the patient (1,2,4). Despite the progressive development of modern technologies, the endovascular method of treatment of stenoses and occlusions of the tibial arteries is the method of choice for the treatment of this pathology [3,5,6]. The endovascular method of treatment is painless and allows the patient to be discharged the very next day after the operation. This method of surgical intervention allows to restore the lumen of a stenosed or occluded tibial vessel using balloon angiodilation. In most cases, balloon angiodilation solves this problem, but there are cases when it becomes necessary to install a stent to solve this problem (7,8,9). One of the indications for the installation of a stent or the use of rotational atherectomy is the presence of a formed atherosclerotic valve in the patient.

Materials and methods. The work is based on data from the analysis of the treatment of 54 patients with critical lower limb ischemia (KINK) after undergoing balloon angioplasty of the lower leg arteries. In 4 patients from this group (7.4%), during endovascular treatment, we found an atherosclerotic valve formed in the lumen of the tibial artery, which prevented arterial blood flow in the distal direction. Valve formation was noted in 3 patients in the anterior tibial artery (PBBA) and in 1 in the posterior tibial artery (PBBA).

In the preoperative period, all patients underwent Dopplerography and MSCT angiography of the vessels of the lower extremities, these research methods cannot reveal the presence of a formed atherosclerotic valve.

Dopplerography of the vessels of the lower extremities. The presence of atherosclerotic plaque. (Fig.1)



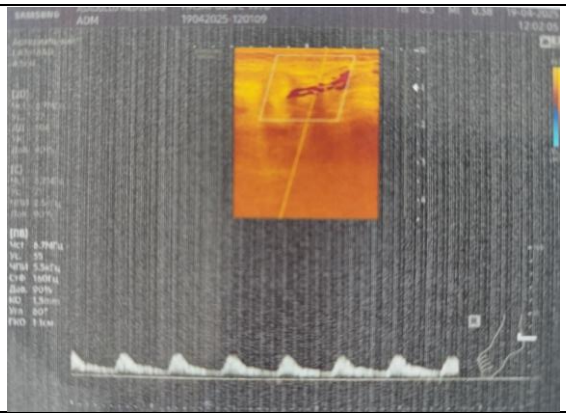
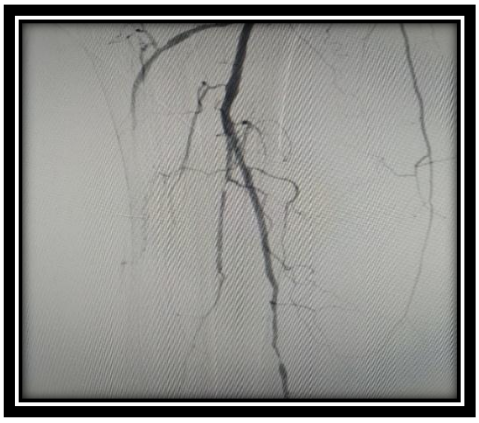
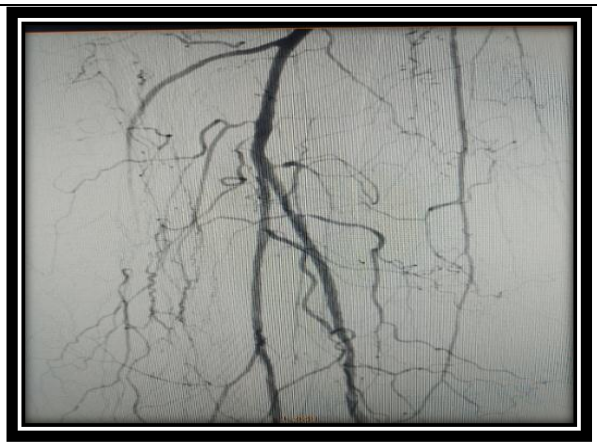


Fig.1. Intraoperative angiography performed at the first stage of surgery also does not reveal the presence of a formed atherosclerotic valve.

Recanalization and balloon angiodilation of the peroneal artery and posterior tibial artery were performed as standard without any problems.



Angiography No. 1. Patient Zainiev, born in 1959. Intraoperative angiography. Proximal occlusion of the anterior tibial artery and the small tibial artery. Critical stenosis of the posterior tibial artery.



Angiography No.2. Patient Zainiev, born in 1959, Restoration of blood flow according to IBA and ZBBA, occlusion of PBBA persists.

During the recanalization of the PBA, we also did not experience any major technical problems. Balloon angiodilation of this vessel at the first stage was performed with a balloon with a diameter of 2.0 -2.5 mm, along the entire length of the artery. This allowed us to perform recanalization without vascular wall dissection, regardless of the density of the atherosclerotic plaque. Conducting multiple antegrade balloon angiodilation of the artery lumen in the area of the formed atherosclerotic valve did not give any result, and the passage of the conductor through the occluded site did not cause any significant problems. Repeated use of antispasmodic agents intraoperatively was also unsuccessful (Eng 2). Based on the identification of this problem intraoperatively in several patients, that is, the absence of blood flow in a vessel that has undergone balloon angiodilation throughout. The question arose about the reason for the lack of blood flow in the vessel that underwent balloon angioplasty.

		
Angiography No. 3. Patient Zainiev, born in 1959, Retrograde puncture of the PBB. In the gap установлен интродьюсер.	*Angiography No. 4. Patient Zainiev, born in 1959, Retrograde contrast of PBB. The presence of normal blood flow according to PBBA, IBA and ZBBA, visualization of the atherosclerotic valve.*	*Angiography No. 5. Patient N. Kayumova, born in 1957, has formed an atherosclerotic valve on the anterior tibial artery*

To identify the cause, we performed a puncture of the distal part of the occluded vessel with the installation of a 4F introducer, for subsequent retrograde balloon andiodilation of the occluded vessel (Eng 3).

Contrasting of the occluded vessel from the retrograde approach showed the presence of patency in the antegrade direction and revealed the formation of an atherosclerotic valve (Ang 4,5).

Balloon angiodilation of the vessel from retrograde access also had no visible effect. The solution to this problem was to install a stent in the area of the formed atherosclerotic valve.

Conclusions: The formed atherosclerotic valve may be one of the reasons for unsuccessful balloon angiodilation of the vessels of the tibia. The presence of dense atherosclerotic plaque does not allow adequate angiodilation of the vessels of the tibia. The formed atherosclerotic valve is an indication for stenting of the vessels of the tibia, and in the presence of a rotator, rotational atherectomy.

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