

## **REPORT**

On the dissertation

"Application of the method closed endarterectomy with distal fixation of the intima for femoral artery thrombosis"

by

**Dr. ALEXANDER TIHOMIROV DASKALOV,**

Associate Degree III and PhD student in the specialty "Vascular Surgery" at  
ACIBADEM CITY CLINIC TOKUDA HOSPITAL SOFIA

VASCULAR SURGERY CLINIC

By

**Prof. Ilia Petrov Lozev MD, DSc**

Professor at the Clinic of General, Abdominal and Vascular Surgery at Ministry  
of the Interior Medical Institute Sofia

Current endovascular methods for the treatment of short sections of the superficial femoral artery are showing better results. The long, total thrombosis of the femoral artery remains a challenge. One of the main and well-established methods of treating such lesions, besides bypass surgery, is the semi-closed endarterectomy of the femoral artery. Its classical implementation requires two arterial accesses and two arterial reconstruction zones, respectively, to fix the intima in the proximal and distal segments of the endarterectomised region. This means more invasiveness, more operative access, longer operative time and, accordingly, more complications. A variant of this method is closed endarterectomy with "blind" interruption of the intima in the distal region, without fixation of the latter, with an increased risk of rethrombosis due to continued dissection of the distal intimal flap. An attempt to overcome these shortcomings of the classic closed femoral artery endarterectomy is the superficial femoral artery closed endarterectomy (AFS) procedure combined with distal fixation of the intima by stenting the distal intimal flap, which is performed with a single femoral access.

The abundant methods for treating occlusive diseases in the femoral-popliteal segment indicate that the question which is the optimal treatment method still remains. For the time the best results are obtained by the autovenous bypass, but its disadvantages are the greater invasiveness, the level of perioperative complications and the frequent lack of adequate venous conduit. Most endovascular techniques have shown good results in the treatment of short

stenoses or thrombosis and unsatisfactory in the treatment of type D lesions of SFA.

The main advantage of the procedure closed endarterectomy of SFA with distal fixation of the intima is its minimal invasiveness - the need only for femoral access to perform the procedure, the lack of need to use prosthetic material, the possibility of local anesthesia in the injured patients, the reduced operative time, and hence the reduced time of limb ischemia. Having only one operative access reduces the rate of wound complications and causes a short hospital stay. The closed endarterectomy method does not require the use of a conduit and, in most cases, does not prevent follow-up procedures for revascularization of the limb. The literature data so far do not show sufficiently convincing data on the results of the application of this technique. An attempt to contribute in this direction is the present scientific work.

The topic of the dissertation of Dr. Alexander Daskalov " Application of the method closed endarterectomy with distal fixation of the intima for femoral artery thrombosis " is useful and very successful. Peripheral arterial occlusive disease (PAOD) is a significant problem in modern medicine and a challenge to find the optimal method of treatment. The incidence of the disease is 3% - 10% in the general population and increases with age. The superficial femoral artery is most commonly affected - in about 70% of cases.

Atherosclerosis is a multifocal disease with concomitant myocardial, carotid and peripheral localization and is a cause of increased operative risk in patients with PAD. Therefore, the priority in the modern treatment of occlusive atherosclerosis is the search for increasingly sparing methods of revascularization.

Dr. Alexander Daskalov's study included 137 patients with operated 141 limbs, divided into two groups:

main group comprising 65 patients (68 limbs) operated with the technique "closed endarterectomy with distal fixation of the intima" at the Clinic of Vascular Surgery and Angiology of the hospital ACIBADEM CITY CLINIC TOKUDA HOSPITAL SOFIA for the period 01.01.2009 - 01.10.2017. , and

a control group comprising 72 patients (73 limbs) operated on by the femoral-popliteal proximal (patella) bypass with e-PTFE ring prosthesis at the Vascular Surgery and Angiology Clinic at the ACIBADEM CITY CLINIC TOKUDA HOSPITAL SOFIA for the period 01.01.2010 - 31.12.2013

A monitoring protocol was created and completed for each patient included in the study, along with all available medical records. The datasheets are stored electronically and then statistically processed.

The results of the comparative analysis between the main group of closed endarterectomy of SFA with distal fixation of the intima (TEA group) and the control group of patients with above-knee prosthetic femoral-popliteal bypass with PTFE prosthesis (bypass group, control group) showed primary patency of the 18th month 69.8% and 62.3% respectively for the TEA and bypass groups. In the analysis of the patency in both groups, the survival until loss of primary patency in the TEA group was found to be about one year longer, but this difference was statistically insignificant ( $p = 0.267$ ).

Secondary patency at 18 month for the two groups in this study was 87% for TEA patients and 84.1% for bypass patients, respectively. The analysis of survival did not show a statistically significant difference in survival until loss of secondary patency occurred. In the review of the literature, data from several studies conducted on patency in patients with endarterectomy with distal fixation of the intima were found to be similar to the author's results.

Despite the lack of statistically significant differences in patency between the two groups examined in the dissertation of Dr. Alexander Daskalov, the comparative analysis of the cumulative survival to retrombosis showed that in patients from the TEA group it decreased more slowly and reached higher values compared to that of controls. The Kaplan-Meier analysis applied found a statistically significant greater average survival to reocclusion of patients in the TEA group than those in the control group, with the former having a risk of retrombosis of about 53% lower (in patients with bypass the risk of developing retrombosis was twice as large,  $p = 0.034$ ).

According to the literature, for now the femoral-popliteal above-knee bypass performed with autologous v. saphena magna remains the procedure with the best results in the treatment of total occlusion of the femoral artery. Comparison of the results of autovenous and prosthetic above-knee reconstructions shows a statistically significant difference in the two approaches with respect to the 5-year secondary patency (70% - 80% when using an autologous vein and 50% - 55% when performing prosthetic bypass reconstruction). In the presence of suitable autologous v. saphema magna it is recommended the latter to be used irrespective of the above-knee position of the distal anastomosis.

Occurrence of restenosis is a major problem in patients who had undergone closed endarterectomy because restenosis is likely to evolve to arterial thrombosis. The cause of restenosis is increased neointimal hyperplasia, which develops as a result of the large area of vascular trauma during endarterectomy and activation of the proliferative response of smooth muscle cells. According to the literature, the highest incidence of restenosis is observed during the first year

of follow-up, after which the incidence of restenosis decreases. In the study of Dr. Alexander Daskalov these data confirm that the frequency of established restenosis is highest in the first 6 months, followed by the period from 7 to 9 months.

The material studied is sufficient in volume and allows reliable statistical processing with reliable results. Patient selection and studies were performed using conventional standard methods. The dissertation is written on 157 standard pages. The work is structured correctly and contains the following parts: introduction, literature review, purpose and objectives, material and methods, results and discussion, conclusions, contributions, conclusion, bibliography. Eight conclusions are drawn and 6 contributions are indicated. The bibliographic reference contains 175 literature sources - 4 in Cyrillic and 171 in Latin. The main bibliographic references are after 2012, most of them are contemporary foreign authors.

The dissertation work of Dr. Alexander Daskalov is well arranged and illustrated. It is stylish and without any spelling mistakes.

Dr. Alexander Daskalov has presented 2 publications related to the dissertation, in one of which he is the lead author.

Having met in detail with the dissertation work of Dr. Alexander Daskalov, I believe that the work is, innovative and will be useful for vascular surgeons from the country in their daily work. The author has indisputable qualities, proven in his long and successful forensic practice in leading medical establishments, which is why I dare to recommend to the honorable members of the scientific jury to vote positively and to award Dr. Alexander Daskalov the educational and scientific degree "Doctor".

Sofia,

20.01.2020



Prof. Ilia Petrov Lozev MD, DSc