

THE MODIFIED MYOPLASTIC METHODS OF AMPUTATION OF THE CRUS AT CRITICAL ISHEMIA OF THE LOWER EXTREMITY AT PATIENTS WITH THE DIABETES MELLITUS (DM)

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✓ Resume,

The retrospective analysis of a case history of 109 sick DM which transferred amputations of a crus in Bukhara a multi-field regional hospital for 2004-2016 is carried out. In dependence of surgical tactics all patients are divided into 2 groups: 1 (n=35) executed amputation of a crus according to Mitish-Svetukhin, in the 2nd group (n=74) on a method of clinic. The analysis of the received results was revealed that the modified way of amputation of crus is more effective.

Keywords: diabetes mellitus, syndrome of diabetic foot, artery, methods of amputation of an extremity, critical ischemia.

МОДИФИЦИРОВАННЫЕ МИОПЛАСТИЧЕСКИЕ МЕТОДЫ АМПУТАЦИИ ГОЛЕНИ ПРИ КРИТИЧЕСКИХ ИШЕМИЯХ НИЖНЕЙ КОНЕЧНОСТИ У БОЛЬНЫХ САХАРНЫМ ДИАБЕТОМ(СД).

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✓ Резюме,

Проведен ретроспективный анализ истории болезни 109 больных СД перенесших ампутации голени в Бухарской многопрофильной областной больницы на протяжении 2004-2016гг. В зависимости хирургической тактики все больные разделены на 2 группы: 1-ой (n=35) выполнили ампутацию голени по Митиш-Светухину, во 2-й группе(n=74) по методу клиники. Анализ полученных результатов выявили что модифицированный способ ампутации голени является более эффективным.

Ключевые слова: сахарный диабет, синдром диабетической стопы, артерии, методы ампутации конечности, критическая ишемия.

ҚАНДЛИ ДИАБЕТ БИЛАН ХАСТАЛАНГАН БЕМОРЛАР ОЎҚЛАР КРИТИК ИШЕМИЯСИДА БОЛДИР СОҲАСИДАН МОДИФИЦИРЛАНГАН МИОПЛАСТИК АМПУТАЦИЯ УСУЛЛАРИ

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✓ Резюме,

2004-2016 йиллар давомида Бухоро давлат тиббиёт институтининг Бухоро вилоят кўп тармоқли шифохонаси базасида қандли диабет хасталиги сабабли болдир соҳасидан ампутация амалиёти бажарилган 109 та беморлар касаллик тарихи таҳлилий ўрганилди. Жарроҳлик амалиёти тактикасига қараб 2 гуруҳга ажратилди: 1-гуруҳ беморлар (n=35) Митиш-Светухин усулида болдир ампутацияси бажарилди, 2-гуруҳ беморларга (n=74) клиника усулида ўтказилди. Текшириш натижаларига кўра болдир соҳа ампутацияси Митиш-Светухин усули клиникамиз модификацияси эффективлиги юқорилиги аниқланди.

Калит сўзлар: критик ишемия, қандли диабет, диабетик тоvon синдроми, артериялар, болдир ампутация усуллари.

Actuality

Today the diabetes mellitus is one of socially important diseases and remains relevant both for medical science, and for health care of all countries [1,2]. According to the latest data, the number of sick DM in the world for the last 10 years increased more than twice and by the end of 2014 reached 387 million people [1,3]. According to forecasts of the International diabetic federation, by 2035 DM will suffer from 592 million people [2,14]. The big social importance of a disease of DM consists that it leads to an early invalidism [12]. The risk of development of coronary heart disease and myocardial infarction increases twice, pathologies of kidneys - by 17 times, gangrenes of the lower extremities - by 20 times [1,3,14].

The comparative analysis of frequency of amputations showed that amputations of the lower extremities at sick DM are made by 17 - 45 times more often than at the

persons who do not have diabetes. However, the frequency of damages of peripheral arteries at patients meets with DM only by 4 times more often [4,5,6].

Development is purulent - necrotic process against the background of diabetic foot more than in 50 - 75% of cases leads to not traumatic amputations [12,13].

According to various authors showed that 6 - 30% of sick DM after the first amputation are exposed to amputation of the second extremity during 1 - 3 during, in 5 during - 28-51[1,7,8,9]. Its complications lead to an early invalidism and lethality [14]. The reasons of disability and lethality are, as a rule, it is purulent - necrotic processes of a syndrome of diabetic foot and amputation of an extremity [7,8,11,15]. According to transatlantic consensus of TASC now about 90% of amputations of the lower extremities are around the world carried out concerning the critical ischemia of the lower extremities (CILE) [5,6,11,15]. Within the first year from the moment

of establishment of the diagnosis of critical ischemia of the lower extremities of 25% of patients need high amputation. The remote lethality at patients with KINK in the first year about 20% and in five years of 40% - 70% [5,6,10,15]. All provided data confirm suspense of this problem and expediency of further development of new tactical approaches to treatment of this category of patients for decrease in frequency of an invalidism and lethality.

The research purpose - to improve results of surgical treatment of patients with critical ischemia of the lower extremity at DM, by development of more effective way of amputation of crus.

Materials and methods

109 patients in purulent surgical office of the Bukhara multi-field regional hospital for 2004-2016 were examined. Men bylo-71, women bylo-38. For uniformity of groups in a research, patients by whom to carry out reconstructive operative measures on arteries lower extremities are selected it was impossible (in connection with features of distribution of occlusal and stenotic process). Extent of damage of the lower extremity was defined according to classification of Wagner (1979) (tab. 1)

Table 1.

Local changes on feet

Local changes	Number of patients	%
Gangrene of one or several fingers	82	75.2
Gangrene of distal department of foot	27	24.8
In total	109	100

Comparative study of results of operation at two ways of amputation of crus from a soleus muscle resection is carried out. The essence of these ways is: 1) The myoplastic way of amputation of crus across Mitish - Svetukhinu. This way of myoplastic amputation of a crus is developed at Institute of surgery of A.V. Vishnevsky of the Russian Academy of Medical Science for patients with chronic critical ischemia of the lower extremities. V.A. Mitish and A.M. Svetukhin (1997) suggested to delete completely during amputation of a crus a soleus muscle, and if necessary as well muscles of front and external groups and to form a crus stump at the expense of sural musculocutaneous.

Technology of operation:

1) The method developed in the national medical research center of surgery of A.V. Vishnevsky

Slit to the level of merge of tendinous stretching of a gastrocnemius muscle with Musculus soleus, on borders of external and back groups of muscles lateral m of a medial surface of a crus cut skin, a hypodermic fatty tissue and own fascia of a crus. As additional criterion of distal level of a section serves the level located 3 - 4 cm above border of hypostasis and a hyperemia of fabrics. Further, after section of own fascia of a crus allocate sural and Musculus soleus muscles and stupidly divide them from each other throughout. The distal leg of a back soft and woven complex is cut (with crossing of a sinew of a gastrocnemius muscle) and form a back sural musculocutaneous rag. Then allocate the top part of a soleus muscle and cut it from proximal points of attachment thanks to what the neurovascular bunch in the top third of crus is widely bared that, in turn, allows to process most atraumatic a neurovascular bunch at the necessary level. A cross semi-oval section of crossing of a tibial bone 1.0 cm lower than expected level cut leather, hypodermic cellulose and a fascia. Throughout 1.5-2 cm will mobilize a skin and fascial rag from a periosteum of a tibial bone. In the skew-cross direction cut front and external groups of muscles with processing of vessels and a nerve. Consistently carry out a transperiosteal osteotomy of small and big tibial bones, at the same time a fibular bone saw 1.5 - 2 cm above than the level of crossing of a tibial bone. The crest of a tibial bone is resected in the slanting direction. Cross cut the remained muscles of back group. Thus the stump of a crus is conditionally divided into a front part - a front skin and fascial rag and stumps

of tibial bones with surrounding muscles and a back part - a sural musculocutaneous rag. The sural musculocutaneous rag has to be longer than other parts on the value equal to the sagittal diameter of an end face of the formed stump. The formed back space from tibial bones is drained the perforated silicon drainage tube brought to skin through separate cuts and liquidated, hemming a back part of a stump to a lobby the synthetic resolving threads. tibial bones close a back musculocutaneous rag then an excess part of a sural rag is excised. Edges of a wound are adapted to each other and taken in. After operation carry out aspiration drainage within 1 - 3 days [16].

2) Method of clinic

The essence of the modified way consists in the following. After section of a distal leg of a back soft and woven complex (with crossing of a sinew of a gastrocnemius muscle) and formations of a back sural musculocutaneous rag carry out a transperiosteal osteotomy of both tibial bones, then allocate the top part of a soleus muscle and cut it from proximal points of attachment thanks to what the neurovascular bunch in the top third of crus strips wide that in turn allows to process most atraumatic a neurovascular bunch at the necessary level.

At inspection the standard clinical, laboratory and tool methods are used. At arrival of patients much attention was paid to collecting the anamnesis. Data on a pain syndrome, duration of existence of the alternating lameness, character and localization of pains during the walking, distance of bezbolevy walking, pains at rest, their intensity, strengthening or decrease in pains in horizontal position became clear and when lowering a leg from a bed. At survey of the patient visually estimated color of integuments and existence of visible trophic frustration: thinning of integuments, tuberosity and porosity of nail plates, existence of trophic ulcers or necroses. The objective research included: palpatorny definition of a pulsation of arteries of the lower extremities in typical points, carrying out auscultation of an aorta, ileal and femoral arteries. All patient carried out ultrasonic dopplerography with measurement of arterial blood pressure in front and back tibial arteries, and the first finger of foot. The ankle-humeral index for definition of critical ischemia of an extremity was calculated. For definition of endogenous intoxication calculated the leukocytic index of intoxication of V.K. Ostrovsky (1983).

Among all patient's multilevel defeat of an arterial system of an extremity by occlusal and stenotic defeat, including femoral (the general, superficial and deep), subnodal, crus arteries were noted (front and back tibial, interosseous). Degree of ischemia of extremities according to Fontaine-Pokrovsk all patients had v degrees. On the basis of clinical inspection further tactics of treatment was defined, depending on vascularization by everything it was solved surgeries, amputation of the lower extremity at the level

of a crus. For assessment of efficiency of the offered expeditious treatment of 109 patients it is divided into 2 groups. The first - operations on Mitish-Svetukhin's method 34 (31.2%), from them the male-23 (21.1%), the female-11 (10.1%). The second - the modified method of clinic 75 (68.8%), from them the male-53 (48.6%), the woman - 22 (20.2%) respectively.

By types of expeditious treatment all patients be distributed in the following groups (tab. 2)

Table 2.

Groups of patients depending on types of expeditious treatment

Indicator	From all quantity (n=109)	The first group (n=34)	The second group (n=75)
% of Men	65.1	67.6	70.7
% of Women	34.9	32.4	29.3
Middle age	65±6.1	67.3±5.4	64.2±8.0
Duration of sugar diabetes (DM)	9.1±1.2	9.4±0.9	8.8±1.1
Duration of the syndrome of diabetichky foot (DMF)	2.3±0.8	2.5±0.9	2.4±0.8

As the table shows, patients in groups on a sex, age, duration of DM and DMS were comparable.

Refusal of patients of an operative measure it is not revealed. All operations were performed under spinal-95 (87.2%) and intravenous-14 (12.8%) (to it was the reason the expressed osteochondrosis of lumbar vertebrae) anesthesia. To all patients irrespective of types of treatment the reasonable medicamentous therapy complex pathogenetic including correction of disturbances of carbohydrate metabolism, introduction of antibiotics on sensitivity of microflora from wound surfaces, admi-

nistration of the drugs directed to improvement of a peripheral blood-groove and metabolism in foot fabrics was carried out (pentoxifylline, cytoflavin, vazaprostan).

Results and discussion

For comparison at the first stage, the first and second group we marked out the following criteria: duration of an operative measure and anesthesia, duration of stay in a hospital and also existence of complications in the early ambassador operational period. The received results are reflected in the tab. the 3rd 4

Table 3.

Comparative characteristic of the I-II group

Criteria of comparison	The first group	The second group
Operation duration (average)	38 minutes	57 minutes
Duration of stay in a hospital	7.8 bed of day	10 bed of day

Apparently when comparing data of the table 3 operations executed on the first group had an average duration of 57 min. on the second group of 38 min., according to us, it is connected the simplified access to a

soleus muscle, mobilization and a resection which significantly influenced on the ambassador operational complications. (tab.4)

Table 4.

Comparative characteristic of complications of the I-II group of patients.

Criteria of comparison	The first group n=74	The second group n=35
Stump suppuration	2 (2.7%)	2 (5.7%)
necrectomy with a resection of a tibial bone	1 (1.3%)	1 (2.9%)
Crus stump phlegmon	2 (2.7%)	3 (8.6%)
High amputation	0	0
Lethal outcome	1 (1.3%)	1 (2.9%)

From tab.4 follows, to note that the majority of complications in both groups nablyudeno at male patients (3.5:1), on the first group of the total number of modification (74), suppuration of a stump is noted at 3, 2 of which men, 1 woman. A necrectomy with a resection

of a tibial bone it is made to one patient after repeated operation the wound healed first intention. Phlegmon of a stump of a crus it is revealed at 2 patients, 1 man, 1 woman, treated these patients local processing and is conservative. Was the reason of a lethal outcome of one

patient a postoperative myocardial infarction. On the second group of the total number of 35 patients, at two (5.7%) noted stump suppuration, the necrectomy with a resection of a tibial bone is made to 1 patient, crus stump Phlegmon at 3, 1 of which the woman, TELA was the reason of a

lethal outcome. During the period after amputation of a crus number of reamputations at more proximal level (hip level) in 1 - 2 й to group of patients statistically did not observe.

Table 5.

Dynamics of comparative assessment of indicators of intoxication.

Criteria of comparison	Changes on day				
	1 day	3 days	5 days	7 days	9 days
Body temperature	37.7±1.1	37.4±0.8	37.2±0.6	37.0±0.5	36.6±0.2
pulse	92.0±8.0	88.0±7.5	86.0±5.5	82±4.5	76±4.0
Leukocytes	14.7±3.8	12.5±4.4	10.4±3.1	8.7±1.2	8.4±1.0
SOE	22.5±3.2	21.2±3.3	20.1±3.5	18.5±3.7	15.8±1.8
Lymphocytes	32.1±5.2	30.5±4.7	28.7±3.7	25.5±4.2	23.1±2.6
Molecule of average weight ($\lambda = 254$ nanometers) conventional unit.	0.84±0.02	0.72±0.02	0.61±0.01	0.49±0.04	0.35±0.02
Leukocytic index of intoxication	7.7±1.2	6.8±1.3	5.5±1.1	4.1±0.5	2.7±0.9.

Table 6.

Dynamics of comparative assessment of indicators of intoxication.

Criteria of comparison	Changes on day				
	1 day	3 days	5 days	7 days	9 days
Pulse	92.0±8.0	88.0±6.5	84.0±6.0	80±2.5	74±4.0
Body temperature	37.7±1.1	37.0±0.8	36.7±0.7	36.5±0.4	36.5±0.2
Leukocytes	14.7±3.8	11.5±3.2	9.2±2.5	6.7±1.3	5.1±1.1
SOE	22.5±3.2	20.7±2.8	15.5±3.2	9.5±1.7	8.5±1.2
Lymphocytes	32.1±5.2	29.1±5.0	26.3±3.5	21.5±3.2	21.1±3.2
Molecule of average weight ($\lambda = 254$ nanometers) conventional unit.	0.84±0.02	0.66±0.02	0.41±0.01	0.30±0.04	0.24±0.02
Leukocytic index of intoxication	7.7±1.2	6.4±1.4	5.1±0.82	3.2±0.7	2.1±0.8.

Data of the comparative objective and laboratory analysis of results in two groups of the examined patients are provided in tables 5-6 from which it is visible that on the first group at receipt pulse on average was 92 уд. in a minute, body temperature averaged 37.70C after the made expeditious and conservative treatment indicators began to decrease equating to norm (8-9-10 days). Other laboratory indicators reflecting response of an organism to inflammatory and necrotic processes. Other all laboratory changes were equaled to norm to 9-11 days after hospitalization of patients in a hospital. In the second group all these indicators came to norm for 6-9 days after hospitalization. Proceeding from the obtained data it is possible to tell, reduction time of duration of operation reduces risk as anesthesiology, and after operational somatic complications. The operational complications noted later: The resection of a tibial bone with a necrectomy

in both groups, from number 74 in the first group is made 1 (1.3%) to the patient and in the second group of 35 at 1 (2.9%). Suppuration of a stump is noted in the first group - 2 (2.7%), in the second - 2 (5.7%) though in both groups the quantity was equal, but in percentage this complication prevailed to the first group. Crus stump phlegmon in the first group - 2 (2.7%), in the second group - 3 (8.6%), this complication prevailed quantity and in percent. Lethal the outcome was noted in the first group - 1 (1.3%), the second group - 1 (2.9%).

As we know, quick accesses and intervention will gradually be improved by opening of atraumatic, low-invasive, easily feasible modification.

Preservation of a knee joint increases efficiency of rehabilitation and quality of life of disabled people with post-amputating defects of an extremity [12]



Conclusions:

1. With amputations of the lower extremities, the preservation of the knee joint increases the efficiency of rehabilitation and the quality of life of patients with post-amputation defects of the limb.

2. In case of critical lower limb ischemia, amputation at the lower leg level according to Mishish-Svetukhin is the optimal method.

3. Modified amputation of the lower leg is a more effective method, which helps to reduce the duration of the operation and reduces postoperative complications.

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