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ASSESSMENT OF METHODS OF AMPUTATION AT THE LEVEL OF THE SHIN IN SEVERE FORMS OF DIABETIC FOOT SYNDROME

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Annotation. Comparative analysis of methods of amputations at the Shin level in diabetic foot syndrome with signs of critical ischemia in patients of the study groups showed that the improvement of the technique of performing myoplastic amputation with removal of m. Soleus led to a significant shortening of the time of operative accommodation, a decrease in the probability of infection of the wound surface during surgery and a sharp decrease in the development of postoperative wound infections from the amputation stump of the Shin from 22.5% to 7.2% of cases.

Key words: amputation of Shin stump, diabetes mellitus, critical ischemia, infection.

INTRODUCTION

Unfortunately, recent decades have been marked by an increase in the number of patients with diabetic foot syndrome with signs of critical ischemia of the lower extremities - CLI (3,4,7,18,19,20). The development of critical ischemia indicates complete circulatory decompensation, which is observed in 30-42 % of patients with severe forms of diabetic foot syndrome (DFS) (7,8,13,21,22,23). The expected mortality of patients with SDS with CLI increases from 25% during the first development of SDS to 60-70% (1,10,15,24,25,26). The incidence of high amputations for DBS in industrialized countries ranges from 0.06 to 3.86 cases per 10,000 patients with diabetes mellitus (5,6,9,16,27,28).

Until now, reconstructive operations are the only effective type of treatment for patients with DFS with CLI. Revascularization of the arterial bed of the lower extremities is possible in practice only in 35-50% of patients. The latter is associated with the questionable success of isolated surgical revascularization in patients with multilevel type and predominantly distal localization of arterial lesions (1,2,5,7,11,12,14,17,29). At the same time, operations that allow preserving the knee joint (amputations at the level of the lower leg) are encouraged, which significantly improves the quality of life of patients in the postoperative period (5,13,16,30,31). The use of less traumatic operations at the shin level for DFS with CLI is an urgent problem in modern surgery.

Purpose of the study: Comparative assessment of the effectiveness of an improved amputation technique at the lower leg level for diabetic foot syndrome with critical ischemia of the lower extremities.

Material and methods: The results of amputations at the lower leg level in 82 patients with diabetic foot syndrome with critical ischemia of the lower extremities treated in the department of purulent surgery of the Bukhara Regional Multidisciplinary Medical Center from 2010 to 2022 were analyzed. Of these, 54 (65.8%)

were male and 28 (24.2%) were female. The age of the patients ranged from 38 to 85 years. The main percentage of patients had severe impairments of vital body functions. Depending on the technique of performing surgery at the shin level, all patients were divided into 2 groups. I – control group consisted of 40 patients who underwent myoplastic amputation of the lower extremities at the level of the lower leg according to V.A. Mitish - A.M. Svetukhin. II - the main group consisted of 42 patients who underwent myoplastic amputation at the level of the lower leg using an improved (technically simplified) method. Indications for amputation of a limb were: occlusion of the main arteries of the lower limb with decompensation of collateral blood flow and a widespread purulent-necrotic process on the foot, widespread wet gangrene reaching the lower third of the leg, total dry gangrene of the foot, the presence of anaerobic infection (clostridial or non-clostridial), critical ischemia of the lower leg. limbs not amenable to drug correction, spread of the local purulent-necrotic process on the foot beyond two anatomical areas with signs of the development of systemic inflammatory response syndrome (SIRS).

In our publications, we highlighted the results of using a new method of surgical intervention (myoplastic amputation according to V.A. Mitish-A.M. Svetukhin) at the level of the lower leg for SDS with CLI. This method of amputation (used in the control group of patients) leads to a sharp decrease in postoperative complications from the amputation stump of the leg and creates convenient conditions for prosthetics (the knee joint is preserved). But the technical implementation of this operation requires the expenditure of a significant period of time (combaloid the muscle is prepared for subsequent extirpation in the formed tunnel between the tibia and the posterior musculocutaneous flap). An increase in the duration of surgery in conditions of severe CLI leads to a possible risk of infection of the surgical field, and the creation of a background for suppurative complications. This led to an attempt to improve the method of operation, which would eliminate the above-mentioned disadvantages. The surgical technique we propose has some features. An incision is made into the skin, subcutaneous tissue, and fascia of the leg. The posterior flap is cut out longer than the anterior one, parallel to the edges of the tibia to the lower third of the tibia, where it intersects. Next, the neurovascular bundle is processed and the tibia bones are cut. This technique allows for a complete overview of the surgical wound. The gastrocnemius muscle is bluntly separated from the soleus, the latter very easily peels off from the gastrocnemius muscle, located ¬more superficially, as well as from the muscles of the deep layer of the posterior surface ¬of the leg. Next, m. soleus is blunt, with the palm extending up to the point of attachment at the head of the fibula. It is cut off 3-4 cm distally, after suturing the remaining muscle fragment, thereby eliminating the possibility of bleeding. The formed posterior gastrocnemius musculocutaneous flap is sutured with the anterior flap, forming a regular cylindrical stump of the leg. The proposed amputation technique dramatically reduces the duration of the operation and improves the overview of the surgical field. This amputation technique was performed in the main group of operated patients.

Results and discussion: Analysis of the research results showed that from 40 patients of group I, 11 (27.5%) had severe signs of hepatic-renal failure, 8 (20%) patients had acute coronary syndrome, 10 (25%) patients had post-infarction cardiosclerosis with signs of cardiovascular failure, 35 (87.5%) patients showed signs of systemic inflammatory response syndrome, 7 (17.5%) of which were with septic shock with symptoms of multiple organ failure (MOF). Analysis of postoperative complications from the amputation stump showed that in patients in the control group, wound infection developed in 9 (22.5%). Mortality due to generalization of wound infection, development of septic shock and multiple organ failure in the studied group was 7.5%. In 4 (10%) cases, due to the progression of wound infection in patients, they were forced to resort to reamputations at the hip level.

In 42 patients of group II who underwent an improved method of myoplastic amputation at the level of the leg, concomitant pathology and signs of a systemic inflammatory reaction with the development of septic shock were comparable as in patients in the control group. In the study main group of patients, the development of postoperative wound infection from the amputation stump was observed in only 3 (7.2%) patients, which was stopped by local ointment sanitation of wounds and adequate antibacterial therapy. At the same time, in 1 (2.3%) patient, generalization of the infection was observed, which led to the development of multiple organ failure, which ended in death.

Thus, a comparative analysis of surgical placements at the level of the lower leg for diabetic foot syndrome with signs of critical ischemia in patients of groups I and II showed that improvement in the technique of performing myoplastic amputation with removal of m. Soleus led to a significant shortening of the time of surgical placement, a decrease in the likelihood of infection of the wound surface during surgery and a sharp decrease in the development of postoperative wound infections from the amputation stump of the leg from 22.5% to 7.2% of cases.

Conclusions:

1. For diabetic foot syndrome with pronounced signs of critical ischemia of the lower extremities, the method of choice for high amputations is myoplastic amputation with m removal. Soleus, since this increases the functionality of the stump and improves the possibilities of its further prosthetics.

2. Improving the technique of performing myoplastic amputation with removal of m. Soleus, lead to a decrease in the number of postoperative wound infections from 22.5% to 7.2%, mortality from 7.5% to 2.3% of cases.

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