Effectiveness of an Improved Treatment Method for Purulent Soft Tissue Wounds of the Extremities Using Physicochemical Techniques and Prolonged Lavage

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Research relevance: Treatment of purulent-necrotic lesions of limb soft tissues remains one of the most complex and socially significant problems in modern surgery. The high frequency of complications, long periods of inpatient treatment, and the risk of patient disability dictate the need for constant search and improvement of methods for active intervention in the wound process. Traditional methods of treating purulent wounds do not always ensure sufficient control over the pathogenic flora, especially in severe forms of infection. The application of physical methods (for example, ultrasound cavitation or vacuum therapy) and chemical factors (antiseptics, enzymes) in combination with prolonged washing allows for a comprehensive impact on the wound: not only removing pus but also actively stimulating cleansing and healing processes. Advantages of the method: Active cleansing, constant washing of the wound (lavaj), prevents the accumulation of exudate and toxins. Effects on deep structures and physicochemical factors penetrate tissues more deeply than standard dressings. Reducing time, improving microcirculation, and rapid decontamination reduce the patient's stay in the hospital.

Research objective: The aim of this study is to improve the treatment results of patients with purulent wounds of the soft tissues of the limbs by applying an improved physicochemical method and prolonged wound washing.

Materials and methods: The examination and treatment data of 113 patients with purulent diseases of the extremities were analyzed, of whom 65 patients with severe forms of purulent diseases of the soft tissues of the upper and lower extremities without diabetes who were treated in the surgery department of the Bukhara Regional Multidisciplinary Medical Center and the Bukhara City Medical Association in 2020-2024 were included in the I comparison group. These patients were treated using a traditional treatment method that included local sanation of wounds with an antiseptic solution of 25% dimexide, necrectomy, water-soluble ointment under an aseptic

dressing, general detoxification therapy, and mandatory endovascular diagnosis and treatment.

The II - main group of our study included 48 patients with severe forms of purulent soft tissue diseases of the upper and lower extremities without diabetes who were treated in the surgery department of the Bukhara Regional Multidisciplinary Medical Center and the Bukhara City Medical Association in 2025-2026. In the treatment of this group of patients, in addition to the traditional treatment method, ultrasound and prolonged wound washing with a 25% dimexide solution were performed.

On the day of admission, all examined patients underwent objective, subjective, general clinical, and instrumental examinations to accurately clarify the diagnosis and assess the patients' somatic condition. After each use of the device, its removable elements are disassembled and subjected to sanitary treatment with disinfectants consisting of 1 part 5% sodium hypochlorite (disinfectant) diluted in 9 parts deionized water, and also, after drying, with ultraviolet rays of their own lamps for 30

During the treatment period, an objective assessment of the course of general and local manifestations of the wound process was conducted based on subjective indicators (character of the wound discharge, infiltrate dissolution, condition of wound edges, features of granulation tissue development and epithelialization) and objective data (body temperature, results of general clinical blood analysis, leukocyte index of intoxication, concentration of medium-molecular peptides in blood serum, pH of the wound discharge, calculation of the M. F. Mazurik PCI indicator, percentage of reduction in wound surface area, wound healing rate, results of bacteriological and cytological studies).

The sensitivity of aerobic bacteria was determined by diffusion from standard discs in a dense nutrient medium, and anaerobic microbes by diffusion in agar using antiseptic holes.

Results: Group I included 65 patients with purulent diseases of the soft tissues of the upper and lower extremities. Of these, 36 (55.4%) patients had purulent wounds of the upper extremities, and 29 (44.6%) had purulent wounds of the lower extremities.

Of the 65 examined patients in this group, 39 (60.0%) were admitted to the clinic with various purulent soft tissue diseases, while 26 (40.0%) were hospitalized with existing extensive purulent wounds of various etiologies, referred from other medical hospitals or outpatient institutions, in the first phase of the wound process. All 39

patients admitted with various purulent diseases of the soft tissues of the limbs underwent an opening of the purulent focus and wound sanation on the day of admission. Further treatment tactics were identical to those in patients admitted with purulent wounds, including daily treatment of the wound with antiseptic solutions followed by the application of "Levomekol" ointment and a 25% dimexide solution under the aseptic dressing.

Group II included 48 patients with purulent diseases of the soft tissues of the upper and lower extremities. Of these, 25 (52.1%) patients had purulent wounds of the upper limbs, and 23 (47.9%) patients had purulent wounds of the lower limbs. Of the 48 examined patients in the main group, 28 (58.3%) were admitted to the clinic with various purulent soft tissue diseases, and 20 (41.7%) patients were admitted with extensive purulent wounds of various etiologies that had already been admitted from other medical hospitals or outpatient clinics in the first phase of the wound process. All 28 patients admitted with various purulent diseases of the soft tissues of the limbs were subjected to purulent focus dissection and wound process sanation on the day of admission.

Comprehensive treatment tactics for patients in the second main group, unlike in the control group, were as follows: on the day of admission, an emergency operation was performed to open the purulent focus and sanitize the purulent cavity with antiseptic solutions containing a 3% hydrogen peroxide solution. After drying, the wound was sanitized with a 25% dimexide solution, followed by prolonged wound washing using a 25% dimexide solution in a specially developed device in our clinic.

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