# A MODERN APPROACH TO PAIN RELIEF AFTER BURNS IN CHILDREN

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***Abstract.*** *Burns are one of the most common types of injuries. More than 400,000 patients with thermal burns are registered in Russia every year. In addition, only 30% of them require hospitalization, the remaining patients are treated in the clinic. In addition, after discharge from the hospital, the majority of patients with the consequences of thermal injury continue treatment and rehabilitation in an outpatient setting. Therefore, effective treatment of burn victims depends not only on the combustiologist working in the burn center. To a large extent, qualified medical care for burns at the ambulatory stage determines their further course, the likelihood of developing complications, and the consequences of the injury.*
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Local treatment of burns is carried out at all stages of evacuation and in accordance with the volume of medical care established for each stage of treatment of burn victims.

First aid for burn victims should be provided immediately at the scene of the accident, and it is necessary to stop the effect of the heat agent and, if possible, start by removing all materials (clothes, jewelry, etc.) that come into contact with the burned surface. . In addition, for local burns up to 10% of the body surface, it is necessary to cool the damaged areas of the skin with water or cold objects for at least 15-20 minutes. Cooling the burned surface no later than 30 minutes after the injury reduces the time of heating of the tissues, prevents the effect of the thermal agent on the deeper tissues. Cooling reduces swelling and relieves pain, and has a great effect on further healing of burn wounds, preventing the deepening of the injury. In addition, the patient should drink painkillers and antihistamines, if there are extensive burns, if there is no fever and vomiting. When transporting victims to a medical facility for limited burns, the primary dressing may be a dry aseptic dressing, and for extensive burns, standard contoured dressings or sterile drapes are used. In the primary dressing, there should be no oil and grease due to subsequent difficulties in cleaning the wounds, as well as dyes, because they can make it difficult to recognize the depth of the lesion. In polyclinics medical care can be provided to patients with thermal injuries, including emergency instructions and to prepare the victim for transport to a specialized or surgical hospital. In this case, treatment tactics are determined by the possibility of continuing it in an outpatient setting or the need for hospitalization in a hospital. The criteria for hospitalization of burn victims are the degree and depth of burns, their localization, the presence of thermal inhalation injuries, concomitant injuries and concomitant diseases, as well as the age of the victim. It should be noted that it may be difficult to determine the depth of the burn during the initial examination. Often, the true depth of the burn can be determined only after 5-7 days.

**For the ambulatory surgeon, the instructions for hospitalizing burn victims must be clearly understood!**

Deep burns of IIIB-IV degrees. Superficial burns of I-II degrees - more than 15% of the body surface. Marginal burns of IIIA degree - more than 5% of the body surface. Burns in special

localization (face, hands, feet) or genitalia): thermal inhalation injury, burning shock, general electrical injury, combined or accompanying trauma, infectious complications of a wound.

It is known that burn wounds are always infected. The development of inflammation in IIIAB-IV degree burns is a stage of the wound process and is not caused by the microflora that is always present in the burn wound, but by the natural processes of limiting and rejecting dead tissue. Therefore, the commonly used term "infected burn" is not appropriate. The concept of an infectious complication of a burn wound includes conditions in which the purulent process spreads beyond the primary lesion and leads to the development of local (abscess, phlegmon, thrombophlebitis, etc.) and general (pneumonia, sepsis) infectious complications.

**Guidelines for outpatient treatment of burn patients**

Adult patients with superficial burns of the I-II degree can be treated on an outpatient basis, if the affected area does not exceed 10-15% of the body surface, and for burns of the IIIA degree - 5% of the body surface, with minor injuries. - a deep, obvious burn of the area is also possible, for example, from a splash of hot oil. The main thing for this category of patients is local conservative treatment of burn wounds.

**Objectives of local treatment of I-II-IIIA degree burns**

Local treatment of I-II-IIIA degree burns should be aimed at creating the most favorable conditions for their healing in an optimal time and ensuring protection of the wound from mechanical damage and infection, effective treatment of wound infection if necessary. stimulation of reparative processes.

**Local treatment of superficial and marginal burns**

I-II-IIIA degree burns can be treated using open and closed methods. In addition, depending on the nature of the created wound environment, these methods are performed using dry or wet methods. Open treatment of burn wounds is possible on the face, genitals and perineum, where bandages make care and physiological functions difficult. In such cases, iodopyrone solution, aerosols, as well as creams containing silver preparations are used. However, the method of choice in ambulatory settings is the closed method using different dressings.

Acerbin aerosol drug, which has an antiseptic and wound-healing effect, can be used for victims of local I-II degree burns. Can already be used in first aid. Acerbin, if necessary, is applied to the wound several times a day, which is covered with a sterile bandage soaked in the solution.

In the absence of signs of infection, after removing the exfoliated epidermis, it is enough to use atraumatic bandages (Parapran, Voskopran, Branolind, etc.), one application of which to superficial burn wounds is enough for further epithelization under the bandage. You can use other wound dressings (Activtex, Appolo), as well as bandages with antiseptic or antibiotic solutions, water-soluble ointments or creams based on silver sulfadiazine.

For burns of degree IIIA, as well as small deep burns of degree IIIB, treatment can begin with moist drying with iodopyrone (Betadine, Povidone-iodine) solutions, which help to form a thin scab of necrotic layers of skin. and fibrin. The disadvantages of the latter include pain during the first dressing. Burns under a dry scab can heal without pus. In cases where a dry scab cannot be formed, its suppuration and rejection develop a week after the injury. The treatment should be continued with a bandage with water-soluble ointments, the curved scab should be removed during dressing.

At the same time, the use of gauze bandages as a carrier for drugs has a number of disadvantages. Removing dried gauze on garlic, despite soaking, causes damage to the young

epithelium and disruption of spontaneous epithelization of the wound, and the dressing itself becomes painful. The use of atraumatic "mesh" dressings in outpatient settings helps to solve the problem of epithelial damage, reduces the pain of dressing and has a beneficial effect on the course of the wound process.

One of the modern types of dressings is Activtex wound dressings, a textile base impregnated with a gel-forming polymer and containing various medicinal substances in the form of a depot system. Depending on the drugs included in the composition, various types of coatings with antibacterial, analgesic and hemostatic effects can be used. The therapeutic effect of the components that make up Activetex coatings is manifested only in a wet state, so it is necessary to moisten the clothes before use, and then from time to time 1-2 times a day. The advantages of Activtex anti-burn dressings are the absence of the need for their initial preparation (immediately before use) and long-term healing properties.

Dressing should be done at least 2 times a week. If the patient's temperature rises, pain and swelling in the wound area increase, the bandage becomes wet with pus, it should be changed often. Dressing should be performed sparingly without damaging the thin layer of growing epithelium, especially in the treatment of burns of the IIIA degree, when epithelization occurs from preserved skin derivatives.

When the epithelization of superficial burns occurs under the scab, a modern alternative to the dry method of local treatment is to create a moist environment in the wound. A moist environment has a beneficial effect on regeneration processes, and the dressing itself is atraumatic. For the local treatment of burns, the wet dressing method is carried out using various films, hydrogels, hydrocolloid and sponge dressings, as well as creams based on silver sulfadiazine.

Various film coatings are highly effective in the treatment of superficial and borderline burns. At the same time, the lack of drainage properties of film dressings requires frequent (daily) dressing, especially with heavy wound discharge. Therefore, the use of occlusive dressings is contraindicated in the treatment of purulent-necrotic and infected burn wounds contaminated with more than 104 microbial bodies / cm2.

Dressings containing hydrogels are widely used in the treatment of limited superficial and border burns. Form-stable hydrogel coatings (Gelepran, Hydrosorb) show good effectiveness in the treatment of burn wounds of the II-IIIAB degree, as well as long-term wounds. Apollo's dressing based on amorphous hydrogel mesh differs well from its western counterparts in the presence of anilocaine as an anesthetic and iodine as an antiseptic. Hydrocolloid coatings (Hydrocoll) can also be used effectively.

It is not appropriate to use biological materials in the treatment of first- and second-degree superficial burns. Various sponge dressings (Algimaf, Algikol, Syuspur-derm, etc.) can be used in the treatment of borderline IIIA burns in the polyclinic. They do not require frequent dressings, absorb wound detritus and stimulate regeneration.

The use of hydrogel, hydrocolloid and sponge collars allows to perform the binding after 2-3 days due to the active sorption of discharge, if there is no discharge and they are firmly fixed to the wound, they can be left until complete epithelization. and independent detachment from the healed surface.

Creams with silver, produced under different names (Argosulfan, Dermazin, Ebermin), which maintain a moist wound environment, create favorable conditions for epithelization and are

an effective tool for the local treatment of superficial and marginal burn wounds, especially in combination with film coatings.

The use of these drugs is recommended for clinical signs of infection and severe suppuration of burn wounds. In addition to them, Iodopyrone (Betadine) and Lavasept solution can be used. Gauze with water-soluble (polyethylene glycol)-based multicomponent ointments (Levomykol, Levosin, Dioxidin, Iodopyron, Betadin) that can be used in the I and II phases of the wound process in the treatment of infected burn wounds. proved themselves well.

With the uncomplicated course of the wound process, the correct selection of local treatment methods and means, burns of the II degree are treated 1-2 weeks after the injury, burns of the IIIA degree - up to 18-21 days. Long-term conservative treatment of burn wounds that cannot be treated in the clinic is a mistake. All burns that do not heal within 3-4 weeks, especially those that cover more than 0.5% of the body surface area, are deep and will most likely require autodermoplasty. Treatment of burn patients discharged from the hospital with small residual wounds after superficial burns and surviving graft sites in patients operated on for deep burns is carried out according to the general principles of local treatment indicated above. The criteria for successful treatment of burn patients are not only wound healing, but also good functional and cosmetic results. According to various studies, hypertrophic and keloid scars develop in 10% of cases after II degree burns, 55-62% after IIIA burns, and 30-40% after autodermoplasty for deep IIIB-IV burns. It should be noted that the main task in the fight against pathological scars is not to treat them, but to prevent scar formation. Taking anti-ulcer measures is most effective for "new" scars during their formation. Most of the conservative treatment of burns is done on an outpatient basis. Usually, a comprehensive course of treatment is carried out for 6-12 months, combining various methods: general and local drug treatment, wearing compression garments, physiotherapy, massage, physiotherapy, balneological treatment, etc.

In the rehabilitation of burn survivors, it should be taken into account that many patients have mental disorders related to their sense of inferiority. This condition requires a special approach and often the need to adjust medication. In addition to the development of scars and deformities, patients with severe burns may have various dysfunctions of internal organs, which requires the involvement of relevant specialists in the examination and treatment of such victims. There is currently no unified system for rehabilitation of burn victims in our country. Training clinical surgeons in the specifics of burn care and rehabilitation with the involvement of burn unit specialists may be one way to address this problem. More attention should be paid to the medical-labor examination of burn survivors and to improving the system of providing them with work.

After 6-12 months of outpatient conservative treatment, after the scars have "matured", the patient, if necessary, undergoes reconstructive surgery. In cases of rapid development of microstomia and eversion of the eyelid, the patient is advised to have an urgent reconstructive operation. The WHO Expert Group, in conjunction with the Child and Adolescent Mortality Assessment Project, has released new data on causes of death in this group for 2020-2021 into the public domain at childmortality.org. The project was presented by The Lancet: Global Health magazine. In addition to all-cause mortality data and estimates, the portal includes cause-of-death estimates for 195 countries, nine regions of the world, and globally. Data are downloaded for mortality rates for three reasons: number of deaths, categories of deaths, and rates. Six age groups are presented: newborns (first 28 days of life), 1-59 months, under 5 years (combining the previous two categories), 5-9 years, 10-14 years and 15-19 years. Estimates for the oldest age group are

broken down by gender. Causes of death are assessed separately by age group and data availability for countries with high and low mortality rates.

Globally, in 2021, 6 million 491 thousand people died among children and adolescents under the age of 20. 78 percent of them correspond to cases under 5 years of age. The main cause of death is premature birth: more than 18% of cases among children under 5 years of age. The next leading cause of death is lower respiratory tract infections (14.2% among children under 5 years, 4.2% among others). It was followed by birth asphyxia or trauma (11.5% in the under-5 category) and malaria (8.8% in the under-5 category, 6.1% among others). Road traffic injuries are also a common cause of death under the age of 20.

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