IMPROVING THE SURGICAL METHOD IN THE TREATMENT OF DEEP BURN INJURIES OF THE FACE AND NECK AREAS

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Abstract. *One of the urgent problems of modern combustiology remains the treatment of deep burn injuries in the face, as well as in the modern period of world medicine. Long-term process of completion of burn injury, as well as out- breaks of severe complications, pigmentative changes in deforming contractures are 20-30%. Objective. Study of the deep burn injury of the face area, the benefits of ulcerative coating (RP) in surgical treatment. Material and methods. Samar- kand branch of the Republican Scientific Center of Emergency Medicine of combiology 2010-2022, 210 patients treated with moderate injuries were divided into 2 groups and the results of treatment were studied. For 108 (51.4%) patients in the main group, "early necroectomy and parapran of the wound cover (RR)" were used. 102 (48.6%) control patients were treated. The age of patients ranged from 4 months to 70 years, an average of 20 ± 3.0 years. Results. Thus, the "wound parapran (RP)" applied to patients in the main group contributed to the appearance of granulation with a deep burn wound for 12-14 days, the purity of the injury in the shortest possible time. Early surgery, early rehabilitation of expected complications. Patients of the main group practiced skin repair for 15-17 days. This was 21.5 ± 1.5 days on treatment days for patients in this group. Day of treatment for control patients was 28.5 ± 2.4 days. Conclusions. The above results of studies and analyzes show that in the treatment of a deep knee burn, it is highly effective to use "parapran wound coat- ing (RP)," which allows surgical skin surgery at an early stage and reduce its duration, not only accelerating skin clean- ing, but also subjecting it to plastic practice positively influenced the reduction of complications. Treatment days were significantly reduced by 8-10 days, which also became important for early*

rehabilitation of complications. There was a decrease in complications after the primary surgical process from 62.7% to 24.1%. As well as the preservation of the aes- thetic state of pigmentative disorders when replacing day dressings and reducing infusions and negative feelings when treating injuries, which plays an important role in the practice of treating burn diseases in patients

Key words: *Deep burns to the neck of the face, wounds, autodermoplasty.*

Introduction: Burns are among the most devastating of all injuries, with outcomes spanning the spectrum from physical impairments and disabilities to emotional and mental consequences [1]. Globally, fire-related burns are responsible for about 265,000 deaths annually [2]. Burns affecting the face and neck are considered special, and their severity is attributed to the complexity of the structures present in this region. Accidents that result in burns usually require special attention because of the ease of complications such as: infections, scar retractions, and anatomo-functional impairment [3]. Traction forces, caused by scarring, can lead to insufficient neck extension, incomplete oral occlusion and buccomaxillofacial skeletal deformities [4].

Burns can be classified according to the depth of tissue loss, extent of the affected area, etiology and severity [5-8]. Burns reaching the facial and/or cervical region can be considered the most serious, as they affect structures with great anatomical and functional complexity, as well as being subject to complications.

Suicides by fire usually result in a high total body surface area (TBSA) involved and have a poor survival outcome with a significant mortality rate, even with the current advances in burn resuscitation and management [9,10].

Scarring in the head and neck (H&N) region can affect respiratory function, vision, and oral continence [11].

In case of deep burns of the face and neck, the healing period is 28-35 days. During this period, a thick black scab appears on the wound, the elasticity of the

burnt skin disappears, the movement of the eyelids and oral cavity is limited, and during the period of inflammation, a purulent-inflammatory process is observed in the wound. Early surgical procedures, as well as temporary dressings that cover the wound, are a positive result in the treatment of deep burns in the face and neck area, allowing you to speed up the healing process.

The objective our work to study the advantages of wound dressing in the surgical treatment of deep burns on the face and neck.

Material and Methods: During a 13-year period, 210 patients with deep burns of the face and neck were treated in the burn department of the Samarkand Center of Emergency Medical Care (RCS UMA) Samarkand, Uzbekistan between 2010 and 2022 were enrolled in the present study.

Among the cases, Patients ranged in age from 4 months to 70 years, with an average age of 20±3.0 years. The total area of deep burns ranged from 4% to 9%. Out of 210 patients, there were 112 men and 98 women. The causes of burns were: Flame – 188 (89.6 %), hot steam – 11 (5.2%), suicide - 11 (5.2%) (Table 1).

Table 1

	Kind of burns	**Total**	**%**
1	Flame	188	89.6
2	Hot steam	11	5.2
3	Suicide	11	5.2
4	**Total**	**210**	**100**

Table 1. The distribution of patients by different kinds of burns

Patients were matched by burn area, age, and time of hospital admission and were divided into two groups accordingly.

The first group (main) included 108 patients, admitted in the first days from the moment trauma was received. For proper diagnosis of their condition and the choice of proper treatment method, all patients at admission were examined for acid–alkali balance of the blood, blood haemoglobin, glucose, potassium, and sodium and calcium levels. After 12–16 hours, the wounds on the face and neck were treated with an analgesic aerosol containing doxycycline-lidocaine. Necrotic tissue was removed, and the wound was treated with a chlorhexidine-based "Parapran" dressing and "Dermogard" ointment containing silver sulfadiazine. Upon changing the dressing, necrotic tissue was removed painlessly and bloodlessly. The combination of "Parapran" dressing and "Dermogard" ointment prevented necrotic tissue from drying out, facilitating its gradual separation. By days 12–14, the wounds on the face and neck were completely cleaned and covered with granulation tissue. We placed non-perforated autograft. The thickness of grafts ranged from 0.2 to 0.3 mm. Grafts from the external and internal surfaces of the hip were normally used. The first bandage was removed on the on the 2nd or 3rd day after surgery. If the skin engrafted well, we proceeded with physical therapy and remedial exercise after about the 6th day. After that, the patients were discharged from the hospital for outpatient treatment. It was recommended that they continue with physical therapy.

The second group (traditional): this included 102 patients who were treated in the traditional manner in the burn department of RSCUMA and Samarkand Inter-Regional Burn Center. From the moment the patients were admitted to hospital, they underwent the following surgical methods of treatment: necrotomy was performed to prevent secondary necrosis and to accelerate the rejection of necrotic tissue. Necrotomy was always performed in a longitudinal direction down to the healthy tissue. After necrotomy, the wound was covered with chemotherapeutic materials (trypsin and chemotrypsin) that accelerated the removal of the necrotic tissue. Wound dressings were changed every other day. After initial removal of damaged tissues, necrectomy was performed for the full depth of the necrosis. In most, full necrectomy was performed 10–14 days after the burn. Free skin grafting was

normally performed on the granulated wound when the wound was completely ready for closure. The wound surface, when ready for plastic surgery, was bright pink, neat, juicy, with little bleeding. The wounds were ready for autografting 20–22 days after the burn. The thickness of grafts ranged from 0.2 to 0.3 mm. Grafts from the external and internal surfaces of the hip were normally used. The first bandage was removed on the 3rd or 4th day after surgery. If the skin engrafted well, we proceeded with physical therapy after about the 6th day and started remedial exercises.

Simultaneously, patients received antibiotic therapy with second- and third-generation cephalosporins combined with second-generation fluoroquinolones. To reduce inflammation, control wound exudation, and prevent donor skin lysis, glucocorticoid hormones (dexamethasone 0.5 mg/kg, prednisolone 1–2 mg/kg) were administered for three days. After autografting, dressings were left undisturbed for 48 hours. Patients with deep burns covering more than 15% of total body surface area received infusion therapy. Blood transfusions and fresh frozen plasma were administered when total protein levels dropped below 65 g/L or hemoglobin below 70 g/L.

Results

First group: after early excision and placement of autograft, (on 108 patients), prevented the development of early infectious complications, and allowed the short period of time (15–17 days) to recover the skin cover. The second operation was performed on eight (7.4%) of the patients because the transplanted skin dissolved in some places. Complete rehabilitation of skin covering provided engraftment of transplants, donor injuries and epithelisation of superficial burns. As a rule, the term of skin covering rehabilitation coincided with the patients' discharge from the hospital and our observation of 16.0 9 ± 3.2 days.

Second group: Control group: those who were treated in the traditional manner (on 102 patients) were allowed within the period of time (22–24 days) to recover the

skin cover. The second operation was performed on 18 (17.6%) patients. The causes of transplants lysis were: suppuration of injuries, hypoproteinaemia, exhaustion and application of high coefficients of flap perforation. Patients remained in hospital on average for 26,5±2,4 days. Complete rehabilitation of skin covering of the control group provided closure of cells because perforated flaps were used for these patients (Table 2).

Results	Group 1 (P = 108)	Group II (P = 102)
Operation term	12-14 days	20-2 2
Wound complications	8	18
Bed-days	16.0 9 ± 3.2 days	26,5±2,4 days
Complications in the nearest after operation period	26	64

P < 0.05 by comparing with checking group.

Discussion

Millions of people worldwide suffer from burn injuries, which constitute a significant global public health concern and can cause variable degrees of scarring [12]. An altered appearance may evoke mental health issues and result in difficulties with social reintegration and impact quality of life [13]. In addition, skin pigmentation changes resulting from burn injuries can increase the risk of photoaging [14]. Previous studies identified severe scar pigmentation and prolonged wound healing as the primary contributors to poorer scar outcomes. Therefore, regulating these two factors and expediting the healing process is crucial in mitigating functional and psychological distress in burn survivors. Patients with deep burns of neck and face require immediate hospital admission and special treatment. At the early treatment stage injured by thermal wounds, we used physiotherapy to speed the regeneration process and reduction of local inflammatory

process, as well as creating conditions to block the formation of hypertrophical scars deformations. The wide range of treatment, medical and physiotherapy create favourable conditions to reduce the development of scars [15,16].

About 20 years ago, it became possible to excise extensive deep burns safely and close the wounds of neck and face with autologous split-thickness skin grafts. Such injuries should be treated as soon after resuscitation as is feasible by excision of the eschar and skin grafting. There is no benefit in delay. Sufficient autologous skin grafts should be available to close the wounds at the same operation, particularly if the grafts are meshed and expanded. Excision and skin grafting are bloody procedures, however, especially if they are prolonged. Although surgical therapy clearly results in earlier return of function and a shorter convalescence, its long-term results are probably similar to those of expectant therapy.

Grafting skin on established, granulating wounds from which the eschar has sloughed (a phenomenon due primarily to bacterial proteases) was once the norm, but it is currently the poorest surgical option. This approach is sometimes necessary, however, in the presence of severe illnesses or systemic complications. The impediments to early surgical closure increase in parallel with the increasing extent of the burn. In trials comparing early with delayed surgical therapy at the same institution, the hospital stay was reduced with early surgery only when the burn area averaged 6 percent of the body-surface area. The incidence of other problems, such as the frequency of septic episodes, was lower with early surgical therapy, however. The results of the presented studies and analyses show that the use of chlorhexidine-based "Parapran" dressing in the treatment of deep burns of the facial and cervical areas is highly effective, this method of treatment has a positive effect on the early implementation of surgical skin plastic surgery and the reduction of its terms, not only accelerates wound healing, but also reduces postoperative complications of skin plastic surgery.

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