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Original Article

Acute Management of Deep Facial Burns

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Abstract

Introduction: Management of deep facial burns is a serious challenge for many reasons: a considerable anatomic and functional diversity is concentrated in a small space, a uniform treatment does not exist, late sequelae are frequent and may be severe, and the literature on the subject is ambiguous.

Aim: To analyse management of deep facial burns.

Patients and methods: A retrospective medical chart review was conducted for 569 patients with deep facial burns hospitalized between January 2005 and January 2015. Demographic data, type, depth and size of burns, chronology and type of surgical treatment, length of hospital stay, and type and incidence of late sequelae were analysed and compared.

Results: Over 10 years, 596 patients with deep facial burns, 216 (36.24%) females and 380 (63.76%) males, aged from 5 months to 95 years (mean 39.5±26 years) were treated. The most common burn agents were hot liquids and flames. The mean total body surface area (TBSA) burned was 17±13.3%. Concomitant eye injury was detected in 63 (10.6%) patients. Priority was given to the early, meticulous, staged surgical approach aimed at sparing the survived tissues and rapid wound closure. Follow-up ranged from 3 months to 5 years. Late functional sequelae were documented for 50 (8.38%) patients and ocular sequelae - for 33 (5.54%) of them. There was no incidence of secondary corneal perforation or definitive loss of vision.

Conclusions: Adequate and up-to-date acute management of deep facial burns based on early, judicious, surgical approach could limit initial damage and reduce late sequelae.

Keywords

acute surgery, deep burn, face

INTRODUCTION

Preserving and restoring the functional and aesthetic entity of the face after severe trauma is of paramount importance for a fulfilled human existence. The incidence of facial burns cited in literature varies as widely (18% – 60%) as that of deep ones.[1-5] Management of deep facial burns is a major challenge for various reasons: a considerable anatomic and functional diversity is concentrated in a small space, terms and methods of treatment are controversial, late sequelae are frequent and may be severe, and the literature on the subject is meagre and ambiguous. Although many approaches to surgical management of a severely burned face have been described, there have been very little advances in it over the past 40–50 years.[6] Objective studies on post-burn sequelae are very few and long-term functional outcomes remain poorly studied.[7,8]

AIM

The aim of this study was to analyse our experience in the management of deep facial burns over a 10-year period and also to elucidate the relationship between timing of surgery and outcomes.

PATIENTS AND METHODS

Setting and patient characteristics

A retrospective medical chart review was conducted for 596 patients treated for deep facial burns in the Department of Burns and Plastic Surgery at St George University Hospital in Plovdiv from January 2005 to January 2015. Deep burns include partial-thickness burns (IIB degree) and full-thickness burns (III degree) after Jackson's burn model.[9] Multiple parameters were assessed using patient notes, theatre and hospital records. Patients' demographic data included age and gender. Injury data included: type of burn; clinical estimate of depth and size of burn (total body surface area percentage – TBSA%). Identified management parameters included: chronology and type of surgical intervention, and length of hospital stay. Type and incidence of late sequelae were analysed as criteria for effectiveness of treatment. Patients with unsurvivable injuries (n=80) and those who left hospital before completion of initial treatment (n=6) were excluded from the study for lack of follow-up.

Ethical approval

The study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the Ethics Committee of the Medical University of Plovdiv (No 2902/10, Nov, 2017). Patients and their legal representatives signed informed consent to publish the images in **Figs 5, 6**.

Statistical analysis

Data were primarily input and processed using Microsoft Excel 2007 (USA, Microsoft), and further managed by the SPSS statistical software version 24 (SPSS, IBM Analytics, Armonk, NY, USA). Continuous variables were expressed as means ± SD, or by medians and interquartile range based on normality of data. Categorical variables were expressed as frequencies or percentages. Continuous variables in the two groups were compared by the unpaired t-test or the Mann-Whitney U-test according to the data distribution. Difference between two proportions was analysed by the z-test. A p value <0.05 was considered significant. The longitudinal data observed at different points were analysed by time series analysis.

RESULTS

Within a ten-year period, 4075 burn patients were admitted and treated in the Department of Burns and Plastic Surgery at St George University Hospital in Plovdiv **(Table 1)**. It is a major burn center in central and southeast Bulgaria providing services for a third of the country's population, i.e. around 2 696 000 people.[10]

Table 1. Admissions

Year	Hospitalized patients			
	Admissions	Acute burns	Facial burns	Deep facial burns (IIB, III degree)
2005	376	301	96	61
2006	420	434	87	72
2007	433	325	72	49
2008	506	360	61	41
2009	509	391	109	74
2010	512	404	102	60
2011	612	451	103	52
2012	624	458	131	72
2013	691	497	122	60
2014	624	454	84	55
Total	5307	4075	967	596

Nine hundred and sixty-seven patients had burns involving the face of which 596 were classified as deep according to clinical manifestation. Five hundred and thirty-eight patients had periorbital burns with 446 of these being deep. In the group of deep facial burns, 441 (74%) were adults and 155 (26%) children (children were defined as less than 18 years old), 380 (63.76%) were male and 216 (36.24%) – female. The patients' ages ranged from 5 months to 95 years, mean 39.5±26 years **(Fig. 1)**.

Distribution of causative agents is shown in **Tables 2, 3** and **Fig. 2**. The hot fluid section includes scalds resulting from hot water, steam, fat, coffee, tea, food, molten material such as plastics, metal etc.; flame burns are those produced by fire, ignited gasoline, alcohol, and other combustible substances; electrical burns are due to a contact or a flash, or both; contact burns are caused by hot solids; chemical burns cover acid and alkaline injuries; combined burns encompass damage from bangers, fireworks, propane and butane, industrial and domestic explosions, etc. where there is an association of thermal, chemical, and barotrauma. In a declining order of frequency, hot fluids burns accounted for 51% of all burns, flame burns – for 28%, and combined ones – for 13.3%.

The mean total body surface area affected was 17±13.3 per cent with a range of 0.5% – 80%. Concomitant ocular pathology was documented for 63 (10.57±1.25%) patients and involved conjunctival burns (n=22), corneal burns

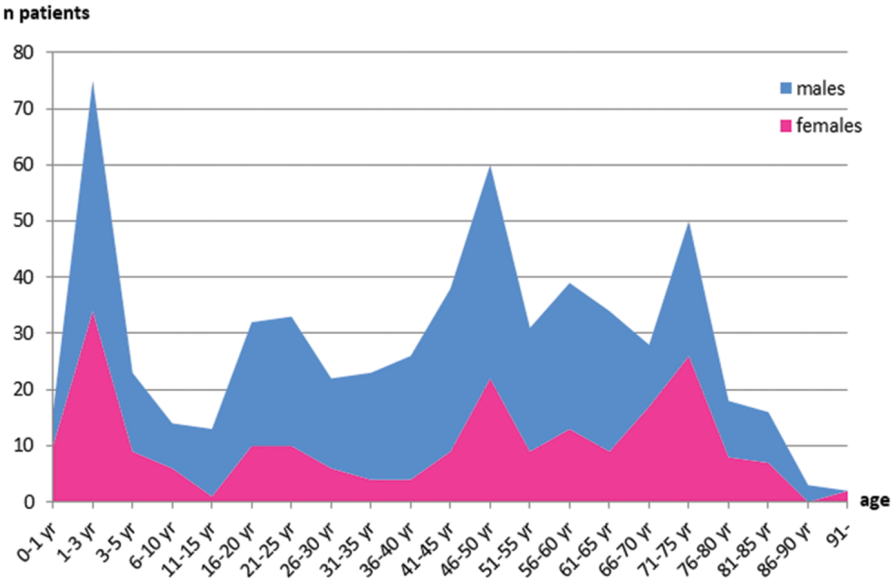

Figure 1. Age and gender distribution of deep facial burns.

Table 2. Age distribution of causative agents

Age / Aetiology agent	Children (<18 yrs)			Adults (>18 yrs)			Comparison
	n	%	Sp%	n	%	Sp%	*p*-value
Hot liquids and steam	116	74.8	3.5	185	42.0	2.4	<0.0001
Flame	19	12.3	2.6	149	33.8	2.3	<0.0001
Electricity	7	4.5	1.7	23	5.2	1.1	>0.05
Hot surface	1	0.6	0.6	12	2.7	0.8	>0.05
Chemicals	0	0.0	0	4	0.9	0.4	>0.05
Combined	12	7.7	2.1	68	15.4	1.7	0.0155
Total	155	100.0		441	100.0		

Table 3. Gender distribution of causative agents

Gender / Aetiology agent	Male			Female			Comparison
	n	p %	Sp %	n	p %	Sp%	*p*-value
Hot liquids and steam	169	44.4	2.6	132	61.1	3.3	< 0.0001
Flame	117	30.8	2.4	51	23.6	2.9	> 0.05
Electricity	27	7.1	1.3	3	1.4	0.8	< 0.005
Hot surface	5	1.3	0.6	8	3.7	1.3	> 0.05
Chemicals	4	1.1	0.5	0	0	0	
Combined	58	15.3	1.8	22	10.2	2.1	> 0.05
Total	380	100		216	100		

(n=12) and corneal abrasions (n=29).

The mean number of operations per patient with a facial burn was 2.14±1.7 (1.44 up to 5 days post-injury and 1.98 up to 10 days post-injury) **(Table 4)**. Debridement procedures accounted for 92.6% of surgical activities (n=1322), skin grafting ones – for 6.6% (n=87), and local flaps, etc. – for 0.8% (n=11).

The mean hospital stay was 22.18±13.6 days; it is not indicative because most often patients have also burns on other locations and/or concomitant smoke and inhalation injury the treatment of which affects the duration of the stay; 362 (60.73%=2/3) patients had burns exceeding 20% TBSA; isolated deep facial burns were only 34 or 5.7% of all burns in the observed group.

Follow-up time ranged from 3 months to 5 years; mean 31.5±28.5 months. Late functional sequelae requiring fur-

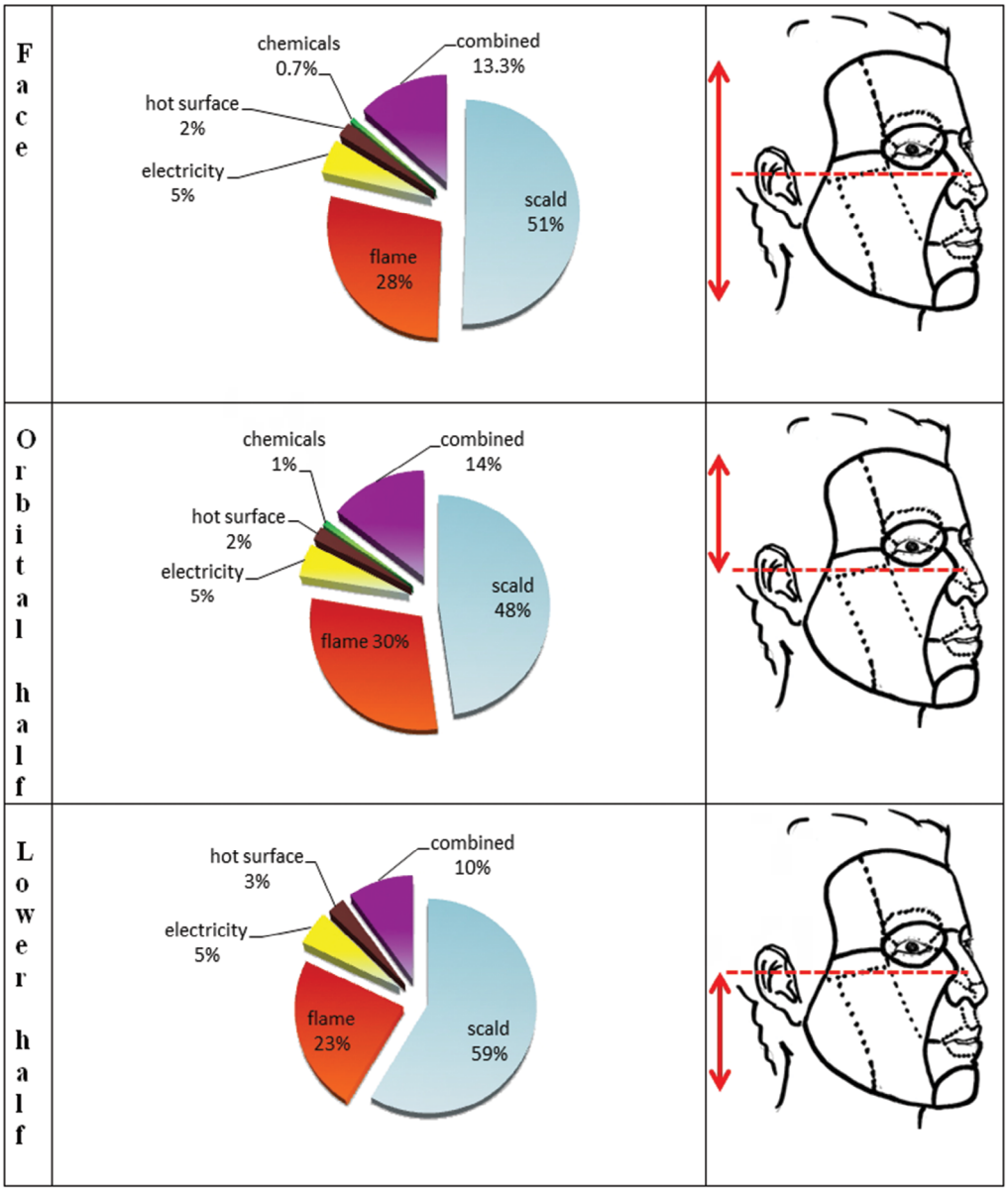

Figure 2. Burn agents.

Table 4. Acute surgical management of facial burns

Type of surgery (patients n=596)	Number of operations		
	Day 0 – 5 post burn	Day 6 – 10 post burn	Day 10 + post burn
Surgical clean-up and debridement	596		
(Serial) tangential excision	260	270	52
Debridement and xenograft	2	10	1
Debridement and allograft		6	2
Debridement and autograft	1	10	14
Autograft		20	21
Temporary tarsorrhaphy		2	2
Local flap		1	6
Total	859	319	98
Mean number of operations per patient	1.44	0.54	0.16

ther treatment were documented in 50 (8.39%) cases **(Table 5)**. Late ocular complications occurred in a total of 33 (5.54%) patients. There were no instances of secondary corneal perforation or loss of vision.

DISCUSSION

The importance of the face for the personal identification is undisputed. In contemporary life of intense communications, its disfigurement imposes upon the individual numerous painful problems. A recent study on the experience of patients with facial burn injuries cites victims' self-estimation as "being a lonely foreigner", "closing my mind toward the world", "hiding hurt feelings", "companion of my face," etc.[11]

Unfortunately, there is no consensus among the leading burn institutions regarding the type of treatment of facial burns, the timing of surgical intervention, the technique to be used, or the follow-up care.[12] On the contrary – the opinions are poles apart. At one pole are the advocates of acute radical interventions, who consider early excision (3 to 5 days post-injury) and immediate skin grafting as the treatment of choice because it minimizes infectious complications and excessive fibrosis, respectively scarring.[12-14] At the other pole are the more conservative surgeons who consider that the 14-21-day delay of operations for partial and mixed depth facial burns has an advantage, as the abundant blood supply in the area presupposes higher regenerative potential which might, in the long run, reduce or even obviate the need for surgery. According to them, too early an intervention risks to create more consequences than could be avoided.[3,15]

According to the collected data, patients with facial burns were a quarter (24%) of all burn admissions. Almost two-thirds of them (596 out of 967, 61.63%) were deep and required surgical treatment in the acute period of trauma which complies with available statistics.[3] The chronologic review of admissions showed that while the number of inpatients with facial burns grew steadily over the years, the frequency of the deep facial burns remained relatively constant **(Figs 3, 4)**. The incidence seen is in keeping with existing published reports.[2,16]

The analysis of age distribution showed peak values in the paediatric group among 1 and 3-3.5 years and in the adult group above 45 years of age; the incidence was high up to 75 years of age, then the contingent shrunk rapidly **(Fig. 1)**. Males predominate almost 2:1 versus females, 380 (63.76%) and 216 (36.24%), respectively, and in the age groups 30 to 45 years, the ratio rises up to 3:1 and 5:1 **(Fig. 1)**. This is consistent with previous studies and is duly related to gender differentials in industrial working environment, and risk taking behaviour.[4,17]

In contrast to some studies[3,5] and in parallel to others[4,17], scald and steam burns are the most common (half of all burns), followed by flame and combined burns with the latter being mainly at the expense of propane-butane explosions and road accidents. This could most probably be related to the geographical and ethnic variety of daily routine. The general trend is valid for the whole face as well as independently for its orbital (upper) half and for the lower face. Facial halves are defined as to Frankfurt horizontal plane which passes through the inferior margin of the left orbit (orbitale) and the upper margin of external auditory meatus (porion), and divides conditionally the face into upper and lower half. In the lower half, the proportion of scald burns is higher than that in the upper half and in the orbital half, flame burns are more frequent than in the lower face (z=2.3; p=0.0197, i.e. p<0.05) **(Fig. 2)**. This finding has a very logical explanation: scald burns result from spill over, splash or spatter of hot liquid and the reflex backward movements of head and arms aimed at protecting the eyes/

Table 5. Late functional sequelae requiring further treatment

Location	Late sequelae	n	%	Sp%
Orbital, n=33 (5.5±0.9%)	Trichiasis + irritative conjunctivitis	2	0.3	0.2
	Eyelid retraction	14	2.3	0.6
	Canthus deformity	6	1.0	0.4
	Corneal scarring(partial)	3	0.5	0.3
	Dry eye syndrome	7	1.2	0.4
	Corneal perforation	0	0	0
	Cataract	1	0.2	0.2
Nasal, n=7 (1.2±0.4%)	Nostril stenosis	2	0.3	0.2
	Nostril ectropion	5	0.9	0.4
Oral, n=10 (1.7±0.5%)	Microstomia	2	0.3	0.2
	Oral incontinence	1	0.2	0.2
	Lip deformity	7	1.2	0.4
(8.4±1.1%)	Total	50	8.4	1.1

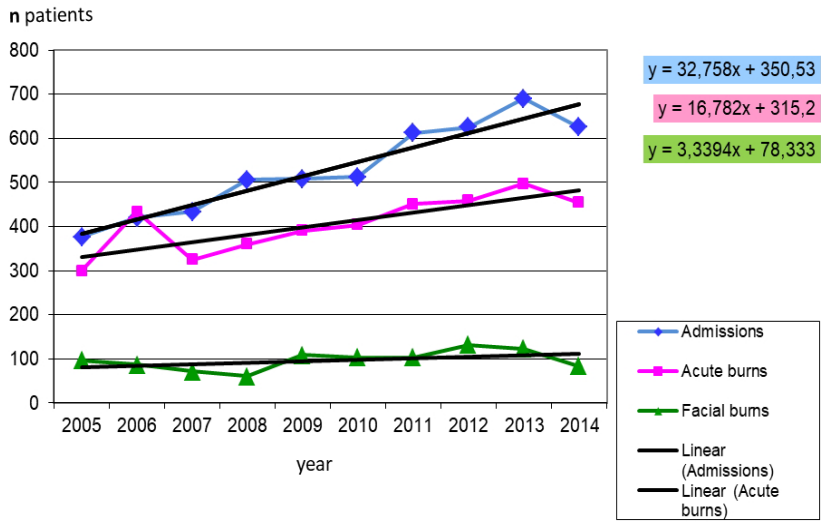

Figure 3. Dynamics of hospitalized patients over a period of 10 years.

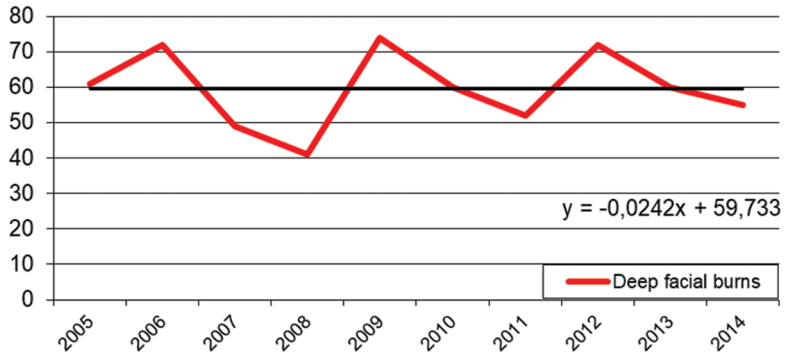

Figure 4. Deep facial burns hospitalized over a period of 10 years.

vision expose the lower face to the injurious agent. As with flame burns, the victim either attempts to extinguish fire or looks for a way out and exposes instinctively the orbital half to the agent.

Further analyses showed that the male-to-female ratio significantly differed between causes of burn. In general, the proportion of electric burns in the male group is higher, as is the proportion of hot fluids in the female ones ($p<0.05$) **(Table 3)**.

The age spectrum of injurious agents reveals that hot fluids prevail over flames both in children and in adults. This tendency is more pronounced in the paediatric group than in the adult one; the frequency of flame and combined burns is higher in the adult community as compared to the paediatric one ($p<0.0001$) **(Table 2)**.

Our protocol for treatment of a patient with facial burn includes:

- Initial ophthalmologic and ENT examination within 2 hours of admission and, in the presence of ocular and ENT damage, a consequent, parallel follow-up.
- Surgical cleansing (physical and surgical debridement of any debris like char, singed or scorched eyelashes, and patent necrotic material as well as foreign bodies) is performed within the first 24 hours. Surgical follow-up is on a daily basis as the majority of burns are not homogenous as far as the depth is concerned **(Fig. 5)**. In our hands for deep facial burns of IIB-III degree, dressings are favoured over the traditional open method, which desiccates lesions and may extend their depth.[18] We use extensively prefabricated ointment gauze (Bactigras, Tulle Gras), silver-containing dressings, temporary skin substitutes such as BIOBRAN, etc. without being biased to a specific product. A late Cochrane review of randomised controlled trials that evaluated the effects of topical treatment for facial burns summarizes that there is insufficient evidence to enable conclusions about the effects of particular topical products on facial burn healing.[18] In a few cases, an allograft has been used as a dressing without surgical debridement to provide protection and aid healing. Experience has shown this to be very helpful in burns of mixed depth where the use of allograft may even avoid the need of further surgery.[1]

Surgery is considered for the mixed and deep partial thickness (second degree) burns and for the full thickness (third degree) burns. Our guiding principle is that a clean fresh wound is preferable to an unexcised and infected necrosis as stated by Hunt, Purdue and Spicer yet in 1987. Lack of sufficient donor skin does not preclude facial excision. The wound is covered with homograft, synthetic skin substitute or ointment gauze dressing until autograft-

Figure 5. A. A 10-month-old boy with a 10% TBSA fresh mixed depth burn to face, left upper and lower extremity from explosion of propane-butane gas cooker – right after initial surgical cleansing; **B.** Debridement and thick split thickness skin graft at day 3 post burn – 20 days postop.

ed.[12] The variety and chronology of surgeries applied are presented in **Table 4**. Debridement is maximally sparing: necrotic tissues are removed tangentially, step by step with a scalpel and less often by dermatome, and on delicate locations by means of fine scissors or of hydrosurgery system. In a large proportion (89.2%, n=532) of patients, debridement and temporary dressings provided the mainstay of treatment. Enzymatic debridement has not been considered for facial burns with regard to ocular proximity and fragility. Thick unmeshed split-thickness and whenever available full-thickness skin grafts have been used for resurfacing based on the facial aesthetic units. The hospital doesn't have a tissue bank at its disposal and the utilization of allografts and xenografts has been very limited for lack of funds and logistics. In case of exposed bone, tendon, nerve or other important structures, vascularised flap coverage has been provided **(Figs 6, 7)**.

The mean number of operations within the first 10 days was 1.98, which is mainly on the account of debridement and within the first 5 days was almost entirely on the account of debridement. The mean number of surgeries per patient progressively decreases towards and after 10 days post-injury when the prevailing procedures are debridement and grafting or grafting of granulating wounds **(Table 4)**.

The tendency is clearly visible in **Figs 7-9**. The main amount of surgery is performed within the first 10 days. Just 7.7% of the operations are done afterwards. The principal policy is of early, serial, cautious excisions and occlu-

Figure 6. A. A 64-year-old female with a contact burn referred at day 7 post-injury; **B.** Debridement at day 9: penetrating defect of lower lip; reconstruction by local transposition and sliding flaps; **C.** Results at day 7 post-op.

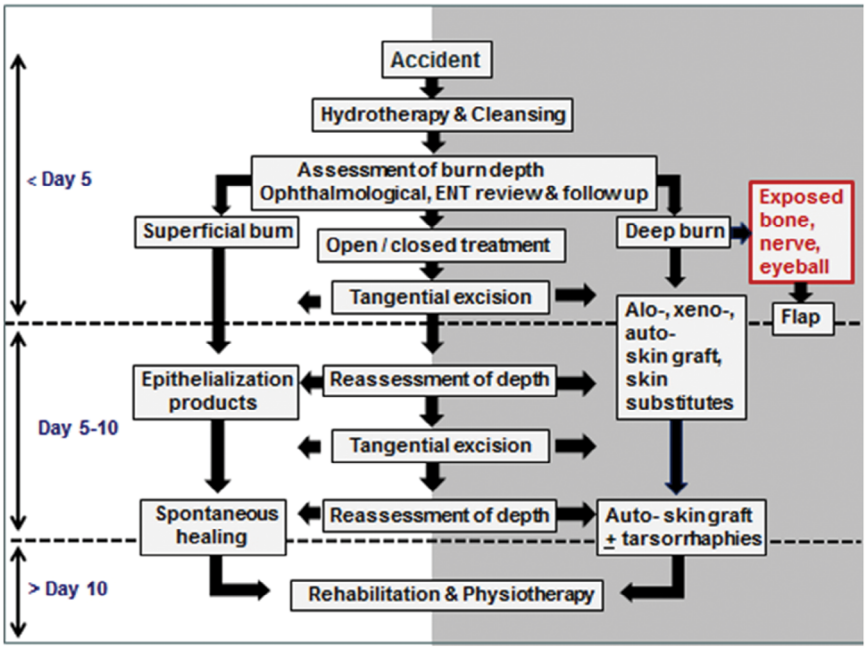

Figure 7. Treatment algorithm for acute facial burns.

sive dressings; local reassessment at regular intervals (1-2 days), further excisions or excisions and grafting of deeper lesions. In summary, our maximum surgical activity is concentrated during the initial two-thirds of the first two weeks, which time-wise sits midway between immediate definitive surgery up to 5 days post-burn and conservative abeyance till after 14 to 20 days.

We find that this moderately aggressive approach (mean number of surgeries 2.14±1.7 vs. average of 1.5–1.6 burn surgeries per patient after Li et al.[4]) of frequent, judicious interventions though labour-intensive is much more balanced as compared to the early aggressive excisions and immediate skin grafting before 5 days post-burn. It spares valuable facial tissues, maintains control of wound infection, and allows for rapid spontaneous epithelialisation from preserved skin appendages thus reducing the surface and severity of long-term sequelae. It is known that in the face, epithelial appendages may even lie in the subcutaneous fat beneath the dermis.[6]

We also consider postponing interventions after the end of the second week (according to the classic conservative approach which relies on the greater regenerative ability of the face), defended by many teams, as a pure waste of time. Delaying the surgical treatment of a deep dermal burn increases the risk of infection, of secondary deepening of burn and loss of underlying structures, such as cartilage and other structures, and causes inevitably additional fibrosis.[1,9,19]

Next to good regeneration, extreme vascularity of the face promotes exuberant inflammatory response and rapid development of granulation tissue. In other words, any area that is grafted late in the treatment plan will already have developed a dense collagen deposit, which predisposes to hypertrophic scarring and contracture development.[6,19] On the face, hypertrophic scars cause easily and frequently distortion and insufficiency of natural orifices with due consequences; deformities, asymmetries, and displacement of the eyebrows, of the hairline and other contours. Even

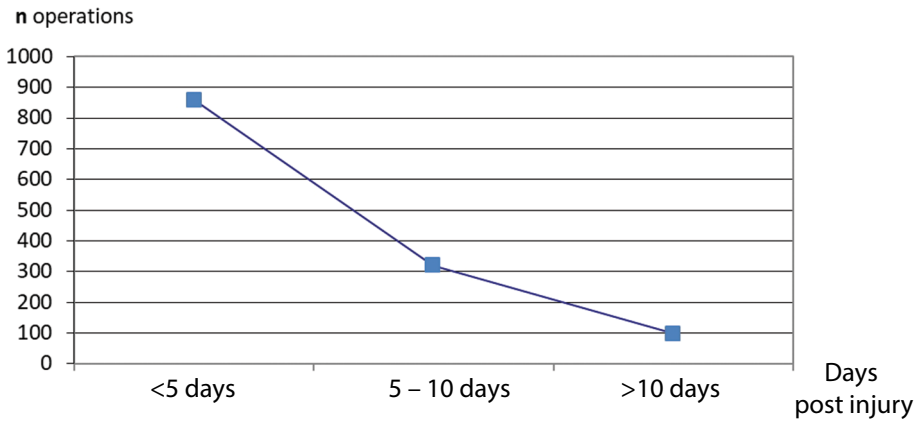

Figure 8. Acute surgical management of deep facial burns.

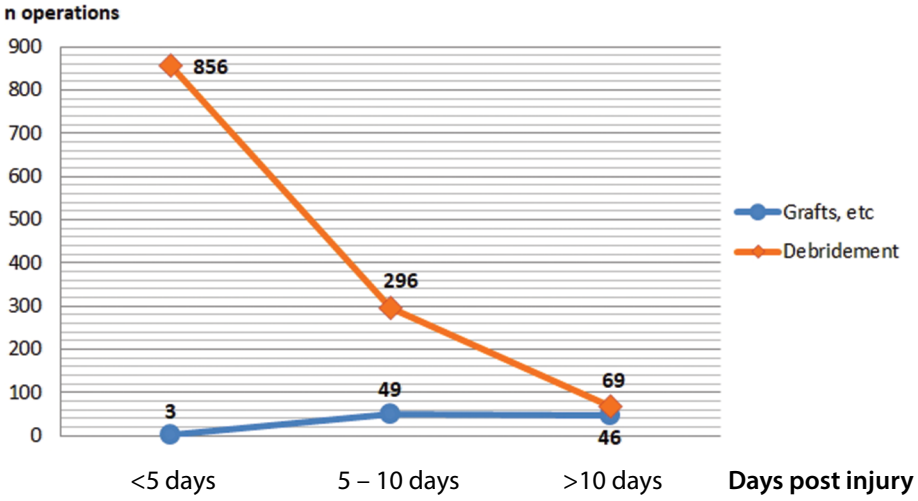

Figure 9. Procedures of acute surgical management of deep facial burns.

in the absence of permanent disfigurement hypertrophic scars alter appearance by causing folliculitis and persistent skin breakdown. At the best, after maturation they leave behind dyschromias, skin roughness, etc. which are marks unacceptable on the face.[1,20]

The timeliness of our preferred approach of augmenting the scope of surgery within the first 10 days post injury is supported by the study of Deitch et al. who have found that there is an increased risk of hypertrophic scarring if the burn wound heals later than 21 days after the injury or if the wound is grafted after 14 days. They also showed that burns that heal in 14 to 21 days have a 33% rate of hypertrophic scarring, whereas burns that heal after 21 days have a 78% rate of hypertrophic scarring.[21] Similar results are reported by Fraulin et al.[2]

As far as anatomical data is concerned, vulnerability and resistance of the skin is dependent on its blood supply, thickness, hairiness, and also by the age and sex of the individual. Skin thickness varies based on location, age and gender. It is the thinnest on the eyelids and post-auricular region (approximately 0.5 mm thick). Generally, female skin is thinner than male one in all anatomic locations. Children have a relatively thin skin. It thickens progressively until the fourth or fifth decade of life when thinning begins. Also, in very young and very old individuals, the skin is not only thinner but has diminished hair-follicle and other adnexae density. In a body area without hair growth – such as the forehead, or eyelids – a given anatomical depth of a burn may not heal, whereas it would heal sufficiently in a hairy body area such as the scalp or bearded portion of the face. We also know that certain skin types (Fitzpatrick types III and IV) and age groups (small children and male teenagers) seem to be predisposed to hypertrophic scarring, more so with dermal injury than with deeper burns. Unfortunately, no objective measurement exists that can predict whether a dermal burn will heal spontaneously, with or without sequelae.[1,12,19,22] All these circumstances make our approach more adequate, precise and perspective for the long term as compared to other methods. This is endorsed by the low incidence of late functional sequelae for our patients: 8.4±1.1% **(Table 5)**. In comparison to this, Hunt et al. report that in a much smaller series of 25 patients, operated on early for full skin thickness face burns, 25% later required either contracture release or skin resurfacing.[12] Other researchers cite much higher frequency of long-term functional sequelae following delayed or non-acute surgery.[2]

It is important to note that the application of compressive masks and/or facial splinting in our facility has been casuistic. We find its usage in everyday life inappropriate for the required long periods of time and its overall effects questionable, especially in children. Instead, the goal is successfully accomplished by persistent physical and occupational therapy.

With regard to outcomes our study confirmed previous findings that the periorbital and perioral zones are most susceptible to functional sequelae **(Table 5)**.[1,2,7,23] This happens because a deep burn in these areas, even small, tends to shrink with little resistance and is prone to contractures with due consequences.[6] These include abnormalities of the eyelids (ectropion, entropion, epicanthal folds, lagophthalmos, ptosis, corneal scarring), of the mouth (microstomia, oral incontinence, lip ectropion) and of the nose (nostril stenosis).[2] Though according to literature, perioral contractures due to delayed acute surgery or secondary healing could be managed successfully by continuous mouth splinting and rehabilitation, temporizing elsewhere on the face only degrades end results – both functionally and aesthetically. A conclusion supported by other teams without being fully objectified so far with statistically significant data.[1,12,15,24] And what is more, Fraulin et al. wrote that within the same patient, where individual variability in wound healing is minimized, skin grafted facial regions had a better scar rating result than non-grafted, spontaneously healing areas, which further supports our approach to deep facial burns.[2] A keystone of this approach

has been the team work – a successful management of a facial burn is not feasible without the daily joint efforts of plastic surgeons together with expert ENTs, ophthalmologists, anaesthesiologists, psychologists, maxillofacial and oral surgeons, physical and occupational therapists, skilful and caring nurses, etc.

Nonetheless, the findings of this research should be interpreted with caution due to the some limitations. As the largest burn center in southeast Bulgaria, this department receives severe burn patients referred from other hospitals. Therefore, some isolated deep facial burns of limited surface are occasionally managed within regional facilities and are not included in this study. As another limitation of this work, we consider the fact that despite the detailed literature search, we failed to find out recent relevant reports to parallel our findings with. The publications on the subject available over the past decade have focused on the psychological and social aspects of the trauma and its sequelae rather than on the surgical management.[5,8,11] The most recent data regarding deep facial burns are provided by Dlimi et al. (as early as in 2011), but their review is exclusively upon the third degree facial burns and any comparison of results would not be adequate.

CONCLUSIONS

In summary, this is the first study in our country presenting a comprehensive overview of the incidence and management of deep facial burns between 2005 and 2014.

Data reveal that facial burns are present in 24%, i.e. in 1 of every 4 burn patients; deep facial burns account for 14.62% of burn admissions and for 61.63 % of inpatient facial burns.

The groups that are especially at risk are toddlers of 1 to 3 to 3.5 years of age and males at the active age of 30-45 years.

Priority is given to the early, balanced surgical approach aimed at rapid wound closure with regard to the risk of secondary infections, the subsequent profound fibrosing and cicatrisation.

Up-to-date and adequate surgical treatment during the first 10 days of the acute period can significantly reduce initial damage as well as the frequency and severity of long term sequelae.

A multidisciplinary team approach is crucial for an ultimate outcome satisfying the patient and rewarding the medical professional.

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Conflict of Interest

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Неотложное лечение глубоких ожогов лица

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Резюме

Введение: Лечение глубоких ожогов представляет собой серьёзную проблему по многим причинам: значительное анатомическое и функциональное разнообразие сосредоточено на небольшом пространстве, нет единого лечения, появившиеся после лечения осложнения являются обычным явлением и могут быть серьёзными, а литература по этому вопросу содержит достаточно противоречивые мнения.

Цель: Проанализировать лечение глубоких ожогов лица.

Пациенты и методы: Был проведён ретроспективный обзор медицинских карт 569 больных с глубокими ожогами лица, госпитализированных в период с января 2005 г. по январь 2015 г. Были проведены анализ и сопоставление демографических данных, типа, глубины и размера ожогов, хронологии и типа хирургического лечения, продолжительности госпитализации, а также типа и частоты появившихся после лечения осложнений.

Результаты: В течение 10 лет были пролечены 596 пациентов с глубокими ожогами лица [216 (36.24%) женщин и 380 (63.76%) мужчин] в возрасте от 5 месяцев до 95 лет (в среднем 39.5 ± 26 лет). Приоритет был отдан скорейшему, тщательному, поэтапному подходу, направленному на сохранение здоровых тканей и раннее закрытие ран. Срок контроля – от 3 месяцев до 5 лет. Поздние функциональные осложнения выявлены у 50 (8.38%) пациентов. Среди них у 33 (5.54%) пациентов наблюдались последствия, связанные со зрением. Не было проявлений вторичной перфорации роговицы или окончательной потери зрения.

Заключение: Адекватное и своевременное лечение глубоких ожогов лица, основанное на раннем и разумном хирургическом подходе, может ограничить первоначальное повреждение и уменьшить возможность появления послеоперационных осложнений.

Ключевые слова

неотложная хирургия, глубокий ожог, лицо