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NON-THERMIC SKIN AFFECTIONS

Brož L., Kripner J.

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SUMMARY

The Centre for Burns can help by its means (material, technical and personal) in the treatment of burns with extensive and deep losses of the skin cover and other tissue structures and in some affections with a different etiology (non-thermic affections). Indicated for admission are, in particular, extensive exfoliative affections – Stevens-Johnson's syndrome (SJS), Lyell's syndrome – toxic epidermal necrolysis (TEN) and staphylococcal scalded skin syndrome (SSSS), deep skin and tissue affections associated with fulminant purpura (PF), possibly other affections (epidermolysis bullosa, posttraumatic avulsions etc.). The similarity with burn injuries with loss of the skin cover grade II is typical, in particular in exfoliative affections with a need for adequate fluid replacement in the acute stage and aseptic surgical treatment of the affected area from the onset of the disease. In conditions leading to full thickness skin loss, in addition to general treatment rapid plastic surgical interventions dominate.

ZUSAMMENFASSUNG

Die nicht-thermische Beschädigungen der Hautdeckung

Brož L., Kripner J.

Das Verbrennungszentrum kann mit seinen Mitteln (im material-technischen und personellen Sinne) und seinen Erfahrungen bei Lösung der ausgedehnten und tiefen Verluste der Hautdeckung und weiterer Gewebestrukturen und auch bei einigen Beschädigung anderer Etiologie (nicht-thermischen Beschädigungen) helfen. Zur Aufnahme werden vorwiegend die ausgedehnten exfoliativen Beschädigungen indiziert – das Steven's-Johnson's Syndrom (SJS), das Lyell's Syndrom – eine toxische ephidermale Nekrolise (TEN) und das Staphylococcal Scalded Skin Syndrome – staphylokokisches Syndrom der verbrühten Haut (SSSS), tiefe Haut- und Gewebebeschädigungen beim fulminanten Purpurausschlag (PF), bzw. weitere Beschädigungen (Epidermolysis bullosa, posttraumatische Avulsion usw.). Die Ähnlichkeit mit einer Verbrennungsverletzung mir Verlust der Hautdeckung vom II. Grad ist besonders charakteristisch für die exfoliativen Beschädigungen, wo die entsprechenden Flüssigkeitersätze in der akuten Phase und die eigene sterile chirurgische Behandlung der beschädigten Fläche vom Beginn der Krankheit notwendig sind. In Fällen, die zu dem Hautverlust in voller Dicke führen, ist neben der Ganzbehandlung die möglist schnelle plastisch-chirurgische Lösung von dominanter Bedeutung.

Key words: non-thermic affection of the skin cover, Stevens-Johnson sy, Lyell sy, staphylococcal scalded skin syndrome, meningococcal sepsis

The similarity of some non-thermic affections of the skin cover with burn injuries from the aspect of general and local treatment is an indication for treatment at a burn department. This applies to the following conditions:

- Stevens-Johnson's syndrome (SJS),
- Lyell's syndrome – toxic epidermal necrolysis (TEN),
- staphylococcal scalded skin syndrome (SSSS),
- extensive necrotic affections such as purpura fulminans (PF).

In the initial stages of exfoliative skin affections, it is often difficult to establish a diagnosis and to foresee the further development of the disease. Early diagnosis based on epidemiology, anamnestic data, the clinical picture and, in particular, histology is important for the initiation of aimed ATB therapy.

At the paediatric intensive care unit of the Prague Burn Center during the past three years five patients with non-thermic affections of the skin were hospitalized, i.e. 2 % of the total number of children admitted to the unit. The number comprised three cases with exfoliative affections of the skin (SJS, TEN and SSSS), and two children were admitted due to ischaemic skin and tissue changes after meningococcal sepsis.

Meningococcal sepsis is an acute inflammatory disease caused by Neisseria meningitidis. Thirteen serotypes are described, serotypes A, B, C, W, Y being pathogenic. It affects younger age groups: 46 % of the cases have been found in children under two years. Clinical manifestations include pharyngitis, febrile temperatures or hypothermia, manifestations of altered circulation and shock, skin lesions – petechiae, dermal

haemorrhages or necroses, fulminant purpura being typical. These skin changes are caused by manifestations of acute vasculitis with fibrin deposits in the arterioles and capillaries and the development of the procoagulation stage of a haemostatic disorder with microvascular multiorgan microthrombotization. These mechanisms affect all organs with an ample capillary network (lungs, CNS, kidneys, adrenals). Subsequently, secondary activation of fibrinolysis occurs with manifestations of haemorrhagic diathesis within the framework of disseminated intravascular coagulopathy, severe multiorgan dysfunction, manifestation of septic shock and possibly death.

Fig. 1. Necrotic changes on the forearm and gangrene of distal phalanges of the right hand.

Fig. 2. Condition after amputation of distal phalanges of the $2^{nd} - 5^{th}$ fingers of the right hand and after autotransplantation of the defect on the forearm.

Vascultitis may lead to extensive skin changes and subsequent loss of the skin cover. Secondary infections leading to extension of skin necroses and the development of gangrene are frequent. An inevitable therapeutic intervention in diseases that involve loss of the skin cover is necrectomy of the affected skin and dermoepidermal transplantation. In cases of deep affection and necrosis of tissues of the extremity, or in cases of a vascular necrosis of the bones in which secondary skeletal deformities develop, sometimes amputation of the affected part of the extremity is inevitable. This is why we consider collaboration of the intensive care specialist and a surgeon specialized in burns an essential prerequisite in the treatment of conditions involving damage and loss of the skin cover to prevent deeper penetration of necroses and their secondary infection in the initial stage of treatment.

The course of these diseases is demonstrated by two examples.

In the first case (Figs 1-3) a 5-month-old boy was involved, who in the first stage of treatment was subfebrile and apathic, but already in the course of the night he developed haemorrhagic manifestations on the skin and signs of haemorrhage into the GIT. The emergency medical service referred the child to a paediatric hospital department where he developed the following symptoms: progressive impairment of consciousness, extensive skin suffusions with a maximum on the extremities and cardiopulmonary insufficiency. Without ensuring i.v. access and adequate ventilation and circulation support, the patient was transferred to the intensive care and resuscitation department of a higher grade paediatric department. There he was admitted in a moribund condition, GCS3, with severe cardiac decompensation and with anuria, therefore comprehensive resuscitation care incl. pharmacological resuscitation of the circulation was started. With regard to considered possibilities of continuous elimination methods, the child was transfered to the inten-

3a)

3b)

Fig. 3. Necrotic areas on the right lower extremity (a), condition after autotransplantation (b).

Fig. 4. Deep necroses on the lower and upper extremities (situation on admission).

Fig. 5. Focal necroses on the gluteal region.

Fig. 6. Healing defects on gluteal region – after autotransplantation.

sive and resuscitation care unit of the Clinic for Children and Adolescents in Prague. On admission multiple suffusions in the whole body, necrotic extremities and extensive perigluteal ischaemic changes developed. The patient was hospitalized for 15 days, incl. six days on artificial pulmonary ventilation; the affected areas were treated in collaboration with the Burn Center. After stabilization of his condition, the boy was transferred for treatment of the skin lesions to the Burn Center, Faculty Hospital Prague 10, with the diagnosis of local skin defects: 17 % grade IIa-b and 8 % grade III. There the patient was subjected to several surgical operations: necrectomy, allotransplantation, autotransplantation and amputation of the fingers. The patient was at the Burn Center for 29 days. The defects, incl. those grafted, healed completely, and the child was transferred to the paediatric department.

The second patient (Figs 4-7) was a seven-year-old girl symptomatically treated as an outpatient suffering from myalgia, arthralgia, fever and haemorrhagic skin manifestations. After three days she was admitted to the paediatric department where her general condition deteriorated: her consciousness was impaired, intubation and artificial pulmonary ventilation was necessary, and she developed septic shock. Artificial pulmonary ventilation was introduced for ten days, pharmacological support of the circulation along with continuous venovenous haemodiafiltration until renal functions improved and the myoglobin level declined. On the second day in hospital she developed v.s. compartment syndrome of the right leg, which was confirmed by an

7a) 7b)

Fig. 7a, b. Patient with healed areas.

assessment of the tissue pressure. Fasciotomy on the inner and outer side of the leg was performed and the posterior peroneal space was opened. For treatment of ischaemic skin lesions, the patient was transferred to the Burn Center, Faculty Hospital Prague 10, with an affection of 20 % (15 % gr. III, 5 % gr. IIb) in the area of the upper and lower extremities and in the gluteal region. Surgical procedures: necrectomy, xenotransplantation, autotransplantation, removal of the necrotic left patella, reposition flap in the area of the left knee, tubular flap on the right upper extremity. The total period in hospital was 24 weeks, on discharge restricted mobility of the elbows, bilateral paresis of the nn. peronei, on the right lower extremity partial loss and fibrosis of muscles of the right leg.

The approach to the treatment of children with exfoliative affections is similar to that of patients with burns with grade II skin affections. In addition to discontinuing all medication apart from essential drugs in SJS and TEN and antistaphylococcal ATB, therapy in a child with suspected SSSS comprised the following basic therapeutic protocol:

– ventilation and oxygen therapy,
– infusion therapy (replacement of fluids by crystalloids and colloids),
– analgosedation,
– antiulcerative treatment,
– heparinization,
– nutritional support (combination of enteral and parenteral nutrition),
– monitoring of the clinical condition and systematic laboratory control,
– evaluation of bacterialogical findings and ATB therapy,
– nursing in the air-fluidired bed,
– local therapy of skin lesions and, in collaboration with the appropriate specialists, treatment of mucosal lesions.

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ANNOUNCEMENT

The 8th Congress of the Polish Society of Plastic, Reconstructive and Aesthetic Surgery will be held in Łódź, October 11 through 13, 2001.

For further information please contact the Department of Plastic Surgery Medical Academy of Łódź, Kopcińskiego Str. 22, 90-153 Łódź, Poland. Tel./fax: 0-48-42-678-66-62

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INHALATION INJURY

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SUMMARY

Inhalation injury is an acute insult of the respiratory tract, caused by steam or toxic inhalants. A suspicion of inhalation trauma (closed-space exposure, facial burns, etc.) is an indication for an immediate endotracheal intubation.

Precise objective case history is also very important point for making the diagnosis. Up-to-date methods of examination in case suspicion of inhalation injury are described in our contribution.

The main therapeutical points are mentioned as well.

ZUSAMMENFASSUNG

Das Inhalationstrauma

Kaloudová Y., Brychta P., Říhová H., Suchánek I., Hrubá J., Seidlová D., Hrazdírová A., Kubálek V.

Die Inhalationsverletzung ist eine akute Beschädigung des Respirationstraktes, die durch Dampf oder toxische Inhalation verursacht wird. Der Verdacht auf das akute Inhalationstrauma (Bedrohung in einem verschlossenen Raum, Gesichtsverbrennungen usw.) stellt eine Indikation für die sofortige Endotrachealeintubation dar.

Für die richtige Diagnose ist die präzise und objektive Anamnese das wichtigste.

Im unseren Beitrag werden die Untersuchungsmethoden der Fälle mit Verdacht auf eine Inhalationsverletzung beschrieben.

Es wird auch das Haupttherapeutischeverfahren erwähnt.

Key words: inhalation injury, lung oedema, respiratory insufficiency in burns, bronchoscopy in burns

Inhalation trauma may be defined as an acute damage of the respiratory tract caused by the inhalation of combustion products or steam, as a rule in a closed space.

PATHOGENESIS

It is a combination of damage to the epithelium of the airways by heat or chemicals, or it is a systemic intoxication by the products of combustion.

Combustion products comprise a mixture of not air, solid particles dispersed in the air (with an irritating and cytotoxic effect), aerosols of irritating and cytotoxic fluids and toxic gases with a systemic action (e.g. CO).

Solid particles larger than 10 micrometres are retained in the nose and nasopharynx, particles 3–10 micrometers in the tracheobronchial tree. Particles of 1–2 micrometers pass into the alveoli. Gases readily soluble in water react chemically in the upper airways, less hydrosoluble gases in the lower airways. Gases poorly soluble in water penetrate through the alveolocapillary barrier and their toxic effects are systemic.

Direct necrosis of the epithelial cells, impaired function of the mucociliary apparatus, an acute inflammatory reaction with stimulation and passage of pulmonary macrophages and activation of neutrophils at the site of the insult occur. Liberation of oxygen radicals and tissue proteases, cytokines and smooth muscle constrictors (thromboxane A2, C3A, C5A) occurs and, secondarily increasing ischaemia in the already damaged airways (development of oedema of the wall, impaired microcirculation). The resistence of the wall of the airways and of the pulmonary vessels increases; the pulmonary compliance by formation of the interstitial pulmonary oedema declines. Oedema of the wall of the lower airways

occurs as well as formation of plugs in the airways made up of necrotic epithelial cells, mucus and blood cells. Thus, partial or total obstruction of the lower airways develops. Distally from the obstruction atelectasis may develop or conversly excessive dilation of the pulmonary alveoli. This may result in respiratory failure and hypoxaemia.

CLINICAL PICTURE

After exposure to products of combustion, reaction occurs at three levels:

1. **Supraglottic region:** The latter responds by the rapid development of oedema (within several minutes to three days). Supraglottic damage develops in some cases independently, more frequently after short-term exposure to combustion products of higher temperature, in particular when at the time of the injury reflex closure of the glottis occurs.

Symptoms: hoarseness, tendency to cough, respiratory insufficiency, imminent laryngospasm (Fig. 1).

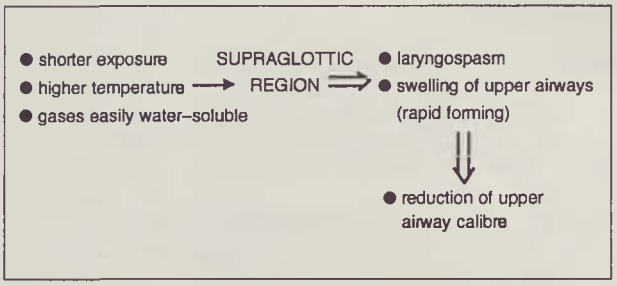

Fig. 1. Supraglottic region – pathophysiology; respiratory insuficiency 5th hour - 3rd day.

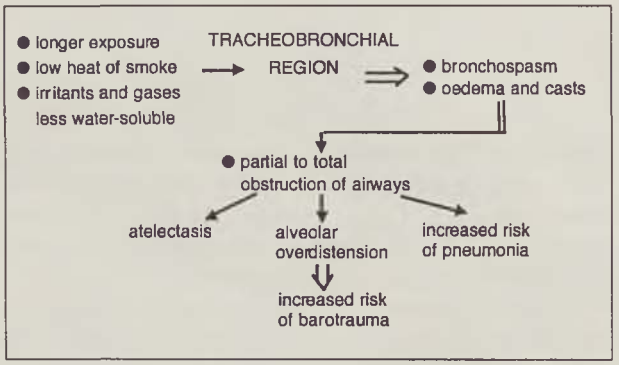

Fig. 2. Tracheobronchial region – pathophysiology; respiratory insuficiency 3rd - 7th day postburn.

2. **Tracheobronchial damage:** Slower development of oedema. Greater risk of development of ARDS and pneumonia, imminent bronchospasm.

Symptoms: urge to cough, bronchorrhoea, sings of respiratory insufficiency usually appear the third to fifth day (Fig. 2).

3. **Intoxication by combustion products** (most frequently carbon monoxide): Carbon monoxid is linked very actively to haemoglobin and thus takes up the binding sites for oxygen. The transport capacity of haemoglobin for oxygen is impaired even in the case of good partial oxygen pressure in arterial blood and this results in hypoxia.

In case of explosion the situation is complicated by the effects of the pressure wave – barotrauma may develop with rupture of some part of the pulmonary tree, in particular the pulmonary alveoli. Costal fractures may also occur or the development of pneumothorax and haemothorax.

DIAGNOSIS

A wide range of damage at different levels of the airways, possible intoxication and development of respiratory failure within the range of 5 hours to 7 days after injury makes the assessment of the diagnosis and therapy of inhalation injury rather complicated.

Accurate objective case – history is very important (mechanism of injury, exposure to combustion products in closed space, type of burning material).

Up-to-date methods of examination in case of suspicion of inhalation injury are: auscultation, direct laryngoskopy, X-ray of the lungs (usually 3–5 days normal finding), repeated fiberoptic bronchoscopy, laboratory screening including level of carbonyl haemoglobin and examination of blood gases – pulmonary shunts (Tab. 1).

Tab. 1. Bronchoscopic findings in inhalation injury.

Bronchoscopic findings:
• soot
• hyperaemia, bronchorrhoea
• petechiae
• pink-grey areas of necrosis
• flat, sometimes concave rigid areas of white totally necrotic lining

secondary infection – mucopurulent secretion

Toxicological examination, in certain cases even the radioisotope examination of the lungs. Radioisotope examination is useful but in many departments not yet available.

Functional examination of the lungs is usually done.

Cytokine levels and cytological examination of broncho-alveolar lavage are examined at present more often experimentally as an indicator of risk (Figs 3, 4).

TREATMENT

Treatment of patients with inhalation injuries involves supportive treatment apart from the specific treatment of some intoxications.

In the majority of cases, inhalation trauma is associated with extensive dermal burns.

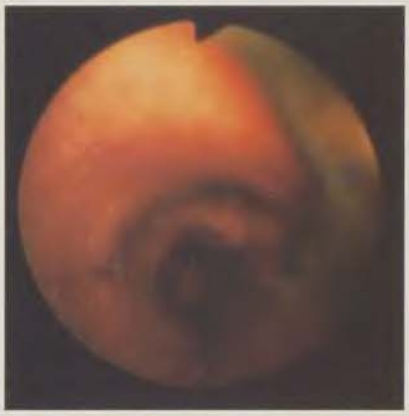

Fig. 3. The bronchoscopy of a 51-year-old male third day after inhalation of products of combustion in a closed space.

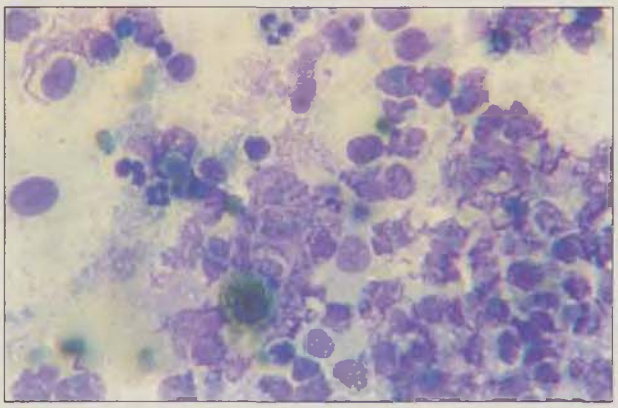

Fig. 4. The cytological picture shows a markedly increased quantities of polynuclears. The polynuclears are degenerated, with gramentose nuclei, macrophages are also present, together with desintegrated and structurally altered cylindrical epithelia. (MGG, 40x)

Immediately after injury and on admission to a specialised department, basic measures are essential to take:

1. **Ensuring free airways** – prompt endotracheal intubation:

In case of deep skin burns on the neck and trunk, releasing incisions must be made as soon as possible.

2. **Ensuring adequate ventilation and oxygenation of peripheral tissues:** moistened oxygen, artificial pulmonary ventilation in case of respiratory insufficiency.

Sings of respiratory insufficiency:

– respiratory rate > 30/min,
– hypoxaemia: $PaO_2 < 8$ kPa, $SpO_2 < 80$ %,
– hypercapnia: $PaCO_2 > 6.5$ kPa,
– vital capacity < 4 ml/kg body weight,
– PaO_2/FiO_2 ratio < 200.

Ventilation regimen strictly individual as required. At present, in the majority of departments tolerance of permissive hypercapnia is preferred or even permissive hypoxaemia, provided the circulatory stability of the patient is preserved. Ventilation parameters should be close to the following values:

– peak inspiratory pressure: less than 35 cm H_2O,
– PEEP: 3–5 cm H_2O,
– inspired oxygen fraction: 0.4,
– tidal volume: 5 ml/kg body weight.

For the vitality of peripheral tissues in cases of circulatory stability the following are sufficient: $SaO_2 > 0.9$, pH > 7.21.

3. **The treatment of shock,** involving haemodynamic stabilization of the patient (Koller, 1992), it means adequate intravenous volume resuscitation as a prevention of hypovolaemic shock. In inhalation trauma, during the first 24 hours the need of crystalloids is 40–75 % greater than in patients with dermal burns only.

4. **Careful analgosedation** is essential.

5. After intoxication with combustion products: **specific antidotes** (if known) and oxygen therapy.

6. **Promotion of mobilization and evacuation of secretions and detritus** from the tracheobronchial tree and lungs (airway suction and lavage, humidification, chest physiotherapy, regular positioning of the patient, mucolytics, bronchodilatating substances).

7. **Antioedematous treatment** (elevation of head and trunk on the bed, escinum etc.).

8. **Other problems of pharmacotherapy:** In many departments a major single dose of corticosteroids is administered immediately after injury to mitigate the cascade of mediators of an acute inflammatory reaction and to reduce the level of circulating mediators. Substitution of surfactant should be considered. Nonsteroidal antiphlogistics are also administered even at the present time to patients with inhalation injuries.

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OUR EXPERIENCE WITH TRANSCONJUNCTIVAL, LASER-ASSISTED LOWER BLEPHAROPLASTY

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SUMMARY

Introduction: Transconjunctival lower blepharoplasty has become more popular in the last decade with the introduction of the CO_2 laser as a cutting and resurfacing tool. The authors have 4 years experience with this procedure.

Method: Patient selection, preoperative evaluation and the surgical technique are described in detail. The operation itself is divided into two parts:

1. Laser-assisted transconjunctival exposure and resection of prolapsed fat pads,
2. Laser resurfacing of the lower eyelid skin.

Results: 36 patients underwent transconjunctival, laser-assisted lower blepharoplasty in the author's department in the period 1997–2000. Transitional hyperpigmentations were treated in 4 patients (11,1 %). No severe complications were noted. All patients except one were satisfied or very satisfied.

Discussion: Transconjunctival and transcutaneous lower blepharoplasties are compared:

1. Transcutaneous blepharoplasty is simpler to perform, some skin resection is possible and no laser device is needed.
2. The danger of ectropion is relatively high in transcutaneous blepharoplasty, and the scar may not be fully acceptable for the patient.
3. Aged and sun-damaged skin is not influenced with the transcutaneous approach except for some improvement of rhytides.
4. Transconjunctival lower blepharoplasty is a relatively safe procedure with very good cosmetic results avoiding an incision and scar of the lower eyelid.
5. There is much less risk of ectropion and other complications in transconjunctival blepharoplasty than in the transcutaneous one.
6. An unpleasant side effect in transconjunctival blepharoplasty is erythema of the lower eyelids persisting for about 2-3 months.

Conclusion: Laser-assisted transconjunctival lower blepharoplasty requires a shorter operating time and causes less bleeding and less patient discomfort. This is full-value alternative to the conventional transcutaneous lower blepharoplasty.

ZUSAMMENFASSUNG

Unsere Erfahrungen mit der transkonjunktivalen unteren, durch Laser assistierten Blepharoplastik

Brychta P., Franců M., Koupil J., Ludikovský K.

Einleitung: Die transkonjunktivale, untere Blepharoplastik ist in der letzten Dekade nach der Einführung von CO_2 Laser zur Inzision und Resurfacing besonders beliebt worden. Die Autoren haben vierjährige Erfahrungen mit diesem Verfahren.

Metode: Die ausfürliche Beschreibung der Auswahl von Patienten, präoperative Untersuchung, und die Technik der Operation werden beschrieben. Die Operation besteht aus zwei Schritten:

1. Die transkonjunktivale Präparation und Resektion der prolabierten Fettpolster mit der Anwendung des Lasers.
2. Die Laser Resurfacing der Haut der unteren Augenlider.

Ergebnisse: In den Jahren 1997–2000 wurde auf der Abteilung der Autoren die untere, transkonjunktivale durch Laser assistierte Blepharoplastik bei 36 Patienten durchgeführt. Vorübergehende Hyperpigmentationen wurden bei 4 Patienten (11,1 %) behandelt. Schwerwiegende Komplikationen wurden nicht verzeichnet. Ausser einer Patientin waren alle übrigen mit dem Ergebnis zufrieden oder sehr zufrieden.

Diskussion: Der Vergleich der transkonjunktivalen und der transkutanen Blepharoplastik:

1. Die Durchführung der transkutanen Blepharoplastik ist einfacher, sie ermöglicht eine Resektion der Haut und benötigt kein Laser.
2. Die Gefahr des Ektropiums ist ziemlich gross bei der transkutanen Blepharoplastik und die Narbe muss für den Patienten nicht akzeptabel sein.
3. Ausser den altersbedingten Runzeln ist die ältrende Haut bei dem transkutanen Verfahren nicht beeinflust.
4. Die transkonjunktivale untere Blepharoplastik ist eine relativ verlässliche Methode mit den sehr guten kosmetischen Ergebnissen. Die Methode verlangt keine Inzisionen und es bestehen keine Narben des unteren Augenlides.

5. Bei der transkonjunktivalen Blepharoplastik ist eine geringere Gefahr einer Ektropiums und anderer Komplikationen im Vergleich zu der transkutanen Blepharoplastik.

6. Eine unerwünschte Nebenwirkung bei der transkonjunktivalen Blepharoplastik ist eine Rötung der unteren Augenlider, die zwei bis drei Monate dauert.

Zusammenfassung: Die transkonjunktivale, untere, durch Laser assistiert Blepharoplastik verlangt eine kürzere Operationzeit, ist mit einer geringeren Blutung verbunden und wird von den Patienten besser vertragen. Es geht um eine vollwertige Alternative zu der klassischen unteren Blepharoplastik.

Key words: transconjunctival lower blepharoplasty, CO_2 laser technique, festoon reduction, lower eyelid skin resurfacing

The eyelids and periorbital region are one of the most important aesthetic parts of the face, significantly affected by the ageing process. That is the reason why both upper and lower blepharoplastics are among the most frequently indicated cosmetic operations. Resection of orbital fat that has prolapsed into the eyelids to produce unflattering bags and rejuvenation of the eyelid skin dramatically improve the appearance in the vast majority of patients. In this article we would like to discuss the lower transconjunctival blepharoplasty and compare it with the transcutaneous procedure.

Classically, the surgical approach to the lower lids has been by a transcutaneous incision that extends from the medial canthus across the lower lid in a transverse subciliary location to end laterally to the orbital rim in a laugh line called the crow's foot (Fig. 1). Usually, the anterior lamella consisting of skin and orbicularis oculi muscle is „tightened" by resecting a horizontal wedge of skin and muscle.

After opening the orbital septum the prolapsed fat is resected to an appropriate extent, and suture of septum and the tightened skin are performed to close the wound.

The transconjunctival approach consists of opening the lower conjunctiva and the capsulopalpebral fascia behind the lower tarsal plate with subsequent removal of prolapsed fat through this incision. The cut and preparation can either be made conventionally using a scalpel or alternatively using the CO_2 laser. The same laser is used subsequently for tightening the skin of the eyelid through its resurfacing.

Transconjunctival lower blepharoplasty is usually credited to Bourquet in 1924 (1). Tessier rediscovered and popularised this method in the 50's. Its main drawback – leaving the abundant skin of the eyelid – was eliminated by using CO_2 laser resurfacing. The laser approach was first described by Baker in 1984 (2, 3). Recently, it has become very popular all over the world (4–9).

PATIENTS, METHODS

Patient selection and preoperative evaluation

Middle-aged patients with developed festoons conducted with some aspects of sun-damaged and aged skin such as rhytides, dyschromia, solar keratosis, elastosis, pseudolaxity and/or multiple benign tumours (syringomas, papilomas, seborrhoic keratoses, milia or xantelasma) are good candidates for CO_2 laser-assisted lower blepharoplasty. An upper age limit does not exist.

There is a group of patients 20–30 years old who have congenital festoons of the lower eyelid without any changes on their skin. The transconjunctival extraction of prolapsed fat without skin resurfacing brings consistently outstanding cosmetic results in these cases.

Another typical group of patients are those with hypofunction of the thyroid gland. The transconjunctival removal of hyperplastic orbital fat brings a rejuvenation of their appearance. Resurfacing in these patients may or may not be necessary. Of course, the appropriate treatment of thyroidal dysfunction must be ensured.

Although we have only female patients in our group, the lower transconjunctival blepharoplasty is one of the most popular cosmetic surgeries in men. According to the American Society of Aesthetic Plastic Surgery Survey for 1999 among the 11 % of male patients having cosmetic procedures in the USA, blepharoplasty is the second most common (behind liposuction) with a 15% increase between 1997 and 1999.

Contraindicated for the operation are psychologically troubled patients with unrealistic expectation and abnormal self-imaging.

Preoperatively, the amount of the prolapsed fat is examined when the patient bows her/his head and looks up to the physician.

The laxity of the lower eyelid is a very important factor and is examined using the snap and distraction tests.

The snap test consists of grasping and retracting the lower eyelid with subsequent releasing. The time to revert to the globe for the eyelid should not take more than 1 second.

The distraction test consists of pulling the lower eyelid away from the globe. The test is positive if the distance from the globe without pain is more than 7 mm.

OPERATING TECHNIQUE

The operation itself is divided into two parts:

1. **Laser-assisted transconjunctival exposure and resection of prolapsed fat pads**

After preoperative sedation, topical anaesthetic drops (Novesin 0,4%) are placed into the inferior culde-sac. A 1–2 cc bolus of 0,5% Marcaine with the addition of Adrenaline 1:200 000 is injected. The infiltration is aimed from the lateral part to the medial canthus of the lower lid superficially and then in the depth from the palpebral sulc to the palpebral rim. The anaesthetic is then massaged into the retroseptal tissues. Generally an additional injection of anaesthetic directly into the conjunctiva is performed (Fig. 2). The upper lashes are everted to avoid a corneal abrasion while placing a laser-safe plate in the inferior cul-de-sac to protect the globe. An assistant everts the lower lid by rolling the lid over the prolapsed fat to create a maximum bulge of the inferior orbital fat pads into the subconjunctival space. With the CO_2 laser set at 7 watts continuous wave or superpulsed delivery, an incision is made through the conjunctiva and capsulopalpebral fascia at the point of the greatest bulge 3–5 mm beneath the tarsal plate in a transverse fashion (Fig. 3). Medially, the lacrimal puncum must not be reached. Care should be taken to avoid the inferior vascular plexus in the inferior fornix. The conjunctiva and lower lid retractors are completely transected in two to four passes. Gentle pressure on the plate enhances the prolapse of orbital fat from the na-

Fig. 1. Skin incision in conventional transcutaneous blepharoplasty.

Fig. 2. Infiltration of anaesthesia into the conjunctiva.

Fig. 3. Exposure of the prolapsed fat pads and laser incision of conjunctiva and capsulopalpebral fascia.

Fig. 4. Gentle pressure on the globe facilitates the fat protrusion.

Fig. 5. Laser cut of prolapsed fat (CO_2 laser set at 7 wats).

Fig. 6. Smaller cosmetic unit of the lower eyelids marked prior to resurfacing.

Fig. 7. Larger cosmetic unit of the lower eyelid.

Fig. 8. Laser resurfacing of the lower eyelid including „feathering".

A | B | D
C

Fig. 9. Patient before and 14 days after lower transconjunctival blepharoplasty + upper blepharoplasty.

A | B

Fig. 10. Patient before and 3 weeks after transconjunctival, laser-assisted lower blepharoplasty.

A | B

Fig. 11. Patient before and 2 weeks after transconjunctival, laser-assisted lower blepharoplasty.

sal, middle and lateral fat pads (Fig. 4). The fat that presents anteriorly to the orbital rim is lifted (over a laser-safe Desmarres lid retractor) by small-toothed forceps. By using the laser in a slightly defocused mode, the fat is cut with maximum hemostasis (Fig. 5). Large vessels are avoided by direct visualisation. Electrocautery is used if necessary. The wound is not sutured, topical antibiotic ointment O-Framykoin™ (a mixture of Bacitracine and Neomycine) is placed into the inferior culde-sac. The plate is removed, and the lower lid is repositioned superiorly to check for residual prolapsed orbital fat. This upward stretch restores normal anatomical relationships.

2. Laser resurfacing of the lower eyelid skin

The lower eyelid is divided into two zones roughly demarcated by the inferior orbital rim. The superior zone includes the thin eyelid skin with its attendant thin subcuticular tissue between the reticular dermis and the orbicularis muscle. This

treatment zone extends from the infraciliary lid to the area overlying the inferior orbital rim (Fig. 6). Resurfacing of this portion of the eyelid is done with one to two passes at conservative CO_2 laser settings of about 4 watts. Care is taken to avoid overly aggresive treatment, which has the potential to cause vertical cicatricial changes in the anterior lamella of the skin and orbicularis muscle, thereby producing a iatrogenic ectropion. Between passes the vaporised tissue is hydrated with a saline-soaked gauze and carefully wiped clean.

The second treatment zone of the lower eyelid extends from the orbital rim caudally to the area of the junction of the lid skin with the facial skin overlying the malar eminence. Festoons lie predominantly within this zone. This zone is treated vigorously with 2–3 nonoverlapping passes with the laser at moderately aggresive settings. The end point is reaching the reticular dermis. Depending on the development of crow's feet, a smaller or greater cosmetic unit can be resurfaced (Fig. 7).

The margins of the resurfaced area are treated as needed by „feathering" which blends texture and colour variations (Fig. 8).

Postoperative care

Postoperative care includes elevation of the head of the bed, ice packs for the first 48 hours, topical antibiotic drops and/or antibiotic ointment. The patient should be examined on the first postoperative day to ensure that there is no decreased visual acuity, retro-orbital hemorrhage, or etropion.

Topical occlusive wound dressings such as hydrogels can be applied alternatively for 3–5 days. It seems that their use brings even faster and more comfortable healing of the resurfaced skin.

RESULTS

In the period of 1997–2000 sixty-four blepharoplasties in total were performed at our department. Thirty-six patients had the lower transconjunctival blepharoplasty alone or in combination with other procedures (Tab. 1). Within this group of patients we treated transitory hyperpigmentation in 4 patients (11,1 %). Maximum duration of the hyperpigmentation was 7 months. We had no severe complication, such as persisting hyper- or hypopigmentation, ectropion, scarring or retrobulbar haematoma. Except for one patient, all the others were satisfied (Fig. 9a–d; 10a, b; 11a, b).

DISCUSSION

A thorough understanding of periorbital anatomy is necessary prior to attempting transconjunctival laser-assisted blepharoplasty. It is additionally necessary to be familiar with the use and effect of the CO_2 laser.

There have been frequently discussed advantages and disadvantages of both transcutaneous and transconjunctival lower blepharoplasties. The following aspects should be taken into account:

1. Transcutaneous blepharoplasty is simpler to perform, some skin resection is possible and no laser device is needed.
2. The danger of ectropion is relatively high in transcutaneous blepharoplasty, and the scar may not be fully acceptable for the patient.
3. Aged and sun-damaged skin is not influenced with the transcutaneous approach except for some improvement or rhytides.
4. Transconjunctival lower blepharoplasty is a relatively safe procedure with very good cosmetic results avoiding an incision and scar of the lower eyelid.
5. There is much less risk of ectropion and other complications in transconjunctival blepharoplasty than in the transcutaneous one.
6. An unpleasant side effect in transconjunctival blepharoplasty is erythema of the lower eyelids persisting for about 2–3 months.

It has been shown that there is actually no reason to remove the eyelid skin, but rather to reshape the bed supporting it. This is best achieved by the removal of prolapsing fat pads without the opening of the orbital septum.

Tab. 1. Group of patients with blepharoplasties (1997–2000)

Operation/Combined with	Single operation	Full face laser resurfacing	Facelifting	Endoscopic brow lifting	Total
Upper blepharoplasty	14 (B1)	2	3	0	19
Lower transcon. blepharoplasty	15 (B4, C1)	7 (B2)	0	1	23
Lower transcut. blepharoplasty	0	0	0	0	0
Lower transcon.+ upper blepharoplasty	11 (B1)	0	2 (B1, C1)	0	13
Lower transcut. + upper blepharoplasty	9	0	0	0	9
Total	**49**	**9**	**5**	**1**	**64**

B – indicates the number of patients in which Botox was injected as an addition
C – indicates the number of patients in which collagen was injected as an addition

Although erythema of the treated area is a not very pleasant side effect of the resurfacing, it is unavoidable. In the process of healing the skin obtains a better quality. New collagen fibres are synthetized, and the skin becomes more firm and elastic. In the newly formed epidermis the pigmentation is more regular and homogenous. Erythema never persists. In some cases in which sun protection was not sufficient, hyperpigmentation arises in the 3^{rd}–4^{th} weeks after surgery. Fortunately, it is transitory, as well. It usually disappears 8–10 weeks postoperatively. There are powerful topical agents which are able to promote the elimination of the hyperpigmentation. Hydrochinon, kojic acid, isotretinoin and glycolic acid are most frequently used.

Both erythema and hyperpigmentation are much less frequent if the Er:YAG laser is used for skin resurfacing during the lower blepharoplasty. Unfortunately, the reduction of rhytides is also much less with this laser. A very advantageous device is therefore the Derma K™, in which both wavelengths are present and one can mix the CO_2 and Er:YAG laser beams as needed.

It must be mentioned that the clinical outcome of lower blepharoplasty can be greatly supported through Botox injections for paralysing the lateral portion of the orbicularis muscle and eliminating the crow's feet of the patient (dynamic rhytides) and through correction of static rhytides by collagen injections. The interval between the operation and these secondary procedures should be at least 3 months.

CONCLUSION

The advantages of the laser-assisted transconjunctival lower blepharoplasty over the transcutaneous one include a shorter operating time, less bleeding and less patient discomfort. As the CO_2 laser has both incisional and resurfacing capabilities, it increases the number of options available to patients choosing aesthetic plastic surgery and thereby enhances the overall scope of a physician's practice. The results of both methods are at least equivalent.

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SIGNIFICANT DIFFERENCES IN THE INCIDENCE OF OROFACIAL CLEFTS IN FIFTY-TWO CZECH DISTRICTS BETWEEN 1983 AND 1997

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SUMMARY

Between 1983 and 1997 a total of 2029 children with CL/P (cleft lip, cleft lip and palate or cleft palate), who were born in the Bohemian districts of the Czech Republic and who underwent surgery and treatment at the Clinic of Plastic Surgery in Prague, were analysed. One possibility for decreasing the risk of delivery of a child with CL/P is to decrease or eliminate its prenatal exposure to embryotoxic factors. Detection of the embryotoxic factors acting at the individual level (e.g. elevated temperature, drug consumption, x-ray examination or infection) is easier than the detection of embryotoxic factors operating at the population level (e.g. water contamination, air pollution). When searching for the latter factors, we first have to reveal regional differences in CL/P incidence. The aim of the present paper was to determine significant differences in the mean incidence of newborns with CL/P in Bohemian districts during a 15 year period. The correlation between the incidence of CL/P and the birth rate in the different districts was also examined.

The mean incidence of CL/P in all Bohemian districts was 1.86 per 1000 newborns (1.86/1000). Districts were divided into three groups, according to significant differences in the incidence of CL/P using a confidence interval. The lowest mean incidence of CL/P was detected in the Svitavy district (0.72/1000) and Louny (1.05/1000). The highest mean incidence was found in the Beroun district (2.86/1000). Besides Beroun, a high mean incidence of CL/P (more than 1.96/1000) was also found in Klatovy, Mělník, Tábor, Kolín, Semily, Česká Lípa, Pardubice, Teplice, Český Krumlov, Sokolov, Chomutov, Praha-západ, Jičín, Rakovník, Kladno, Prachatice, Rokycany, Tachov, Liberec , Pelhřimov. Paradoxically, the districts with a higher or lower birth rate exhibited a lower (1.62/1000) or higher (1.92/1000) incidence of CL/P, respectively.

Future studies should elucidate whether the significant regional differences in the incidence of CL/P can be related to differing exposure of pregnant women to harmful environmental embryotoxic factors.

ZUSAMMENFASSUNG

Die bedeutenden Unterschiede in der Inzidention der orofazialen Mundspalten in 52 tschechischen Bezirken (1983–1997)

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In den Jahren 1983–1997 wurden in den tschechischen Bezirken insgesamt 2029 Kinder mit der orofazialen Mundspalte (CL/P) geboren. Diese Kinder wurden an der Klinik für plastische Chirurgie in Prag operiert. Das Risiko des Geburts eines Kindes mit der orofacialen Mundspalte kann man durch die Elimination des Auswirkens von embryotoxischen Faktoren auf die Frucht im Verlauf der Schwangerschaft verringen. Die Entdeckung der embryotoxischen Faktoren, die auf den Zustand des Einzelnen (z.B. erhöhte Temperatur, Medikamenten, RTG Ausstrahlung, Infektion) auswirken, ist relativ einfacher als die Entdeckung des embryotoxischen Faktors, der auf das Populationsnivaeu auswirkt. Der erste Schritt bei der Entdeckung des embryotoxischen Faktors mit höherer Auswirkung auf die Population stellt die Detektion der bedeutenden lokalen Unterschiede in der Inzidention von der orofazialen Mundspalte dar. Deswegen war das Ziel dieser Mitteilung: 1) nach den signifikanten Unterschieden in der durchschnittlichen Inzidention der orofazialen Mundspalte dar in 52 tschechischen Bezirken in den letzten 15 Jahren zu suchen und 2) die Korrelation zwischen der Inzidention der orofazialen Mundspalte und der Natalität in den angegebenen Lokalitäten durchzuführen.

Die durchschnittliche Inzidention der orofazialen Mundspalte in alien 52 Bezirken war 1,86 auf 1000 Geburte (1,86/1000). Mithilfe des Konfidentionsintervals wurden die Bezirke in 3 Gruppen eingeteilt, die sich gegenseitig in der Inzidention der orofazialen Mundspalte bedeutend unterschieden. Zu den Bezirken mit der höchsten durchschnittlichen Inzidention der orofazialen Mundspalte (höher als 1,96/1000) gehörten: Beroun, Klatovy, Mělník, Tábor, Kolín, Semily, Česká Lípa, Pardubice, Teplice, Český Krumlov, Sokolov, Chomutov, Praha-zäpad, Jičín, Rakovník, Kladno, Prachatice, Rokycany, Tachov, Liberec und Pelhřimov. Die höchste Inzidention der orofazialen Mundspalte wurde im Bezirk Beroun (2,86/1000) und Klatovy (2,79/1000) erwiessen, die niedrigste im Bezirk Svitavy (0,72/1000) und Louny (1,05/1000). In Bezirken mit höherer Natalität fanden wir signifikant niedrigeres durchschnittliches Aufkommen der orofazialen Mundspalte (1,62/1000) als in den Bezirken mit niedrigerer Natalität (1,92/1000). Weitere Studien sollten erklären, ob die festgestellten signifikanten Unterschiede mit der unterschiedlichen Exposition von Frauen im Reproduktionsalter gegenüber den embryotoxischen Faktoren der Aussenumgebung oder mit der genetischen Prädisposition zusammenhängen können.

Key words: orofacial cleft, cleft lip, cleft palate, epidemiology, human

In several European countries, an increasing trend in the incidence of orofacial clefts has been reported: e.g. in Finland (Rintala, 1986), Slovenia (Koželj, 1996), Denmark (Jensen et al., 1988). In the Czech Republic, the systematic registration of newborns with CL/P started at the Clinic of Plastic Surgery in Prague in 1964 (Klásková, 1974). No increased incidence of newborns with CL/P was observed in the Czech Republic from 1964 to 1992 (Peterka et al., 1995). The annual incidence oscillated around a mean value of 1.74 per 1000 newborns (1.74/1000), but the only significant increase of CL/P was registered in 1985 (Peterka et al., 1995). Both environmental and genetic factors are assumed to be implicated in the etiopathogenesis of orofacial clefts (e.g. Fog Andersen, 1942; Červenka et al., 1966, 1967; Rintala, 1986; Fára et al., 1988; Peterka et al., 1994, 1996), and their detection is a prerequisite for the prevention of orofacial clefts.

Although the genetic factors involved in the origin of the orofacial clefts are still unknown, some indirect proof exists suggesting their existence. Fog-Andersen (1942) demonstrated two basic genetic groups (CL+CLP and CP) that have different recurrent risks. Accordingly, we have confirmed the existence of the two basic familiar genetic cleft types (CL+CLP and CP) in our sample of parents and their children with orofacial clefts (Peterka et al., 1996), suggesting that the cleft type in a child is influenced by the cleft type present in its mother or father. In addition, differences exist in the risk of specific cleft types between daughters and sons of an affected mother or father (Peterka et al., 1996). The combination of a preconception choice of the sex of a baby with ultra-sonography prenatal screening could decrease the risk of delivery of a child with an orofacial cleft in families with a familiar predisposition (Peterka et al., 1996).

In the non-familiar clefts (i.e., other orofacial clefts are not present in the family of the patient), it is important to know what exogenous factor(s) might be involved during the origin of the malformation. The detection of putative embryotoxic (teratogenic) factors is a prerequisite for cleft prevention in further pregnancies. The factors acting at the individual level, e.g., maternal cigarette smoking (Wyszynski et al., 1997) an infectious disease and/or high body temperature (Peterka et al., 1994; Natsume et al., 2000), drug consumption (Slavkin, 1992), professional exposure to chemicals during pregnancy (Lorente et al., 2000), or life-style (Carmichael, Shaw, 2000), can be revealed by anamnesis. In addition, harmful environmental factors like contaminated water or air pollution (Šrám et al., 1999) can also play an important role during the etiopathogenesis of inborn defects. Such exogenous factors acting at the population level might be partially responsible for local differences in the incidence of CL/P. To verify this hypothesis, we compared the mean incidences of children with orofacial clefts

Fig. 1. Schema of 52 Bohemian districts according to the administrative organization in the sense of the law No. 36/1960. The abbreviations of the districts are explained below.

AA - Praha hlavní město (Prague–Capital)
BE - Beroun
BN - Benešov
CB - České Budějovice
CK - Český Krumlov
CL - Česká Lípa
CR - Chrudim
CV - Chomutov
DC - Děčín
DO - Domažlice
HB - Havlíčkův Brod
HK - Hradec Králové
CH - Cheb
JC - Jičín
JH - Jindřichův Hradec
JN - Jablonec nad Nisou
KH - Kutná Hora
KL - Kladno
KO - Kolín
KT - Klatovy
KV - Karlovy Vary
LI - Liberec
LN - Louny
LT - Litoměřice
MB - Mladá Boleslav
ME - Mělník
MO - Most
NA - Náchod
NB - Nymburk
PA - Pardubice
PB - Příbram
PE - Pelhřimov
PH - Praha-východ (Prague-East)
PI - Písek
PJ - Plzeň-jih (Pilsen-South)
PM - Plzeň-město (Pilsen-City)
PS - Plzeň-sever (Pilsen-North)
PT - Prachatice
PZ - Praha-západ (Prague-West)
RA - Rakovník
RK - Rychnov nad Kněžnou
RO - Rokycany
SM - Semily
SO - Sokolov
ST - Strakonice
SV - Svitavy
TA - Tábor
TC - Tachov
TP - Teplice
TU - Trutnov
UL - Ústí nad Labem
UO - Ústí nad Orlicí

in all 52 Bohemian districts of the Czech Republic during 15 years and correlated them with birth-rate or density of inhabitants.

MATERIAL AND METHOD

In total, 2029 children with CL/P were examined, born in the Bohemian districts from 1983 to 1997 and operated on and treated at the Clinic of Plastic Surgery in Prague. All these patients provided data for the present study. In the registry of the Clinic, those children who died at a presurgical age and, consequently, did not undergo an examination were absent.

The examined territory involved 52 Bohemian districts according to the administrative organization in the sense of the law No. 36/1960 (Fig. 1). The annual numbers of newborns in each of the 52 districts were taken from the Czech Statistical Office, Prague. Data on the total numbers of people living in each individual district were taken from the census in 1991 (near the middle of the period under examination). Data about the size of districts were taken from the Statistical lexicon of municipalities in the Czech Republic (1994).

The mean annual incidences of CL/P per 1000 newborns in the Bohemian districts were statistically analyzed and their differences were tested using a confidence interval (Dixon, Massey, 19699) and Student's t-test.

RESULTS

Number of inhabitants in the Bohemian Districts

According to the number of inhabitants, the Bohemian districts were divided into three significantly different groups using a confidence interval (CI). Because of the high number of its inhabitants (more than one million), Prague was excluded from this calculation. The first group involved 23 districts with fewer than 90 700 inhabitants (white areas in Fig. 2). The second group comprised 10 districts with 90 700 to 108 433 inhabitants (gray areas in Fig. 2), and the third group included 18 districts where the number of inhabitants was greater than 108 433 (black area in Fig. 2). The largest populations were seen in the northwest (districts DC, UL, TP, MO, CV, KV, LT and KL), in the northeast (districts LI, MB, TU, NA, HK, PA, UA) and also in the big towns/districts (Prague, Pilsen and České Budějovice, compare Fig. 2 with Fig. 1). On the contrary, the number of inhabitants was very low (large white areas in Fig. 2) in the southwest part of Bohemia.

Two factors appeared to be responsible for such large regional differences in the number of inhabitants: a) the presence of large towns with a high concentration of people (e.g., Prague, Pilsen, České Budějovice) and b) differences in the size of the districts. The latter factor was partially eliminated by considering the number of inhabitants per km^2 (density of inhabitants – see Fig. 3).

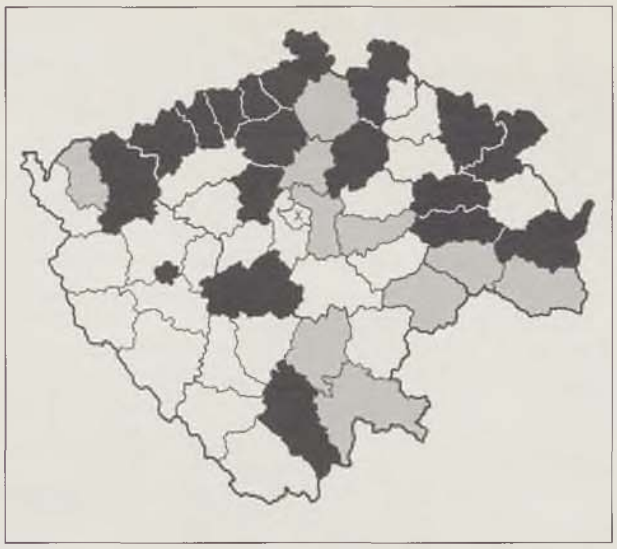

Fig. 2. Number of inhabitants in the Bohemian districts from the census of 1991: less than 90 700.2 (white districts), from 90 700.2 to 108 433.1 (gray districts), more than 108 433.1 (black districts). Prague was not included.

Density of inhabitants

In Fig. 3, the white districts represent a population density of less than 100/km^2, the gray districts represent a density of 100–300/km^2 and the black districts indicate a density of people greater than 1000/km^2.

Except for the districts Pilsen and České Budějovice, the density of people is higher in the north part of our country than in the south. The mean density of inhabitants was 67/km^2 in the white areas and 155/km^2 in the gray areas of Fig. 3. Roughly, we can say that more than twice as many people per km^2 live in the north (more in-

Fig. 3. Density of inhabitants in Bohemian districts: less than 100/km^2 (white districts), from 100 to 300/km^2 (gray districts), more than 1000/km^2 (black districts).

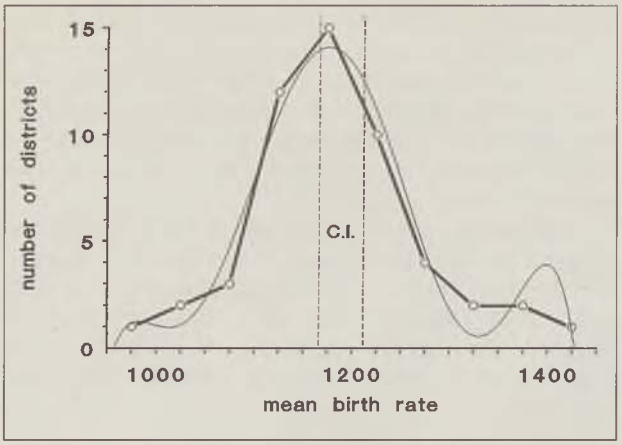

Fig. 4. Distribution of districts (thick line) and polynomial curve fit (thin line) according to the mean annual birth rate per 100 000 inhabitants in 1983–1997. Dashed lines delimit the confidence interval (C.I.).

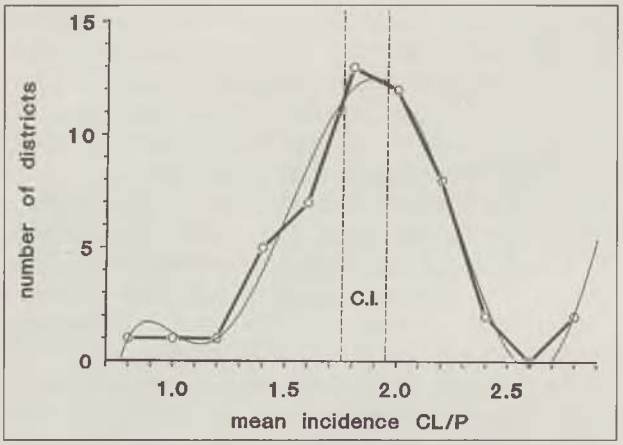

Fig. 6. Distribution of districts (thick line) and polynomial curve fit (thin line) according to the mean incidence of CL/P per 1000 newborns. Dashed lines delimit the confidence interval (C.I.).

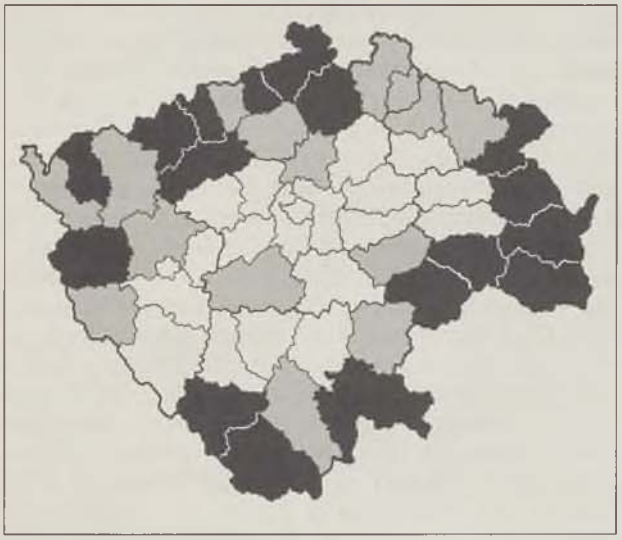

Fig. 5. The mean annual birth rate in 1983–1997 per 100 000 inhabitants in the Bohemian districts: less than 1165.5 (white districts), from 1165.5 to 1213.4 (gray districts) and more than 1213.4 (black districts).

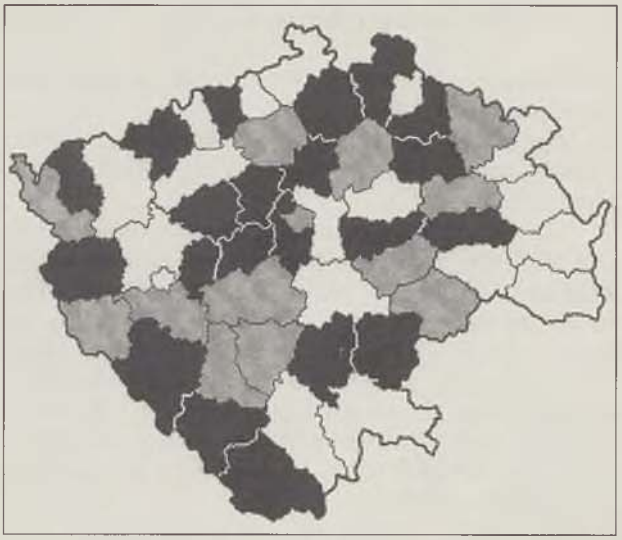

Fig. 7. The mean incidence of CL/P in the Bohemian districts in 1983–1997 calculated per 1000 newborn: less than 1.76 (white districts), from 1.76 to 1.96 (gray districts) and more than 1.96 (black districts).

dustrial) part of Bohemia than in the south (more agricultural) part (see Fig. 3).

Birth rate per 100 000 inhabitants

The mean annual birth rate in the Bohemian districts was 1189.6 newborns per 100 000 inhabitants during the period 1983–1997. The 95% confidence interval together with the confidence limits (Fig. 4) allowed us to rank all districts in 3 significantly different groups (Fig. 5): a) the districts exhibiting an average birth rate (1165.5 – 1213.4) (gray districts in Fig. 5); b) the districts with the lowest birth rate (lower than 1165.5 – white districts in Fig. 5) and c) the districts with the highest birth rate (above 1213.4 – black districts in Fig. 5). In general, the districts with the lowest birth rates were concentrated in the central part of Bohemia, while the higher birth rates were found along the borders of Bohemia.

The birth rate did not correlate with either the number or the density of inhabitants (compare Figs 2–4).

Incidence of CL/P per 1000 newborns

The mean incidence of CL/P in the Bohemian districts was 1.86/1000 during 1983–1997. The 95% confidence interval together with the confidence limits (Fig. 6) allowed us to rank all districts in 3 groups: a) the districts exhibiting an average incidence of CL/P 1.76–1.96/1000 (gray districts in Fig. 7), b) the districts with the lowest incidence of CL/P (lower than 1.76 – white districts in Fig 7.) and c) the districts with the highest incidence of CL/P (above 1.96 – black districts in Fig 7).

The districts with the highest incidence accumulated around Beroun (Beroun 2.86/1000, Rokycany 2.02/1000, Rakovník 2.03/1000, Kladno

2.03/1000 and Praha-západ 2.09/1000) and Mělník (Mělník 2.48/1000, Semily 2.29/1000 Česká Lípa 2.24/1000, Jičín 2.06/1000 and Liberec 2.01/1000). A high incidence was also found in Klatovy (Klatovy 2.79/1000, Český Krumlov 2.13/1000, Prachatice 2.02/1000) as well as by Kolín (2.30/1000) and Pardubice (2.18/1000), Tábor (2.47/1000) and Pelhřimov (1.97/1000). A significantly increased incidence was also found in several single districts Tachov (2.02/1000), Sokolov (2.12/1000), Chomutov (2.12/1000) and Teplice (2.16/1000) (Fig. 7).

In contrast, the districts of Svitavy and Louny exhibited the lowest incidence of CL/P (0.72/1000 and 1.05/1000, respectively), which was several times lower than the highest incidence of CL/P in Beroun (2.86/1000) and Klatovy (2.79/1000). In general, the districts with the lowest incidence of CL/P were concentrated along the southeastern and northwestern Bohemian borders.

Correlation between density of people and incidence of CL/P

We tested whether differences in population density might be associated with differences in the incidence of CL/P.

The mean incidence of CL/P was 1.82/1000 in the 26 districts with a lower mean density of inhabitants (67/km^2 – white areas in Fig. 3). The mean incidence of CL/P was 1.92/1000 in the 24 districts with a higher density of inhabitants (155/km^2 – the gray areas in Fig. 3). The difference between the mean incidences of CL/P in the districts with a lower or higher density of people (1.82/1000 or 1.92/1000, respectively) was not significant (P = 0.353).

Correlation between birth rate and incidence of CL/P

We calculated the mean incidence of CL/P separately for 17 districts with significant higher birth rates (black areas in Fig. 5) situated at the Bohemia borders, as well as for 20 districts with significantly lower birth rates (white areas in Fig. 5) in the central part of Bohemia.

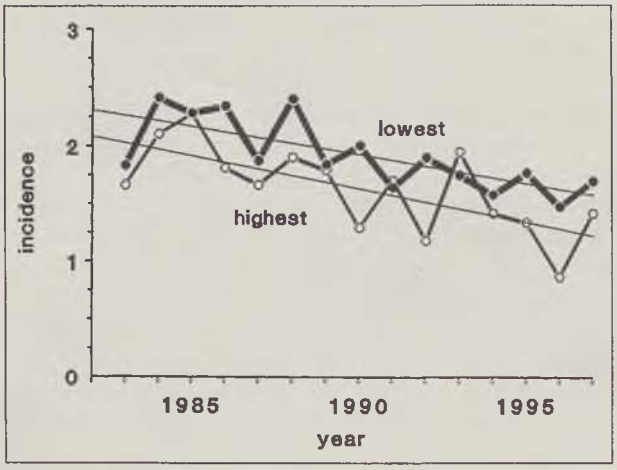

Fig. 8. The mean incidences of CL/P in districts with significantly lower (black points) and higher (white points) birth rates with respective regression lines.

The mean incidence of CL/P (1.62/1000) was significantly lower (P = 0.02) in the districts with the highest birth rates, compared to the incidence of CL/P (1.92/1000) in the districts with the lowest birth rates.

Generally, the incidence of CL/P gradually decreased in the Bohemian districts with lowest and highest birth rates during the entire period 1983–1997 (Fig. 8). However, the incidence of CL/P in the districts with the lowest birth rates was higher during the whole period 1983–1997 (Fig. 8).

DISCUSSION

The interpretation of epidemiological studies on the incidence of inborn defects is limited by the absence of knowledge on the prenatal loss of similarly affected embryos/fetuses. The postnatal incidence of orofacial clefts depends on both the number of CL/P originating prenatally and on the number of prenatally aborted embryos (fetuses) with CL/P (Peterka et al., 1995). The prenatal loss of embryos with CL/P has been proven in a large collection of human embryos, in which the incidence of CL/P was twice as high as in newborns (Iizuka, 1973). Klásková (1974) confirmed the postnatal death of children (two times more boys than girls) with CL/P during the first year of their life. Heart malformations (30.2 %) and multiple malformations incompatible with life (44.1 %) are the most frequent causes of newborn death during the first week after delivery (Klásková, 1974). Hujoel et al. (1992) concluded that infants from Washington State with facial clefts (with or without associated anomalies) have a significantly increased mortality risk when compared to infants without any diagnostic abnormalities at birth. Infants with CL/P without other abnormalities have a 3.7 fold increased odds for dying during their first year of life. When facial clefts are associated with other abnormalities there is an 82.3 fold increase in odds for mortality during the first year of life (Hujoel et al., 1992). In our set of children with CL/P, we have not included those children who died during the first weeks of their life, before coming to the clinic for further treatment.

In the present study, significant differences were observed in the mean incidence of CL/P in Bohemian districts during the years 1983–1997. Klásková (1971) reported the results of her study on the incidence of CL/P in children born in Bohemian districts during 1964–1970. She found the highest incidence of CL/P in the districts Benešov (3.45/1000) and Teplice (2.85/1000). The highest incidence of CL/P in the Benešov district has been associated with the formerly frequent occurrence of endemic struma in the non-migrating population, while the high incidence of CL/P in the Teplice district might be associated with the in-

fluence of industry and human migration (Klásková, 1971). Compared to the data from 1964–1970, the present study from 1983–1997 confirmed that the Teplice district remains one of the districts with a high incidence of CL/P, but the Benešov district exhibited one of the lowest values during 1983–1997. Focused studies should elucidate in the future a reason for the decrease in CL/P incidence in Benešov.

The variation in the mean incidence of CL/P between districts was relatively high (0.72–2.86 per 1000 newborns). Such variation could result from regional differences in both population genetic backgrounds and possible exposure to harmful environmental factors. Only a regional and permanently acting genetic and/or environmental factor (e.g., radiation, water contamination) might induce a long-term increase in the incidence of CL/P in a district at the population level. In addition, a pregnant woman living in a district can be exposed to a specific embryotoxic factor (e.g., infection, high temperature, drugs, chronic diseases, x-ray examination, professional exposure). The latter factors acting transiently at an individual level can cause CL/P only if they operate during the critical developmental period, i.e., during days 27–60 of pregnancy (Fára et al., 1988).

In the present study, the incidence of CL/P did not correlate with either number or density of inhabitants. However, a negative correlation between the incidence of CL/P and the birth rate level was confirmed: incidences of CL/P were higher in the districts with lower birth rates and lower in the districts with higher birth rates. A higher birth rate might indicate relatively better conditions for pregnancy in the respective regions – e.g., a lower level of embryotoxic factors. We can hypothesise about the coincidence: lower level of embryotoxic factors – higher birth rate – lower incidence of CL/P. In contrast, the lower birth rate in specific districts might also be associated with lower fertility or more spontaneous abortions as a result of higher environmental stress. Accordingly, the incidence of developmental defects (CL/P) should also be higher there.

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INTERDISCIPLINARY COLLABORATION IN CLEFT PROBLEMS: SURGEON – STOMATOLOGIST

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SUMMARY

During treatment of patients with clefts, reliable interdisciplinary collaboration of plastic surgeons and stomatologists-orthodontists is essential. The authors describe the principles and procedures of these disciplines that are linked and mututally interconnected. These have been elaborated on the basis of many years experience and have proven very satisfactory in the long-term care of patients.

ZUSAMMENFASSUNG

Die interdisziplinare Zusammenarbeit in der Mundspalteproblematik Chirurg-Stomatolog

Kuderová J., Müllerová Ž., Brousilová M., Jiroutová O.

Im Verlauf der Behandlung eines Patienten mit der Mundspalte ist eine zuverlässige interdisziplinare Zusammenarbeit zwischen dem plastischen Chirurgen und dem Stomatologen-Orthodontisten notwendig. Es wird beschrieben das Verfahren und die Prinzipien der eingeführten Bereiche, die aneinander anknüpfen und sich gegenseitig beeinflussen. Sie wurden aufgrund der langzeitigen Erfahrungen ausgearbeit und sie wenden sich gut in der langzeitigen Patientenbehandlung.

Key words: facial cleft, interdisciplinary collaboration of plastic surgeons and orthodontists, therapeutic principles

Care of patients born with a facial cleft cannot be only the concern of surgical disciplines. It is important to ensure for every affected child mutual interdisciplinary collaboration. Indispensible surgical operations are interlinked with stomato-orthopaedic treatment and with phoniatric and logopedic care. Our longstanding experience with these problems, which dates back to 1957 when the stomatological department for clefts was founded, has been verified by the treatment of almost 10 000 patients and justify our elaborating a rational therapeutic pattern.

After delivery of an affected child the plastic surgeon contacts the parents. He explains the principle of the defect and the immediate care of the infant and outlines the surgical procedure, i.e the type and timing of the primary surgery of the lip and palate and further corrective operations.

At the Clinic of Plastic Surgery in Prague we proceed according to the following schedule: the lip is operated on at the age of ca 5 months by the Tennison-Randal method (we mobilize intensively). The palate is operated on between the age of 1 and 3 years by the Vardill-Kilner method, i.e. a shift to achieve maximal retroposition of the palate. In severe isolated clefts and in complete clefts we perform primary pharyngofixation. In bilateral clefts we prolong the nasal septum by a WY shift after surgery of the palate before the child enters school. In unilateral clefts we implant bone spongiosa between the age of 9–12 years from the ilium into the maxillary defect. Corrective surgery is indicated for the time when the child changes his or her environment (starting school, apprenticeship, secondary school). The primary operation is successful if the need for corrective surgery is minimal.

We do not practice preoperative orthodontic care before the primary surgery on the lip in neonates and infants. It is of no value for the surgeon and the assumption that the maxilla will restore its growth potential, as in a healthy child, has not proven true.

The stomatologist becomes acquainted with the patient at the time of the primary surgery on the lip. At that moment starts the essential long-term cooperation of the quadrangle: surgeon, stomatologist, phoniatrist, patient. On this collabo-

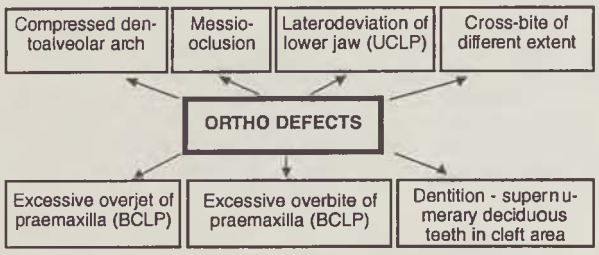
ration, which frequently persists throughout the first and second decade of the child's life, depends the final therapeutic result.

From the surgical pattern it is apparent that the first years of life are devoted to surgical operations. From the stomatological aspect the child is checked once or twice a year. These check-ups are harmonized with necessary surgical check-ups that are focused on the genereal development of the child and the state of the scar. Phoniatric check-ups are necessary as well as monitoring of pre- and postoperative logopedic care.

The stomatologist evaluates the development of the jaws and the eruption of teeth. He recommends fluoride prevention, makes repeated preventive dental examinations and provides instructions on hygiene. He recommends sanation. During this initial period of dental care, which comprises the period of first dentition (1–6 years), orthodontic defects can already be diagnosed (Tab. 1). They are, however, only rarely treated. For treatment, functional devices are most frequently used (activator). An exception are partial dentures, in particular upper dentures used after agreement with the phoniatrist for speech re-education.

Tab. 1. Deciduous dentition age 1–6 years. Orthodontic defects of dentition – review.

1. Check-ups 1x–2x per year
2. Follow-up of development of jaws and eruption of teeth
3. Fluoride prevention
4. Repeated instructions on hygiene
5. Preventive examinations including recommended sanation



Between the 6th and 7th year the permanent teeth begin to erupt. The orthodontic defect deteriorates considerably. The child remains under the supervision of the plastic surgeon and intensive orthodontic treatment is provided.

During the period between the ages of 6 and 10 years, in some patients the priorty is preparation of the dentoalveolar arch of the upper jaw for a primary bone autograft that will integrate the split segments of the maxilla and close the residual vestibulo-nasal communications. Table 2 gives an overview of orthodontic defects and therapeutic principles for this period. The suitable time for a bone autograft is determined by

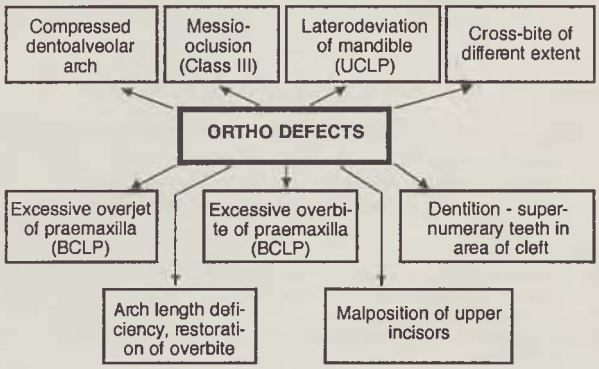
Tab. 2. Mixed dentition age 6–10 years. Orthodontic defects of dentition – review. Basis of therapy.

1. Modification of the position of the permanent incisors, protrusion and derotation central incisors, prolongation of the dentoalveolar arch, alignment of the lateral incisors
2. Surgery in the area of the upper frontal teeth
3. Elimination of the dentoalveolar cross-bite, widening of the compressed arch

1, 2, 3 – preparation for bone graft

4. Starting of serial extractions
5. Treatment of inadequate intermaxillary relations (Class III)

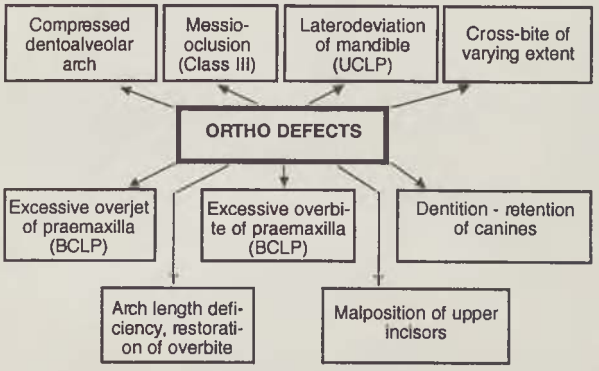
Therapy: plates
functional appliances
grounding of the teeth
extractions
fixed appliances
dentoalveolar surgery



Tab. 3. Mixed dentition age 10–15 years. Orthodontic defects of dentition – review.

1. Repair of intermaxillary defect
2. Treatment of compression of jaws and repair of dental crowding
3. Therapeutic extractions
4. Surgical operations in the area of the premolares and canines
5. Alignment of permanent canines
6. Preparation for maxillo-facial surgery (10 % of patients)
7. Minor defects – retention of therapeutic results

Therapy: fixed appliances
removable appliances
extractions
retention appliances



agreement of the surgeon and stomatologist, based on an evaluation of the dental casts, panoramatic radiographs of the dentition and lateral cephalograms of the skull. The prerequisite is a well-developed dentoalveolar arch of the upper jaw.

After this operation, approximately after the age of 10 years, the orthodontist has enough time to treat post-cleft deformities, which develop to their full extent during puberty (Tab. 3).

Tab. 4. Permanent dentition age 15–18 years. Final treatment.

1. Termination of orthodontic therapy
2. Retention of therapeutic results
3. Monitoring of terminating growth
4. Preparation for maxillo-facial surgery, continuation (cca 10 % of patients)
5. Preparation for final prosthetic treatment (collaboration with prosthetist)

Tab. 5. Factors influencing therapeutic result.

1. Nature of defect
2. Attitude of family and characteristics of patient
3. Individual and continual approach (treatment by assigned doctors)
4. Atraumatic surgery
5. Excellent technical facilities (perfect orthodontic products, prompt collaboration with laboratory)
6. Experience with treatment
7. Close interdisciplinary collaboration of specialists of the cleft centre

From the aspect of surgical disciplines within the framework of interdisciplinary care, the maxillo-facial surgeon must participate in the treatment. A cleft is a skeletal defect that cannot always be compensated for by treatment in the dentoalveolar area. This applies in ca 10 % of patients.

At about the age of 15 years the surgeon considers corrective surgery of the lip and nose and possibly closure of the residual vestibulo-nasal communications. From the aspect of frequent relapses of the orthodontic result in case of longer discontinuation, during this period close interdisciplinary collaboration is very important.

During the period between 15 and 18 years dental treatment has its peak (Tab. 4). Mostly, this applies to patients with complete clefts. In milder defects active treatment ends before the age of 15 years. In all instances, however, long-term retention of the orthodontic result is important and essential. Several factors participate in the final effect of treatment. They are listed in table 5. If we take them into account and harmonize them, the result is usually optimal. Respecting the demands of different disciplines as well as the possibilities and demands of the patient and family gives very satisfactory results. The patient integrates well into society from a functional as well as aesthetic aspect.

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INNOVATION

A SIMPLE, COST EFFECTIVE, INNOVATIVE METHOD OF SECURING BURNS DRESSING

Bhathena H. M.

Patients with extensive thermal burns injury need whole body wound dressings at least for a period of 2 to 3 weeks. These dressings require expertised skill, lot of dressing material, drugs etc., and it drains on the patient's resources, causing financial burden at times. The usual method of fixation for the burns dressing around the torso and extremities, with long cotton gauze bandages is cumbersome and difficult as patients need to be lifted for encircling the bandages around various body parts. This requires extra manpower as well.

Over the years quality and types of burns dressing material have been modified. More and more synthetic material has been utilized. In developed countries, ready-made absorbent burns dressing is easily available in different sizes and different brands as per the requirement. The situation is not same in under developed and developing countries like India. Burns wound dressings drain out financial resources of burns patients very heavily, as these patients need frequent daily absorbent dressings for a very long time till healing takes place. Over a period of more than ten years, at Eric Kharas Burns Research Center, Masina Hospital, Mumbai, India, I have evolved a novel method of fixing this massive absorbent burns dressing with ordinary office stapler and staple pins.

Fig. 1. Ordinary office stapler and staple pins.

Fig. 2. Stapler is being used for fixing the dressing in upper extremity.

Fig. 3. Stapler is being used for fixing the dressing in lower extremity.

Fig. 4. Close up view of stapler used for leg dressing.

Fig. 5. Use of office stapler for torso dressing.

Technique

An ordinary office stapler and staple pins are being used instead of roller gauze bandages to secure the layered absorbent burns dressing material. The required medicated gauze in layers is used as usual to wrap around. The last layer of layered gauze dressing is tacked on itself, by pinching and stapling at an appropriate distance. Thus stabilizing the whole burns dressing quickly and easily without turning the patient to and fro.

The office stapler and pins are sterilized with chemical sterilization either with absolute alcohol or Cidex.

Discussion

This unique technique of securing the burns wound dressing has not been described before in literature. Fixation of burns dressing with an ordinary office stapler and staple pins, is found very satisfactory and ideal in extensive burns wound dressings. In whole body burns wound dressings approximately minimum of 6 roller gauze bandages, (size 18 mts x 15 cms) are required. The material cost for these six roller gauze bandages (Pack of surgical gauze cloth 18 mts x 90 cms) is Indian Rs. 160/00. Whereas, we use about 300 staple pins approximately for securing the dressing of whole body burns wound. One time cost for the office stapler is Indian Rs. 130/00. Office stapler is reused for same patients, whereas the recurrent cost of staple pins is Indian Rs. 3/00 for 300 pins for each whole body burns dressings. This is definitely very economical comparing with the use of gauze bandages for stabilizing the burns dressings.

Apart from being economical, it has its own advantages as well. It is very easy to fix the layered gauze dressings by stapling upon itself. The need to turn the patient physically for every turn of fixing roller bandage around is not required as the dressing is secured merely by fixing it with office stapler and staple pins, without turning the patient. This reduces the discomfort and inconvenience to the patient. It also reduces the need of extra manpower to turn these patients frequently during burns dressings.

Summary

An easy, simple way of securing the burns dressing has been described. This is achieved by using an ordinary office stapler and staple pins. The use of long, encircling gauze bandages for fixation of burns wound dressings around the torso and extremities, is eliminated. This article describes the use of this innovative, cost effective, quick, easy and simple method of fixation of burns wound dressings.

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SOUHRNY

Netermická postižení kožního krytu

Brož L., Kripner J.

Popáleninové centrum může svými prostředky (materiálně-technickými a personálními) a zkušenostmi s léčbou popálenin pomoci při řešení rozsáhlých a hlubokých ztrát kožního krytu a dalších tkáňových struktur i u některých postižení jiné etiologie (netermických postižení). K přijetí jsou indikována zejména rozsáhlá postižení exfoliativní – Stevensův-Johnsonův syndrom (SJS), Lyellův syndrom – toxická epidermální nekrolýza (TEN) a staphylococcal scalded skin syndrome – stafylokokový syndrom opařené kůže (SSSS), hluboká kožní a tkáňová postižení při fulminantní purpuře (PF), případně další postižení (epidermolysis bullosa, posttraumatické avulze apod.). Podobnost s popáleninovým úrazem se ztrátou kožního krytu II. stupně je charakteristická zejména u exfoliativních postižení s nutností adekvátní tekutinové náhrady v akutní fázi a vlastní sterilní chirurgické péči o postižené plochy od počátku onemocnění. U stavů vedoucích ke ztrátě kůže v plné tloušťce je vedle celkové léčby dominantní co nejrychlejší plasticko-chirurgické řešení.

Inhalační trauma

Kaloudová Y., Brychta P., Říhová H., Suchánek I., Hrubá J., Seidlová D., Hrazdírová A., Kubálek V.

Inhalační trauma je akutní poškození respiračního traktu, způsobené vdechováním zplodin hoření. Podezření na inhalační trauma (expozice zplodinami hoření v uzavřeném prostoru, hluboké popáleniny obličeje a další) je indikací k okamžité endotracheální intubaci. Přesná objektivní anamnéza je velmi důležitým faktorem ke stanovení diagnózy.

V našem sdělení jsou schematicky uvedeny současné metody vyšetření pacienta v případě podezření na inhalační trauma.

Dále popisujeme základní terapeutický postup u inhalačního traumatu.

Naše zkušenosti s transkonjunktiválním dolní blefaroplastikou provedenou za pomoci laseru

Brychta P., Franců M., Koupil J., Ludikovský K.

Úvod: Transkonjunktiválním dolní blefaroplastika se stala populárnější v poslední dekádě se zavedením CO_2 laseru jako prostředku k řezání a k resurfacingu. Autoři mají 4 roky zkušeností s tímto postupem.

Metoda: Do detailů je popsán výběr pacientů, předoperační vyšetření a operační technika. Samotná operace je rozdělena do dvou částí:

1. transkonjunktiválním vybavení a resekce prolabujících tukových polštářů za pomoci laseru,
2. laserový resurfacing kůže dolního víčka.

Výsledky: Na autorově oddělení v období 1997–2000 mělo provedenu transkonjunktiválním dolní blefaroplastiku za pomoci laseru 36 pacientů. U 4 pacientů (11,1 %) byly léčeny přechodné hyperpigmentace. Nebyly zaznamenány vážnější komplikace. Kromě jednoho, byli pacienti spokojeni nebo velmi spokojeni.

Diskuse: Jsou srovnány transkonjunktiválním a transkutánní dolní blefaroplastika:

1. Provedení transkutánní blefaroplastiky je jednodušší, je možná určitá resekce kůže a není potřebné laserové vybavení.
2. Nebezpečí ektropia je při transkutánní blefaroplastice relativně vysoké a jizva nemusí být pro pacienta plně akceptabilní.
3. Kromě jistého zlepšení vrásek není stárnoucí a sluncem poškozená kůže transkutánním přístupem ovlivněna.
4. Transkonjunktiválním dolní blefaroplastika je relativně bezpečná metoda s velmi dobrými kosmetickými výsledky, vyhýbající se incizím a jizvám dolního víčka.
5. U transkonjunktiválním blefaroplastiky je mnohem menší riziko ektropia a jiných komplikací než u transkutánní.

6. Nepříjemným vedlejším efektem při transkonjunktiválním blefaroplastice je zarudnutí dolních víček po dobu 2–3 měsíců.

Závěr: Transkonjunktiválním blefaroplastika provedená za pomoci laseru vyžaduje kratší operační čas a způsobuje menší krvácení a menší nepohodlí pro pacienta. Je to plně rovnocenná alternativa k běžné transkutánní dolní blefaroplastice.

Významné rozdíly v incidenci orofaciálních rozštěpů v 52 českých okresech (1983–1997)

Peterka M., Peterková R., Tvrdek M., Kuderová J., Likovský Z.

V letech 1983–1997 se narodilo v českých okresech celkem 2029 dětí s orofaciálním rozštěpem (CL/P), které byly operovány na Klinice plastické chirurgie FNKV v Praze. Riziko narození dítěte s CL/P je možné snížit eliminací působení embryotoxických faktorů na plod v průběhu těhotenství. Odhalení embryotoxických faktorů , které působí na úrovni jedince (např. zvýšená teplota, rtg záření, infekce) je relativně snazší než odhalení embryotoxického faktoru, který působí na populační úrovni. Prvním krokem při pátrání po embryotoxickém faktoru s větším dopadem na populaci je detekce významných lokálních rozdílů v incidenci CL/P. Proto cílem tohoto sdělení bylo: 1. pátrat po signifikantních rozdílech v průměrné incidenci CL/P v 52 českých okresech za období 15 let a 2. provést korelaci mezi incidencí CL/P a porodností v daných lokalitách.

Průměrná incidence CL/P ve všech 52 okresech byla 1,86 na 1000 porodů (1,86/1000). Pomocí konfidenčního intervalu byly okresy rozděleny do tří skupin, které se navzájem v incidenci CL/P významně liší. Mezi okresy s nejvyšší průměrnou incidencí CL/P (vyšší než 1,96/1000) patří: Beroun, Klatovy, Mělník, Tábor, Kolín, Semily, Česká Lípa, Pardubice, Teplice, Český Krumlov, Sokolov, Chomutov, Praha-západ, Jičín, Rakovník, Kladno, Prachatice, Rokycany, Tachov, Liberec a Pelhřimov.

Variabilita výskytu CL/P v jednotlivých okresech byla značná. Nejvyšší incidence CL/P byla prokázána v okrese Beroun (2,86/1000) a Klatovy (2,79/1000), nejnižší v okrese Svitavy (0,72/1000) a Louny (1,05/1000).

V okresech s vyšší porodností jsme nalezli signifikantně nižší průměrný výskyt CL/P (1,62/1000), než byla průměrná incidence CL/P v okresech s nižší porodností (1,92/1000). Další studie by měla objasnit, zdali zjištěné signifikantní rozdíly mohou souviset s odlišnou expozicí žen v reprodukčním věku embryotoxickým faktorům zevního prostředí nebo s genetickou predispozicí.

Interdisciplinární spolupráce v rozštěpové problematice: chirurg – stomatolog

Kuderová J., Müllerová Ž., Brousilová M., Jiroutová O.

V průběhu léčby rozštěpového pacienta je nezbytná spolehlivá interdisciplinární spolupráce mezi plastickým chirurgem a stomatologem–ortodontistou. Jsou popsány zásady a postupy uvedených oborů, které na sebe navazují a vzájemně se prolínají. Byly vypracovány na základě dlouholetých zkušeností a velmi dobře se uplatňují v dlouhodobé péči o pacienta.

BOOK REVIEW

Dobrin Radev: Healing of Surgical Skin Wounds (Biomechanical Aspects)
Fil OOD – Varna (Bulgaria), 2000, pp. 115

This monograph comes as no surprise to Bulgarian readers. The author is known for his long-standing research of skin wounds, in particular their postoperative healing and research on criteria of the quality of the healing process.

Individual theoretical and practical problems are analyzed in twelve brief chapters.

At the beginning of the first chapter on general laws and specific features of wound healing, the author quotes definitions of various authors and the origin of these definitions and uses them as a basis for his own definition of healing: healing of a surgical skin wound is a process which starts 1–2 seconds after incision and persists until morphological integrity and function of the skin are restored.

The second chapter deals with the cellular and humoral mechanisms of the healing process. He explains in detail and tries to systematize complicated relationships. „Orders" during healing are in the cells (autocrine, paracrine and juxtacrine regulation) and spread by direct contact or by means of cellular mediators that participate in healing.

Periodization of the healing process is the subject of many research projects that frequently (do not) differ as to their results. Some authors propose three-stage healing, others are in favour of a four-stage process. Every new proposal of the periodization of the healing process is the result of more recent and more modern research. According to the author, work on periodization should be focused on evidence of his concept, i.e. the concept of a „biomechanical purposeful healing process" for the needs of clinical surgery. Classifications of biomechanical processes pertain to skin as well as to other tissues – muscles, connective tissue, bone, gastric wall etc.

Factors that have an impact on healing can be classified as stimulatory or inhibitory. Furthermore, they can be divided into local and general and endogenous and exogenous factors. The author discusses not only classical factors but also emotional ones such as distress, the possibility to hasten healing, e.g. by electrical stimulation, the action of growth factors etc.

Of great interest is the passage on objective methods for monitoring the healing process of surgical skin wounds. The author mentions thermography and contact thermometry. He describes in detail the use of ultrasound for monitoring surgical wounds of the anterior abdominal wall at different sites, in different directions and of different lengths.

The author ascribes considerable importance to biomechanical qualities of the surgical skin wound. Assoc. Prof. Radev describes the technical design of his own tensiometer as well as its use. Experimental measurements on animals were made by means of a mechanical dynamometer with subsequent histological examination of the morphological state of the scar.

The author comments, based on statistically analyzed results of experimental and clinical research, on the minimal time for removal of stitches after abdominal operations. Comparative studies deal with three methods of skin sutures: vertical stitches with gauze rolls, Dr. Lalejana's stitch (patented in 1983 – No. 236, Bulgaria) and individual button adaptative stitches. The studies compare the mechanical strength of the wound, the mathematical model of tissue strangulation in the area of the suture and the cosmetic outcome up to the end of the 6th month.

The quoted literature comprises more than 200 references, incl. 70 in Cyrillic and the remainder in the Latin alphabet. The publications are from different periods, including recent years.

The illustration are very expedient – the author's results are arranged in tables. The author's own diagrams and those of other authors are used as convincing evidence of different hypotheses. Colour and black and white photographs present the author's clinical, experimental and histological observations.

The monograph is a successful attempt to summarize briefly and succintly the known facts on the healing of surgical skin wounds and to draw attention to his own research with regard to future problems of skin wound healing. The author draws attention to the fact that clinicians should not be satisfied with classical rules and routines but should seek to discover new findings about the subtle processes of skin wound healing and how to influence these processes.

At the present time of economic changes in Bulgaria, the publication of books is very difficult. I greatly appreciate, therefore, this small but interesting monograph devoted to a fundamental problem of all surgical disciplines – skin wounds.

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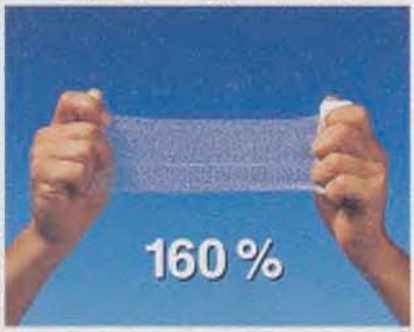

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