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HEALTH FOR ALL - ALL FOR HEALTH

40 YEARS OF THE WORLD HEALTH ORGANIZATION

In 1983, 40 years have elapsed since the treaty concerning the foundation of the World Health Organization came into force. The organization was set up on the initiative of the UN Economic and Social Council to replace the former International Office of Public Hygiene and the Standing Organization of Hygiene of the League of Nations and to assume responsibility for some of the functions of the UNRRA Health Section.

The aim of WHO has always been to achieve the maximum standard of health in all parts of the world with health being strictly defined by the WHO Constitution not only as a state without disease or illness but also as a state of perfect physical, mental and social well-being.

For the protection of health the WHO has been promoting coordinated health care all over the world, supporting research aimed at improving the living environment and nutrition, initiating international conferences aimed at the protection of human health and organizing world-wide campaigns to combat particularly dangerous diseases. The organizational set-up of WHO comprises, for instance, the world epidemiological service which supplies daily information on the incidence and spread of epidemics. There is also an international cancer research agency, etc. At present the WHO is conducting a world-wide campaign against smoking and heading a campaign against AIDS.

Every year, the WHO awards a number of grants for health workers to learn about the latest achievements of medical knowledge and sends out specialists in aid of the developing countries providing them with the necessary technical facilities.

The member countries of the Council for Mutual Economic Assistance are among those taking an active part in all those campaigns. Of no little importance for our own field of work is the close cooperation that exists between the International Society for Burn Injuries and the World Health Organization.

In spite of the fact that considerable progress in human health care has been made during the existence of the WHO, especially in combatting infectious diseases and devastating epidemics, in mother and child care, etc., there are still many problems requiring action. Millions of people in the world still suffer from hunger or live in stressful social conditions, and in a number of the developing countries health care still has a long way to go to achieve the desirable standard. Hence the need for all health workers and all people of good will to step up their effort to preserve peace and to achieve social justice as an indispensable condition of good health so that the motto of this year's Day of Health "Health for All — All for Health" could be accomplished.

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RECONSTRUCTION OF CRANIOFACIAL MICROSOMIA AND HEMIFACIAL ATROPHY WITH FREE LATISSIMUS DORSI FLAP

W. PISAREK

Some disorders in the embryogenesis are responsible for facial anomalies. Craniofacial microsomia (first and second branchial arch syndrome) is a deformity characterized by a hypoplasia of skeletal and neuromuscular structures in the temporomandibular and pharyngomandibular regions. The deformity varies in extent and degree (3). Hemifacial atrophy (Romberg's disease) is well known in its manifestations but the etiology remains obscure. The deformity is due to atrophy of the skin, subcutaneous tissue and muscles (8, 10). In both diseases the deformity of facial contour can be severe and it occurs in young people.

TREATMENT

Numerous methods of correction with varying success have been reported in the past (2, 6, 7). Correction of the jaw deformity has been attempted either by expansion for contour restoration or by osteotomies to change the jaw asymmetry. Bone, cartilage and dermal grafts are often used but tend to be resorpted. A buried dermis-fat flap has a better retention of the transplanted tissues. However this requires several surgical steps. Synthetic implants are simple in use but we prefer autogenous tissue.

With the advent of microsurgery the free dermis-fat flap (4, 10) and the free flap of omentum have been employed to restore facial contour (9).

In 1981 we began a new concept of treatment. The free latissimus dorsi flap was transferred to the face as a muscle or musculocutaneous flap. The surgery focused on the essential problem, the restoration of the facial contour. Except for one case (Fig. 4.) in which the osteotomy of the chin was performed no skeletal correction was effected. Six to nine months after the free flap transfer a secondary operation was required to finish the tailoring.

CLINICAL DATA

Seven patients, five males and two females have undergone surgical reconstruction, five for the deformities of craniofacial microsomia and two for



Fig. 1 a) ariculo-mandibular type of craniofacial microsomia, b) result of treatment with free musculocutaneous flap



Fig. 2 a) mandibular type of craniofacial microsomia, b) result of treatment with free musculocutaneous flap and fascial strip hold-up



Fig. 3 a) fully expressed syndrome. Macrostomia, cleft lip and palate were operated on in the childhood, b) result of treatment with free musculocutaneous flap



Fig. 4 a) mandibular type of craniofacial microsomia, b) result of treatment with free musculocutaneous flap and chin osteotomy



Fig. 5 a) mandibulo-neuro-muscular type of craniofacial microsomia, b) result of treatment with free muscle flap covered with skin graft



Fig. 6 a) hemifacial atrophy, b) result of treatment with free muscle flap covered with skin graft

hemifacial atrophy. All patients were between the ages of 19 and 25 years. Prior to the examination in our polyclinic the patients were unaware of the possibility of surgical correction of the deformity. In all cases the main problem was an asymmetrical disfigurement of the face.

Dysplasia of the mandibula and soft tissue dominated the cases of craniofacial microsomia. In two of the five cases deformity of the auricle existed and in one case the syndrome was considerably manifested (Fig. 3). One female with Romberg's disease sustained a very severe soft tissue atrophy of her face (Fig. 7.).



Fig. 7 a) severe hemifacial atrophy, b) result of treatment with free musculocutaneous flap. Patient refused final correction as she was satisfied with the initial surgery

OPERATIVE PROCEDURE

The surgical procedure was similar in all seven cases. The flap was based on the thoracodorsal vessels. In initial procedures the flaps were carrying skin islands, in the next procedures only the muscles were used. The muscle was taken in excess to ensure sculpturing in any corrective procedure.

Two teams were simultaneously engaged in the operation. While one team was preparing the face with rhythidectomy incision to elevate the cheek skin as far to the midline, as the deformity existed, the other was preparing the flap. The facial artery and vein were dissected, clamped and divided. In

some cases the facial vein appeared to be much smaller than the thoraco-dorsal vein and we prepared the external jugular vein for anastomosis. The free flap was transferred to the face, positioned in the subcutaneous pocket of the cheek and fixed with pull-through sutures over buttons. The vessels were anastomosed by using the operating microscope and 10-0 nylon sutures. After observing the blood supply for 20 minutes the skin island was sutured to the wound margin. A split skin graft was used to cover bulking muscle when only the muscle flap was transferred. A suction drain was left under the flap.

No heparin was given postoperatively. The patient stayed in bed for three days. Vital signs of the flap were monitored by checking the colour and temperature of the skin island. Small doses (0,1) of aspirin and dextran 500,0 ml were administered for the first three days after the operation.

Six to nine months after the flap transfer the correction was performed to reduce the bulk by excising any excess of the settled muscle, the skin island, or the skin graft. In one case fascia lata strips from the thigh were used to help hold the flap in the right position.

RESULTS

The follow-up ranged from three to seven years. The only complication was a skin island necrosis in one case. It had been caused by venous congestion.

Free latissimus dorsi flap transfer has been an effective means of gaining symmetry of the face.

One female refused the final correction as she was satisfied with the initial surgery. All of the patients are doing well and show a marked improvement in their self-image.

DISCUSSION

Microsurgery has already had radical effects in plastic and reconstructive surgery. The pedicled flap transfer traditionally used for serious deformity correction has now given way to free flap transfer in numerous cases. The newer surgical technique has undoubtedly shortened the duration of hospitalization and has diminished patient morbidity.

The suggested method of reconstruction by means of free muscle flap seems to be a new attempt to obtain a satisfactory correction of congenital and acquired deformities of the face.

This method permits to achieve a sufficient volume and a natural consistency to the restored cheek. A possible scar contracture which could cause firmness is obviated because of the absence of any dermal tissue.

It is hoped that the transferred muscle tissue will not change its mass because of a change of the body weight in the future as it had been supposed in the cases of free flap of omentum or other dermis-fat flaps [1, 9]. The disadvantage in using the omentum is the possible intra-abdominal complication of a laparotomy [5].

Reconstruction with the free flap cannot be recommended in all cases of facial deformities. It seems to be advisable in patients with an extensive deficit of facial tissues.

SUMMARY

Seven patients have undergone surgical reconstruction for the deformities of craniofacial microsomia and hemifacial atrophy. The free latissimus dorsi flap was used for the restoration of facial contour. The results have been followed-up for as long as seven years. All the patients do very well with marked improvement in their self-image. The presented concept permits to achieve a sufficient volume of the restored cheek and its natural consistency. It seems to be a competitive method to others traditionally used ones.

RESUME

Reconstruction de microsomie craniofaciale et d'atrophie hémifaciale par utilisation du lambeau libre de grand dorsal

Pisarek, W.

Chez 7 malades on a exécuté une reconstruction chirurgicale de la microsomie craniofaciale déformante et de l'atrophie hémifaciale. Afin de rétablir les contours du visage, on a choisi comme matériel le lambeau libre du muscle grand dorsal. Les résultats ont été suivis jusqu'au recul de 7 ans. Tous les patients sont très contents de l'amélioration considérable de leur aspect. La méthode proposée permet d'atteindre le volume désiré du visage à reconstruire et son aspect naturel. Il paraît que cette méthode puisse concurrencer les procédés traditionnels utilisés jusqu'à présent.

ZUSAMMENFASSUNG

Rekonstruktion der kraniofacialen Mikrosomie und Atrophie der Gesichtshälfte unter Verwendung des freien Lobus m. latissimus dorsi

Pisarek, W.

Bei 7 Patienten wurde eine chirurgische Rekonstruktion der deformierenden kraniofacialen Mikrosomie und der hemifacialen Atrophie vorgenommen. Zur Erneuerung der Konturen des Gesichts wurde der freie Lobus aus dem m. latissimus dorsi verwendet. Die Ergebnisse wurde bis sieben Jahre lang beobachtet. Alle Patienten sind sehr zufrieden mit der wesentlichen Verbesserung ihres Aussehens. Die vorgeschlagene Konzeption gestattet den gewünschten Umfang des rekonstruierten Gesichts und seines natürlichen Aussehens zu erzielen. Es hat den Anschein, dass diese Methode den bisherigen traditionellen Vorgängen gut konkurrieren kann.

RESUMEN

La reconstrucción de la microsomia craniofacial y de atrofia de la mitad de la mejilla con ayuda del transplante libre de m. latissimus dorsi

Pisarek, W.

En 7 pacientes se realizó una reconstrucción quirúrgica de la deformidades causadas por la microsomia craniofacial y atrofia hemifacial. Para la reconstrucción

del contorno de la mejilla se empleó el trasplante libre de m. latissimus dorsi. Los resultados obtenidos fueron observados hasta el periodo de 7 años. Todos los pacientes están muy contentos con el mejoramiento considerable de su apariencia. La técnica propuesta permite lograr el volumen necesario de la mejilla reconstruida y de su apariencia natural. Parece que esta técnica pueda competir con los presentes procedimientos tradicionales.

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SURGICAL CORRECTION OF DEFORMATION OF THE FACIAL SKELETON IN PATIENTS WITH HEMIFACIAL MICROSOMIA

V. M. BEZRUKOV, N. A. PLOTNIKOV, V. I. GUN'KO, T. A. BABAYEV, A. A. NIKITIN

Hemifacial microsomia (HFM) is an independent form of a congenital defect of branchial arches I and II development.

The etiology of HFM is virtually unknown although Poswillo (1974) produced the syndrome by causing artificially a hematoma in the region of the ear and lower jaw of an embryo in an animal experiment. According to the data of this author the birth rate of children with HFM amounts to 1:3500.

A typical HFM is characterized by underdevelopment of the lower jaw, the temporo-mandibular joint (TMJ), microtia and macrostomia. The gravity of the syndrome varies from rudimentary forms to maximally developed ones. Regarding the lower jaw and the TMJ as the centre of development of the anomaly of the skull in patients with HFM, the deformities of the facial skeleton can be divided into three degrees.

In the degree I the deformity of the facial skeleton is slight. All parts of the mandible on the side of the syndrome are smaller in size. The anatomical development of the TMJ and its function are not impaired.

In degree II a pronounced deformity of the facial skeleton can be observed. The body and the ramus of the lower jaw and the TMJ are underdeveloped on the affected side. Rudiments of the condylar and coronoid processes are situated below the malar arch and frontally to the site of the natural position of articular fossa.

Degree III is characterized by a clearly pronounced deformity of the facial skeleton. The body of the mandible on the affected side is underdeveloped and ends in a rudiment of the ramus. The TMJ is absent. Meuremann (1957) proposed a three degrees classification of underdevelopment of the auricle in patients with HFM: degree I — diminished and deformed auricle with preservation of its anatomical parts; degree II — rudiment of the auricle consists of long or elongated parts of underdeveloped cartilaginous tissue; degree III — the external ear consists only of one or several cartilaginous portions or is completely absent.

In the present study we based the differential diagnosis on the presence of deformation of the facial skeleton and of the auricle. The absence of macrostomia did not influence the diagnosis.

A total of 85 patients with HFM were observed and treated. There were mainly young people aged 16—25. The syndrome was more frequently manifested on the right side of the face (53 persons). There were 47 women and 38 men. In contrast to most other typical developmental anomalies of the cranial and facial parts of the skull we did not find hereditary transfer of HFM. No relation was found between the degree of affection of the auricle and the degree of underdevelopment of the facial skeleton.

Degree I deformity of one half of the face is of low intensity and can be related to the underdevelopment of the mandible and sinking of the soft tissues of the parotico-masticatory region. The chin is slightly shifted to the damaged side. The mouth opens freely, the mandible can be moved in full extent. Deep overbite may be observed. The occlusion plane is slightly inclined. Roentgenological examination shows underdevelopment of the body, the ramus, the condylar and coronoid processes of the lower jaw, and also of the articular fossa and tubercle of the temporal bone. The shape of the ramus differs from that of the intact half of the mandible.

In HFM patients with degree II deformity of the facial skeleton the external examination reveals clearly the threedimensional asymmetry due to vertical, horizontal and sagittal unilateral hypoplasia. The centre of hypoplasia lies within the temporo-mandibular joint. Pronounced underdevelopment of the middle and lower parts of the face can be observed. The chin is underdeveloped, short, broad, shifted to the affected side. The parotico masticatory and retromandibular regions sink as a result of hypoplasia of the masticatory muscle and the parotid gland. The corner of the mouth and the wing of the nose on the side of the syndrome are displaced upwards, the naso-oral fold is short and deep. The adipose pad of the cheek is underdeveloped. The supra-mental crease lies high, is uneven, the lower lip is turned inside out. The mouth opens freely, the mandible is shifted to the damaged side. Movements of the jaw to the side of the intact TMJ are blocked. Lateral cross-bite can be observed. The occlusion surface in the region of the premolars and canines is inclined to the pupillary line under an angle of 10—15°.

The roentgenograms of the facial skeleton demonstrate pronounced underdevelopment of the lower and upper jaws, the temporal bone, the malar bone and arch and also of the orbit on the side of the syndrome. The ramus of the lower jaw is short, narrow, disfigured with rudiments of the condylar and temporal processes in its upper portion. Underdevelopment of the temporal bone, the mastoid process and the articular fossa and tubercle can also be observed. The branch and the body of the intact half of the lower jaw exhibit a compensatory enlargement, the mandibular body is flattened. The mentioned phenomenon contributes to a general aggravation of facial deformation.

In HFM patients with degree III deformation of the facial skeleton we can observe pronounced asymmetry and disfigurement of the facial skeleton.

The underdeveloped half of the face is flattened. The corner of the mouth on the side of the syndrome is pulled up to the auricle, bundles of connective tissue can be palpated in the soft tissues of the cheek. The lateral and lower walls of the orbit are underdeveloped, the eye slit is narrowed. The oral fissure is uneven, the wing of the nose displaced upwards, the naso-oral fold is short and deep. The mass of soft tissues in the underdeveloped half of the face is considerably smaller than on the intact side. The chin portion of the lower jaw is underdeveloped, short, broad, shifted to the affected side. The labio-mental fold is situated high, the lower lip is turned inside out. Palpation reveals marked hypoplasia of the masticatory muscle, the parotid gland and the branch of the lower jaw. The mouth opens freely, the lower jaw is displaced to the side of the deformed TMJ. Lateral movements to the intact TMJ are blocked. Deep overbite, laterognathia or open bite on the intact side of the face can be observed. The occlusion plane is inclined to the pupillary line under an angle of 15—30°.

The roentgenograms of the skull demonstrate clearly pronounced underdevelopment of the lower and upper jaws, the orbit, the malar bone and arch, the temporal and the adjacent parietal, the frontal and occipital bones on the side of the syndrome. The malar bone is situated considerably lower than the analogous bone on the intact side. The body of the lower jaw is underdeveloped and deformed, the ramus appears as a pointed rudiment.

Surgical correction of the facial skeleton in patients with hemifacial microsomia

In agreement with most authors [V. I. Gun'ko, 1984; G. A. Kotov, 1984; Converse et al., 1973; Obwegeser, 1974; Murray et al., 1984; Lauritsen et al., 1985 and others], we believe that complex rehabilitation of HFM patients should be started with reconstructive operations on the facial skeleton. It should be noted that the above mentioned surgeons mostly used auto- or allotransplants from the ribs or the iliac bone for bone and contour plasty of the supporting tissues of the face and for TMJ arthroplasty. Operations of the type of contour plasty using various tissues and materials were broadly used to improve the shape of the face [A. A. Limberg, 1927; A. T. Titova, 1975; V. S. Agapov, 1984; V. I. Yarchuk, 1984].

According to our clinical experience, orthotopic allotransplants preserved by varying methods present the best osteo-plastic material for constructive operations on the facial skeleton; by means of these materials it is possible to remove simultaneously mandibular defects of various extent to shape the TMJ and to perform contour plasty of the malar bone and arch.

In the treatment of HFM patients with degree I deformation of the facial skeleton who show a slight disfigurement of one half of the face and the occlusion without functional disturbances of the dento-mandibular system we performed contour plasty of the lower jaw using silicone implants or separate segments of orthotopic allotransplants (Figs. 1 and 2).

All bone-plastic operations on the facial skeleton were performed under endotracheal anesthesia.



Fig. 1 Woman patient P. Diagnosis: Degree I rightsided hemifacial microsomia
 a — Occlusion surface lies in parallel with the pupillary plane, b — postoperative
 scar in the parotico-masticatory region after removal of the rudiments of the auricle



Fig. Teleroentgenogram in AP projection of the same patient. Negligible deformation
 of the facial skeleton

Surgical correction of the supporting tissues of the face in HFM patients with degree II deformation of the facial skeleton is a complicated and multi-plane task. Surgical interventions on both halves of the lower jaw with simultaneous shaping of the temporo-mandibular joint were carried out for the reconstruction of the lower jaw, restoration of the TMJ and the removal of micrognathia. In the region of the underdeveloped half of the jaw, a constructive operation — creating a new TMJ and removing the defect of the mandibular branch — was carried out. In order to lift and shift the lower jaw to the intact side in the region of the ramus of its other side, sagittal or vertical osteotomy of the ramus was carried out.

Operative technique

A skin incision, 6—7 cm in length, is performed at a distance of 3—4 cm from the angle and the body of the underdeveloped half of the lower jaw. The soft tissues and periosteum are dissected along the lower margin of the jaw. The body and the ramus of the jaw are laid bare from both sides. (As a rule, the masticatory muscle proper is absent, the branch is underdeveloped, rudiment of the condylar and coronoid processes can be seen on its end.) Access is created to the articular fossa of the temporal bone. The articular fossa and the tubercle are underdeveloped and flattened. Rudiments of the condylar and coronoid processes are resected. The articular fossa for the TMJ in the temporal bone and the recipient area for the allotransplant in the lower jaw of the patient are created. The articular block of the allotransplant is introduced into the mandibular fossa. The temporal component of the articular block is attached to the temporal bone of the recipient by means of a thin wire.

While preserving the satisfactory developed articular fossa and tubercle in some patients we used the allotransplant of the lower jaw with the lower floor of the TMJ. The peculiarity of the operative technique in this case lies in placing the head of the allotransplant into the articular fossa after which the cartilaginous meniscus and the remnants of the capsule are attached to the surrounding soft tissues using kapron sutures.

In the region of the ramus of the intact half of the lower jaw we perform osteotomy of the branch in the sagittal or vertical plane using intraoral or extraoral approach. The body of the lower jaw is shifted forward and fixed in the planned position using bimaxillary splints with attached loops. The allotransplant is placed on the recipient area on the jaw of the patient and fixed with fine wire sutures. The operation on the lower jaw is concluded by fixing the split fragments of the mandibular branch and suturing the wounds.

It should be noted that a fissure sized 0.3—0.7 cm develops between the molars on the underdeveloped side of the face after reconstruction of the lower jaw and TMJ. In the postoperative period orthodontic treatment is carried out to achieve multiple occlusion contacts owing to dento-alveolar prolongation.

Our experience with the treatment of the mentioned group of patients

location of the chin do not enable us to achieve the desired aesthetic results only by means of reconstructive operations. It is advisable 2—2.5 years after has shown that pronounced underdevelopment of the soft tissues and dis-



Fig. 3 Woman patient S. Diagnosis: Degree II leftsided hemifacial microsomia
a — before operation, b — after bone-reconstructive operation, c — after contour
plasty using silicone implant

the operations on both halves of the lower jaw to perform contour plasty of the face and chin portion of the jaw using various materials. (Figs. 3 and 4).

In HFM patients with degree III deformation of the facial skeleton, a clearly pronounced hypoplasia of the supporting and soft tissues of the middle and lower parts of the face was observed. For this reason the removal of the deformity in these patients is possible only by a surgical intervention on the lower jaw and maxillary complex. Reconstruction of the lower jaw and the TMJ is carried out similarly as in patients with degree II deformation of the facial skeleton.

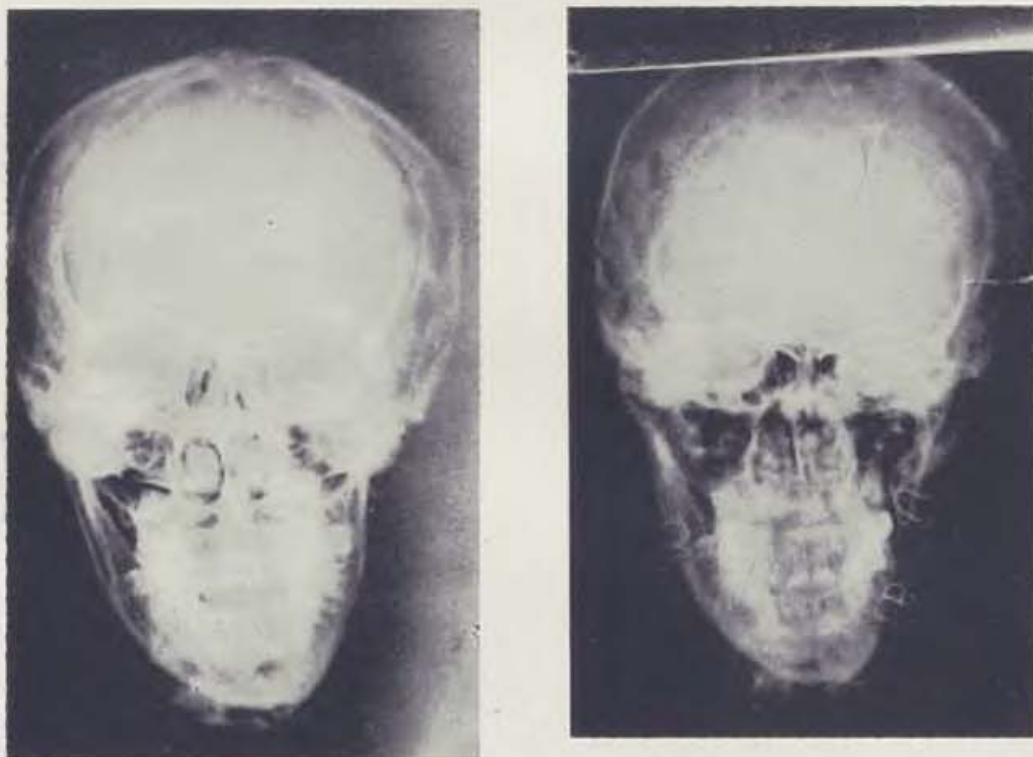


Fig. 4 Teleroentgenogram of the same patient in AP projection
a — before operation, b — after reconstructive operation

Operative technique

The upper jaw is laid bare by an incision in vestibulum oris. Osteotomy is carried out at the level of the bottom of the inferior nasal meatuses up to the pterygoid processes of the sphenoid bone. The osteotomized lower portion of the maxillary complex is turned in such a way that the occlusion plane of the jaw is parallel with the pupillary line. In this way the height of the upper jaw is reduced on the intact side and increased on the side of the syndrome by introducing the bone transplant into the incision line. When it is necessary to lift the upper jaw complex, bone transplants are also introduced into the line of osteotomy in the region of the pterygoid processes of the sphenoid bone.

In 5 patients with degree III deformation of the facial skeleton marked hypoplasia and defect of the malar bone and arch with distal position of

external and inferior walls of the orbit were observed. For the surgical correction of the supporting tissues of the face in these 5 patients a method of plastic operation for an underdeveloped face was elaborated using a complex orthotopic allotransplant including the body and the ramus of the lower jaw, a complete TMJ, the malar bone and arch with the external and inferior margins of the orbit.

To ensure a broad access to the middle and lower parts of the face, two incisions are used, i. e., submandibular and parotid towards the temporal region.

Operative technique

At a distance of 3—4 cm from the margin of the mandibular body a skin incision 6—7 cm in length is performed in the submandibular region. The soft tissues are dissected layer after layer. Subcutaneous fatty tissue and m. platysma are atrophic. The external surface of the mandibular body is laid bare. Rudiment of the ramus is resected in the posterior part of body. A bed for the transplant is created on the mandibular body. Parotid incision with transition to the temporal region is accomplished. The periosteum is dissected along the external margin of the orbit and the soft tissues are separated from its external and inferior walls. A bed for the full articular block is

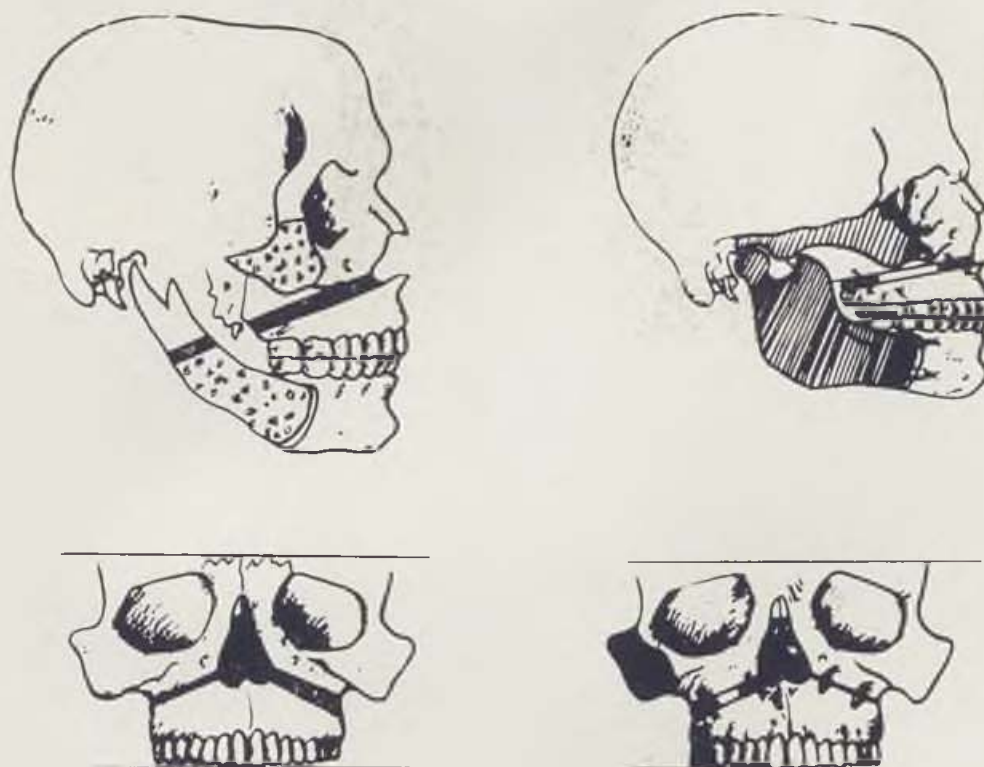


Fig. 5 Schematic presentation of the lower jaw with the formation of the recipient bed, osteotomy and ostectomy of the maxillary complex

Fig. 6 Schematic presentation of osteoplasty using a complex orthotopic allotransplant on the mandible, transfer and fixation of the lower portions of the maxillary complex

formed frontally from the meatus acousticus low the temporal bone. The allotransplant is inserted into the wound through the submandibular incision,



Fig. 7 Woman patient Sh. Diagnosis: Degree III leftsided hemifacial microsomia
a — before operation, b — after osteo-reconstructive operation, c — after contour
plasty using silicone implant

the articular block is fitted in the fossa and attached to the styloid process of the temporal bone by thin wire sutures. The malar arch of the transplant is placed on the rudiments of the malar arch of the recipient and fastened in the region of the external and inferior walls of the orbit using thin wire sutures. The body of the allotransplant is fixed to the recipient area on the lower jaw of the patient (Figs. 5 and 8).

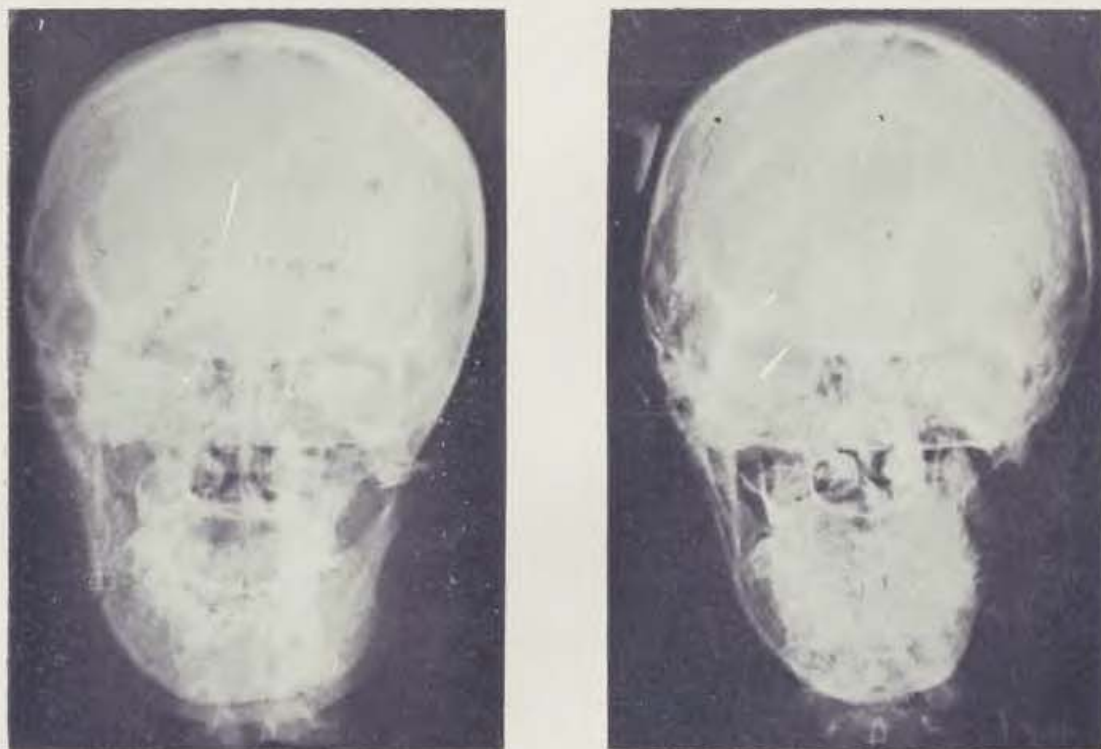


Fig. 8 Teleroentgenogram of the same patient in AP projection
a — before operation, b — after osteoreconstructive operation

In a total of 85 HFM patients, 100 surgical interventions were carried out. The table shows the distribution of HFM patients according to the degree of deformation and the character of constructive, reconstructive and corrective operations.

An analysis of delayed results has shown that quite favourable functional and aesthetic results were achieved in 30 out of 32 HFM patients operated on. A complication in the form of suppuration developed in the postoperative period in three patients and was checked by antiinflammatory therapy. Partial resorption of the transplant occurred in three patients and required contour plasty. The newly created TMJ in all the patients functioned satisfactorily. In 14 patients with marked hypoplasia or aplasia of the masticatory muscle proper and of the parotid gland, contour plasty using silicone implants was performed after reconstructive operations on the supporting tissues of the face.

Tab. 1. Distribution of HFM patients according to the degree of deformation and the types of surgical interventions performed

Degree of deformation	Number of patients	Reconstructive operations with the creation of TMJ		Contour plasty of the face
		on the lower jaw	on both jaws	
I	3	—	—	3
II	24	7	1	5
III	58	10	18	12
Total	85	17	19	20

The results obtained demonstrate that the use of orthotopic allotransplants for surgical corrections of deformations of the facial skeleton in HFM patients enables us to avoid multistage surgical operations and to achieve optimal functional and aesthetic results.

SUMMARY

Clinical observations of 85 patients with hemifacial microsomia are presented. New, original, constructive, reconstructive and corrective operations on the supporting and soft tissues of the face, using orthotopic grafts and allotransplants, were developed. By using large-volume bone-plastic operations on the middle and lower parts of the face, we can achieve optimal functional and aesthetic results.

Key words: hemifacial microsomia, orthotopic allotransplant, deformity of the facial skeleton.

RESUME

Traitement chirurgical des déformations du squelette facial chez les malades ayant une microsomie hémifaciale

Bezrukoff, V. M., Plotnikoff, N. A., Gougnko, V. I., Babayeff, T. A.,
Nikitine, A. A.

Les observations cliniques de 85 malades avec microsomie hémifaciale sont alléguées. On a élaboré de nouvelles opérations originales, constructrices, reconstructrices et correctrices, portant sur les tissus d'appui ou les tissus mous de la face, en utilisant les greffons orthotopiques et les homogreffes. La réalisation des opérations ostéoplastiques d'une ampleur importante, dans la partie moyenne et inférieure du visage, permet d'atteindre les meilleurs résultats sur le plan fonctionnel et esthétique.

ZUSAMMENFASSUNG

Die chirurgische Behandlung einer Deformation des Gesichtsskeletts bei Patienten mit hemifacialer Mikrosomie

Bezrukov, V. M., Plotnikov, N. A., Guňko, V. I., Babajev, T. A.,
Nikitin, A. A.

Es werden klinische Beobachtungen von 85 Patienten mit hemifacialer Mikrosomie angeführt. Es wurden neue originale, konstruktive, rekonstruktive und korrektive Operationen des weichen und des Stützgewebes des Gesichts unter Verwendung orthotopischer Pfropfen und Allotransplantate vorgenommen. Die Ausführung voluminöser, ausgedehnter knochenplastischer Operationen im mittleren und unteren Teil des Gesichts gestattet es, optimale, ästhetische und Funktionsergebnisse zu erzielen.

SUMARIO

Corrección cirujana de la deformidad del esqueleto facial en pacientes con microsomia hemifacial

Bezrukov, V. M., Plotnikov, N. A., Guňko, V. I., Babajev, T. A.,
Nikitin, A. A.

El papel presenta las observaciones clínicas efectuadas en 85 pacientes con microsomia hemifacial. Los autores han elaborado nuevas técnicas originales, constructivas, reconstructivas y correctivas con la aplicación a los tejidos faciales, soportadores y blandos, empleando injertos ortotópicos y alotransplantes. Las operaciones óseo-plásticas de gran extensión efectuadas en la parte media inferior de la cara produjeron resultados óptimos en cuanto al aspecto funcional y estético.

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BOOK REVIEW

S. A. Sohn: Fundamentals of Aesthetic Plastic Surgery, Baltimore 1987

The book, written by a team of plastic surgeons of the younger generation, is divided into nine sections and a total of 25 chapters. Bound in hardback, it is printed on good quality glossy paper and has 437 pages. It is amply documented with schematic sketches of surgical approaches and techniques of operation. There are also many photographs of patients taken prior and after surgery.

The introductory chapters clearly suggest the authors' intention to help the young plastic surgeon start his practice, especially private practice. Adapted to this is also the endeavour to teach the surgeon to understand the psychology of the patient coming with the request to have aesthetic surgery performed, or to instruct the surgeon on matters of anesthesia and post-operative problem management.

Another chapter deals with the provision of the necessary photographic docu-

mentation, even independently by a layman [surgeon]. The orientation of the book is defined especially in the 5th chapter "Office surgery and the new plastic surgeon", which has the following parts: "Should I join an established practice", "The disadvantages — apparent and real", "Historical trends in office plastic surgery", "Standards and accreditation in office plastic surgery — AAAAPSF (the American Association for the Accreditation of Ambulatory Plastic Surgery Facilities)", "Should I build an office plastic surgery facility?", "Advantages of office plastic surgery (to the patient, to third party carriers and government)", "Advantages of performing office plastic surgery (to the surgeon)", "Should I begin office surgery when just starting out?", "The author's experience in office plastic surgery", "How I would do it now if I were starting out", "Role of the architect — why do I need him?", "How to develop and pay for an initial office surgery facility", "Who should I hire?",

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EXPERIMENTAL TWO-LAYER FLAP FOR PLANTAR DERMATOPLASTY OF SKIN DEFECTS

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Due to the present achievements of dermatoplasty, skin defects can be removed at any localization, yet the current techniques used in plastic surgery for the management of plantar defects (V. P. Filatov 1917, B. V. Parin 1940, A. K. Tychinkina 1972, J. Zoltan 1984, Ion Kirikuta 1980) still fail to attain satisfactory results. Owing to physical strain, the transferred transplants necrotize, which eventually leads to the formation of poorly healing ulcers.

We needed experimental proof of our hypothesis, namely, that it is possible to form a skin flap capable of healing together with the plantar surface and with standing physical strain.

METHODS

Test were made on 21 young pigs (white Landrace breed) weighing from 15 to 18 kg. The terms of morphological observation were set in accordance with the schedule of primary clinical healing of the aseptic skin wounds and the subsequent union of the layers of the formed two-layer flap on days 7, 14, 21, 30, 60, 120, 180. For each period we used three animals.

The basic aim of our experiment was to conduct morphological observation of the dynamics of the envisaged union of the inner decorticated portion of the flap with the inner surface of the external layer; also we wanted to follow up histological changes in the skin layers during their union, specificities of vascularization in the process of healing, changes in the adipose and sweat glands as well as in hair follicles.

The experiments were made in general ether anaesthesia following intramuscular premedication (4 ml 2.5% Aminazin solution, at 15 to 20 minutes

i. m. 15 to 20 ml sodium oxybutyrate). The premedication permitted to avoid the stage of excitation, which is particularly prominent in young pigs, to reduce substantially the quantity of ether applied as a basic precaution for the prevention of toxic pneumonia.

The construction of the two-layer flap proceeded in three stages.

In the first stage the authors performed an arch-like incision of the skin with subcutaneous adipose tissue beginning from the antero-superior iliac spine directed downward and forward (incision length 12–13 cm) in the posterior half of the iliac zone. Analogically, a parallel incision of 7 cm was made. The skin flap thus formed between the incision was mobilized from the aponeurosis and sutured according to Filatov. The edges of the wound were sutured by means of mattress sutures in the usual manner. The stitches were removed on days 16–18 from the wound, on days 18–20 from the flap.

The second stage followed in 21–22 days. At a distance of 14 cm to the upper pedicle of the existing flap, the authors performed a semi-circular incision of the skin and subcutaneous adipose tissue down to the lower pedicle of the flap. A parallel incision was made again at the distance of 7–8 cm (Fig. 1a). The skin and the subcutaneous adipose tissue was totally

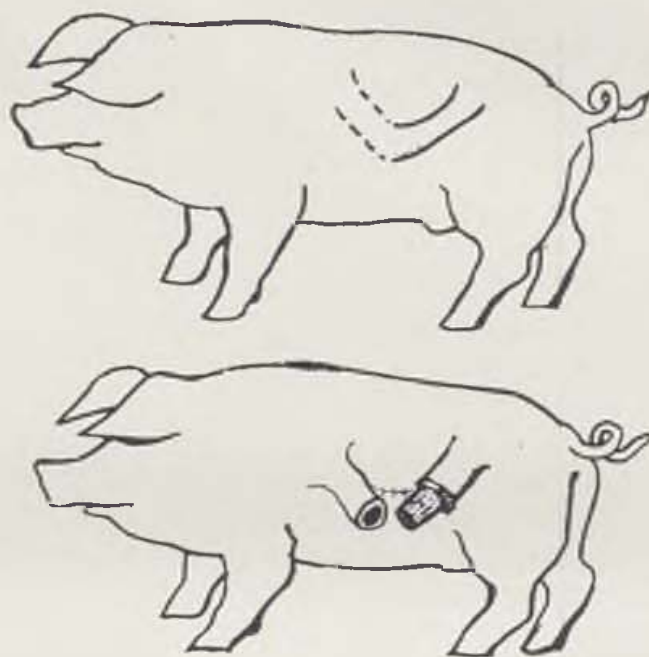


Fig. 1 Stages of the two-layer flap construction

mobilized from the muscle and aponeurosis and sutured to form a cube. This resulted in a single massive arch-like flap of nearly double the length. The wound edges of the resulting defect beneath the new part of the flap was closed with mattress sutures to establish a firm union. The sutures were then removed similarly as in stage 1.

The third stage followed within 30—40 days of the removal of the stitches. The skin flap was then cut transversally in the middle. By comparing the free segments, the length of the possible doubling was estimated. From one side the epidermis (0.3 mm) was taken over a distance of 6—8 cm by means of a Stryker electrodermatome. The other segment was cleared of the subcutaneous fatty tissue to produce a hollow tube about 6—8 cm long (Fig. 1b). The deepitelialized part of the flap was inserted into the other half and both parts of the flaps were fixed with internal sutures placed there previously. In this way, a two-layer skin tubular flap was made.

A major swelling of the flap, moderate cyanosis of the doubled part were seen on the 2nd postoperative day owing to the impaired blood supply and congestion between the two skin layers. The signs of impaired blood supply gradually abated disappearing entirely by days 10—12. The sutures were removed on days 18—20. Concurrently with the above-mentioned schedule, the animals were sacrificed and the doubled part of the tubular flap was assessed macroscopically. To study the structural changes, specimens were taken for histological examinations and the histological sections were then stained with hematoxylin-eosin, picrofuchsin according to van Gieson for muscle and collagen fibres, and with resorcin-fuchsin according to Weigert for elastic fibres.

RESULTS

Productive perivascular infiltration was seen 7 days after a two-layer skin flap had developed in the skin of the external portion. Parietal and obliterating thrombi, protein and erythrocytic clusters were detected in the blood vessels of the subcutaneous adipose tissue. In two cases, the dermis of the inner portion nearer the subcutaneous adipose tissue had developed zones of necrosis surrounded by proliferating stratified squamous epithelium. The dermis fibres in the vicinity of those zones were oedematous and greatly infiltrated with polymorphonuclear elements. Fuchsinophilia of the collagen bundles of the outer skin was observed, though slightly reduced in the necrotic zones and sporadically in the papillary layer.

Signs of focal productive perivascular infiltration appeared on day 14 in one case of observation. The inner layer of the contained tiny foci of proliferation of the hair follicle skin epithelium with the development of keratinized "droplets" (Fig. 2a). In two cases the depth of the inner layer dermis showed the presence of cysts lined with epidermis containing a structureless necrotic mass. Signs of inflammation due to the formation of granulation tissue with polymorphonuclear infiltration could be seen in zones lacking any epithelial lining of the adnexa.

Cysts lined with epidermis and filled with keratinized mass were discovered in the internal layer of the skin in 21 days. The parts of the missing epithelial lining of the peripheral cysts showed signs of chronic inflammation while in the rest of the skin there were only minor signs of focal productive

perivascular infiltration. The collagen fibres of the skin tended to exhibit altered staining properties more prominent in the inner skin. There were atrophied sweat glands and sporadic hair follicles, some of them enveloped in granulation tissue (Fig. 2b).

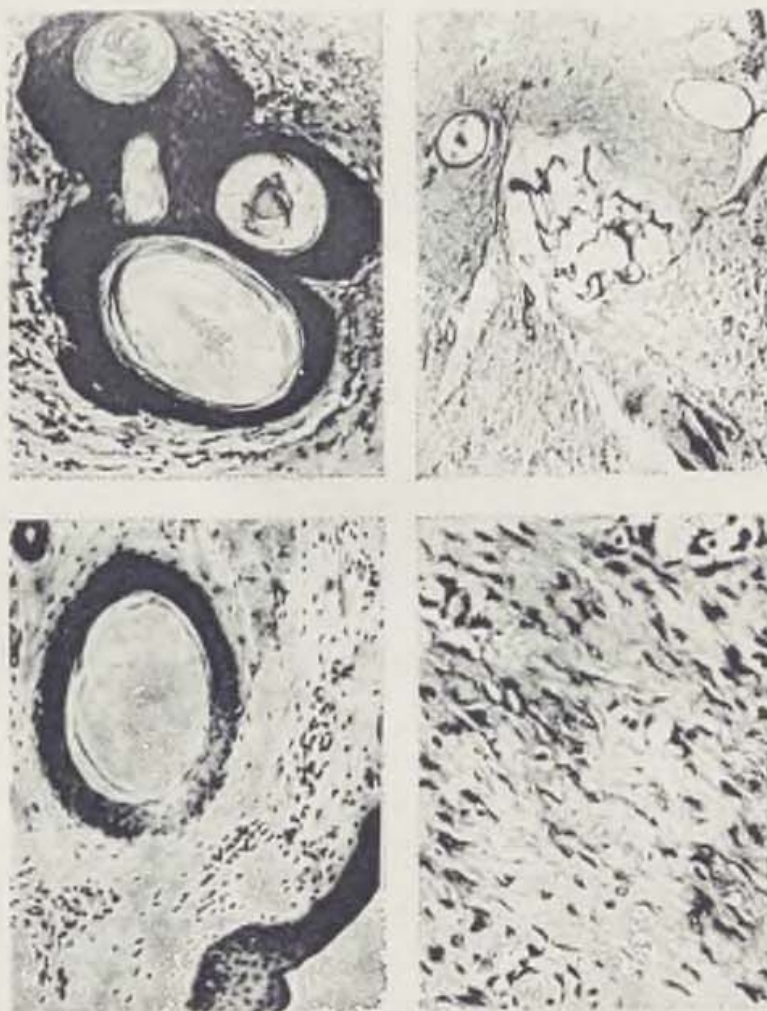


Fig. 2 Morphological changes in two-layer flap observed at different times. a) Keratinized masses in hair follicle ("droplets") on day 14, b) Sweat glands atrophy in the inner part of the flap on day 14, c) Insignificant perivascular infiltrations in the external flap portion after 1 month, d) Normal appearance of capillaries in the wall of the two-layer flap after 6 months

Examined one month later, the skin of the outer layer of the flap showed signs of focal underdeveloped productive perivascular infiltration (Fig. 2c), and, in the adipose layer, a large quantity of blood vessels, connective tissue fibres throughout the thickness of the adipose tissue. At the interface of the inner layer of the flap and the adipose interlayer there was clear evidence of a layer of fibre-elastic tissue. The dermis of the inner layer showed signs of fibrous tissue proliferation with microfoci of lymphoid-histiocytic infiltra-

tion. Also observed were sporadic hair follicles, adipose and atrophic sweat glands, microcysts with signs of chronic productive inflammation. In addition to that, there were foci of mature granulation tissue in the initial stages of scarring.

In two months' time the papillary layer of the dermis of the external portion of the flap showed signs of more productive perivascular infiltration, though minimally expressed. The inner layer of the flap exhibited isolated microfoci of polymorphonuclear infiltration along the vessels.

After four months, the internal and the external layers of the flap could no longer be distinguished. The flap wall had the appearance of a single thick skin layer covered with epidermis, and beneath it clearly differentiated papillary layer of the epidermis with numerous capillaries showing signs of productive inflammation. In the reticular layer of the dermis, considerable vascularization of the type of minor arteries, arterioles, capillaries, venules and tiny veins appeared between the collagen fibres. In the deep layer of the flap it was possible to identify small groups of atrophied hair follicles between sclerotized collagen fibres.

After six months, perivascular infiltration was much less pronounced, or could not be observed at all compared to the state after four months (Fig. 2d). Similarly, the staining properties of the collagen, elastic fibres showed no signs of any substantial change except for occasionally observed reduced numbers of elastic fibres in the papillary layer of the flap walls. There was a minimum of manifest chronic inflammation with the granulation tissue practically totally transformed into cicatricious tissue.

CONCLUSIONS

All this offers ample ground to claim that in an experimental two-layer flap all its layers ultimately coalesce at the level of the chronic proliferative inflammation with granulation tissue developing and subsequently turning into cicatricious tissue. At the same time, there are fewer and fewer skin appendages in the inner layer as a result of adipose and sweat glands atrophy, while hair follicles disappear.

The results of our experimental study permit us to recommend the clinical use of the two-layer flap for covering plantar skin defects.

SUMMARY

Dermatoplasty for the correction of external plantar defects is discussed. The authors give reasons for their experimental observation as well as selection of experimental animals. The experimental methodology is described and a schedule for the animals' observation suggested. The section dealing with morphology describes the dynamics of the atrophic process of the adnexa of the internal flap portion and morphogenetic union of the deepithelialized internal layer with the internal surface of the external flap portion. The results

based on experimental follow-up of a two-layer skin flap, resistant to physical strain, lead the authors to recommend it for clinical use.

RESUME

Lambeau expérimental à deux couches pour plastie du défaut cutané au pied

Pyslar, S. I., Stamatina, S. I., Fedotov, A. F., Krylov, A. P.,
Levenec, V. L.

La problématique des plasties du défauts située à la surface du pied est expliquée. Le but de l'expérimentation est mis au point ainsi que de choix d'animaux expérimentaux. Donné la description de la méthode expérimentale et les délais d'observation des animaux. Dans la partie morphologique de l'article, on décrit la dynamique du processus d'atrophie des organes cutanés accessoires concernant la couche intérieure du lambeau. On y décrit également la morphogenèse de la prise de couche intérieure désépithélialisée sur la surface intérieure de partie extérieure du lambeau. A la base des résultats d'expérimentation concernant le lambeau cutané à deux couches, qui s'est révélé résistant à la charge physique, on recommande le lambeau à deux couche à l'utilisation dans la clinique.

ZUSAMMENFASSUNG

Experimenteller doppelschichtiger Lobus zur Plastik eines Defekts der Haut der Fusssohle

Pyslar, S. I., Stamatina, S. I., Fedotov, A. F., Krylov, A. P.,
Levenec, V. L.

Es wird das Problem der Plastik von Defekten der Fusssohlenoberfläche erklärt, und das Ziel einer experimentellen Beobachtung und Auswahl experimenteller Tiere begründet. Ferner wird die Methode des Experiments und die Termine der beobachteten Tiere beschrieben. Im morphologischen Teil des Artikels wird die Dynamik des Prozesses der Atrophie der Hautorgane der inneren Schicht des Lobus sowie die Morphogenese des Zusammenwachsens der deepitalisierten inneren Schicht mit der inneren Oberfläche des ausseren Teils des Lobus beschrieben. Auf Grund der Ergebnisse der experimentellen Beobachtungen eines doppelschichtigen Hautlobus, der gegen physische Belastung widerstandsfähig ist, wird der doppelschichtige Lobus zur Anwendung in der Klinik empfohlen.

RESUMEN

El lóbulo experimental de dos láminas empleado en la dermoplastia plantar para reconstruir los defectos cutáneos

Pyslar, S. I., Stamatina, S. I., Fedotov, A. F., Krylov, A. P.,
Levenec, V. L.

Los autores dan un informe sobre la dermoplastia de la superficie de la planta de piel y indican los motivos por su observación experimental y la selección de los animales experimentales. La sección morfológica del artículo describe el proceso atrófico de las partes cutáneas adjuntas de la porción interior del lóbulo y la morfogenesis de la unión de la lámina interior de-epitelizada con la superficie interior

de la parte exterior del lóbulo. Los resultados obtenidos a base de la observación experimental del lóbulo cutáneo de dos láminas, resistente al esfuerzo físico, condujeron a los autores a recomendar esta técnica para el uso clínico.

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"Equipment and supplies — how to save money", "Ensuring safety of your equipment" and "The future of office plastic surgery".

Pages 55—425 discuss surgical operations by different regions of the body, e.g. operation of the nose, eyelids, etc. The sections devoted to the surgery of the face include description of surgical anatomy, approaches, the patient's positioning and the particular operations on the face and neck with regard to certain specificities, such as decreased skin turgor, etc. This part also includes a description of the methods using chemical peeling methods and the technique of dermabrasion. The authors go into considerable detail describing plastic surgery of the jaws with reference to early and late dentition disorders and maxillary and mandibular defects. The section on plastic surgery of the chest includes description of techniques for breast augmentation and reduction. Another section

is devoted to paediatric problems in plastic surgery, the management of accidents, tumour and vascular malformations, congenital nevi, and a brief reference is made to the cleft lip and palate. The next section describes pre-operative preparation, surgical techniques and post-operative care in the removal of excess abdominal wall. The final section discusses the problems and surgical treatment of protruding ears, post-injury scars, the use of laser for surgery and hair transplantation.

The book is designed for beginning plastic surgeons and will be found especially useful for starting private practice.

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CONTRARY CHARACTERISTICS OF A AND B BLOOD GROUPS IN CLEFT LIP AND PALATE

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INTRODUCTION

Cleft lip and palate may be the characteristic example of a prenatal semi-lethal congenital defect (approximately 90% embryos with this defect die [5, 7, 9, 10]). Etiologically, clefts are a heterogeneous, multifactorial syndrome, where both genetic and exogenous factors [1, 2, 5, 6, 10] are apparently involved, each of which may be only partly present, participating in interactions and having a rather minor effect. Another problem in investigating semi-lethal defects is the question of prenatal (reciprocal) balance [2, 3, 4, 6, 7, 9] between the incidence, or defect development in the embryo population and its decline due to lethality. Thus, a postnatal group of children with congenital defect need not have an increased or decreased incidence of embryotoxic factor [3, 7, 10]. Owing to these reasons, apart from genetic disposition in humans, other factors influencing etiology, modification and lethality are not fully understood.

In humans, it is difficult to judge beforehand which character will play a dominant role in congenital defects. The ABO blood groups may be associated with a wide range of affections, beginning with ulcerous involvement and gastric carcinoma and ending with the social classification of man and the degree of his psychotic condition. In semilethal and multifactorial defects, however, no association has been found. Through association with the ABO groups one of the factors of genetically determined disposition or resistance is simultaneously revealed.

As early as in 1966 we found a certain shifting in blood groups (8) in the hereditary dominant type of cleft associated with the so-called cysts of the lower lip (Van de Woude's syndrome). Nevertheless, in cleft defects, as a whole, one cannot expect to find a strong association with ABO groups, which is difficult to find in a normal way, i.e. by comparing the blood group incidence in a group of probands with cleft defect to the incidence of a control group. We tried to avoid the consequences of prenatal reciprocal balance

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by investigating mainly modification influences, which will be mentioned in the Discussion section.

METHODS

The ABO blood groups were identified in 2,614 children with cleft defect operated on at the Department of Plastic Surgery, Medical Faculty of Hygiene, in 1964—1983. During that period 3,399 children with cleft defect coming from Bohemia were registered in the Department (p of detection = 0.9), the blood groups were identified in 77 % of the children examined.

The control population sample for ABO blood group determination consisted of 6,432 pregnant women monitored in the period from 1981—1984 at the Department of Gynaecology and Obstetrics, Prague 5.

This large group was divided into 6 subgroups according to the cleft degree:

CL — cleft lip, CLs subtotal, CLt — total

CLP — cleft lip and palate, CLPm — uniolateral, CLPb — bilateral

CP — isolated cleft palate, CPd — durum, CPm — molle.

Further, the group was divided by the proband's sex, our tables indicating M used for males, F for females.

The sex ratio is expressed as the proportion of males out of the total, the whole unit = 1; for example, the sex ratio of 0.600 signifies that the group consists of 60 % males.

The parity of the proband's mother is expressed as the share of the first-born children out of the total, whereas the total equals one. For example, 0.600 in firstborn children means that the group contains 60 % firstborn children.

FAM 1° indicates the cleft incidence in the proband's parents and siblings (familial affection with hereditary involvement of 1st degree or a positive family history of 1st degree), and again we indicated it as a proportion of the total, which equals 1. For example, FAM 1° = 0.075 indicates that in 7.5% families the cleft defect in relatives amounted to 1°. These data helped us to test differences in the subtypes of cleft defects with regard to the (relative) importance played by the etiological factor. The FAM 1° values are related to other investigated factors, and thereafter the coefficient of correlation is established. In short, if the correlation coefficient of any factors is positive, its influence can be compared to that of familial affection, if it is negative, then its influence can be contrary.

FAM + means a positive family history of the coefficient of relationship 1/16. The cleft defect incidence in more distant relatives is not included under FAM, as these data were found to be unreliable. FAM refers to the negative family history, and it is also expressed by values of up to one.

RESULTS

Absolute and relative representation of the ABO blood groups in the group with cleft defect and the control population sample is indicated in

Table 1. Females with cleft defect have a non-significant increase in A blood group (45%) as distinct from males (41.6%) and the control group. On the other hand, the B blood group is slightly decreased.

Tab. 1. Absolute and relative AB0 proportion in a group of children with cleft defect (CL/P) and in a control group

AB0	Relative CL/P			Population		Absolute CL/P		
	M	F	Σ	rel.	abs.	M	F	Σ
A	0.416	0.450	0.430	0.423	2.720	637	487	1.124
O	0.319	0.313	0.316	0.321	2.064	488	339	827
B	0.183	0.160	0.174	0.179	1.151	281	173	454
AB	0.082	0.077	0.080	0.077	497	126	83	209
Σ	1.000	1.000	1.000	1.000	6.432	1.532	1.082	2.614

The positive family history of the whole group as regards the coefficient of relationship 1/16 was found without significant difference in the blood groups. The highest value was registered in the O group (26%), the lowest one in the A group (23%).

Significant differences appear following the division of children with cleft defect into subgroups according to the cleft defect and sex.

The sex ratio of the cleft lip (CL) and cleft palate (CP) is, in both cases, the lowest in the A group and highest in the B and AB groups (Tab. 2) (X^2 , $p < 0.02$). Due to low frequency of the AB blood group, the discussion

Tab. 2. Sex ratio (Sr) i. e. proportion of males as a whole (whole = 1) and total number of probands (n) in basic cleft types (CL, CLP, CP — see text) in AB0 blood groups

Blood group	CL		CLP		CP		Σ	
	Sr	n	Sr	n	Sr	n	Sr	n
A	0.554	276	0.682	515	0.399	333	0.567	1.124
O	0.597	196	0.686	373	0.446	258	0.590	827
B	0.646	113	0.689	222	0.462	119	0.619	454
AB	0.660	50	0.633	98	0.508	61	0.603	209

is mainly concerned with the B group. The differences in the total cleft defect (CLP) are non-significant.

Further, we established subgroups according to sex with incomplete cleft lip, without distinguishing CL or CLP. This subgroup of females had a significant increase in the A group and decrease in the B group (X^2 , $p < 0.01$), whereas the male group values were just the opposite (X^2 , $p < 0.01$). This can be partly seen in Table 4, column CLs. Thus, incomplete cleft lip is more frequent in males who have the A group absent and the B group present, while the situation in the female group is contrary.

In a positive family history (FAM +) with coefficient of relationship 1/16, the total group of children with cleft defect contained a lower ratio of firstborn children (5), which can be ascribed to lethality. This group has also the same ABO blood groups (X^2 , $p < 0.02$) but differences appear as to separate blood groups. The ratio of firstborn children in the A group is similar to that found in familial and non-familial cases (Tab. 3), whereas the

Tab. 3. Proportion of the firstborn children (whole = 1) between boys with cleft defect (M) and girls (F) according to the ABO groups in isolated familial incidence (FAM -) and with positive family history up to the coefficient of relationship 1/16 (FAM +) excluding families with affected siblings

Blood group	FAM -			FAM +			
	M	F	Σ	M	F	Σ	Σ
A	0.477	0.473	0.475	0.424	0.478	0.448	0.469
O	0.463	0.441	0.455	0.395	0.359	0.379	0.435
B	0.442	0.512	0.468	0.359	0.136	0.278	0.423
AB	0.435	0.567	0.491	0.471	0.188	0.380	0.464
Σ	0.463	0.477	0.469	0.407	0.362	0.390	0.450
n	1.171	817	1,988	361	265	626	2.614

firstborn rate with positive family history decreases in the other blood groups, reaching the maximum in the B group (X^2 , $p < 0.02$) with the greatest differences found in the female subgroup (X^2 , $p < 0.01$).

Table 4 shows the relative representation of the ABO blood groups in 6 subgroups according to the type of cleft defect (CLs...CPm — see Methods section); further it indicates the frequency of the cleft defect of the proband's parents in these subgroups (FAM 1°) and the correlation coefficient (R) between FAM 1° and the relative frequency of the blood group. A significant correlation coefficient ($p < 0.05$ or < 0.02) was found in females with blood groups A [$R = -0.859$ and B = +0.931].

Tab. 4. The representation of ABO blood groups (whole = 1) in subgroups by cleft defect types (CLs ... CPm — see text) in boys (M) and girls (F) cleft defect incidence in proband's parents (FAM 1⁰) and correlation (R) between blood group frequency and FAM 1⁰, n = number of probands

Sex	Blood group	Cleft defect type						n	R
		CLs	CLt	CLPm	CLPb	CPd	CPm		
M	A	0.372	0.511	0.428	0.424	0.405	0.388	637	-0.316
	O	0.330	0.255	0.325	0.277	0.365	0.313	488	+0.088
	B	0.199	0.181	0.166	0.235	0.145	0.194	281	+0.248
	AB	0.099	0.053	0.080	0.063	0.085	0.104	126	+0.194
	n	282	94	584	238	200	134	1.532	
	FAM 1 ⁰	0.028	0.032	0.053	0.097	0.080	0.105	0.062	
F	A	0.478	0.469	0.432	0.409	0.421	0.531	487	-0.859
	O	0.292	0.327	0.303	0.304	0.349	0.283	339	-0.266
	B	0.161	0.143	0.166	0.209	0.161	0.117	173	+0.931
	AB	0.068	0.061	0.100	0.078	0.068	0.069	83	+0.338
	n	161	98	271	115	292	145	1.082	
	FAM 1 ⁰	0.050	0.051	0.074	0.130	0.082	0.035	0.071	

DISCUSSION

When analyzing the suspicious factors in children (or their mothers) with the kind of cleft defect which is semi-lethal in the embryonic age, the active factor in the whole group need not be more frequent (or less frequent) as, for example, the "high tide" of this factor entering the embryos influenced by etiology may be compensated for its "low tide" due to lethality of the affected embryos [2, 3, 7]. For this reason, a simple comparison with the control group usually fails to bring significant results. We have tried to elaborate procedures which might cope with this problem to a certain extent.

We consider it useful to differentiate three effects in active factors: etiological effect which helps to exceed the threshold of teratogenesis, modifying influence which is to be seen in the degree or type of cleft defect, and lethal effect helping to exceed the threshold of lethality [3, 7]. Postnatally, we are mainly able to identify the modifying effect. For example, the group has a decreased proportion of the factor for CL as distinct from CLP. This may be due to the fact that the factor leads to the development of CLP from CL, and thus it is more frequent in CLP, or, on the contrary, it decreases lethality, which is best seen in CLP where the factor is accumulated. This difference between CL and CLP suggests the potentially active part of the factor.

The second possibility how to tackle this problem is to establish correlations between the known and analyzed factor in the subgroups according

to the degree of the defect. For example, in cleft defects, the known factor was represented by the incidence of cleft defect in parents (FAM 1°) and by the correlation of blood groups where we established blood group correlations. A positive correlation may be interpreted either as genetic disposition or decreased lethality in CLP (in more severe types of cleft defect). On the other hand, a negative correlation may signify a "protective influence" or increased lethality in the more severe types of cleft defect.

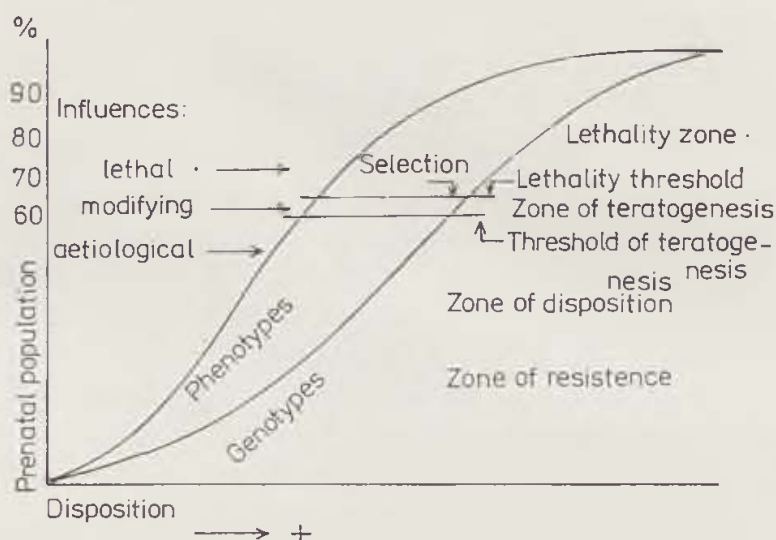
We regard it as important to compare males and females to establish the sex ratio, if made in the subgroups according to the degree of the defect. Male embryos have evidently lower thresholds of teratogenesis (3, 4) as well as of lethality. This may result in differences in the sex subgroups when, for example, a weak impulse may provoke a higher degree of teratogenesis in males, but not females.

Another possible way of dealing with this problem is to follow up the interactions of two and more factors. In the ABO blood groups, for example, we followed their interaction with the firstborn children's "rate" and familial incidence, both of which, in cleft defects, build up a semilethal effect (5). Due to the influence of the analyzed factor (in this case the A or B blood group), this effect can decrease or increase according to the proband's sex.

In Czech population, the cleft lip and palate defects were found to possess various relations which may be expressed in terms of negative correlation (2, 3, 4, 6, 7). For example, the sex ratio in CLP and CP has a negative correlation in the subgroups based on the proband's year of birth and on the region he comes from (six Czech regions altogether). If the sex ratio in cleft palate rises, it falls in the total cleft defect. If the CLP prevalence rises, the CP prevalence declines. The rising "firstborn rate" is accompanied by a falling ratio of families with positive family history, etc. These balanced changes account for the "prenatal population (reciprocal) balance" (2).

This balance must have been stabilized during phylogenetic development. In congenital defects, the lethality of the embryo was advantageous from the selection viewpoint, as it facilitated earlier birth of another (healthy) child. However, an excessively strong disposition to embryonic lethality (spontaneous abortions) was disadvantageous as the abortions of potentially vital embryos decreased the rate of reproduction. This reciprocal selection pressure resulted in reaching an equilibrium within the gene pool of the embryonic population, where in normal conditions both selective components are, in an optimum proportion. But this kind of situation must be the outcome of genotype participation, and embryonic lethality is considered an alternative programme of ontogenesis during organogenesis. The birth of a child with congenital defect can take place only within a short interval between the thresholds of teratogenesis and lethality. Within this interval, "defect modifications" occur, which might require only minor impulses, as beyond the threshold of teratogenesis embryonic homeostasis has already been impaired. The schematic situation in embryonic population is seen in Graph 1.

The interpretation of the results should correlate with the results of experimental teratology. The cleft defects develop during a relatively long period of teratogenesis (cca 30 days), most probably in the time sequence of CLt — CLs — CPd — CPm — CPs (submucosum). Cleft lip develops approximately two weeks earlier than cleft palate as the former evidently provokes the development of the latter, resulting in a total cleft defect (3, 4). A reversal of this process is not possible. Thus, in the embryonic population there may be fewer CL and more CLP factors. With the embryo's age, the resistance to etiological factors and lethality is growing. This situation is seen in Graph 2, where the cleft type markings are localized according to the embryo's age and the distance from the thresholds of teratogenesis and lethality. For example, CLP is situated as late as the period of the onset of CP as prior to that period the embryo had developed only a CL defect. In CLP, the

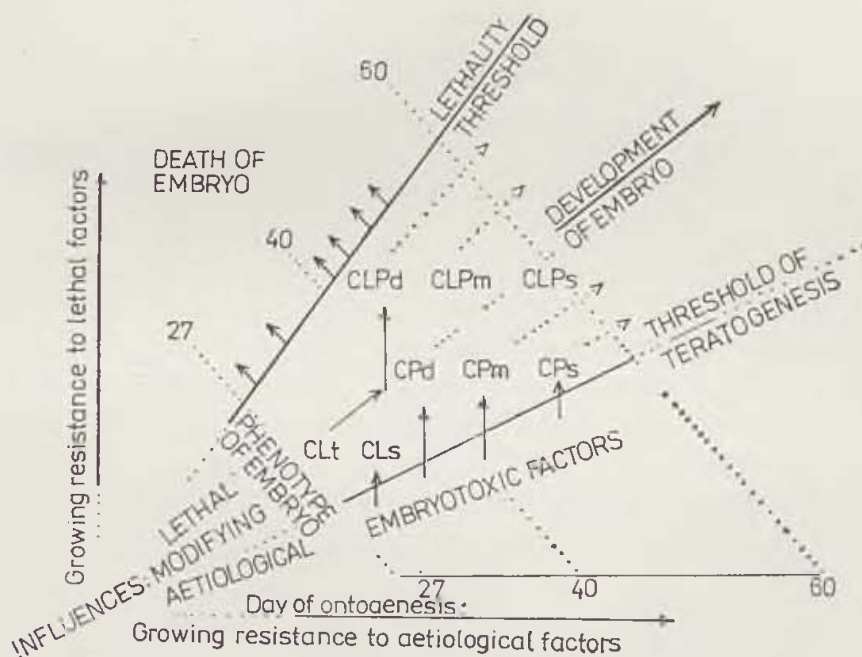


Graph 1. Embryonic population is indicated by a cumulative curve which represents incidence of embryonic phenotypes and genotypes with regard to the cleft defect. The zone of teratogenesis is defined by thresholds of teratogenesis and lethality. Natural embryonic lethality is 30—50%, in cleft defects approx. 90%.

distance from the threshold of teratogenesis is the greatest as this type of cleft is triggered off by the most powerful "impulse", thus being closest to the threshold of lethality. Equally, in other cleft types, it can be assumed that the higher the quantity of etiological factors, the closer is the embryo to the threshold of lethality (6, 7, 9). The modifying influences are indicated by an arrow from CL leading to CLP. The embryonic effects may be genetic (part of the embryo's phenotype) or exogenous — this is indicated outside the embryo. Unless death occurs in the period of teratogenesis, the embryo develops within a certain distance from the threshold of lethality, depending on the cleft type. However, the graph does not register sex differences.

The results obtained in our group of children with cleft defect are probably best expressed by the hypothesis that the A blood group acts as a "protective influence" for the embryo in terms of etiology, modifications and lethality (see Table 5). In the A blood groups, the sex ratio in milder cleft types (Cl, CP) is lower as the elevated threshold of teratogenesis prevents the cleft development in males where weaker embryotoxic impulses presumably occur. In a similar way, we can explain the condition in an incomplete cleft lip. In the A blood groups, these cleft defects would not occur in male embryos; the female embryos fail to develop the CLt modification and thus there will be more cases of the A blood group in female embryos with CLs, and fewer in the male group. In a positive family history, the rate of the firstborn children does not show a substantial decrease in the A blood groups as the embryo is protected against lethality. The correlation of the cleft incidence in parents (FAM 1°), is negative, high in females (an effect contrary to that caused by genetic disposition) and low in males, where decreased lethality of the more severe forms leads to a relative increase in the A group, thus decreasing the value of negative correlation.

As regards the B group, the situation is just the opposite. The O group is mostly placed between the A and B groups, the AB group has a low frequency and may be closer to the B group.



Graph 2. Schema of cleft defects. The development of the defect is defined by thresholds of teratogenesis and lethality, with modifications occurring in between, for example: CL → CLP, CL_s → CL_t, CP_m → CP_d. The positions of cleft subtypes are marked according to the period of their onset. The distance from thresholds of teratogenesis and lethality shows the necessary "dose" of embryotoxic factors appearing in different cleft defects needed to cross the threshold.

Tab. 5. Classification of basic differences in the proportion of the A and B blood groups and their interpretation. Specifications similar to those used in tables and text.

Relations	Sex	A group		B group		Data
		changes	interpretation	changes	interpretation	
whole group	M F	0 slightly higher	lethality —	0 slightly lower	lethality +	Tab. 1
sex ratio in CL and CP		lower	etiology in M —	higher	etiology in M +	Tab. 2
CLs + CLPs	M	lower	etiology —	more frequent	etiology +	Text (Tab. 4)
	F	more frequent	modification —	lower	modification +	
Primogeniture in FAM +		identical	lethality —	lower	lethality +	Tab. 3
cirrelation to FAM 1 ⁰	M	negat, low	etiology — lethality —	posit, low	etiology + lethality +	Tab. 4
	F	negat, high	modification —	posit, high	modification +	

These results allow us to advance the following working hypothesis: the ABO blood groups, A and B in particular, may play an active role in cleft defect development, their influence being of the contrary type; the A blood group might be labelled as a "protective effect", the B group as the "embryo-toxic effect". Thus the B group might be considered one of the factors of "useful" embryonic lethality facilitating prenatal selection of the defective embryos. In semi-lethal defects, however, due to the complexity of inter-related objective laws and factors, the interpretation need not always be unequivocal.

SUMMARY

The ABO blood groups were established in 2,614 probands with CL, CLP and isolated CP, coming from Bohemia, who were monitored at our Department in 1964—1983. 6,432 pregnant women from Prague 5, served as the control group. Significant differences between the A and B groups were found in four respects. CL and CP sex ratio in the A blood group is lower than in the

B group. In a positive family history the proportion of the firstborn children is generally lower, in the A blood group it is higher than in the B group. Women with subtotal cleft lip (CL and also CLP) have an increase in the A blood group and decrease in the B blood group, while the situation in males is just the opposite. In six subgroups classified according to the degree of the cleft (CL_s, CL_t = subtotal, total CL, CLP_m, CLP_b = unilateral, bilateral CLP and CP_d, CP_m = durum, molle) the correlation coefficient between the cleft frequency in first-degree relatives (FAM 1°) and the blood group incidence was found in the A group as $R = -0.859$, in the B group, $R = +0.931$, R in males being considerably lower. These results led the authors to formulate the hypothesis that the A group has a "protective effect": it prevents the more severe forms and decreases embryonic lethality in women, and in males it even prevents the development of the cleft. The B group behaves in a contrary way: its effect may be described as embryotoxic, increasing teratogenesis, modifications and lethality.

Key words: cleft lip and palate, ABO groups, sex ratio in the ABO groups

RESUME

Caractéristiques antagonistes des groupes sanguins A et B chez les fentes labiales et palatines

Černý, M., Fára, M., Hrivnáková, J.

Les groupes sanguins ABO ont été enregistrés chez 2614 sujets examinés en Bohême, dépistés à la Clinique dans les années 1964—1983, porteurs de fentes labiales (CL), fentes labio-palatines (CLP) et fentes palatines isolées (CP). Contrôle de population se portait sur 6432 femmes enceintes du quartier Prague 5.

On a trouvé d'importantes différences entre le groupe A et B au quatre points: Sexe-ratio chez CL et CP est plus bas dans le groupe A contre le groupe B. La quotité de premiers-nés (Kp) est, l'anamnèse familiale étant positive, en général plus bas et dans le groupe A celle-ci est plus élevée qu'au groupe B. Quant à la fente labiale subtotale (CL et CLP), chez les femmes le groupe A est plus fréquent, le groupe B plus rare, chez les hommes le partage est inverse. Le coefficient corrélatif en six sous-groupes établis selon le grade de la fente (CL_s — f. subtotale, CL_t — f. totale, CLP_m — f. unilatérale, CLP_b — f. bilatérale, CP_d — durum, CP_m — molle) entre la fréquence de la fente chez les parentés de 1^{er} grade (FAM 1°) et la fréquence du groupe sanguin a été chez les femmes: pour le groupe A— $R = -0,859$, pour le groupe B— $R = +0,931$. Chez les hommes R était abaissé. S'appuyant à ces résultats, on a établi une hypothèse de travail que le groupe A possède «une influence protectrice» qui rend moins possible l'existence de plus graves types de fentes chez les femmes, qui abaisse la létalité d'embryons et qui empêche même l'apparition de fentes chez les hommes. Le groupe B se comporte d'une façon juste inverse, son effet peut être désigné, du point de vue des fentes, comme embryotoxique, il augmente la tératogenèse, les modifications et la létalité.

Widersprechende Charakteristiken des Erscheinens von Blutgruppen A und B bei Lippen- und Gaumenspaltungen

Černý, M., Fára, M., Hrivnáková, J.

Die Blutgruppen ABO wurden bei 2614 Versuchspersonen aus Böhmen festgestellt, die an der Klinik in den Jahren 1964—1983 mit einer Lippenspaltung (CL), einer Lippen- und Gaumenspaltung (CLP) und einer isolierten Gaumenspaltung (CP) behandelt wurden. Bei einer Bevölkerungskontrolle gab es in Prag 5 6432 schwangere Frauen. Bedeutsame Unterschiede zwischen den Gruppen A und B wurden in vier Richtungen festgestellt: Der Sex-Ratio bei CL und CP ist geringer bei der Blutgruppe A gegenüber B. Der Anteil an Erstgeborenen (Kp) ist bei einer positiven Familienanamnese allgemein geringer und ist bei der Blutgruppe A hier höher als bei der Blutgruppe B. Bei einer subtotalen Lippenspaltung (CL und CLP) nimmt die Gruppe A bei Frauen zu und die Gruppe B ab, während es bei Männern umgekehrt der Fall ist.

Korrelationskoeffizient in sechs Untergruppen je nach dem Grad der Spaltung (CL_s, CL_t = subtotale, totale CL) (CLP_m, CLP_b = monolaterale, bilaterale CLP) (CP_d, CP_m = durum, molle) zwischen der Häufigkeit der Spaltung bei den Eltern (FAM 1°) und dem Erscheinen der Blutgruppen betrug bei Frauen für die Gruppe A $R = -0,859$, für die Gruppe B $R = +0,931$, während bei den Männern „R“ wesentlich geringer war. An Hand dieser Ergebnisse wurde die Arbeitshypothese aufgestellt, dass die Gruppe A einen „schützenden Einfluss“ habe (bei Frauen die Entstehung schwerer Formen erschwere, die Letalität der Embryos verringere und bei Männern auch der Entstehung einer Spaltung vorbeuge). Die Gruppe B dagegen verhält sich gerade umgekehrt, ihr Effekt kann als „embryotoxisch“ bezeichnet werden, sie steigert die Teratogenese und modifiziert auch die Letalität.

RESUMEN

Las características contrarias de los grupos sanguíneos A y B en fisuras del labio y paladar

Černý, M., Fára, M., Hrivnáková, J.

Los grupos sanguíneos fueron establecidos en 2614 personas de Bohemia con hendiduras del labio, con hendiduras del labio y paladar y con hendiduras aisladas del labio, quienes fueron monitoreados en nuestro departamento en los años 1964—1983. 6432 mujeres grávidas de Praga 5 sirvieron como grupo control. Se encontraron diferencias significantes entre los grupos A y B en cuatro esferas: en las fisuras del labio y las del paladar, el coeficiente de sexo es más bajo en el grupo A que en el grupo B. En la anamnesis familiar positiva la proporción de los primeros nacidos es generalmente más baja, siendo más alta en el grupo A en comparación con el grupo B. Las mujeres con la hendidura subtotal del labio (hendiduras del labio y las hendiduras del labio y paladar) tuvieron el grupo A creciente y el grupo B disminuyendo, mientras que la situación en los hombres fué precisamente contraria. En seis subgrupos clasificados según el grado de la fisura (CL_s — subtotal, CL_t — total, CLP_m — monolateral, CLP_b — bilateral, CP_d — durum, CP_m — molle) el coeficiente de la correlación entre la frecuencia de la hendidura en los parientes del primer grado (FAM 1°) y la frecuencia del grupo sanguíneo en las mujeres tuvo el valor para el grupo A — $R = -0,859$, para el grupo B — $R = +0,931$, mientras

que R fué más bajo en los hombres. Estos resultados condujo a los autores formular una hipótesis preliminar que en las mujeres el grupo A tiene un "efecto protector" previniendo el desarrollo de las formas más severas y reduciendo la letalidad embriónica, mientras que en los hombres este grupo puede aun prevenir el origen de la fisura. El grupo B tiene un efecto contrario que puede ser descrito como embriotóxico con el aumento en la teratogenesis, modificaciones y letalidad.

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CONCLUSIONS ON PERIPHERAL NERVE MICROSURGERY

D. IONESCU

Introducing reconstructive microsurgery did not mean merely an addition of microsurgical microscopes and instruments, but a change, a progress towards a new conception — **the microsurgical conception of reconstructing the tissues**. The microscope and the instruments are only a means of turning into good account the new conception since the mere use of the microscope, of the instruments according to the old conception on reconstruction of tissues cannot be considered as reconstructive microsurgery.

Since December 1980 through October 1987, more than 900 patients were operated on, with peripheral nerve lesions, out of which:

- 875 lesions were operated on by means of peripheral nerve suture;
- 130 lesions required reconstruction of the nerve continuity by nerve grafting.

These operations led to the following conclusions:

1 — Important changes in peripheral nerve surgery have been made, above all, owing to a new conception on nerve repair. By using microsurgery the surgeons have tried to improve the surgical conditions, the visualization and manipulation of delicate neural elements, to eliminate successfully the important obstacle in the peripheral nerve repair by introducing new reconstructive microsurgical techniques.

2 — An ever deeper understanding of phenomena and new surgical means corresponding to each new level of understanding have created the possibility of a better quality and a more rapid recovery. Undoubtedly, in the future, when the nerve fibre suture, or something of the kind, will be successfully performed, the results will seem to allow of no further improvements.

3 — The new conception and, consequently, the new surgical technique introduced by Professor Millesi succeeded in achieving the excellent qualitative "leap" which had been searched for and expected for such a long time.

4 — The classical epineurial suture is gradually abandoned in favour of the fascicular one.

5 — Among the microsurgical techniques of peripheral nerve sutures, the fascicular suture on fascicular groups is the routine technique best suited for a maximum recovery. Obviously, under good technical conditions and when "there is no choice", the epiperineurial or, especially, the circumferential fascicular suture can also prove useful.

6 — The nerve suture associated with the suture of the main nerve artery (0.2—0.5—1 mm in diameter) has demonstrated in 70 % of the cases a more rapid and satisfactory recovery. The problem facing the surgeon does not refer to technical difficulties in performing this type of vascular anastomosis, but to the difficulty of finding a vessel on which the anastomosis can be performed.

7 — Daily observation of the patients operated on (until the 12th day for sutures and the 21st day for graftings) has shown the presence of hypoesthesia or of tactile sensibility 3—7—14 days after surgery in previously anesthetic areas. This is well defined on the 21st day after surgery. It has also shown the presence of "sketches" of flexion or extension during this interval, or even disordered or incomplete flexions-extensions. These observations do not correspond to the present physiopathological explanations regarding nerve recovery. I am convinced that different theories on peripheral nerve recovery will appear in the future.

8 — The time interval from injury, the patient's age and the microsurgical technique are the main elements on which the degree of recovery after a peripheral nerve lesion depends. The shorter this interval, the better the results. However, in young and very young patients the time interval from injury does not prevent grafting, even if it is performed only in view of obtaining at least tactile sensibility.

9 — Irrespective of the level of the lesion I have not noticed any qualitative difference in the postoperative evolution of the peripheral nerves operated on when the patients were operated on within 6 months from injury.

10 — "The surgical bed", the associated lesions as well as the number of operations preceeding microsurgery seem to be more important than the level of the lesion. Under these circumstances the recovery-interval is longer. But when the patient is young, when he did not have "X" operations before microsurgery and the time interval from injury is not longer than 6 months, the quality of the recovery can be as good as in the case of a nerve section.

11 — I consider the most difficult moment the correct coaptation on corresponding sensory and motor groups. The only conclusion here would be that an objective, rapid and reliable method of intraoperative identification would be really useful; until then the "common sense" of the visualization and orientation when working with the operating microscope remains the only alternative.

12 — The Diapulse-therapy associated to surgery favours the break of the barrier at the level of the suture and the axonal growth. This was proved by the presence of the Tinel sign between the metacarpophalangeal joint and the third phalange for three days after surgery in all patients in whom the fascicular suture was associated with the Diapulse-therapy.

13 — As regards the length of the nerve defect, the longest nerve graft was of 26 cm. So far I am not convinced that there is an inverse ratio between the postoperative results and the length of the nerve defect, as mentioned in all surgery studies. To my surprise, testing the degree of sensibility for 30 days after surgery in defects of different lengths, for the last three years, has shown the presence of hypoesthesia and then, of tactile sensibility in 80 % of the median and the posterior tibial nerve defects which were grafted within 7—30 days after surgery, as well as the presence of a certain degree of finger flexion in high median nerve lesions or extension in the external popliteal sciatic nerve.

14 — Starting from Millesi's conception on the epineurial connective tissue, since 1981 I have considered the excision of the epinerve of the graft at the extremities of the graft extremely logical and useful. It has increased the chance of a conformable and good intrasurgical fascicular alignment during postsurgical healing.

15 — Collecting the nerve graft implies great attention; consequently, all grafts were taken under visual control by an incision performed all along the graft, without stretching, elongations (a 15 % elongation deteriorates the nerve), so that the connective tissue surrounding the nerve should be represented only by the epineurium.

16 — As regards the level of the lesion and the length of the nerve defect in median nerve lesions defects of 2—3 cm can be "made up for" by proximo-distal mobilization of the nerve. Things are different in the case of ulnar nerve defects in the middle or one-third proximal of the forearm or in the defects of the fingers or the hand, where 1 cm defects require grafting.

17 — In small ulnar nerve defects of 1—2,5 cm better results were obtained by using as donor nerve the dorsal sensory branch of the ulnar nerve rather than the sural nerve.

18 — The three patients with vascularized sural nerve graft and microvascular anastomosis are not enough for drawing conclusions. Therefore, the fact that in two patients with such vascularized grafts the evolution was extremely favourable can be a mere coincidence. But such good results in such a short time were not similar to any other grafting performed before.

19 — I do not believe in the usefulness of the anterior transposition of the ulnar nerve in the cases indicated by the specialized studies. The higher the lesion, the smaller the chance of a perfect recovery of the intrinsic muscles, but the possibility remains of a recovery of the big motor flexors (the deep flexors and the carpal ulnar flexors). In the case of transposition, the motor fascicles corresponding to the flexors are most often sectioned or elongated.

20 — In the case of "continuity lesions" the intrasurgical diagnosis is necessary and, at the same time, it is extremely difficult to specify the site, the number of fascicles concerned, the limits of the lesion. Within an im-

pecable internal neurolysis one can, with patience, obtain this specification and consequently, one can also continue the reconstructive surgery. "Continuity lesions", although annoying and "neverending", with utmost care can still be delimited. The connective tissue of the epineurium with its interfascicular extensions, becomes a priceless guide of "the limit" of this type of lesion. Palpation can also indicate an empty tube, more fibrous and more sclerotic contents, always in comparison with the rest of the nerve.

21 — In median and/or ulnar nerve paralysis, in serious sequelles, such as a neglected Volkmann, serious prolonged ischemia of the nerves, spectacular results can be obtained after fasciotomy and reconstruction of the nerve continuity, but **only when** the deep flexor muscles still have a chance of "survival".

22 — Extremity replantation have their own statute and, so far, a very strict "order" in performing the surgery, an order established by the most outstanding surgeons in the world, which proves to be logical, relatively "simple". However, I should like to make a remark — the number of microsurgical replantations is small in our clinic (out of 14 replantations, 13 were successful) and it would not give me the right to make this remark, but my experience in peripheral nerve surgery convinced me that, in emergency, during replantation, mere anchoring of the nerves is more useful, their continuity being left to be reconstructed quietly and without haste in order to get a maximum recovery. One of the contraindications of the primary peripheral nerve-suture is also the fact that in emergency it is impossible to make a precise delimitation of the injured and the healthy parts of the nerve, this being easier in secondary surgery.

23 — I consider the neurolysis alone to be useless in nerve lesions due to elongations, the only real possibility of recovery being an excision in healthy tissue and the grafting of the nerve defect.

24 — Microsurgery cannot be performed hastily. The smallest wrong step can compromise the work of 3—6—12 hours.

25 — It is essential to evaluate the results according to groups of patients operated on by the same surgeon-microsurgeon. A seemingly similar technique applied to a seemingly similar category of patients can show opposite results compared to the result after conventional surgery. Actually, after microsurgery, in the best cases (6 months after injury at the most, and up to the age of 45) recovery should be of 75—90 %. These are the real, possible parametres obtained by true microsurgery. Improved results in comparison with the classical technique and the patient's satisfaction with these minimal improvements are not to be encouraged. A patient is glad to see an improvement of 10—20 %, but he is not qualified to judge fully a real chance of maximum recovery. However, the surgeon knows and can appreciate what he has achieved and what he could have achieved in fact. This is why, microsurgery can be performed only by people with a high professional consciousness.

26 — Paleative surgery was not necessary in any of the patients operated on.

27 — None of the 900 patients operated on by peripheral nerve microsurgery presented any kind of suppurative complication. In 4 patients at the end of surgery or on waking up from anaesthesia a rupture took place on the suture line of the peripheral nerve, a suture which was remade after 24 hours.

28 — It is important that these new microsurgical techniques should be constantly evaluated and openly compared with the conventional classical methods not only from an aesthetic and functional point of view, but also from an economical one. Microsurgery has all the possibilities to reduce the number of days of hospitalization and of functional handicap; moreover it gives the chance of a total or nearly total recovery.

SUMMARY

Since December 1980 through October 1987, more than 900 patients were operated on, with peripheral nerve lesions, out of which 875 lesions were operated on by means of peripheral nerve suture, 130 lesions required reconstruction of the nerve continuity by nerve grafting. The patients were checked-up monthly, for one year, or even one year and a half, according to the complexity of the lesion. The operations proper and the time after surgery have enabled the conclusions submitted in the paper. All operations have been carried out by the same surgeon-microsurgeon.

RESUME

Conclusion de la microchirurgie des nerfs périphériques

Ionescu, D.

Depuis le décembre 1980 jusqu'à l'octobre 1987, on a opéré plus que 900 patients avec des lésions des nerfs périphériques. Dans 875 opérations du nombre total, il s'agissait des sutures des nerfs périphériques, alors que dans 130 cas, la réparation de nerfs périphériques dans leur intégrité a réclamé une greffe nerveuse. Les opérés ont été suivis tous les mois, avec le recul d'un an ou d'un an et demi après l'intervention, selon la gravité des lésions. Les opérations exécutées et le suivi de la période postopératoire ont permis de tirer la conclusions que nous présentons dans ce travail pour considération générale. Toutes les opérations ont été effectuées par le même opérateur-microchirurgien.

ZUSAMMENFASSUNG

Schlussfolgerungen aus der Mikrochirurgie der peripheren Nerven

Ionescu, D.

Im Zeitraum vom Dezember 1980 bis zum Oktober 1987 wurden mehr als 900 Patienten mit einer Beschädigung der peripheren Nerven operiert. Davon betrafen 875 Operationen die Nähte der peripheren Nerven, während es in 130 Fällen eine Rekonstruktion der Integrität der Nerven war, die eine Nerventransplantation erforderte. Die operierten Patienten wurden jeden Monat während 1 bis 1½ Jahres nach der Operation kontrolliert, je nach der Kompliziertheit der Läsion. Die eigentlichen

Operationen sowie die Periode darnach gestatteten es, Schlussfolgerungen zu ziehen, die wir in der vorliegenden Arbeit zur Erwägung vorlegen. Sämtliche Operationen führte ein und derselbe Chirurg (Mikrochirurg) aus.

RESUMEN

Los resultados obtenidos a base de la microcirugía periférica de nervios

Ionescu, D.

Desde diciembre 1980 hasta octubre 1987, más de 900 enfermos con lesiones periféricas de nervios fueron operados; desde este número 875 pacientes fueron operados por medio de la sutura periférica de nervios, 130 casos necesitaban la reconstrucción de los nervios con ayuda de los transplantes de nervios. Los pacientes fueron examinados mensualmente por el periodo de un año o un año y medio dependiente de la complejidad de la lesión. La operación misma y el control efectuado después de ella facilitaban hacer las conclusiones que se presentan en este papel. Todas las operaciones fueron efectuadas por el microcirujano.

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ARTERIAL CUTANEOUS AND MYOCUTANEOUS FLAPS IN THE RECONSTRUCTION OF DEVASTATING TISSUE-LOSS SURGERY

L. LACA, I. SATKO, P. ONDRUŠ, J. KODÝDEK

INTRODUCTION

Severe devastating facial injuries bring about tragic consequences both for the affected person and for his close relatives. The resulting cosmetic effect after healing is of principal importance for the rest of the person's lifetime. The face is a part of human body which is permanently exposed performing not only important physical functions but also expressing the person's individuality.

In facial injuries, the aim of reconstructive surgery is to restore not only the function but also to achieve optimum esthetic effect.

Thus, new surgical techniques are sought and introduced to achieve optimum functional and cosmetic effect which would cause the least inconvenience to the patient and reduce the period of treatment.

Recently, reconstructive facial surgery has been successful in applying arterial cutaneous, myocutaneous and osteocutaneous flaps. Even though these play a major part in substituting post-resection wounds in oncological surgery, they are also beginning to be applied in traumatic surgery. Due to their perfect independent blood supply and sufficient volume, they can be immediately used for the reconstruction of the defect in tissue-loss injuries, thus largely reducing the healing period and improving the patient's psychic condition [2]. We shall demonstrate two of our own cases of severe devastating facial injury, where, together with other plastic interventions, we also used this type of flaps.

OBSERVATION

1. A 14-year-old boy, slightly mentally retarded, put a detonator into his mouth and blasted it off by means of a battery. He was treated at the local surgical department where his wound was covered by sterile dressings. He was immediately transported to the regional hospital in Banská Bystrica. During transport the patient was given infusion solutions and analgetics.

Upon arrival, the patient was immediately brought to the operating room, where tracheostomy and cannulation of the subclavian vein were performed, a permanent catheter was introduced and intensive anti-shock therapy started. With the vital functions stabilized, the patient, in general anaesthesia, was examined and the devastating tissue-loss injury of the middle and lower third of the face treated (Fig. 1).



Fig. 1 A 14-year-old patient with severe devastating injury of the middle and lower thirds of the face, caused by the explosion of a detonator, which he put into his mouth. Condition prior to primary treatment, after tracheostomy

After washing out the wound with saline solution, we established the extent of the destroyed soft tissues of the middle and lower thirds of the face with the total loss of the lower lip and three quarters of the upper lip. The frontal mandibular section was broken extending from tooth 35 to 43, the crowns 35—45 and 14—25 were fragmented. The oral cavity had numerous lacerated wounds heavily contaminated with detonator particles and fragments of teeth.

The wounds were repeatedly washed out with a great quantity of saline solution until all existing impurities and foreign bodies were washed away, the loosened radices were taken out and the frontal mandibular section was restored to normal position and fixed with four clamps. Radially running wounds in the oral cavity and on the facial skin were sutured. After the debridement of necrotic tissue and suture of mucosa and skin, the total lower lip, three quarters of the upper lip and part of the nasal base were still damaged. Following surgery, the nasogastric tube was inserted (Fig. 2).



Fig. 2 The patient from Fig. 1 after primary injury treatment. The remaining defect of the total lower lip and three quarters of the upper lip. Radially running wounds into the surrounding tissues caused by pressure wave and crown fragments of the frontal teeth acting as secondary projectiles

After the removal of the remaining necrotic tissue and wound debridement, the damaged upper lip and nasal base were recovered with sliding flaps from the right and left cheeks, tracheostomy and nasogastric tube were discontinued. Six weeks later, the lower lip defect was covered with musculo-cutaneous flap on an upper sternocleidomastoid pedicle (Fig. 3). The flap healed in perfectly with an excellent functional and esthetic effect (Figs. 4, 5). Further plastic surgery is to follow in order to correct the upper and lower lips, mouth corners, upper and lower mouth vestibules and prothetic improvement is planned.

2. A patient, aged 33 years, sustained a severe tissue-loss facial injury caused by ignition and explosion of unknown gases in a barrel during flame welding. The patient, in a coma, was brought in by ambulance, immediately



Fig. 3 The patient from Fig. 1 after plastic reconstruction of the upper lip with the sliding flap from the cheek and after covering the lower lip defect with musculocutaneous flap from sternocleidomastoid muscle



Fig. 4 Condition six months after the accident — front view — Fig. 5 Right-side view of the same patient

intubated at the place of accident and during transport he was given infusion solutions (Fig. 6).

In the operating room tracheostomy and subclavian vein cannulation were performed and a permanent catheter introduced. Under general anaesthesia, the wound was washed out and debrided with saline solution and gross impurities removed out of the wound. The lacerated wound ran from the left mandibular angle across the cheek up to the left mouth corner, crossing the upper lip and nasal zone at the osteo-cartilaginous junction reaching as far as the outer eye canthus up to the right temporal region. The tip of the nose with its cartilagenous structure and the anterior maxillary part with teeth 11—15 were fixed to the soft parts of the artificially constructed flap. A part



Fig. 6 A 33-years-old patient with devastating facial injury caused by gas explosion.
Condition prior to primary treatment

of the maxilla with teeth 21—22 was missing and the palate was broken into many small fragments. The mandible showed bilateral angular-zone comminuted fractures opening up into the oral cavity. The frontal third of the tongue was almost cut off from the other parts by a deep lacerated wound; numerous lacerated wounds were found on the velum in the oral base zone.

Following repeated washing out with a saline solution and removal of necrotic tissue, the maxillary fragments were freely fixed with wire and Sauer's upper splint and the lacerated oral wounds were sutured. Sauer's lower splint was applied and intermaxillary fixation was used for the jaws. With the lacerated facial wounds sutured, we made submandibular incisions

layer by layer in order to suture the comminuted fractures in the mandibular angle region. The facial bones were fixed with bilateral subcutaneous Adam's



Fig. 7 The patient from Fig. 6, 2 weeks after primary treatment. Condition after covering the right nasal side defect and infraorbital zone with frontal arterial flap supplied by a. supratrochlearis sinistra



Fig. 8 The same patient with arterial flap detached after union was achieved

suspensories from the lateral margins of the orbit. Finally, the nasogastric tube was introduced.

After two weeks we found a tissue defect on the right side of the nose near the medial eye canthus extending into the infraorbital zone. To avoid deformation of the lower lid and nose, we decided to cover the defect with an arterial frontal flap using the left supratrochlear artery (Fig. 7). The flap healed without complications as did the donor site wound after a primary suture. Another two weeks later, the flap was detached (Fig. 8). The next two pictures (Fig. 9, 10) show the patient three months after the accident.



Fig. 9 Condition 3 months after the accident — front view — Fig. 10 Right-side view of the same patient

DISCUSSION

Opinion of surgical treatment for devastating facial injury may differ in detail but, in general, primary treatment should be as simple as possible to achieve good results, which means that complicated skin transfer is to be avoided if possible. As to the time schedule of the treatment, it is desirable to perform primary treatment within 6 hrs. of the accident, though, in poly-traumatic cases primary treatment can be postponed by 6—12 hrs. and started after the vitally important organs have been managed and the whole organism stabilized. In primary treatment the following conditions should be observed: antisepsis, treatment in general anesthesia, adequate wound debridement including foreign bodies removal and devitalized tissue excision, recon-

struction of all damaged anatomical structures, primary wound closure in anatomical layers, followed by adequate wound dressing (4). Observance of these principles helps to reduce tissue loss to a minimum, thus creating adequate conditions for the next reconstructive operations. Non-sparing surgical technique, premature removal of osseous fragments disregarding their vitality, non-elimination of foreign bodies, artificially created cavities, result in suture infection, facial structure deformation and loss of tissue which otherwise can be used for reconstruction. It is recommended to cover the wound with compressive dressing for 12—18 hrs. to avoid hematomas which enhance fertile ground for microorganisms. The prophylactic use of antibiotics depends on the assumed extent of contamination of the wound, its depth, localization, the patient's general condition and other associated injuries. If we opt for antibiotic prophylaxis, it must begin within 3—4 hrs. of the accident to have any effect at all. Beyond this time period, the antibiotics are used for their therapeutical effect, which determines their type and dosage.

Secondary reconstructive operations are performed only after the stabilization of potential foci of infection have been managed as these might complicate the post-operative course of treatment and worsen the result. Sequestra, foreign bodies, teeth roots and devitalized teeth are removed. The principal requirement is that the patient is in a generally good condition. This mainly refers to the quality of nutrition and elimination of systemic infections. The local conditions also influence the time period and choice of secondary reconstructive operations. We pay attention to the quality of the surrounding tissues, their mobility, elasticity and scar quality. Equally, we must examine the donor site; for arterial flaps we use Doppler's ultrasound flowmeter to judge the quality of the supplying artery.

When establishing the sequence of secondary reconstructive operations, we first attend to defects leading to severe functional consequences, such as inability to receive food, saliva excretion, respiratory problems or any other large defects which negatively influence the patient's psychic condition.

The use of arterial cutaneous and myocutaneous flaps for the reconstruction of facial defects is very convenient due to the fact that —

1. they are supplied with blood independently of the defect zone.
2. They can also be used irrespective of the elasticity of the surrounding tissues.
3. They provide the defect with full cover as they consist of skin, subcutis or even muscle.
4. They do not deform the neighbouring structures.
5. They are of sufficient volume to cover even large defects.
6. Osteomyocutaneous flaps permit one-stage reconstruction of both hard and soft tissues.
7. They reduce the period of treatment and incapacitation compared to classical transplant operations.

8. Application of musculocutaneous flaps, however, may have some disadvantages, such as differences in colour and pubescence and even deformation at the site of the subcutaneously localized flap pedicle (3).

In plastic reconstruction for devastating tissue-loss injuries, we usually combine sliding and rotation flaps taken from the vicinity of the defect with arterial flaps to enhance the advantages and suppress the disadvantages of these therapeutical procedures. Knowledge of the division of the face into anatomical zones and sub-zones greatly facilitates our work (2). Combination of different flaps helps to preserve the boundaries of definite zones, or, at least, to replace them in such a way that the tissue quality and morphology of the substituted part should correlate with the dividing lines (1).

CONCLUSION

A good final result, both functional and esthetic, of reconstructive operations for devastating tissue-loss injuries depends not only on plastic surgery alone but also on proper timing as well as on the patient's cooperation. Such types of injury are to be considered and managed as a whole. We consider it to be wrong to regard arterial flaps as opposed to other types of cutaneous replacement and flaps as it is necessary to make use of their respective advantages. Undoubtedly, arterial flaps are a great contribution and improvement in the reconstructive surgery of the face.

SUMMARY

The authors report on the application of arterial cutaneous and musculocutaneous flaps on the upper pedicle of the sternocleidomastoid muscle in two patients with severe devastating tissue-loss injuries. They discuss and analyze the time schedule, conditions and possibilities regarding the selection of reconstructive techniques as these influence the resulting functional and esthetic effect.

RESUME

Possibilités d'utilisation des lobes artériels cutanés et musculocutanés dans la reconstruction des pertes de substance traumatiques du visage

Laca, L., Satko, I., Ondruš, P., Kodýdek, J.

Les auteurs décrivent l'utilisation des lobes artériels cutanés et musculocutanés au pédicule supérieur du muscle sterno-cléido-mastoïdien chez deux patients présentant de graves pertes de substance dévastatrices au visage, d'origine traumatique.

Dans la discussion, ils dressent le bilan des temps opératoires, les conditions et les possibilités dans le choix des couvertures de reconstruction qui influencent les résultats finals sur le plan esthétique et fonctionnel de la reconstruction.

ZUSAMMENFASSUNG

Möglichkeiten einer Anwendung arterieller Kutan- und Myokutanloben bei der Rekonstruktion verlustartiger Verwundungen des Gesichts

Laca, E., Satko, I., Ondruš, P., Kodýdek, J.

Die Autoren berichten über die Anwendung eines arteriellen Haut- und Muskulokutanlobus am oberen Stiel des m. sternocleidomastoideus bei zwei Patienten mit schweren devastierenden verlustartigen Verwundungen des Gesichts.

In der Diskussion wird der Zeitplan, die Bedingungen und Möglichkeiten bei der Auswahl rekonstruierender Eingriffe analysiert, die die resultierende Funktionsrekonstruktion und ihren ästhetischen Effekt beeinflussen.

RESUMEN

Posibilidades del empleo de los lóbulos arteriales cutáneos y miocutáneos en la reconstrucción de la lesión facial con pérdida tisular

Laca, E., Satko, I., Ondruš, P., Kodýdek, J.

Los autores presentan un informe sobre el empleo de los lóbulos arteriales cutáneos y musculocutáneos sobre el pedículo superior del músculo esternocleidomastoideo en dos pacientes con la lesión grave devastadora con pérdida tisular. Se discuten y analizan los detalles como el plan de tiempo, condiciones y posibilidades en cuanto a la selección de la técnica operatoria, porque todos estos factores influyen el resultado postoperatorio final desde del punto de vista de función y estética.

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Objective investigation of the human voice

Prof. Minoru Hirano, M. D., Japan

Hemispherical dominance: its development and relationship
to neuropsychomotor aspects of speech defects

Prof. Andrew Kertesz, M. D., Canada

Speech rehabilitation in children with hearing defect:
diagnosis, treatment and rehabilitation

Prof. Karel Sedláček, M. D., Czechoslovakia

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Ass. Prof. Alexej Novák, M. D., CSc.
chairman of XXIst IALP Congress
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Ass. Prof. František Šram, M. D., CSc.
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This Congress will be followed by an International Symposium on Phonosurgery and Phoniatrics, organized by the E.N.T. Department, Charles University, Medical Faculty, Plzeň and held in Karlovy Vary, August 11—13, 1989.

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Department of Phoniatrics

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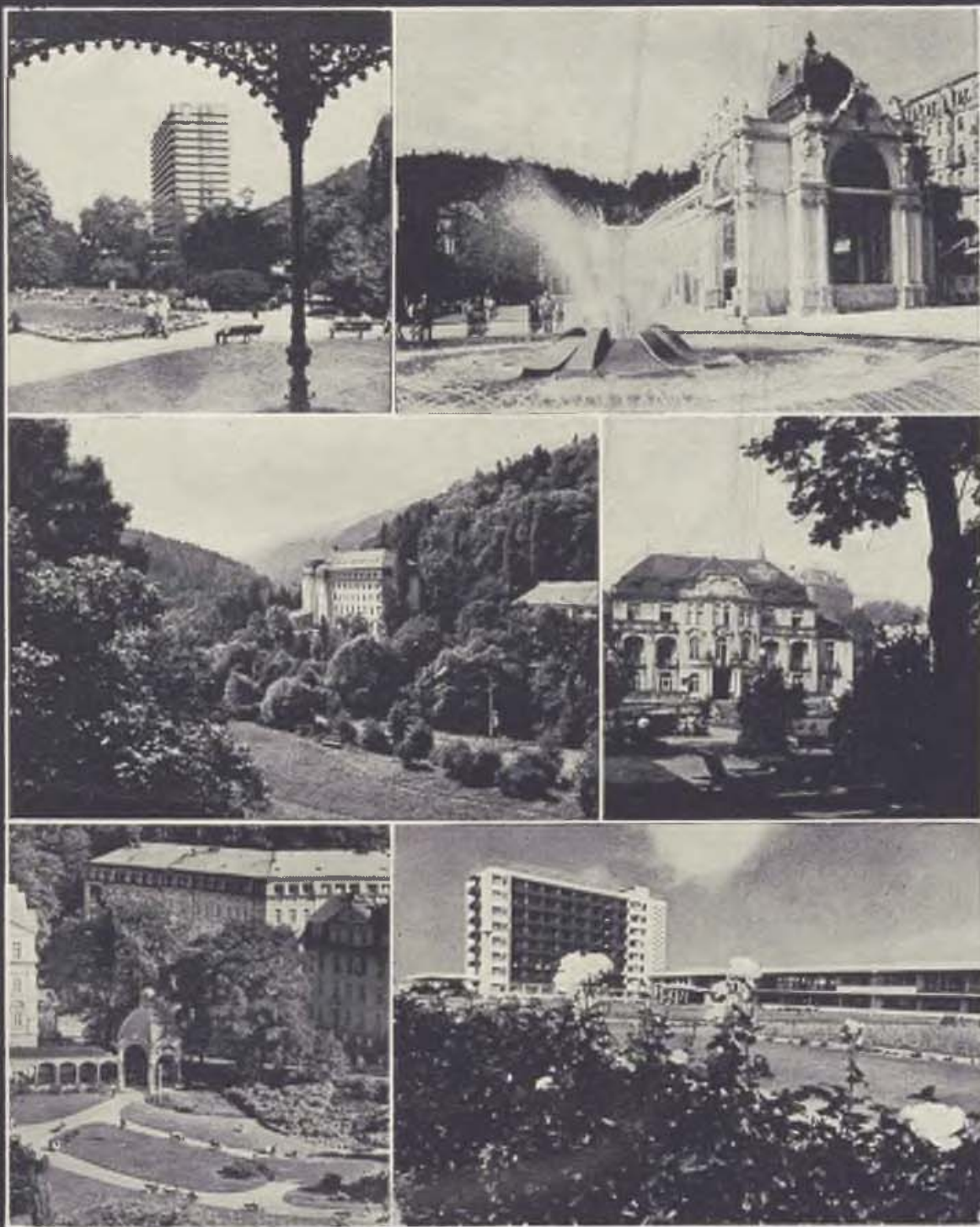
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