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THE DEVELOPMENT OF MODERN CLASSIFICATION AND NOMENCLATURE OF CONGENITAL LIMB DEFICIENCIES

B. VRBICKÝ

Recent decades have seen considerable progress in the treatment of limb deficiencies. While analogous trauma states do not pose problems as regards their classification and nomenclature, the nomenclature employed in congenital deficiencies is often outdated and does not suggest the type of deficiency in terms of anatomy. This nomenclature of Greek and Latin origin includes names such as e. g., amelia (absence of a whole limb), peromelia (mutilation of the peripheral segment of a limb), or phocomelia (failure proximal segments of a limb to develop), etc.

The new international classification, recognized by the WHO, is based on Swanson's classification (1) dividing congenital limb deficiencies into the following seven groups:

I. Failure of formations of parts
II. Failure of differentiation and separation of parts
III. Duplication
IV. Overgrowth — Gigantism
V. Undergrowth
VI. Congenital constriction band syndrome
VII. Generalized skeletal abnormalities

These seven groups cover all types of congenital limb deficiencies. The most frequent type of deficiency is the first one, i. e., failure of formation of parts. The more detailed nomenclature in this particular group has undergone a number of changes. In their classic work appearing in 1961 (2), the American authors Frantz and O'Rahilly used the term hemimelia (hence transversal and paraxial hemimelia referring to complete limb deficiency and partial deficiency in the longitudinal axis of a limb, respectively). The problem is that this terminology, linguistically incorrect as it is (for hemimelia in fact means half of a limb), may be a source of misinterpretation. It was for that reason that a revised version of the Frantz-O'Rahilly classification (3) was published in 1966 coining the term meromelia instead of hemimelia. The 1966 version divided limb deficiencies into transversal meromelias (with the deficiency crossing

the limb's longitudinal axis) and longitudinal meromelias (with the deficiency involving the limb in its axis). Transversal and longitudinal meromelias can be either terminal (the limb ends with the deficiency) or intercalar (the segment involved is sandwiched between unaffected parts) (Fig. 1). Hence, this system comprises four variants: 1) tranversal terminal, 2) transversal intercalar, 3) longitudinal terminal, and 4) longitudinal intercalar meromelias. However, even this classification fails to cover absolutely all possible variations of the deficiency. So, for example, phocomelia, i. e., transversal intercalar meromelia may include terminal deficiencies in a phocomelic hand (e. g., absence of one or more digits), something the above nomenclature is lengthy and cumbersome to describe.

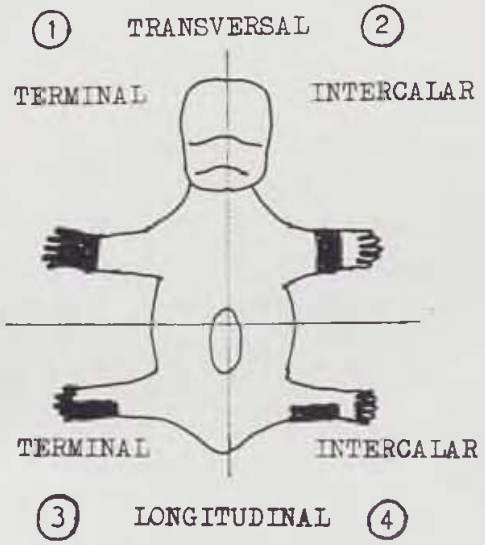


Fig. 1 Division of meromelias according to the revised Frantz and O'Rahilly classification

It was for these reasons that a study group attached to the International Society for Prosthetics and Orthotics (ISPO) was founded in 1973 in an effort to develop a more precise classification and nomenclature (4). Its results were presented at the ISPO Symposium on the Limb Deficient Child, held in Heidelberg in August 1988 (with the author of this paper attending). The methodology of describing a limb deficiency is based on the following principles:

1) deficiencies are described exclusively on anatomical and radiological, not on etiologic, embryological or epidemiological bases;

2) description of the deficiency is confined to description of the skeleton deficiency. In most cases, the unreported consequence of a skeletal deformity is malformation of the appropriate part of the limb;

3) the classification and nomenclature, based on the above description, is very simple and allows to specify exactly the anatomical situation of the affected limb and to employ a numerical code.

The ISPO Classification divided limb deficiencies into two main groups: 1) transversal deficiencies and, 2) longitudinal deficiencies.

1. TRANSVERSAL DEFICIENCIES

Transversal deficiencies comprise so called congenital amputations thus resembling surgical amputations at various levels of the limb. The level of congenital amputation (transversal defect) is designated by the name of the segment (not the bone) at which the limb ends. Length of the segment at which the limb ends is given in thirds. In cases where the limb segment is absent without any remainder (i. e., where the plane of the transversal deficiency crosses the joint), the name of the first missing segment is followed by the word "total". The possible planes of individual transversal deficiencies are shown in Fig. 2.

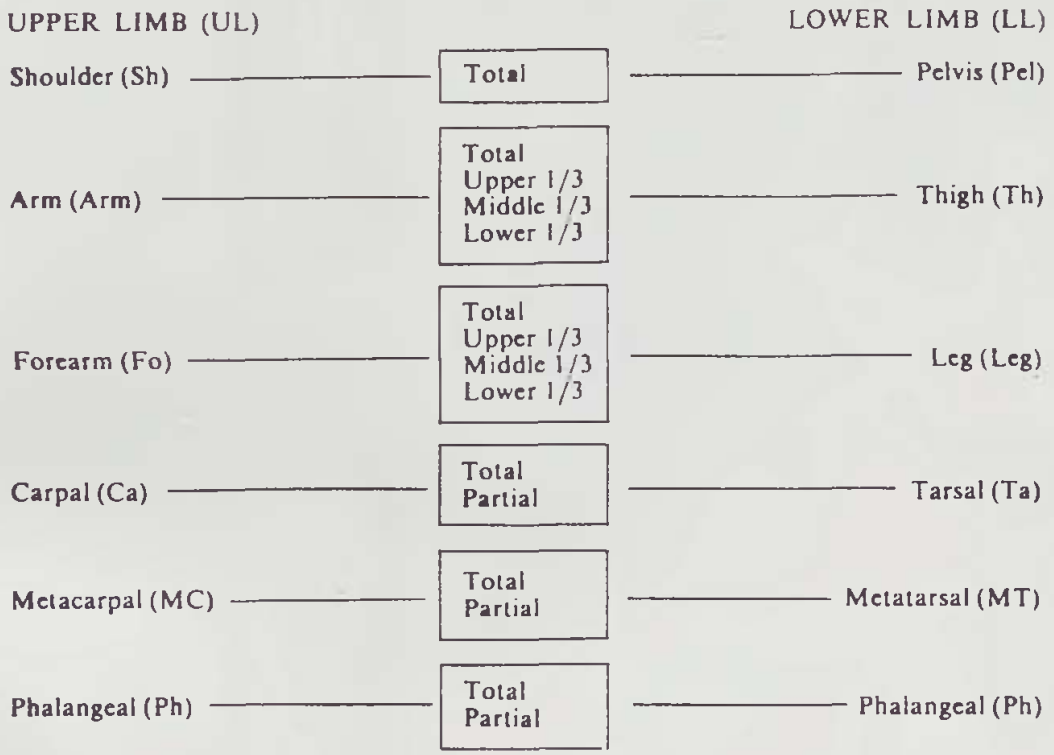


Fig. 2 Possible planes of transversal limb deficiencies

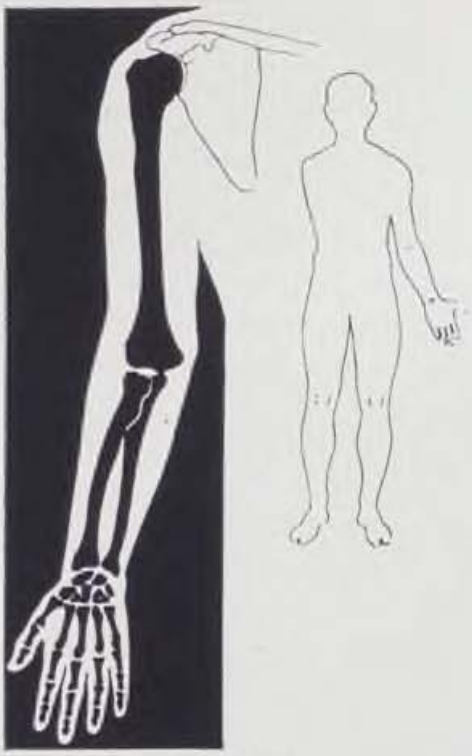
Examples:

a) the right upper limb is missing beginning with the shoulder joint (Fig. 3). ISPO nomenclature: transversal deficiency of the upper arm — total;

b) the right lower limb is missing beginning with the distal third of the thigh (Fig. 4). ISPO nomenclature: transversal deficiency of the distal third of the right thigh.

2. LONGITUDINAL DEFICIENCIES

Longitudinal deficiencies refer to all those not considered transversal. In these deficiencies all missing bones (not segments), or the appropriate seg-



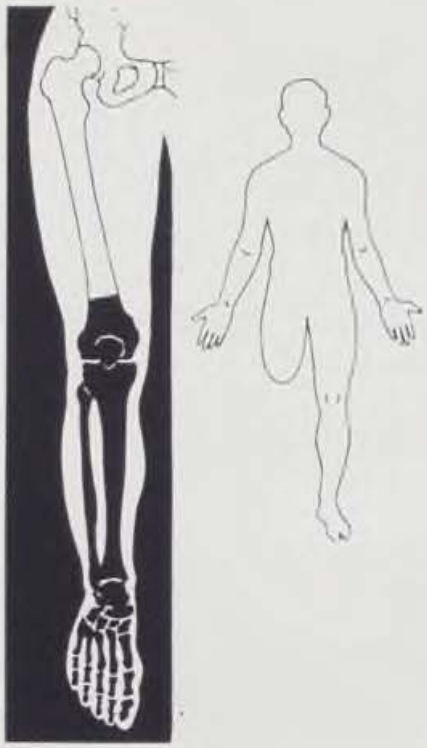
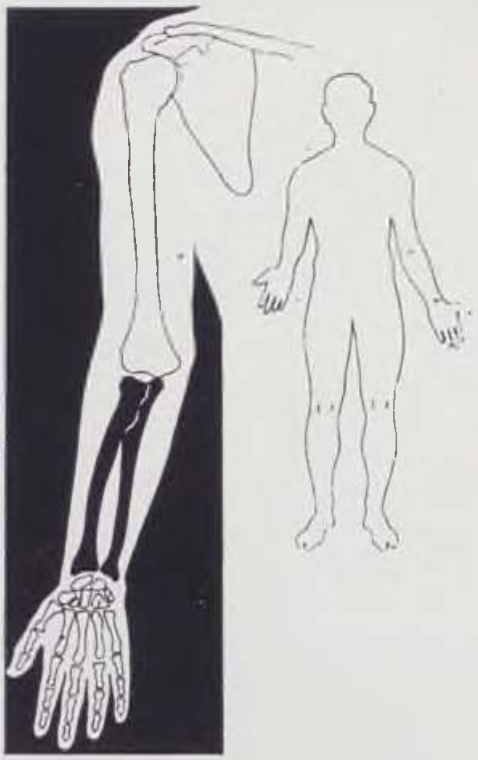


Fig. 3 Transversal deficiency of the right arm — total
Fig. 4 Transversal deficiency of the distal third of the right thigh



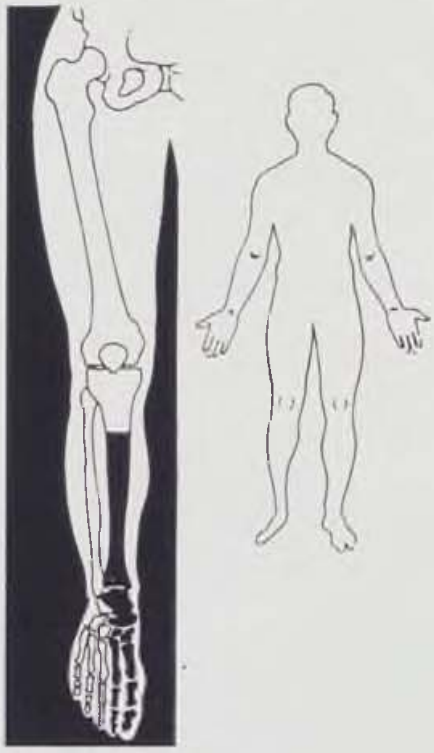


Fig. 5 Longitudinal deficiency of the right radius and ulna — total
Fig. 6 Longitudinal deficiency of the distal 2/3 of the right tibia, part of the tarsus, first and second metatarsuses — total and phalanges of the first and second digits — total.

ments of the missing bone, are simply named. If a bone is completely missing, its name if followed by the word "total"; if a segment of a bone is missing, the missing third is indicated after the name of the bone involved. All bones not appearing in the name of the deficiency are present.

Examples:

a) The radius and ulna are completely absent in the right upper limb. The arm bone, the bones of the wrist and hand are normally developed (Fig. 5). ISPO nomenclature: longitudinal deficiency of the right radius and ulna — total;

b) The distal 2/3 of the tibia, part of tarsal bones, first and second metatarsal bones, and the first and second digits are absent in the right lower limb (Fig. 6). ISPO nomenclature: longitudinal deficiency of the distal 2/3 of the right tibia, part of the tarsus, first and second metatarsus — total, phalanges of the first and second digits — total.

Note: Figures 3—6 of malformations were published in Kay H. W.: A proposed international terminology for the classifications of congenital limb deficiencies: Inter-Clin. Inform. Bull., XIII, 7, 1—16, April 1974.

SUMMARY

The paper offers a review of the development of modern classification and nomenclature of congenital limb deficiencies from the classic work by Frantz and O'Rahilly up to the nomenclature as proposed by ISPO (International Society for Prosthetics and Orthotics) and presented at the Symposium on the Limb Deficient Child in Heidelberg in 1988.

RÉSUMÉ

L'évolution de la moderne classification de nomenclature des défauts congénitaux des mebres

Vrbický, B.

Le travail donne l'aperçu de la moderne classification de la nomenclature des défauts congénitaux des membres, commençant par le travail classique de Frantz et de O'Rahilly jusqu' à la nomenclature d'ISPO (International Society for Prosthetics and Orthotics), présenté à Symposium of the Limb Deficient Child à Heidelberg en 1988.

ZUSAMMENFASSUNG

Die Entwicklung einer modernen Klassifiizierung der Nomenklatur angeborener Defekte der Gliedmassen

Vrbický, B.

Die Arbeit bietet einen Überblick über die Entwicklung einer modernen Klassifizierung der Nomenklatur angeborener Defekte der Gliesmassen, beginnend mit der klassischen Arbeit von Frantz und O'Rahilly, bis zu der Nomenklatur, die die Inter-

nationale Geselschaft für Prosthetik und Orthotik (ISPO) vorgeschlagen hat, wie sie bei dem Symposiumüber ein gliedmassengeschädigtes Kind in Heidelberg im Jahre 1988 präsentiert wurde.

REFERENCES

1. **Swanson, A. B.**: Classification of limb malformations on the basis of embryological failures: A preliminary report. Inter-Clin. Inform. Bull., 6, 3 : 1, Dec. 1966.

2. **Frantz, C. H., O'Rahilly, R.**: Congenital skeletal limb deficiencies. J. Bone and Joint Surg. 43-A, 8 : 1202, 1961.

3. **Burtch, Robert L.**: Nomenclature for congenital skeletal limb deficiencies, a revision of the Frantz and O'Rahilly classification. Artif. Limbs, 10, 1 : 24, 1966.

4. **Kay, H. W.**: Clinical Applications of the new international terminology for the classification of congenital limb deficiencies. Inter-Clin. Inform. Bull., 14, 3 : 1, March 1975.

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AGE-DEPENDENT CHANGES IN THE SIZE OF THE UPPER LIP IN BULGARIANS

M. M. MADZHAROV, L. M. MADZHAROVA

The study of age-dependent changes in the size of the upper lip in a healthy human subject is of essential importance for the visual art. diagnosis, indication, planning and carrying out postoperative check-up of cheiloplasty.

Anthropometric studies of age-dependent changes in the size of the upper lip were carried out by a few Bulgarians and foreign investigators (4,5). The work of these authors was not always supported by adequate research material (5) or the studies were concerned with only certain age groups (4,5). That is why also the conclusions concerning age-dependent changes in the size of the upper lip are incomplete and disputable. Plastic surgery of the upper lip, however, requires a much more detailed and accurate anthropometric characteristic. For this reason, the task of the present study is to determine age-dependent changes in the size of the upper lip in healthy individuals of both sexes for the whole period of postnatal ontogenesis.

MATERIAL AND METHODS

The studies were carried out in the years 1972—1987. The objects of the studies were all healthy inhabitants of the country of Bulgarian origin, aged 3 days to 102 years. To obtain a highly typical general set, it was necessary to carry out representative sampling. The representative sample was chosen at random using the lottery, cluster and regional methods of selection. In this manner, 2 300 individuals — 1 150 females and 1 150 males were included. The units under observation were subdivided into 24 age-sex groups 4 of which contained 125 units each, 16—100 each, 2—75 and 2—25 units each. The last 4 groups consisted of 2 age groups, i. e., aged 80 and more, each containing 100 units. The place of origin was determined by the birthplace of the mother. It was established that 54.94% of the total number of subjects observed were town dwellers while 45.06% were rural population. The measurings were carried out by means of a cephalometric device of our own construction (1). Two dimensions were established, which can give the general characteristic of age-dependent changes in the size of the upper lip. The anthropometric

technique following the measurements entered in the anthropometric sheets used by us is as follows:

1. Width of the upper lip or width of the oral fissure (14)* — the real distance from cheilion (ch) to cheilion /ch/ at rest.

2. Height of the upper lip (26)* — linear distance from subnasale /sn/ to stomion /sto/ at rest. (Fig. 1).

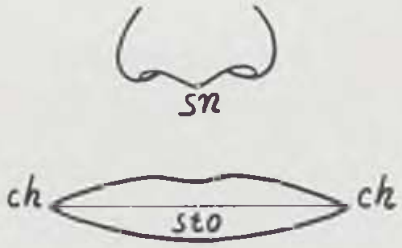

Fig. 1 Cephalometric points according to R. Martin -K. Saller

The obtained data were processed and analysed using standard statistical methods. Age dynamics of the two phenomena under study was investigated by means of absolute and relative increases (Tables 1, 2, and Fig. 2), which we published in 1988 for the first time (3).

RESULTS AND DISCUSSION

Age-dependent changes in the width of the upper lip (Table 1, Fig. 2). The width of the upper lip at the age intervals under observation increases irregularly. There is a period of accelerated growth starting from the day of birth to the age of 6—7 years in both sexes. In boys, it reaches 80.99% of the width in 21-30-year-old men while in girls, it reaches 87.10% of the width in 21-30-year-old women. The impression is produced that the upper lip in the newborn, much like the ears (2), is strongly developed, and in the males it makes 58.22%, in the females 62.58% of the size of its ultimate development. In subjects aged 7 years and over including the years of puberty, a strong recession in the rate of growth occurs on the one hand while, on the other, the mouth continues growing in size all the same, to the age of 80 at least, after which a negligible tendency to a decrease can be observed until the end of life. In the newborn, the width of the upper lip in girls is 0.08 mm smaller than that in boys, reaching 99.73% of the latter, whereas in the 3-4-year-olds, on the contrary, the upper lip of boys is 0.33 mm smaller than that of girls, reaching 99.08% of the latter. At the pre-school age of 6—7 years, the former relationship is restored, the upper lip of girls being 0.09 mm smaller than that of boys making up 99.79% of the latter. Later on, this tendency becomes more pronounced in all the periods of life though the curves for the two sexes do not fully coincide. Thus in the 15—17-year-olds the width of the upper lip in boys is 2.46 mm more than in girls, the difference being statistically significant ($p < 0.001$), while in the adults (21—30 years) the difference is 3.74 mm. It

Table 1.

Age-dependent changes in the width (mm) of the upper lip (ch- ch) in Bulgarians
n = 2200 (♂ = 1150; ♀ = 1150)

	Age groups (years)	Biostatistical characteristics				Degree of development (%) in comparison with 21—30-year-olds
		n	$\bar{x}$	S	m	
1.	Newborn	♂ 100	30.17	2.44	0.24	58.22
		♀ 100	30.09	2.57	0.26	62.58
2.	3—4	♂ 100	35.65	2.10	0.21	68.80
		♀ 100	35.98	2.59	0.26	74.83
3.	6—7	♂ 125	41.97	2.96	0.27	80.99
		♀ 125	41.88	3.14	0.28	87.10
4.	15—17	♂ 100	49.13	3.81	0.38	94.81
		♀ 100	46.67	3.29	0.33	97.07
5.	21—30	♂ 125	51,82	3.62	0.32	100.00
		♀ 125	48.08	3.36	0.30	100.00
6.	31—40	♂ 100	53.48	3.36	0.34	103.20
		♀ 100	48.90	3.51	0.35	101.71
7.	41—50	♂ 100	55.00	3.07	0.31	106.31
		♀ 100	50.92	2.80	0.28	105.91
8.	51—60	♂ 100	56.80	3.77	0.38	109.61
		♀ 100	53.06	3.53	0.35	110.36
9.	61—70	♂ 100	57.21	4.33	0.43	110.40
		♀ 100	54.15	3.85	0.39	112.62
10.	71—80	♂ 100	58.62	4.34	0.43	113.12
		♀ 100	54.53	4.16	0.42	113.42
11.	81—90	♂ 75	58.31	4.30	0.50	112.52
		♀ 75	53.88	4.21	0.49	112.06
12.	91—100	♂ 25	57.64	4.87	0.97	111.23
		♀ 25	52.40	3.97	0.46	108.99
	Over 80 years	♂ 100	58.14	4.50	0.45	112.20
		♀ 100	53.51	4.20	0.42	111.29

reaches its maximum (5.24 mm) after the 9th decade when the width of the upper lip in females is only 90.91% of that in males. It can be seen that this age interval does not coincide with the 71—80 age interval (see age 74) at which the upper lip is widest in both the males — 58.62 (± 0.88) mm and — 54.53 (± 0.83) mm — the females. This no doubt demonstrates that the

Table 2.

Age-dependent changes in the height (mm) of the upper lid (sn- sto)
n = 2300 (♂ = 1150; ♀ = 1150)

	Age groups (years)	Biostatistical characteristics				Degree of development (%) in comparison with 21—30 year-olds
		n	$\bar{x}$	S	m	
1.	Newborn	♂ 100	12.31	1.03	0.10	52.88
		♀ 100	12.01	0.99	0.10	56.95
2.	3—4	♂ 100	17.35	2.24	0.24	74.59
		♀ 100	16.80	2.30	0.23	79.66
3.	6—7	♂ 125	18.18	2.21	0.20	78.16
		♀ 125	17.48	1.58	0.14	82.88
4.	15—17	♂ 100	22.61	2.47	0.25	97.21
		♀ 100	20,04	2.08	0.21	95.02
5.	21—30	♂ 125	23.26	2.14	0.19	100.00
		♀ 125	21.09	2.08	0.19	100.00
6.	31—40	♂ 100	23.78	2.34	0.23	102.24
		♀ 100	21.30	1.77	0.18	101.00
7.	41—50	♂ 100	23.83	3.13	0.31	102.45
		♀ 100	21.43	2.29	0.23	101.61
8.	51—60	♂ 100	23.80	2.61	0.26	102.32
		♀ 100	21.21	2.47	0.25	100.57
9.	61—70	♂ 100	23.26	3.53	0.35	100.00
		♀ 100	21.24	2.87	0.29	100.71
10.	71—80	♂ 100	22.74	3.33	0.33	97.76
		♀ 100	20.62	2.59	0.26	97.77
11.	81—90	♂ 75	21.69	3.22	0.37	93.25
		♀ 75	18.61	3.21	0.36	88.24
12.	91—100	♂ 25	20.24	3.42	0.28	87.02
		♀ 25	18.20	2.81	0.56	86.30
	Over 80 years	♂ 100	21.33	3.33	0.33	91.70
		♀ 100	18.51	3.12	0.31	87.77

reverse development of the upper lip only begins in senile individuals and the changes are more pronounced in females.

Age-dependent changes in the height of the upper lip (Table 2, Fig. 2) The height of the upper lip at the age intervals under observation changes irregularly, too. After birth, it increases more intensively as compared with

the growth of the width of the mouth being 74.59% in 3—4-year-old boys in comparison with its height in 21—30-year-old men while in 3—4-year-old girls it makes 79.66% of its height in 21—30-year-old women. In the newborn, both the width and height of the upper lip are highly developed: in the males, the degree of development reaches 52.88%, in the females 56.95% of their ultimate size. After the fourth year, including the years of puberty, a gradual increase in the height of the whole upper lip is noticeable, being more expressed in the males. After the age of 15—17, there is a strong regression in the age-dependent changes but nevertheless, the lip continues its growth at least to the fifth decade in both sexes upon which a just noticeable tendency to a decrease can be observed, lasting till the end of life. During the whole period of postnatal ontogenesis, the height of the upper lip remains greater in the males than in the females. In newborn girls, the height is 0.30 mm less than that in the boys and equals 97.64% of the latter while in the 3—4-year-olds, it is 0.55 mm less and equals 98.83% of the latter. With increasing age, the difference becomes more pronounced and in the 15—17-year-olds it is 2.57 mm, and the curves for the sexes differ. However, later in life, the changes in these differences during the remaining age intervals become inessential, which is well demonstrated in the almost parallel courses of the curves in the diagram (Fig. 2). Nevertheless, the age-dependent changes in the height of the whole upper lip after the age of 80 show a more expressed tendency to a reverse development, especially in the females.

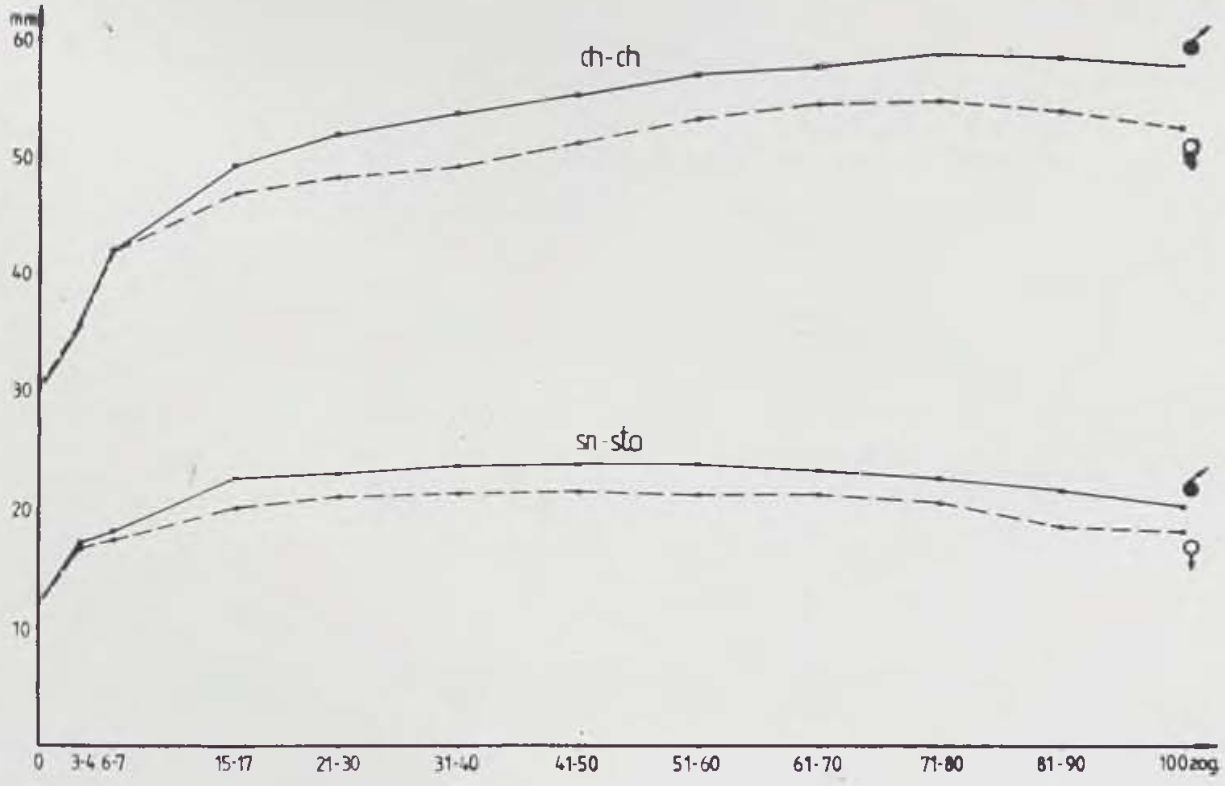

Fig. 2. Comparative data on age dependent changes (cm) in the width (ch-ch) and height (sn-sto) of the whole upper lip in Bulgarians of both sexes

On the basis of the mentioned studies and processing of the results, it has been possible, with respect to the dynamics of age-dependent changes in the size of the upper lip, to draw the following general conclusions:

1. At the moment of birth, the upper lip is one of the most developed organs of the human body, and its size is equal in both sexes ($p < 0.05$).

2. In 6—7-year-old subjects, the width of the upper lip in girls equals 80.99%, in boys 87.10% of its ultimate development, its height being 78.20% and 82.90%, respectively.

3. When studying the growth of the upper lip in Bulgarians of both sexes, we did not observe the pubertal jump in growth, characteristic of the organism as a whole. This can also be seen in the results of studies concerning other nations (5).

4. The finding of V. Todorov from 1976 showing that the upper lip in Bulgarians continues growing after the age of 20 years (4) has been confirmed. However, our results show that the height of the upper lip in both sexes reaches its maximum in the 5th decade (44 years), and the width in the 8th decade (74 years), which is followed by the process of reverse development with a more pronounced dynamics in the females.

5. In the 3rd decade, the upper lip in the males is wider and higher by 3.74 mm and 2.17 mm, respectively, than in the females. The upper lip in the males remains larger than in the females starting from the day of birth to the end of life, the difference in the width being most pronounced (5.24 mm) after the 9th decade, and in the height in the 9th decade (3.08 mm). The width of the lip at the age interval of 3—4 years, where it is greater in girls, is an exception.

CONCLUSION

The upper lip is one of the most developed organs of the human body at the moment of birth, which changes intensively mainly until the beginning of school, where-upon it increases in size gradually with a transition to the process of reverse development only by the end of life. These data, on the one hand, and the anatomical structure of the lip on the other, form a sufficient basis for indications to cheiloplasty on condition that the anesthesiologist and the micropediatrician agree. The mean values of the width and height of the lip at the age intervals studied and their variants can be useful as standards in plastic surgery and visual art.

SUMMARY

Age-dependent changes in the width and height of the upper lip were studied in 2,300 healthy Bulgarians aged from 3 days to 102 years, for the purposes of cheiloplasty in surgery and of visual art. It has been established that at the moment of birth, the upper lip is one of the most developed organs of the human body in both sexes and that it grows in size up to the age of 80 years, completing its intensive growth during the pre-school age while in

the years of puberty it does not show the growth jump characteristic of the organism as a whole. In the males, the lip remains larger during the whole period of postnatal ontogenesis except for the early childhood; the difference in the height is most expressed (3.08 mm) in the 9th decade, and in the width (5.24 mm) even later. The conclusion has been drawn that cheiloplasty can be performed at any age including the first days after birth, the dimensions obtained at the age intervals under study serving as standards.

RÉSUMÉ

Changements dimensionnels de lèvre supérieure dépendant de l'äge chez les Bulgares
Madzarov, M. M., Madzarova, L. M.

Dans l'intérêt de la cheiloplastie en chirurgie et aux arts plastiques, on a suivi les changements d'âge de la largeur et de la hauteur de lèvre supérieure chez 2300 Bulgares sains, âgés de 3 jours jusqu' à 102 ans. On a constaté que la lèvre supérieure représente chez les deux sexes à la naissance l'un des organes les plus développés du corps humain, qui augmente jusqu' à 80 ans, tout en finissant son développement intensif à l'âge préscolaire et ne présentant pas, en période de puberté, de bond de croissance, caractéristique pour l'organisme en sa totalité. Pendant toute la période d'ontogenèse postnatale, à l'exception du bas âge enfantin, la lèvre reste grande chez la population masculine, la différence de la hauteur étant la plus évidente (3,08 mm) en neuvième décennie, tandis que celle de la largeur encore plus tard. Nous en concluons que la cheiloplastie peut être exécutée à n'importe quel âge, y compris les premiers jours après naissance. Les dimensions obtenues dans les intervales d'âge suivis servent de normes.

ZUSAMMENFASSUNG

Altersveränderungen der Ausmasse der oberen Lippe bei Bulgaren
Madzharov, M. M., Madzharova, L. M.

Für den Bedarf der Cheiloplastik in der Chirurgie sowie in der bildenden Kunst wurden die Altersveränderungen der Breite und Höhe der oberen Lippe bei 2300 gesunden Bulgaren im Alter von 3 Tagen bis zu 102 Jahren beobachtet. Es wurde festgestellt, dass die obere Lippe bei beiden Geschlechtern im Augenblick der Geburt eines der am meisten entwickelten Organe des menschlichen Körpers ist, das sich bis zum Alter von 80 Jahren vergrössert, wobei es im Vorschulalter seine intensive Entwicklung beendet und in den Jahren der Pubertät keinen Sprung im Wachstum aufweist, der für den Organismus als Ganzes charakteristisch wäre. In der ganzen Periode der postnatalen Ontogenese, mit der Ausnahme des frühen Kindesalters, bleibt die Lippe bei der männlichen Bevölkerung grösser, wobei der Unterschied in der Höhe am deutlichsten in der neunten Dekade ist (3,08 mm), dagegen in der Breite noch später (5,24 mm). Wir ziehen daraus den Schluss, dass man die Cheiloplastik in einem beliebigen Alter vornehmen kann, einschliesslich der ersten Tage nach der Geburt, und dass die erhaltenen Ausmasse in den beobachteten Altersintervallen als Normative dienen können.

REFERENCES

1. **Madzharov, K. M.:** Device for cephalometry (in Russian). Author's certificate No. 33701, 1981.

2. **Madzharov, M. M.:** Cephalometric studies on newborn Bulgarians for the compilation of standard tables for plastic

surgery (in Russian). Acta morphologica, 4; 73. 1983.

3. **Madzharov, M. M., Madzharova, L. M.:** Age-dependent changes in the size of the upper lip in Bulgarians of both sexes from birth to 100 years and over (in Russian). Anniversary research conference, Summary, T'rgovishche (Bulgaria), 28, 29th October, 1988, 107, 1988.

4. **Todorov, V.:** Changes in some anthropological signs of ageing in Bulgarians (in Russian). Cand. Sc. thesis (Sofia), 1976.

5. **Farcas, L. G.:** Anthropometry of the head and face in medicine. New York, Elsevier, 115, 123, 1981.

6. **Martin, R., Saller, K.:** Lehrbuch der Anthropologie Bd. 1., Stuttgart, Gustav Fischer Verlag, 1957.

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REPAIR OF ANTERIOR SECONDARY PALATE FISTULA USING TONGUE FLAPS

M. S. THIND, A. SINGH, R. S. THIND

INTRODUCTION

With advancement in surgical techniques and muscles anatomical studies of cleft lip and palate, repair of soft palate has reached near perfection except for velopharyngeal incompetence in some cases. But in spite of this, incidence of fistula in the anterior part of secondary palate is not infrequent in repaired cases of complete cleft of primary and secondary palates. This is true more so in bilateral than in unilateral cases.

In spite of sound repair of anterior part of secondary palate by double breasting of vomerine flap under mucoperiosteal flap edge with mattress stitches at the time of primary palate repair, the breakdown in this area occurs. This is so where the defect is wide and tissues are deficient. Again at the time of operation of secondary palate cleft second attempt may be made to repair this area in two layers. But in large number of cases anterior part of the mucoperiosteal flaps, being utilised in push back, do not provide oral layer in that part of hard palate. These are the cases which are likely to develop fistula in this area.

Presence of fistula palate leads to leakage of fluids into the nose, hypernasality and defective articulation of speech. Converse et al. (1977) state that fistulae palate should be closed by surgical methods, if possible, to improve speech and prevent escape of fluids and food particles into nasal cavity. Small fistula adjoining the alveolar region can be closed by the use of Burian flap. (Fig. 10, 11 and 12). Fistula in the posterior part of hard palate can be closed by transposition of local mucoperiosteal flaps. But when fistula is present in the anterior part of hard palate little local tissue is available to provide adequate closure (Fig. 1, 4).

REVIEW OF LITERATURE

Guerrero-Santos and Altamirano (1966) were the first to use tongue flap for repair of palatal fistula following cleft palate repair. Nasal layer was formed from local palatal flaps, oral layer was provided by tongue flap from

Fig. 1. Fistula anterior palate — case 1, pre-operative.

Fig. 2. Closure of fistula anterior palate with tongue flap — case 1, before separation of flap

Fig. 3. Closure of fistula with tongue flap — case 1, post-operative

Fig. 4. Fistula anterior palate — case 2, pre-operative

Fig. 5. Closure of fistula with tongue flap — case 2. post-operative

Fig. 6. Formation of nasal layer by turn over flaps (operative)

dorsum or margin of tongue. Detachment occurred in two cases so they started using interdental wiring. With further experience they discontinued interdental wiring. Cadenat et el. (1973) and Hockstein (1977) also found interdental wiring unnecessary.

Since then tongue flaps have been successfully used to close palatal fistulae, however, with some modifications (Jackson, 1972; Cadenat et al., 1972; Hockstein, 1977; Carreirao and Lessa, 1980; Pigott et al., 1984; Fukuya et al., 1985).

ANATOMY OF TONGUE FLAP

Lingual artery (one on each side) provides very rich blood supply to the tongue through its two branches viz., dorsal linguae deep lingual or ranine.

Dorsal linguae artery arises from the proximal part of lingual artery, runs upwards and is distributed to the dorsum of tongue. This forms the primary blood supply of posteriorly based tongue flaps.

Deep lingual or ranine artery is the larger of the two terminal branches of lingual artery which arises deep to the hyoglossus muscle. It runs deep to the hyoglossus muscle. It runs deep to the ventral mucosa of tongue and runs forwards to the tip and gives numerous branches which ascend towards the dorsum of tongue.

Venous drainage is into (1) sublingual veins, (2) veins accompanying deep arterial system and (3) longitudinal mucosal venous system ending into a midline vessel near base of tongue (Bracka, 1981).

Due to formation or rich submucus plexus (Cadenat et al., 1973) and ranine arch (Carreirao and Lessa, 1980; Bracka, 1981) median line of the tongue is no more a barrier in designing of the tongue flaps.

MATERIAL AND METHODS

Seventy-two cases of fistulae anterior part of secondary palate are presented in which repair was done by anteriorly based median tongue flap since 1971. These are the cases in which closure with local flaps was not possible.

Seventeen cases out of seventy-two cases were from 638 cases of repaired bilateral complete cleft primary and secondary palate and fifty-five followed repair of 1965 cases of unilateral complete cleft primary and secondary palate.

Out of seventy-two cases of palatal fistulae, ten cases reported with fistula resulting from palatal repair done elsewhere.

In all the cases fistula was present in the anterior part of secondary palate, that is, behind the alveolus.

Chief complaint was leakage of food and fluids into the nose and defective speech.

Age distribution and size of fistula are shown in Table I and Table II respectively.

DESIGN OF TONGUE FLAP

In all cases dorsal median anteriorly based tongue fiap was used.

Nasal layer partially and completely was formed by hinge flaps based at the margin of fistula. In one case it was provided by cheek flap.

Table 1. Age distribution

Age	Number of cases
Before 1 year	12
1—2 years	30
2—5 years	16
5—10 years	11
More than 10 years	3
Total	72

Table 2. Size of the fistula

Size in cm	Number of cases
0.5—1.0	57
1.0—1.5	14
2.0—0	1
Total	72

SURGICAL TECHNIQUE

Under general anaesthesia with oral endotracheal intubation Dott's mouth gag is inserted and opened. Fistula is examined and 1 : 2 lac adrenaline is injected locally around the fistula. Incision is given all around the fistula and hinge flaps dissected on all sides and closed with 4—0 eye less chromic catgut with knot on nasal side. This formed the nasal layer (Fig. 6). In majority of cases the anterior part of flaps do not contain original mucoperiosteal tissue as it has been pushed back and in fact it is locally formed tissue so it is not

very vascular. Therefore, the original mucoperiosteal flaps should be made to form substantial part of this layer.

Mouth gag is removed and throat is packed and a 2—0 silk stay stitch is passed through tip of tongue. Tongue is pulled out with the help of stay stitch and tongue flap is marked on the dorsum in the median part keeping the base anteriorly with tip of the flap going as posteriorly as possible but in front of circumvellate papillae. Breadth of tongue flap depends on the size of the defect. Incision of the flap is started from the posterior end. Tongue mucosa along with some amount of lingual muscle is incised and held with the help of a skin hook and dissection proceeds anteriorly. Donor defect in the tongue is closed with 2—0 chromic catgut interrupted stitches in single layer. In few stitches a bite is taken through the median raphe to close dead space. Thus the flap is raised to required length so that it covers the defect and has an adequate pedicle. The base of flap may be just short of tip. Care is taken that last stich on the donor defect does not strangulate the base of flap (Fig. 7).

Now lower jaw is retracted with the help of a right angled retractor and flap is made to set on the already repaired nasal layer. 3—0 eyeless silk stitches are passed from the palate to tongue flap near the posterior end of lateral margin of fistula (primary defect) on both sides. Stitch ends are held in a hemostat. Similar stitches are passed anteriorly all round at 0.25 cm distance. Good bites are taken on the palatal mucosa side. Where sufficient mucosa is not available stitch is passed through the gum between the teeth. Tying of the stitches is started posteriorly on both sides and then proceeds anteriorly (Fig. 8). Finally, the tip of the tongue is fixed to the floor of mouth with a 2—0 silk stitch passed behind the tongue tip and brought on the chin and tied after keeping vaseline gauze bolus on tongue and chin. (Fig. 9). Tongue stay stitch and throat pack are removed. Endotracheal intubation is removed only after the patient is fully awake. Blood transfusion is given in majority of cases and intravenous fluids are given during tand after operation.

Decadron 1 cc intramuscularly is given during the operation and in the evening. Antibiotics, anti-inlamatory drugs (Brufen), analgesic (paracetamol) are given in post-operative period.

POST-OPERATIVE

Position is maintained to provide venous drainage by gravitation. Flap is examined in the evening. If there is some venous congestion as is seen in some cases a little massage of the flap is enough to relieve this.

Tongue fixation stitch is removed on 10th—11th day.

Separation of the flap is done after eighteen days under general anesthesia. Posterior edge of fistula is made raw and edge of flap is stitched to it with 3—0 chromic catgut stitches. Posterior edge of flap is trimmed, if needed, before stitching.

Defect on tongue is repaired with 2—0 chromic catgut stitches in single layer.

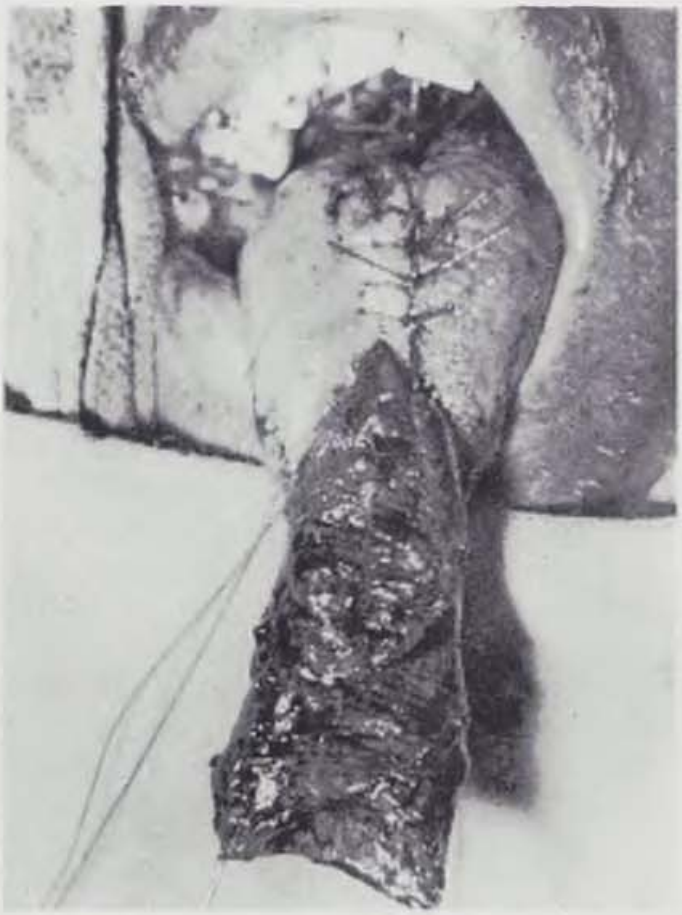

Fig. 7. Dorsal tongue flap raised and donor defect on the tongue closed (operative)

Fig. 8. Tongue flap stitched on the repaired nasal layer (operative)

In post-operative period antibiotics and analgesics are given. Patient is advised to lie on one or other side position to provide gravitational venous drainage.

RESULTS

The results were excellent (Fig. 2, 3, 5). Tongue flap provided a water and air tight closure of the fistula so that leakage of fluids into nose stopped completely, and hypernasality decreased and articulation was noticeably improved. There was no noticeable change in movements, sensations and function of tongue.

In three cases where detachment of tongue flap occurred in this series it was found that size of fistula had decreased. Detachment started during the first week in the posterior part of fistula. Strain on the stitches leads to loosening and/or cutting through of stitches and this ultimately leads to dehicense between the nasal layer and flap, thus laying the foundation stone of detachment. Detachment may be stopped from progressing by putting a few stitches on fifth to eighth day in a few cases. In two cases, where complete detachment occurred tongue flap was given after an interval of 3—4 months and results were good in these cases also. In one case extensive fibrosis did not allow the success of second operation.

DISCUSSION/CONCLUSIONS

Repair of secondary palate (Stark, 1977) in complete cleft of primary and secondary palate, unilateral or bilateral has been well documented. The weakest repair is in the area some distance behind the alveolus where double breasting by vomerine flap under mucoperiosteal flaps is either not feasible and the area in front where local flaps form floor of nose and alveolar area. Thus the single layer repair at the site of aveolus and some distance behind may breakdown forming a fistula of few millimetres to a few centimetres with resultant fibrosis. Small fistulae (a few millimetres) may be closed by local adjoining tissue. However, in the most anterior part Burian flap is possible and is a very useful in repair.

In fistula of some size a little behind alveolus local palatal tissue flaps are usually non-existent or inadequate because the original mucoperiosteal flaps have been retroposed. In this situation, some local tissue in the oral cavity need to be used and here tongue tissue is a very suitable. It provides a very good vascular and adequate cover to the local hinge flaps which provide some lining for two layer closure. This lining is sound usually but superimposed tongue flap provides the needed security when executed properly. In some cases, this lining is very inadequate and these are the cases where tendency to breakdown of tongue flap repair existed. In these cases tongue flap can be secured more efficiently both posteriorly to retroposed mucoperiosteal tissue, and anteriorly to alveolar and lip mucosa which provide proper purchase for suturing.

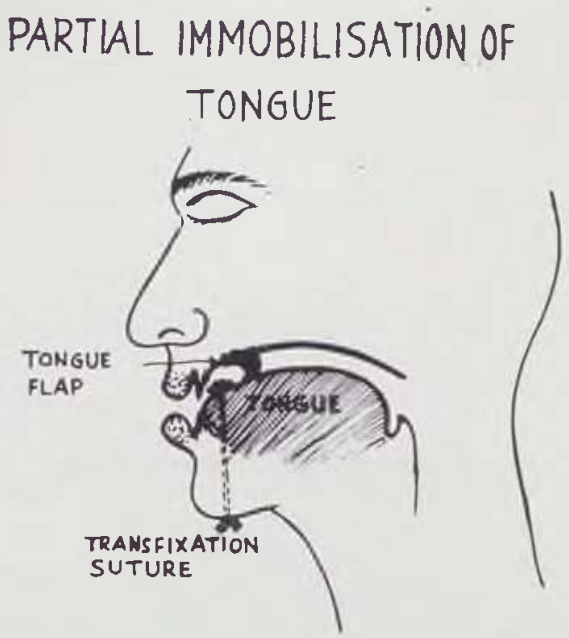

Fig. 9. Partial immobilization of tongue by tongue stitch

Fig. 10. Burian flap has been raised

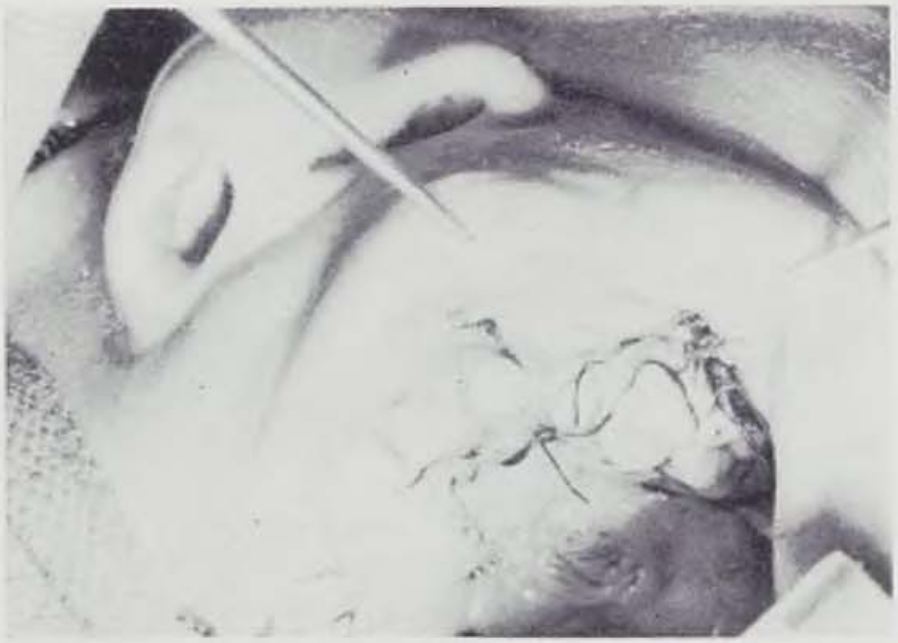

Fig. 11. Burian flap stitched on repaired nasal layer

Fig. 12. Closure of fistula with Burian flap (post-operative)

Transfixation suture (Fig. 9) result in sufficient fixation of the tongue, preventing its undue mobility post-operatively and thus takes away mechanical strain on the tongue flap.

Tongue flap repair leaves a circular or oblong suture scar at the junction of tongue flap with adjoining palatal tissue. Whether it causes impairment of palatal growth is being studied.

Tongue flap as used in this series has given excellent results.

SUMMARY

Seventy-two cases of palatal fistulae are presented. The location on anterior part of secondary palate is due to lack of double layer closure. Vascular pattern of tongue is detailed. Operative details of using tongue flap as oral layer in closure of fistula are described. Undue mobility of tongue and prevention of breakdown of tongue flap repair incidence of which is low in present series are mentioned. It is suggested as excellent method of closure of palatal fistulae in difficult cases.

RÉSUMÉ

Réparation de fistule palatale secondaire antérieure par lobe lingual

Thind, M. S., Singh, A., Thind, R. S.

Description de soixante-douze cas d'une fistule palatale. La localisation sur la partie antérieure du palais secondaire est causée par manque de double couche de fermeture. On passe en revue détaillée le tableau de la vascularisation de la langue. On décrit les pas opératoires de l'utilisation du lobe lingual comme couches orales de la fermeture de la fistule. On mentionne la mobilité inopportune de la langue et la prévention de l'échec de la correction du lobe lingual, dont fréquence est basse dans cette série. On propose une excellente méthode de la fermeture de la fistule palatale dans des cas difficiles.

ZUSAMMENFASSUNG

Die Korrektur einer vorderen sekundären Gaumenfistel unter Anwendung eines Lappens aus der Zunge

Thind, M. S., Singh, A., Thind, R. S.

Beschrieben werden zweiundsiebzig Fälle einer Gaumenfistel. Das Vorkommen auf dem Vorderteil dessekundären Gaumens wird durch die ungenügende doppelte Schliessschicht verursacht. Detailliert wird das Bild der Vaskularisierung der Zunge angeführt, und es werden die Einzelheiten einer Operation unter Anwendung eines Lappens aus der Zunge als orale Schicht des Abschlusses der Fistel beschrieben. Erwähnt wird auch die ungeeignete Mobilität der Zunge sowie die Prävention eines Misserfolgs der Korrektur des Zungenlappens, dessen Bildung in dieser Serie selten ist. Es wird eine ausgezeichnete Methode des Abschliessens der Gaumenfistel in schwierigen Fällen vorgeschlagen.

REFERENCES

1. **Bracka, A.**: The blood supply of dorsal tongue flaps. Brit. J. Plast. Surg., 34 : 379, 1981.

2. **Cadenat, H. et al.** (1973): Quoted by R. W. Pigott, F. W., Reiger and A. Frazer Moddie. Tongue flap repair of cleft palate fistulae. Brit. J. Plast. Surg., 37 : 188, 1984.

3. **Carreirao, S. and Lessa, S.**: Tongue flap and the closing of large fistulae of hard palate. Ann. Plast. Surg., 4 : 182. 1980.

4. **Converse, J. M., Hogan, V. M., Frite Barton, E.**: Secondary deformities of cleft lip, cleft lip nose and cleft palate: Reconstructive Plastic Surgery. Edited by Converse, J. M., Vol. IV, 2nd edition, Philadelphia: W. B. Saunders, 2198, 1977.

5. **Fukuya, Y., Adyama, R., Shinomiya, S. et bl.**: Palatal fistulae following cleft palate surgery (Japa) JPN. J. Plast. Reconstr. Surg. 1985 28/7574—581 Summ. in Engl. Quoted in Excerpta Medical Plastic Surg., 17(5) : 177, 1986.

6. **Guerrero-Santos, J. and Altamirano, J. T.**: The use of lingual flaps in repair of fistulae of hard palate. Plast. Reconstr. Surg., 18 : 123, 1966.

7. **Hockstein, H. J.** (1977): The closing of large residual palate and velum clefts using tongue flaps. Quoted by R. W. Pigott et al. in Brit. J. Plast. Surg., 37 : 285, 1984.

8. **Jackson, I. T.**: Use of tongue to resurface lip defects and close palatal fistulae in children. Plast. Reconstr. Surg., 49 : 537, 1972.

9. **Pigott, R. W., Rieger, F. W.** and **Moddie, A. Frazer**: Tongue flap repair of cleft palate fistulae. Brit. J. Plast.Surg. 37 : 285, 1984.

10. **Stark, R. W.**: Cleft palate: Reconstructive Plastic Surgery. Edited by Converse, J. M., Vol. IV, 2nd edition. Philadelphia: W. B. Saunders, 1977, 2090.

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TREATMENT OF DONOR SITES — CALCIUM ALGINATE VERSUS PARAFFIN GAUZE

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INTRODUCTION

Brown seaweeds, (Laminaria hyperborea) which contain alginate have been harvested of the coasts of Scotland and Ireland for medical use since at least the early eighteenth century (Martin, 1716) For treatment of among other things, wounds. Alginates were widely used in surgery in the early 1950s (Blaine, 1951) as haemostatic agents, but their use slowly declined. Recent developments in wound dressings include production of a new calcium sodium alginate wound dressing, Kaltostat(R), a product, that would reduce healing time, produce a superior quality new skin and provide better patient comfort on split skin donor sites. In this trial a Kaltostat(R) dressing was compared with a traditional dressing of Jelonet(R).

MATERIALS AND METHODS

Kaltostat(R) is a new, hemostatic absorbing dressing, which consists of 100% calcium alginate fibres (hydrophile polysaccarides). When Kaltostat(R) is placed on the donor area, the calcium-ions from the dressing will be exchanged with sodium-ions from the wound-secrete. This results in the formation of a protective, viscous gel, which covers the wound, absorbs the exudate and keeps the wound naturally and suitably moist. The calcium-ions liberated by the gel-process furthermore act as catalysts in the clotting-cascade (Factor IV), and thus there is also a hemostatic effect. Calcium alginate is decomposed biologically into monosaccarides and is absorbed by the body. Kaltostat is a soft sterile nonwoven dressing available in 3 standards (7,5 cm × 12 cm, 10 cm × 20 cm, 15 cm × 25 cm).

A standard paraffin gauze dressing, Jelonet(R), was used for comparison.

Patients undergoing skin grafting procedures due to burns entered the trial if informed consent was obtained. In order to maintain comparable donor sites the surgeon, the dermatome blade-and setting were the same. Patients

with mirror-image donor sites on the thighs were studied. When the split skin had been harvested, saline-soaked gauze pads were placed temporarily for haemostasis. After removal of the pads the Kaltostat(R) dressing was applied on one thigh, and the Jelonet(R) dressing on the other. Both dressings were retained with an elastic bandage.

If possible the dressings were removed on the seventh day after surgery for inspection. Every precaution was taken to reduce the dressing trauma to a minimum. If the dressing was adherent it was removed by soaking in a bath.

The following parameters were recorded:

1. Healing time. The criteria for healed skin was a reepithelialized donor area from which the dressing could be removed without re-bleeding. If the donor area was not healed, inspection was carried out again in intervals of 2 days until healing.
2. Patient discomfort with removal of the dressing.
3. Signs of clinical infection.
4. Quality of the re-epitheliazed donor sites judged one month post-operatively. Photographs were taken after skin-harvesting and on day 7 and 1 month postoperatively.

Table 1. Comparative results between the Kaltostat(R) dressing and the Jelonet(R) dressing

Pt. no.	Age /sex	TBSA %	Healing day		Clin. inf.		Bleeding in the bandage	Ease with rem.	Quality of the skin
			J	K	J	K	K J	K J	K J
1	28/M	12	7	7	—	—	K > J	K > J	K > J
2	39/M	10	10	10	—	—	K > J	K = J	K = J
3	25/M	20	10	7	—	—	K > J	K > J	K > J
4	43/M	8	10	7	—	—	K > J	K > J	K > J
5	38/F	21	10	10	—	—	K > J	K = J	K = J
6	23/M	29	8	7	—	—	K > J	K > J	K = J
7	43/F	23	12	12	—	—	K > J	K = J	K > J
8	21/F	20	14	12	+	+	K = J	K = J	K > J
9	66/F	2	10	10	—	—	K > J	K > J	K > J
10	6/M	20	9	7	—	—	K > J	K > J	K > J
11	33/F	6	8	7	—	—	K > J	K = J	K = J
12	85/F	2	17	11	—	—	K > J	K > J	K > J
13	41/F	21	9	8	—	—	K > J	K > J	K = J
14	48/M	8	9	9	—	—	K > J	K = J	K > J
15	31/M	20	8	8	—	—	K > J	K = J	K < J
16	70/F	11	10	8	—	—	K > J	K > J	K = J
17	47/M	19	8	7	—	—	K > J	K > J	K = J

TBSA = total burn surface area as percentage of total body surface area.
K = Kaltostat; J = Jelonet
K > J, Kaltostat better than Jelonet
K = J, Kaltostat the same as Jelonet
K < J, Jelonet better than Kaltostat

RESULTS

17 patients entered the trial, the results of which are shown in Table 1. Since the material was limited, it was not analysed statistically.

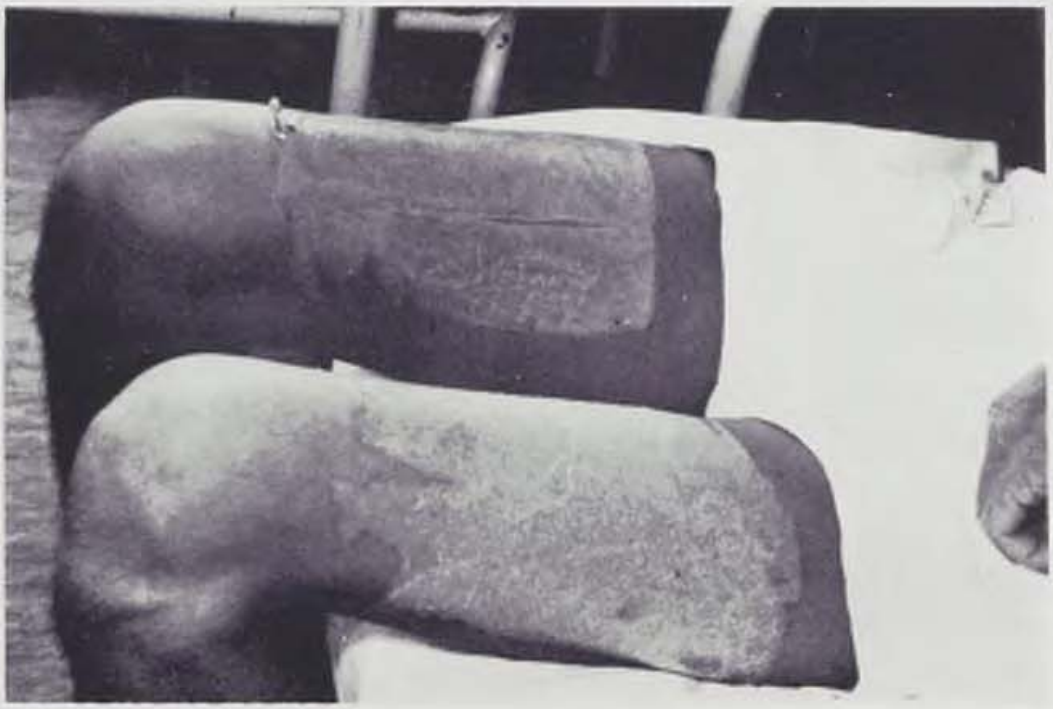

Fig. 1. Donor site one day after removal of the Jelonet dressing and Kaltostat dressing on respectively the right and the left thigh. The donor site treated with Kaltostat is less red and vulnerable than the donor site treated with paraffin gauze

9 men and 8 women entered the study. The mean age of the patients was 40,3 years (range 6—85 years). The mean healing time for Jelonet(R) dressing was 10,2 days (range 7—17 days), and for the Kaltostat(R) dressing it was 8,3 days (range 7—11 days). One female patient age 21 showed clinical signs of infection (Thomsen, 1970), i.e., wound discharge, redness and swelling of the surrounding skin, and raised temperature. Positive swab cultures of Hemolytic Streptococci group B confirmed the clinical signs of infection, and the patient was treated with penicillin.

In 10 cases, the removal of the Kaltostat(R) dressing, compared with the removal of the Jelonet(R) dressing, was easier and less painful to the patient, probably because the reepitheliazed skin was less red and therefore vulnerable (Fig. 1).

In 16 out the 17 cases the bleeding in the Kaltostat(R) dressings were less than the in Jelonet(R) dressing judged at removal.

In 10 out of the 17 cases were the quality of the new skin, judged 1 month post-operatively, of a better quality on the donor site covered with a Kaltostat(R) dressing than on the donor site covered with a Jelonet(R) dressing, as the new skin was found smoother, less red and more solid (Fig. 2.), although the difference was marginal.

Fig. 2. The donor sites one month after surgery. The right thigh was treated with Kaltostat and the left thigh was treated with parafin gauze. Only a marginal difference in redness and smoothness is seen

Fig. 3. Removal of the Kaltostat dressing from the thigh

DISCUSSION

In patients who require multiple viable cutaneous autograft procedures, a fast and solid healing of the donor areas is essential. In the search for a suitable wound dressing, a tremendous number of synthetic material have been introduced on the commercial market, each one with its own beneficial effects (Queen D. 1987). The ideal dressing for the donor areas should fulfil the following demands (Turner T. D. 1981):

1. Promote a quick painfree healing
2. Maintain a moist, sterile enviroment
3. Be removable without causing trauma at dressing change
4. Be active haemostatic
5. Be biodegradable without toxic or allergenic effects
6. Not result in any hypertrophic scarring

Though this study was carried out on a small number of patients, we think, that we demonstrated some advantages in the clinical use of Kaltostat(R) compared to Jelonet(R). The reduced discomfort with removal and the better quality of the new skin of the donor areas were both found better in 10 out of 17 cases, on the donor site treated with the Kaltostat(R) dressing. These advantages are important and similar to the results found in other reports (Thomas S. 1985, Atwood A. I. 1989). The ability of the Kaltostat(R) dressing to produce significant better haemostasis in skin graft donor sites has been mentioned by Groves A. R. 1986, Blair S. D. 1988, and this trial strongly supports these findings. The average healing time of the Kaltostat(R) donor were 8,3 days and only insignificantly shorter (1,9 days) than on the Jelonet(R) side treated donor area. In a similiar study (Atwood I. A. 1989) complete healing had occured by $7 \pm 0{,}71$ days with a Kaltostat(R) dressing compared to $10{,}75 \pm 1{,}6$ days with paraffin gauze. Whether or not the infection rate was lower than with the conventional paraffin gauze dressing cannot be stated in this trial because of the low number of patients.

CONCLUSION

It seems that the Kaltostat(R) dressing is superior to the traditional Jelonet(R) dressing in regard to the haemostatic quality, the quality of the re-epithelialized skin and comfort and easiness at removal of the dressing. In this study only a marginal profit in healing time is shown.

SUMMARY

In the surgery of burns a good healing of donor areas is essential. A controlled trial of 17 cases is presented. Mirror-image donor areas in the same patient were treated on one leg with a traditional dressing of paraffin gauze, Jelonet(R), on the other leg with Kaltostat(R), a calcium sodium alginate wound dressing. Healing time, haemostasis, ease and comfort with removal, dressings, infection

and quality of the regenerated skin, were estimated. The Kaltostat(R) dressing seemed to be superior due to the quality of the re-epithelialized donor site, the haemostatic quality and the ease and comfort with removal. There was a marginal profit in healing time.

RÉSUMÉ

Traitement des sites doneurs par calcium alginate au lieu de gaze paraffinée

Basse, P., Siim, E., Lohmann, M.

Dans la chirurgie des brûlures, il est important une bonne guérison des sites donneurs. On présente une expérience avec dix-sept cas controlés. Les régions donneuses, localisées speculairement chez le même malade, on été soignées par un pansement traditionnel, consistant à la gaze paraffinée Jelonet(R) sur l'un des membres inférieurs, sur l'autre membre par Kaltostate (R) — calcium natrium alginate. On a suivi le temps de guérison, hémostase, facilité et commodité de l'enlèvement des pansements, infection et qualité de la peau régénérée. Les pansements à Kaltostate(R) se révélaient meilleurs du point de vue de la qualité de réépitelisation du site donneur, des qualités hémostatiques et de l'aisance et de la commodité d'enlèvement. Il y avait même du profit marginal au temps de guérison.

ZUSAMMENFASSUNG

Die Behandlung von Donorstellen mit Kalziumalginat statt mit Paraffingaze

Basse, P., Siim, E., Lohmann, M.

Bei der Chirurgie von Verbrennungen ist es wichtig, dass die Donorstellen gut heilen. Es wird ein Versuch in siebzehn kontrollierten Fällen beschrieben. Die spiegelartige Anordnung des Donorgebietes bei dem gleichen Patienten wurden an einem Bein durch einen traditionellen Verband aus Paraffinmul Jelonet (R) behandelt und am anderen Bein mittels Kaltostat(R), Kalziumnatriumalginat. Beobachtet wurden die Zeit der Heilung, die Hämostasis, die Einfachheit und Bequemlichkeit der Beseitigung der Verbände, die Infektion und die Qualität der regenerierten Haut. Die Verbände mit Kaltostat(R) erwiesen sich als besser für die Qualität der re-epitelisierten Donorstelle sowie für die hämostatischen Eigenschaften und für die Einfachheit und Bequemlichkeit einer Beseitigung. Es gab hier auch einen Marginalgewinn in der Zeit der Heilung.

REFERENCES

1. **Attwood, A. I.:** Calcium alvinate dressing accelerates skin graft donor site healing. Br. J. Plast. Surg. 42, 373, 1989.

2. **Blaine, G.:** Experimental observations on absorbable alginate products in surgery. Annals of Surgery 125, 102, 1947.

3. **Blair, S. D., Backhouse, C. M., Harper, R., Matthews, J., Mc. Collum, C. N.:** Comparison of absorbable materials for surgical haemostasis. Br. J. Surg. 75, 969, 1988.

4. **Groves, A. R., Lawrence, J. C.:** Alginate dressing as a donor site haemostat. Annals of the Royal College of Surgeons of England 68, 27; 1986.

5. **Martin, M.:** A description of the Western Islands of Scotland, 1716.

6. **Quen, D., Evans, J. H., Gaylor, J. D.**

S., **Courtney, J. M.** and **Reid, W. H.**: Burn wound dressings — a review. Burns 13, 218, 1987.

7. **Thomas, S.**: Use of a calcium alginate dressing. The pharmaceutical journal 235, 188, 1985.

8. **Thomsen, M.**: The burns unit in Copenhagen. V. Scand. J. Plast. Reconstr. Surg. 4, 45, 1970.

9. **Turner, T. D.**: The functional development of wound management products. Proceedings of a conference on Medical Applications of Textiles, Leeds University, July, 1981.

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MICROGNATHIA IN MYASTHENIA GRAVIS CASE REPORT

P. D. STEFANOVIĆ, S. APOSTOLSKI

Myasthenia gravis (MG) is a disease characteristic for pathological fatigue of the muscles, and is followed by paresis and paralysis. The etiology (1) of this disease is unknown. It is believed that the disease is caused by thymus (2), immunological and psychogenic factors, respectively. The onset of the disease ranges from the age of 20 to 50 years, but it can appear in children as well. The oculogyre muscles are most often involved, resulting in ptosis, diplopia and strabismus. The bulbar muscles are also affected. Thus, difficulty in chewing and swallowing and nasal speech occur. Paresis develops gradually leading to the permanent palsy. The course of the disease might be very fast, and the death might come in a few weeks or months. Physical efforts, psychic trauma, infection and delivery may cause the myasthenic crisis. It might appear spontaneously as well and have a lethal end.

CASE REPORT

A 26-year old female patient has been suffering from the generalised form of myasthenia gravis with vital impairment and breathing disorders from the age of 15. She underwent a thymectomy, but at collar ortranscervical approach. The postoperative period was complicated by respiratory crisis, and therefore, the patient was treated at the Centre for Respiration and passed through the assisted ventilation and intensive care for some time. Afterwards, the patient was in relatively stable state for four years, receiving the therapy of anticholinesterase. But, in 1982, she started getting worse, complaining of frequent difficulty in chewing and swallowing, walking and breathing. She was then admitted to the Clinic of Neurology in Belgrade for the first time. The generalized myasthenia gravis with strongly manifested bulbar disorders was registered. The difficulties in chewing, swallowing and talking were stressed by an anomaly of the mandible (micrognathia), which had been probably caused by long myasthenic weakness of masseter muscles in a period of growth and development of the jaws. The severe form of myasthenia gravis was confirmed by clinical, electrophysiological testing. The computed tomography of media-

Fig. 1. Computed tomography-residual thymic tissue

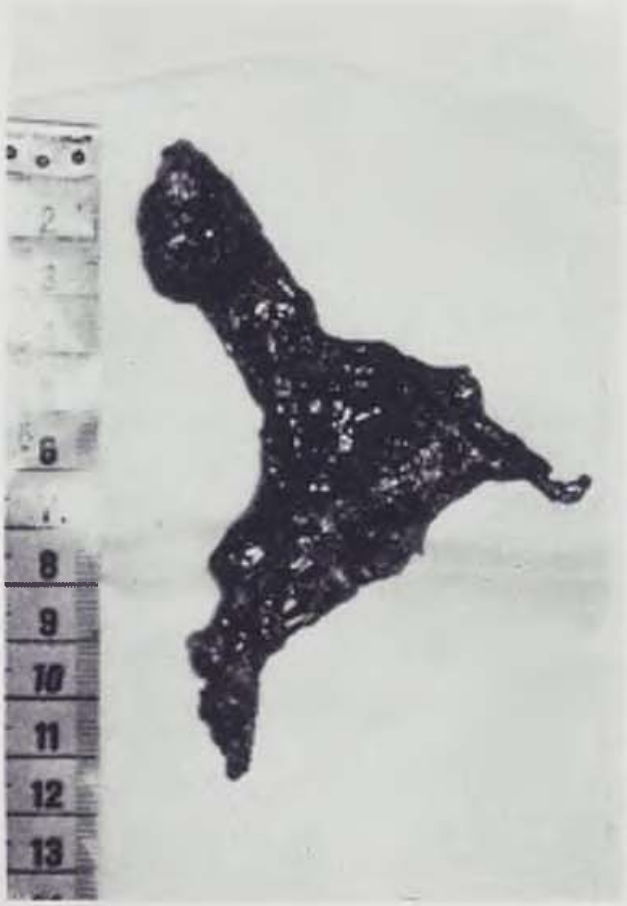

Fig. 2. Residual right lobe of thymus-after operation

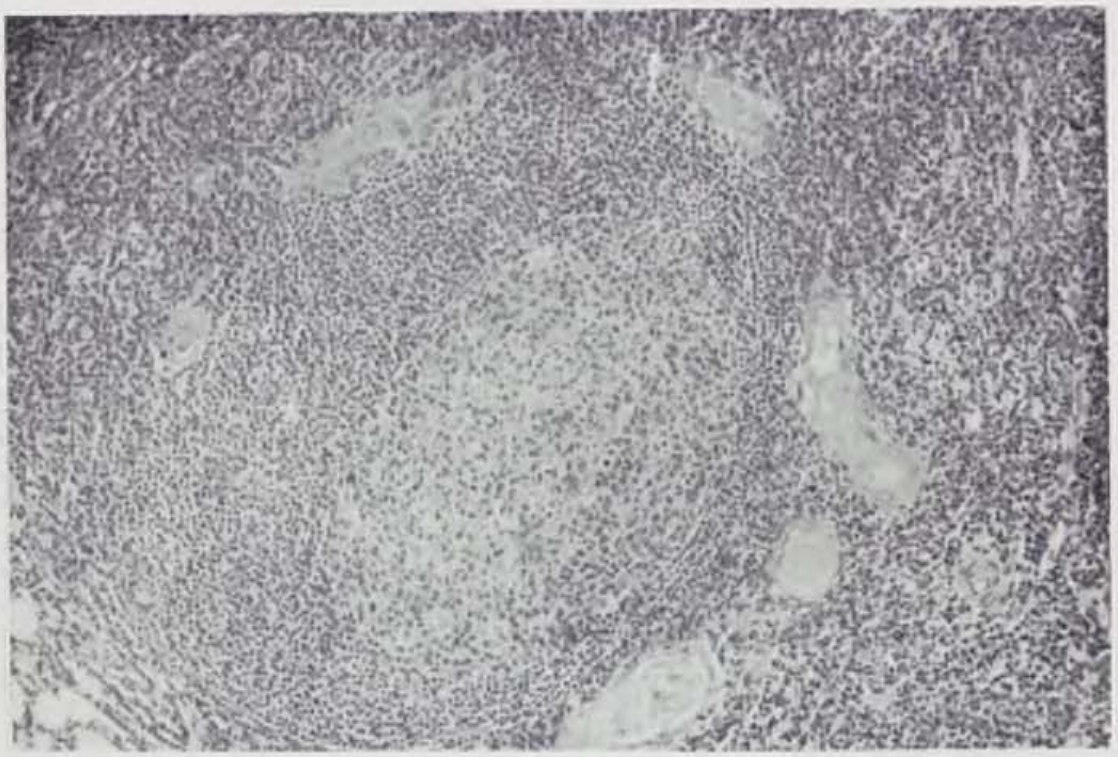

Fig. 3. Large number of germinative centres within Lymphoid hyperplasia of thymus medula

Fig. 4. A panoramic roentgenogram before the extraction of low wisdom teeth

Fig. 5. Anterior view of patient preoperatively

Fig. 6. Lateral view of patient preoperatively

stinum (Fig. 1) revealed a residual thymic tissue. In order to prepare the patient for further intervention, she underwent a two-year immunosuppressive treatment (corticosteroides were prescribed to high single doses every two days as well as azathprine loo mg daily) with intermittent repeated therapeutic exchange of plasma (3). In spite of such a therapy, the clinical state, immunological findings (highly concentrated IgM, 3.77 g/L), decreased concentration of C3 (0.75 g/L) and positive circulating immune complexes,

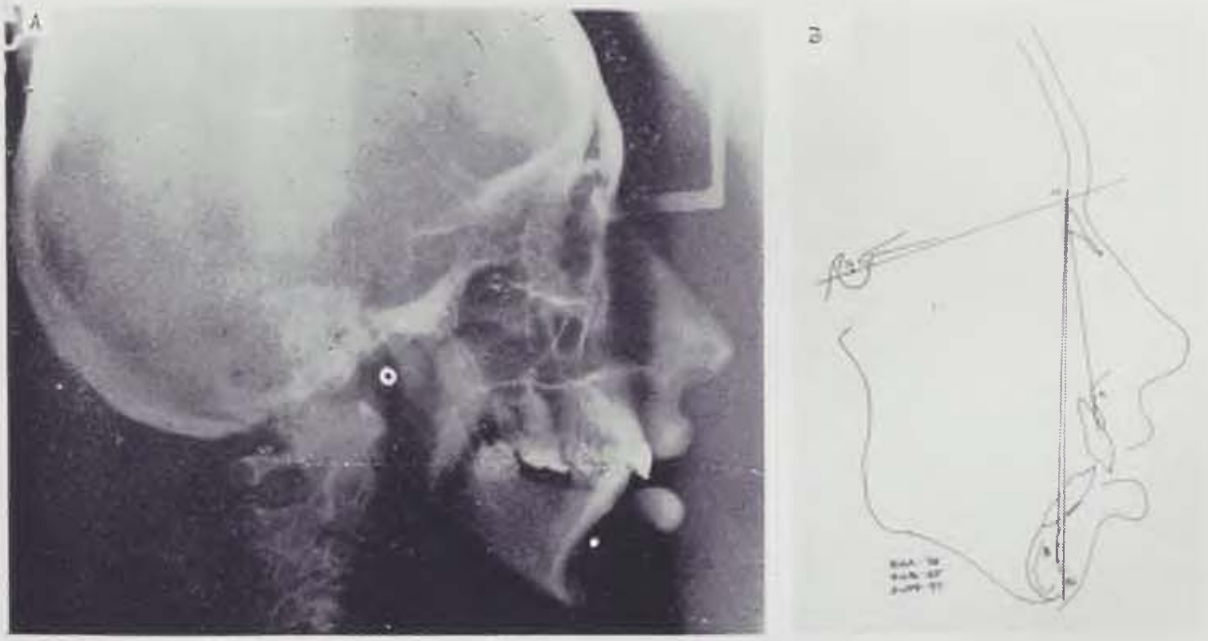

Fig. 7. (A) Cephalogram and (B) cephalometric tracings before the operation

accompanied with a high antibody titer on the acetylcholine receptor, indicated rethymectomy, carried out transsternally, by the so-called extensive thymectomia. The residual right lobe was removed entirely (Fig. 2). By a histological analysis hyperplasia of the thymus was found, as well as a large number of germinative centres within lymphoid hyperplasia of thymus medula (Fig. 3). The postoperative period was seriously complicated, and followed by the assisted ventilation once again but also by maintenance of self care, speech and swallowing. Since the speech and swallowing were further maintained with high doses of inhibitor cholinesterase, in spite of the restitution of all the muscles, a hypothesis was put forward that the residual anomaly of the mandible significantly affected these functions. Thus, we elaborated a plan for a plastic, surgical treatment.

After the analysis of cephalogram and the one on the plaster models, as well as after the extraction of low wisdom teeth, we made a splint on the mandible and put metal bars on the remaining teeth (Fig. 4). In total anesthesia, elongation by both sides sagittal splitting of ramus and body of the mandible was performed intraorally. Figures 5,6 and 7 show our patient and

Fig. 8. Anterior view of patient postoperatively

Fig. 9. Lateral view of patient postoperatively

cephalogram before the operation. Figures 8,9 and 10 show the situations after the operation. From the operation 6 weeks on, there was a fixation between the jaws, as well as a gastric sonde, placed endonasally. The postoperative course was regular and was not followed by weight loss or complications related to coalescence of the mandible fragments or complications of the primary disease.

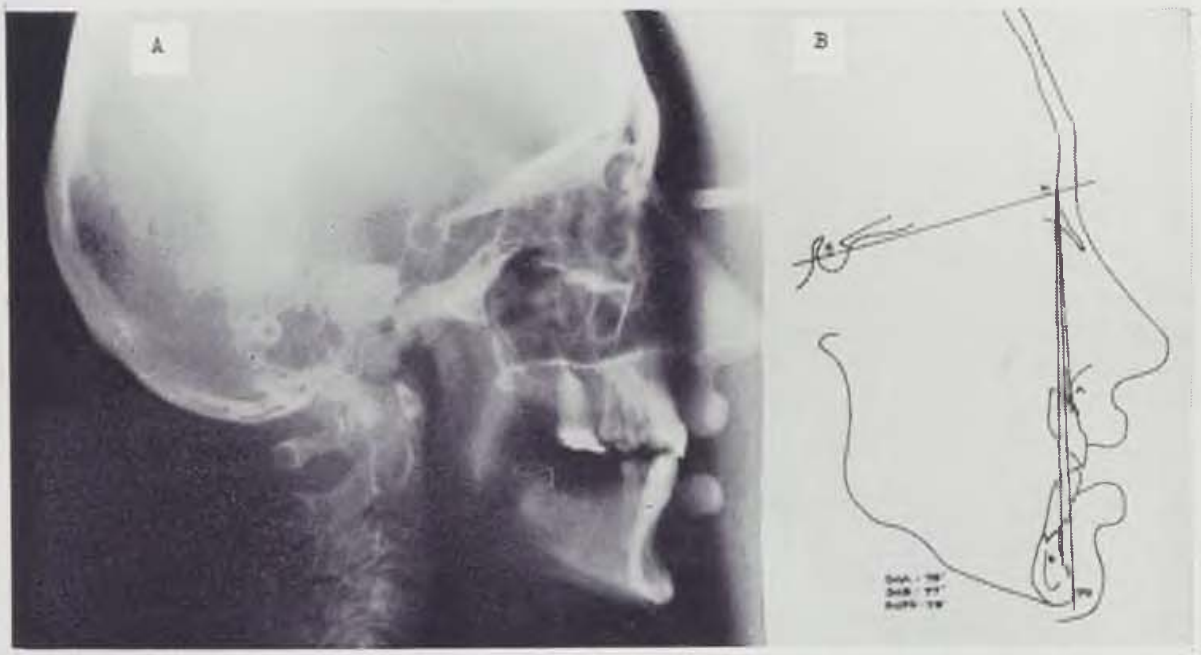

Fig. 10. (A) Cephalogram and (B) cephalometric tracings after the operation

DISCUSSION

Myasthenia gravis is a very serious disease, which might end fatally. Its etiology is unknown, but is thought that psychogenic factors and thymus have crucial role, too. The myasthenic crisis is also caused by psychogenic factors. We presented a functionally aesthetic operation which had been carried out in order to make some corrections of the appearance, improve psychic elements and also breathing and swallowing by moving the mandible and chewing by better occlusion. It is very likely that myasthenia gravis conditioned such a serious deformity, for the muscle stimulation on the developing bone lacked. Anamnestic and heteroanamnestic data of our patient denied heredity, infection or trauma in childhood.

SUMMARY

Micrognathia is a disease which can appear in patients with myasthenia gravis. If patients with MG are adequately neurologically prepared they may undergo aesthetic, functional operation, which leads to improvement in the course of the disease.

RÉSUMÉ

Micrognatie chez une grave mysthénie

Stefanović, P. D., Apostolski, S.

La micrognatie est une maladie qui peut survenir chez les patients souffrant d'une grave myasthénie. Sous condition que les patients avec micrognatie soient préparés convenablement par un traitement neurologique, on peut effectuer des interventions fonctionnelles esthétiques menant à l'amélioration de l'évolution de la maladie.

ZUSAMMENFASSUNG

Mikrognathie bei schwerer Myasthenie

Stefanović, P. D., Apostolski, S.

Die Mikrognathie ist eine Krankheit, die bei Patienten mit schwerer Myasthenie erscheinen kann. Wenn die Patienten mit einer Mikrognathie entsprechend neurologisch vorbereitet sind, können sie eine ästhetische Funktionsoperation durchmachen, die zu einer Besserung des Verlaufs der Erkrankung führt.

REFERENCES

1. **Osserman, K. E.**: Myasthenia Gravis. New York, Grune and Stratton, 1958.

2. **Blalock, A.**: Thymectomy in the treatment of myasthenia gravis. Report of twenty cases. J. Thorac Surg. 13 : 316, 1944.

3. **Pinching, A. J., Peters, D. K., Newsom-Davis, J.**: Remission of myasthenia gravis following plasma exchange. Lancet 2 : 1373, 1976.

4. **Converse, J. M.**: Reconstructive Plastic Surgery, 2d Ed., Vol. 3. Philadelphia: Saunders, 1977.

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SURGICAL TREATMENT OF POST-TRAUMATIC DEFECTS OF THE SOFT TISSUES OF THE HEAD WITH NECROSIS OF THE CALVARIAL BONES

S. P. PAKHOMOV

Head injuries with necrosis of the soft tissues or the bones of the calvaria usually occur in electroburns. Less frequently they are encountered as a result of contact burns, burns caused by flame or hot liquids in protracted exposure due to helpless state or disturbed consciousness of the afflicted person. Such injuries often result in intracranial complications, unfavourable outcome of the disease, and in disability. In cases reported by A. N. Orlov and E. E. Glybovskii (7), intracranial suppurative processes (epidural and subdural abscesses) were observed in every third patient with affections of the calvarial bones throughout their thickness. In 9 out of 37 patients with penetrating defects of the calvarial bones, the outcome was lethal.

In osteonecroses of the calvaria, multistage surgical treatment is most widely used, at the first stage of which necrotic soft tissues are removed most frequently in the course of 2—3 weeks following injury. At the second stage, multiple craniotomy or osteonecrectomy is carried out; F. X. Paletta (13) accomplishes this stage on the fifth post-traumatic day. Only after rejection of the non-viable parts of the bone, the produced defect is covered by means of free dermatoplasty of the granulating surface.

In cranial bone defects of limited size, local dermatoplasty or its combination with free skin transplantation to the donor wound is applied. In penetrating defects, dermatoplasty using flaps with subcutaneous cellular tissue from distant parts of the body is preferred, either the Italian of the Filatov flap being used.

The treatment of patients with extensive osteonecroses of the cranial bones including multiple craniotomy and plastic surgery using pedicle flaps takes from 4 to 9 months (2). In the last few years, publications appeared on the restoration of calvarial defects by dermatomuscular flaps with the application of microvascular anastomoses (5, 6, 7), this shortening considerably the duration of treatment. However, the patients with penetrating defects must undergo reconstructive cranioplastic operations for the restoration of the hard cover of the calvaria and, until these operations are accomplished, the patients have to wear a special head dress with a protective plate.

In the literature, there are reports on isolated clinical observations (11, 12) where the denuded non-viable bone was not removed or where only a thin layer of the external lamina was resected without dissecting the diploë, and the bone was covered with a dermato-adipose flap with the prospect that this would promote the restoration of its viability. In these cases it was possible to shorten the duration of treatment to half its time (14, 15).

Our clinical and experimental observations also testify to the possibility of restoring the bony structure at the site of injury. Histological studies have shown that in the marginal parts of the calvarial bone defect produced as a result of resection of the necrotic spot, young, newly-formed bony structure appears at the edge of the osteocyte-free bone in the patients 2 to 2.5 after electroburns. It has been shown in experiments on rabbits and dogs (3, 4) on which thermic burns with injury to the bones of the calvaria were inflicted that an early excision of the soft tissue scab and covering of the focus of the burned bone with a well-vascularized dermato-adipose transfer flap with good blood supply prevents bone sequestration and development of intracranial suppurative complications, promotes regeneration of the bony tissue and gradual replacement of its non-viable structures.

In the Nizhni Novgorod Research Institute of Traumatology and Orthopedics, 4 490 patients with deep burns of various localization were treated between 1961 and 1989; 84 (1.7%) of them, aged from 7 months to 79 years, had suffered damage to the calvarial bones: 39 as a result of electroburns, 22 burns caused by flame, 18 contact burns, 4 chemical burns; one patient was scalded with boiling water. In addition, three patients had osteonecrosis due to mechanical injury, while in one woman-patient, necrosis of the soft tissues and bones developed after osteoplastic craniotomy performed for meningioma.

The patients were hospitalized at various intervals after injury: 11 patients were admitted in the course of the first week, 19 after 1—3 weeks, 42 in the course of 1—3 months, 16 after 4 months. In most of the patients, burns of the hairy part of the head were combined with burns of other localizations (face, neck, chest, upper and lower limbs) over an area from 5 to 53% of the body surface. Only 20 patients presented local injuries to the calvaria.

In patients admitted within the interval of 3—4 weeks after injury, an immobile, dark scab, firmly attached to the underlying bone, could be observed. In patients admitted at later intervals, rejection or suppurative dissolution of necrotic soft tissues over the periphery occurred, baring grey or dark-grey bone; in some cases, isolated small foci of granulations were found to grow through the necrotic bones. Circumscribed necrosis of the calvarial bones, 10—50 cm^2 in size, was observed in 40 patients, up to 80 cm^2 in 13, to 120 cm^2 in 17 and more than 120 cm^2 in 18 patients.

Thermovisual investigation revealed a decrease in the intensity of fluorescence of the osteonecrotic focus in comparison with the surrounding tissues with a temperature gradient of 1.25—2.0 °C, this not permitting reliably to established the depth of osteonecrosis. On operation, only the external lamella of the calvarial bones was found to be damaged in these cases.

A total of 49 patients with damage to the external lamella, 39 with osteonecrosis of part of the calvaria in all its thickness were under our observation; in six of the latter, necrosis was present in the anterior wall of the frontal sinuses and in the bones of the facial skeleton. As a rule, the size of the defect was larger in the external lamella than in the internal.

Among the patients with penetrating defects of the calvarial bones, epidural abcesses were found in 14, subdural abscesses in 3, encephalitis in 3 and an abcess of the cranial portion of the brain in one patient. Superficial destruction of part of the brain prolapsing through the bone defect was found in 3 patients (Fig. 1a, b). In most of these patients, the intracranial suppurative complications were not revealed until at craniotomy because their course was unsymptomatic or the symptoms, such as headache, were not very informative.

In addition to interventions focused on fighting the mentioned complications, various kinds of dermatoplasty were used to cover the wounds on the head.

After removing the necrotic parts of the external lamella of the calvaria in 6 patients and the bone in all its thickness in one patient, local dermatoplasty was performed.

In order to remove an extensive calvarial defect, we performed free dermatoplasty of the granulating surface using 0.3—0.4 mm thick transplants in 31 patients after multiple craniotomy and sequestration of bones; in 15 patients after tangential osteonecrectomy; in 16 patients during a single one-stage removal of osteonecrotic parts throughout the thickness of the bone, and in 3 patients along with the removal of necrotic dura mater.

Free dermatoplasty following sequestration of osteonecrotic parts and development of granulations ensured restoration of the skin cover united with the underlying bony tissue in necrosis of the external lamella of the calvaria or with the dura mater and the brain in penetrating defects. Later on, this conditions, in many patients, ulceration of the restored thin skin cover, unreliable protection of the brain in penetrating defects of the cranial bones, headaches, and development of post-traumatic epilepsy.

The mentioned complications occurring in the patients in latter periods after treatment served as a basis for the use of other types of dermatoplasty. After removing necrotic soft tissues and bones throughout their thickness, we performed dermatoplasty using Filatov's flap in five patients and dermatoplasty according to Tychinkina (10) in one patient.

In three patients, the necrotic parts of the calvarial bones were not removed and dermatoplasty was performed over osteonecrosis: in one of the patients, we used a rotation flap, in another we applied bridge-shaped fascia-skin flaps cut out in the neighbourhood of the wounds, while in the third patient, we used Filatov's flap. The wounds resulting from the transfer of local tissues were covered with free skin transplants. No complications were observed in the patients (Fig. 2-a, b).

Fig. 1. Prolaps of the brain in a patient with a penetrating defect of the calvarial bones and the dura mater; a — before restoration of skin cover; b — after free dermotoplasty of granulating brain surface

Fig. 2. Covering an osteonecrotic area of the parietotemporal region by means of a rotation skin flap with subcutaneous cellular connective tissue; a — before operation; b — after operation

When covering necrotic bones with dermato-adipose or dermato-fascial flaps, one can never be sure that an inflammatory process, fraught with suppurative complications, is not hidden in their thickness or underneath. In order to reduce the risk of development of intracranial suppurative complications, to preserve the hard cover of the calvaria and to shorten the time of treatment, we worked up and used in treating patients a method (1) in which the osteonecrotic part after removal of the necrotic soft tissues is exposed to ultrasonic cavitation. Then, multiple craniotomy is carried out by means of a lancet-shaped or spherical cutter, going as deep as to the vascularized layer, and in necrosis of the bone affecting it throughout its thickness, right to the dura mater. When suppurative inflammation is not present in the bone, the membranes and the brain, the openings of the cutter are filled with bone fragments in order to create favourable conditions for reparatory processes. The zone of osteonecrosis is covered with a highly vascularized skin flap with subcutaneous cellular tissue on a nutrient pedicle (Italian flap, Filatov's flap) cut out

in the neighbourhood of the bared bone or in a distant area. The donor wound is covered with a free skin transplant.

In our observations concerned with the covering of perforated osteonecrotic areas in two patients, we used a combined method of dermatoplasty: Filatov's flap in one patient and dermatoplasty according to A. K. Tychinkina in the other (Fig. 3 a, b, c, d).

Results of treatment of 7 patients with osteonecrotic foci covered by means of pedicle dermatoplasty were analysed in the course of 1.5 to 8 years.

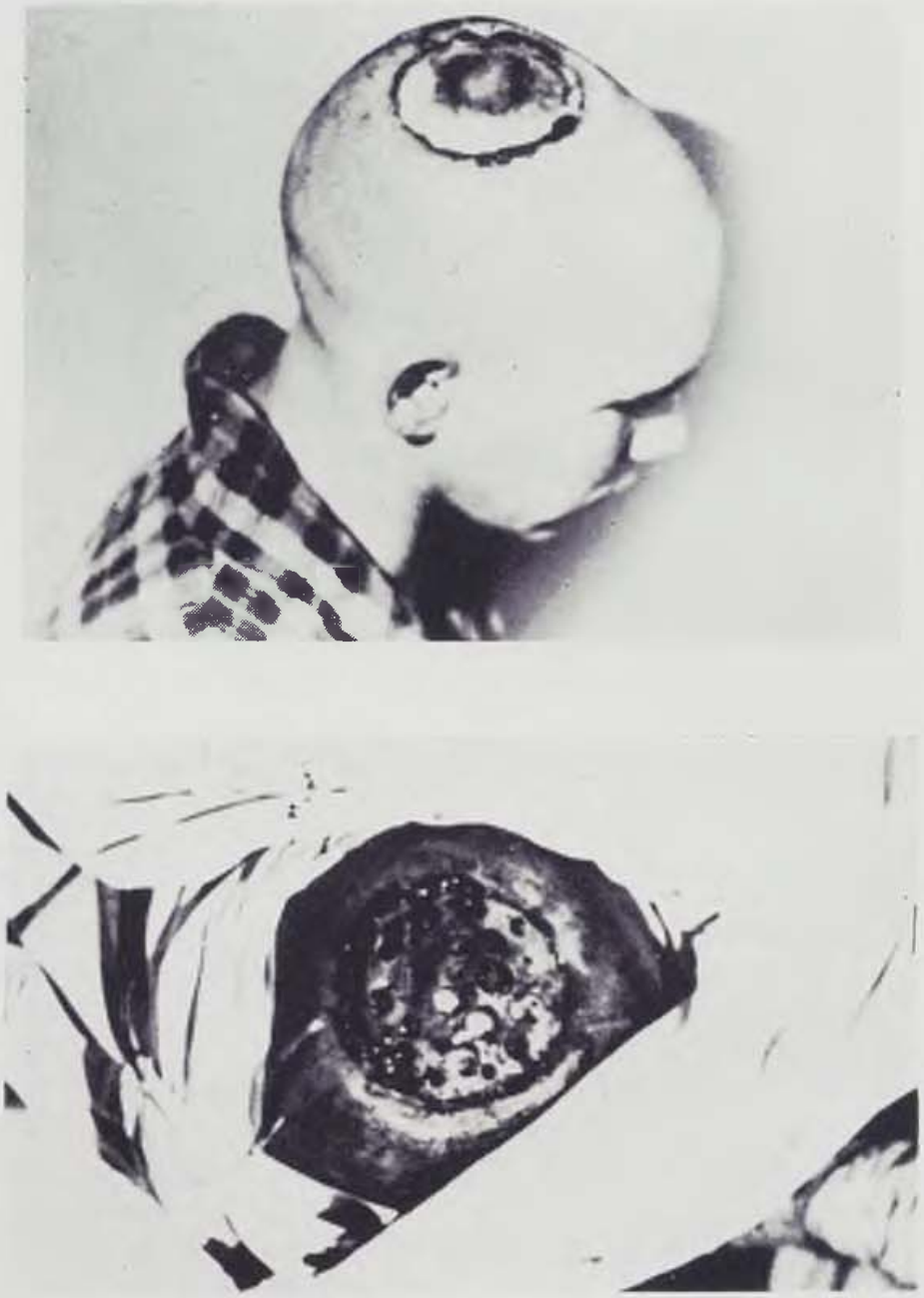

Fig. 3. Stages of operation for the covering of an osteonecrotic zone after electrical injury: a — before restoration of the skin cover; b — openings of the cutter were applied throughout the thickness of the parietal bone

No complications were observed, work ability was restored 54 days after dermatoplasty, in the mean.

Out of the 88 patients with osteonecroses of the calvaria treated in our Institute, 84 recovered, 4 died (4.5%). All the patients who died exhibited damage to the calvarial bones throughout their thickness against the background of deep burns of other localization; in three of them, surgical operation on the head could not be performed because of a serious condition of the patient. Lethal outcome occurred within 3—4 weeks following injury. Immediate cause of death in two of the patients was sepsis (with suppurative

Fig. 3. c — the osteonecrotic zone was covered with a skin flap with subcutaneous cellular tissue on a temporary nutrient pedicle; d — the same patient after termination of treatment

pleuritis in one patient and abscess of the lungs in the other), meningoencephalitis in the third and abscess of the cranial portion of the brain in the fourth.

The shortest time of treatment until recovery of the patients with the use of multiple craniotomy and free dermatoplasty was 37 days, with pedicle dermatoplasty 32 days, and with local dermatoplasty 26 days, the longest time being 327, 123 and 49 days, respectively.

An analysis of treatment of the patients with osteonecrosis of the calvaria has shown that multiple craniotomy and waiting for sequestration with the formation of granulations is inevitable in connection with the removal of extensive osteonecrotic foci, which conditions long-term treatment of the suppurative process, potential development of intracranial suppurative complications and prolonged time of treatment. Free dermatoplasty of the granulating surface does not ensure full-value skin cover, especially in penetrating defects of the calvarial bones. The brain may prolapse and get wounded in the bone defect (Fig. 1 b).

An early excision of the necrotic soft tissues before infection develops in the wound on the head in combination with multiple craniotomy down to viable tissues, ensures visual diagnosis of the depth of the injury and enables us to detect possible suppurative inflammation.

Covering the osteonecrotic parts with a well vascularized skin flap with subscutaneous cellular tissue or with a dermato-fascial flap before the development of infection in the wound makes it possible to prevent intracranial suppurative complications, create a full-value skin cover, shorten the time of treatment and restore work ability of the patient.

SUMMARY

Experience with the treatment of patients with defects of the soft tissues of the head and necrosis of the calvarial bones has been generalized. Results of treatment using multiple craniotomy, osteonecrectomy and various methods of dermatoplasty aiming at restoration of the skin cover are discussed.

The methods of treatment focused on the preservation of osteonecrotic parts and thus the hard integument of the calvaria ensuring prevention of intracranial suppurative complications, creation of a full-value skin cover, a more favourable outcome of injury and work ability of the patients are discussed and recommended.

RÉSUMÉ

Traitement chirurgical des défauts posttraumatiques des parties molles de la tête, avec nécrose de la voûte crânienne

Pachomov, S. P.

On a résumé les expériences avec le traitement des malades présentant les défauts des parties molles de la tête et la nécrose de os de la voûte crânienne. Les résultats du

traitement, consistant en crâniotomie multiple, ostéonecrectomie et diverses méthodes de dermoplastie visant vers le renouvellement du tégument cutané, on été discutés.

On a décrit et recommendé le mode du traitement, orienté au maintien des régions ostéonécrotiques, c'est-à-dire du tégument dur de la voûte crânienne, assurant la prophylaxie des complications purulentes intracrâniennes, un tégument cutané de valeur, les résultats du traumatisme plus favorables et la faculté de travail des atteints.

ZUSAMMENFASSUNG

Die chirurgische Behandlung posttraumatischer Defekte der weichen Teile des Kopfes mit einer Nekrosis der Knochen der Schädelwöbung

Pachomov, S. P.

Es wurden die Erfahrungen mit der Behandlung von Patienten mit Defekten der welchen Teile des Kopfes und einer Nekrosis der Knochen der Schädelwölbung zusammengefasst. Diskutiert wurden die Ergebnisse der Behandlung bei Anwendung der vielfachen Kraniotomie, der Osteonekrektomie und verschiedener Methoden der Dermoplastik mit dem Ziel der Erneuerung der Hautdecke.

Beschrieben und empfohlen wurde die Behandlungsmethode, die auf die Bewahrung der osteonekrotischen Umkreise abzielt und also auf das harte Intergumentum des Schädelgewölbes, ferner die Profilaxis innerschädliger eitriger Komplikationen, eine vollwertige Hautdecke, günstigere Ergebnisse des Traumas und die Arbeitsfähigkeit der Patienten.

REFERENCES

1. A. c. 1178418 USSR, MKI A 61 B 17/00. Method of treatment of osteonecrosis of the skull with defect of the soft tissues (S. P. Pakhomov — USSR) Discoveries. Inventions. — (In Russian). Otkrytiya. Izobreteniya, 34, 1985.

2. **Burmistrov, V. M., Volkov, L. F.**: Using Filatov's pedicle flap in the treatment of burns and their sequels (in Russian). Vestn. khirurgii im. Grekova (Grekov's bulletin of surgery). Vol. III, 7; 75, 1973.

3. **Bushuyev, Yu. I., Demina, N. I.**: Regeneration of bony tissue in the focus of thermic injury (in Russian). 5th Scientif. — Pract. Conf. on the problems of thermic injuries. (Abstracts of papers). Gorky, 86, 1986.

4. **Demina, N. I.**: Experimental substantiation of surgical treatment of burns in the head with injury to the calvarial bones (in Russian). Author's abstract of Cand. Med. Sci. thesis. Gorky, 16,1 988.

5. **Ken'erash, M.**: A new method of dissection and transposition of a musculocutaneous flap of m. Latissimus dorsi (in Russian). Acta Chir. Plast. 24, 1 : 17, 1982.

6. **Krylov, V. S., Nerobeyev, A. I., Milonov, N. O.**: Plastic removal of defects of soft tissues using free transplantation of musculocutaneous flaps in microsurgical technique (in Russian). Vestn. khirurgii im. Grekova (Grekov's bulletin of surgery), 129, 7 : 8, 1982.

7. **Orlov, A. N., Glybovskii, E. E.**: Surgical treatment of burn injuries to the calvarial bones (in Russian). Vest. khirurgii im. Grekova (Grekov's bulletin of surgery,) 115, 7 : 97, 1975.

8. **Povstyanoi, N. E., Kovalenko, O. N.**: Strategy and results of treatment of posttraumatic defects of the soft tissues with denudation of the calvarial bones (in Russian). Klinich. khirurgiya (Clinical surgery), 3 : 14, 1988.

9. Free musculodermatoplasty in deep burns of the calvaria (**Vikhriyev, B. S., Burmistrov, V. M., Belonogov, L. I., Kichemasov, S. Kh.**) (in Russian). Khirurgiya (Surgery), 5 : 43, 1985.

10. **Tychinkina, A. K.**: Dermoplastic operations (in Russian). Moscow, 152, 1972.

11. **Hartford, C. E.**: Preservation of Devitalized Calvarium Following High Voltage Electrical Injury. J. Trauma, 29, 3 : 391, 1989.

12. **Jackson, D.**: Burns of Bone: can these bones live? Histological review and aetiology. Burns, 1, 4 : 342, 1975.

13. **Paleta, F. X.**: Surgical Management of the Burned Scalp. Clin. Plast, Surg. 9, 2 : 167, 1982.

14. **Silverberg, B. e. a.**: Microvascular Reconstruction after Electrical and Deep Thermal Injury. J. Trauma, 26, 2 : 128, 1986.

15. **Wang, X. W.**: Regeneration of Full Layer Necrosis of Skull following High Voltage Electrical Injury. Burns, 12, 3 : 206, 1986.

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RATIONALE FOR THE NEED TO EMPLOY A CONSERVATIVE METHOD IN THE TREATMENT OF PATIENTS WITH DYSTROPHY OF THE HAND

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Diseases of the hand account for 6.1 % of those affecting the locomotor tract. According to the author's data (3), degenerative complications and sequelae of the diseases of the hand occur in 39.8 %, and make up the largest group in the overall pattern of hand diseases. As several nosologic forms often coexist, the authors regard diseases affecting the hand as a generalized disease of ligament tissue. The mainstay methods for treating these diseases include symptomatic surgery with recurrence rates ranging between 14—80 % (2).

The aim of this paper was to specify the causes aiding the development of dystrophy of the hand with respect to sexual dimorphism, and to provide a rationale for selecting the method of treatment.

MATERIAL AND METHODS

A comprehensive examination of women with hand dystrophy including 38 women with tunnel syndromes, 32 women with Dupuytren's contracture, 23 with radiocarpal joint ganglia, 14 with subcutaneous tendon ruptures, 17 with concomitant diseases of the hand aged 30 to 50 years, and 10 women making up a control group with no history of a gynaecologic or vascular disease was performed. In view of the possible role of hormonal disorders and blood circulation in the development of disease, a radioimmunoassay of sexual hormones, rheography as well as examination of the functional state of the autonomic nervous system using a known methodology were performed (1); in addition, asymmetries of arterial pressure and temperature were assessed.

The levels of gonadotropic hormones (FSH, LH), prolactin (PL), and steroid hormones (estradiol, E; progesterone, PG; testosterone, TS) were determined in blood plasma specimens. Collection was made in fasting subjects at 8 s. m. on days 5—7, 14—15, and 22—24 of the menstrual cycle. The

following units were used when calculating the markers: mn/1 (PL, FSH, LH), nmol/1 (PG, TS), pmol/1 (E).

Rheography was performed using standard method by means of skin leads placed at the wrist and index finger in RVG, and by means of masto-mastoid and occipitomastoid leads in REG and RG of spinal arteries.

RADIOIMMUNOASSAY RESULTS

All dystrophies of the hand have been found to be associated with various disorders of sexual hormone levels at various stages of the menstrual cycle. The changes in the absolute levels of hormones in the blood serum of patients with dystrophy of the hand are associated with impaired rhythm and character of hormonal disorders in the course of the menstrual cycle. A feature common to patients with all nosologic forms is an increase in prolactin levels in blood serum as well as an absence of peaks of elimination of LSH, LH, PL, TS in the mid-cycle. Patients with Dupuytren's contracture, tunnel syndromes, ganglia (even if these conditions occur concomitantly) typically show an increase in TS levels at various stages of the cycle which presumably is the reason for the frequent coexistence of the diseases. The slightest changes in the hormonal pattern (involving PG and PL levels) are present in spontaneous tendon ruptures. The changes observed in inflammations of the ligament were more marked; only TS and E remaining within the normal range. Patients with the other nosologic forms typically showed an increase in PG and LH levels in the first stage and, also, a decrease in FSH, LH and PG levels in the second stage of the cycle. These results suggest that all dystrophies of the hand were associated with hormonal disorders with varying degree of severity. This apparently determines the degree of morphologic alterations occurring in ligaments. However, a number of changes show a uniform pattern making it possible to assign all these conditions to a single group.

RESULTS OF EXAMINATION OF THE FUNCTIONAL STATUS OF THE AUTONOMIC NERVOUS SYSTEM

Sympathetic response typically prevail in patients with dystrophy of the hand. In our view, the incidence of sympathetic and parasympathetic responses is characteristically equal in combined diseases of the hand. Results of the orthoclinostatic test, performed in an effort to examine the autonomic control of the suprasegmental portion of the autonomic nervous system, suggests it is impaired in women with hyperandrogenism. These patients as well as those with predominantly parasympathetic responses were found to have insufficient autonomic control at a higher level compared with those showing low estrogen levels. The control group typically exhibited excessive autonomic control with no adaptation impairment. Examination of the baseline autonomic tone of segmental vegetative formations, assessed by the colour of the skin, distinctness of the vascular pattern, and skin temperature, indicates that the patients are predisposed to vascular spasm at the segmental

level. Examination of the local autonomic reflex from the capillary wall using examination of local dermographism points to capillary spasms in hand dystrophy. Besides, all markers were found to be asymmetric in all nosologic forms.

Examination of the autonomic tone, reactivity and control of function in women with dystrophy of the hand made it possible to discover a disorder of not only segmental but, also, the suprasegmental part of the autonomic nervous system. The typical pattern of pathological disorders in subjects with various nosologic forms of diseases of the hand was found manifesting itself by prevalence of the tone of the sympathetic or parasympathetic nervous systems and by the character of hormonal disorders.

RESULTS OF RHEOGRAPHY

All dystrophies of the hand are associated with blood circulation disorders, with a characteristic decrease in blood supply to the hand and an increase in vascular tone. While, in some conditions, the changes involve the carotid area, in others, the vertebral arteries are affected, or a combination of both can occur. In unilateral disease of the hand, the blood circulation disorders are present in either hand. The pathologic process involving the vertebral artery affect the ipsilateral artery. Changes in the area of the carotids will usually have an effect on both sides. The changes can be of various intensity due to the severity of hormonal disorders and alterations in the autonomic nervous system.

The implication is that dystrophy of the hand is not an isolated disorder of one of the markers, but a generalized process involving the whole body. The severity of pathologic changes, as assessed using objective methods, characterizes the degree of the dystrophic process occurring in the hand. Its progressive development with periods of exacerbations and remissions illustrates the compensation or decompensation of changes in the body. Results of the examination must be taken into account when justifying the selection of the therapeutic method and duration of its application in patients with dystrophies affecting the hand.

RATIONALE FOR THE SELECTION OF THE THERAPEUTIC METHOD

Selection of the method of treatment, and duration of treatment in patients with dystrophies of the hand must be strictly individualized. An absolute indication for the selection of an operative therapeutic method is impaired function of the hand and disablement. In this particular case, the main problem is to choose the correct extent of operation, and its timing. The operation cannot be performed at a time of rapid progression of the disease which, in our experience, occurs in spring and autumn. The extent of surgery is determined by the degree of blood circulation disorder and hormonal disorders. In women with dystrophies of the hand, it is imperative to consult

the gynaecologist, to establish the aetiology of hormonal disorders and to seek its preoperative correction. Whereas women with dystrophy of the hand found (by rheography) to have functional disorders and compensated course of the hormonal disorders, can be indicated for radical surgery, those with organic lesions and hormonal disorder decompensation are eligible for palliate surgery only.

Operation for dystrophy of the hand should not be undertaken for cosmetic reasons only. In this case, when the physician is faced with a pleading patient, preference should be given to conservative therapeutic modalities such as fixation (in spontaneous ruptures of tendons), puncture (ganglia), aponeurotomy (Dupuytren's contracture), or physiotherapeutic and pharmacological (tunnel syndromes) therapies. These methods affect the generalized processes occurring in the body only to a lesser extent. Even though use of these methods may lead to only partial removal of the deformity or a short-term effect, they must be preferred because, to obtain a favourable effect again, they can be performed repeatedly. To prevent postoperative decompensation, it is critical to institute, in all patients, conservative pharmacologic therapy in an effort to ensure long-term remission of the disease. The therapeutic tools employed include agents improving blood circulation, normalizing vascular tone, supporting venous return, enhancing microcirculation as well as replacement hormonal therapy, sedative therapy, and preparations normalizing nervous system function. This approach to the treatment of patients with dystrophies of the hand has reduced the rate of recurrence in our clinic from 9.8 % to 3.6 %.

SUMMARY

Radioimmunoassay determining sexual hormone levels, functional state of the autonomic nervous system and blood supply, were used to study the causes aiding the development of dystrophies of the hand in women. All these conditions were found to be associated with gross disorders of the endocrine system, autonomic dysfunction and changes in the system of blood supply. The results were used to develop a policy for the selection of the therapeutic method and its timing with a favourable effect.

Key words: Dystrophies of the hand — comprehensive examination-hormonal disorders — blood circulation disorders — autonomic nervous system impairment — rationale for therapeutic method selection.

RÉSUMÉ

Justification de la nécessité de l'utilisation d'une méthode conservative dans le traitement des malades avec la pathologie dystrophique de la main

Kuznecova, N. L., Gajov, A. V.

On a étudié les causes menant à la genèse des maladies dystrophiques de la main chez les femmes, en utilisant les méthodes radioimmunologiques de détermination du taux d'hormones sexuelles, de l'état fonctionnel du système nerveux végétatif et de l'alimen-

tation sanguine. Chez toutes les maladies dystrophiques de la main on a constaté de graves troubles du système endocrinien, dysfonctions végétatives et changements dans le système d'alimentation sanguine. Conformément aux résultats obtenus, on a élaboré l'accès au choix de la méthode de traitement et du temps de sa réalisation réussie.

ZUSAMMENFASSUNG

Die Begrüdung der Notwendigkeit einer Anwendung konservativer Methoden bei der Behandlung von Patienten mit einer distrophischen Pathologie der Hand

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Mittels radioimmunologischer Methoden wurde das Niveau der Geschlechtshormone bestimmt, sowie des Funktionsstandes des vegetativen Nervensystems und der Blutversorgung. Studiert wurden die Ursachen der mithelfenden Enstehung dystrophischer Erkrankungen der Hand bei Frauen. Bei allen dystrophischen Erkrankungen der Hand wurden groge Störungen des endokrinen Systems festgestellt, sowie vegetative Disfunktionen und Veränderungen im System der Blutversorgung. Im Einklang mit den erhaltenen Ergebnissen wurde der Zutritt zur Wahl der Behandlungsmethode ausgearbeitet sowie die Zeit der Realisierung mit positivem Effekt.

REFERENCES

1. **Vein, A. M., Solovjeva, A. D., Kolosova, G. A.**: Vegeto — vascular dystony. M.: Med., 1991 (in Russian).

2. **Kipervas, I. P., Buzunova, L. V.**: Rehabilitation of patient with post-traumatic tunnel neuropathy with Zudek syndrome (Ortopedia, travmatologia, protyezirovanye) — II. S. 24 — 1987 (in Russian).

3. **Usolceva, E. V., Mashkara, K. I.**: Surgery of hand diseases and trauma. L.: Med. — 1986 (in Russian).

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Travel, in the younger sort, is a part of education: in the elder, a part of experience
FRANCIS BACON 1561 – 1626
(Essays, 15. 'Of Travel)

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BRIEF REPORT ON A VISITING SCHOLARSHIP IN THE U. S. A.

A. NEJEDLÝ

In 1991, the writer had the opportunity to go through a half-year Visiting Scholarship in the United States. This opportunity was given to him by the PSEF (Plastic Surgery Educational Foundation). The Visiting Scholarship was proceeded by the writer's attendance at the conference of plastic surgeons in Budapest 1989, arranged by the Hungarian Society of Plastic Surgery in collaboration with the PSEF. In 1992, a similar conference is about to be held in Prague. After the return from the Budapest conference, the writer quite unexpectedly received an invitation by the PSEF to submit an application for the 1991 Visiting Scholarship in the United States. However similars invitation have been sent to a number of other young plastic surgeons, who didn't take part at the Budapest conference. The invitation was accompanied by an application form with a number of questions regarding the applicant himself and his affiliation, as well as his prior education, professional experience, publications, and his professional interest. A recommendation by the the head of the department had to be enclosed. Applications have been submitted by some sixty other young plastic surgeons from the whole of the world. For a closer selection, there were invited four of them, by one from Argentine, from China, from Thailand and from Czechoslovakia. The selection took place at the opportunity of the 59th Annual Meeting of American Plastic Surgeons, Boston, Massachusetts 1990, organised by the ASPRS (American Society of Plastic and Reconstructive Surgeons), ASMS (American Society of Maxillofacial Surgeons) and the PSEF under the slogan „Revolutionary Medicine".

The selection of the applicants for the 1991 Scholarship was performed by a commission, consisting of about 10 members. The event took place on the 2nd conference day. The interviews were strictly individual, i. e., the applicants weren't gathered together prior to them, and they met only by chance. The atmosphere was friendly, the examiners listened patiently, with concentrated attention, without haste and with obvious interest. They even became not to be impatient, when the writer mentioned the long history of the Prague Charles University, as well as the tradition of the Prague plastic surgery, and it's contributions to the professional field. From the four semifinalists, only two were to be selected. I. e., the probability for an applicant to receive the stipend was about 1 to 30. However, the result was announced in writing only about six weeks after the conference. The other finalist was the applicant from the Thailand.

The conference was scheduled for 5 days, and its program was very comprehensive. Its printed proceedings contained 123 papers, divided into 13 chapters. They were distributed at the registration of the conference participants. The participants were able to attend at a number of additional instructional courses organised by the PSEF. Those courses went on simultaneously, usually for 1—3 hours, early in the morning or in the afternoon. They covered all special topics within the branch of plastic and reconstructive surgery. They were given by foremost specialists within the respective fields. They were assigned either as didactic or as advanced ones for experienced surgeons. The special fee amounted from $25—$75, according to the duration of the individual courses.

The conference was attended by more than 2000 physicians of various professionals strains, coming predominantly from the U. S. The conference fees and travel expenses of the applicants for the Scholarship were covered by the PSEF. The admittance to instructional courses and to social events was free for them.

The writer appreciated the possibility to attend at the conference greatly, not only because it has provided him with a lot of new knowledge, but also because it enabled him to get acquainted with some foremost American professionals.

The writer was free to choose the departments and the personalities he would like to visit. Though it was not easy to decide. His main interest pertained to the reconstructive surgery using transposition of musclecutaneous pedicled flaps and free flap transfer, particularly in the connection with the breast reconstruction with living tissue after mastectomy. With this type of surgery he has got acquainted already in Prague, prior the Boston conference at which he acquired some valuable incitements.

Therefore he tried not to disperse his attention to a greater number of various places and concentrated only on two of them, i. e., on Atlanta, (Georgia) and Los Angeles (California). In Atlanta there are two noted Plastic surgery departments. One them is the Department of Plastic Surgery at the Emory University connected with the names of Foad Nahai, MD and John

Bostwick III, MD, the other one is the Atlanta Plastic Surgery P. A., led by Carl R. Hartrampf, Jr, MD, the first surgeon that performed the reconstruction of the breast by means of the pedicled TRAM flap and a man of immense experience in this field. In Los Angeles the writer visited the Department of Plastic Surgery at the University of California, led by William W. Shaw, MD, who without exageration represents the top U. S. personality in the field of free flap transfer. It is also Malcolm A. Lesavoy, who is active there. Though the writer is not particularly interested in the craniofacial surgery, he enjoyed to observe the surgery performed by Henry K. Kawamoto, MD. At all departments, which the writer had the opportunity to visit, there is a great number of further noted professionals and it is not possible, within this short communication, to mention them all.

As to the time schedule, the writer divided his stay in accordance to the number of plastic surgery departments at the respective cities. He concluded his journey by the attendance at 1991 ASPRS/ASMS/PSEF conference which took place in Seattle, Washington. This, already, 60th Annual Meeting was held under the slogan "Summits in Plastic Surgery".

In short, it is possible to say that it was an exceedingly interesting feature to get acquainted with several eminent personalities in one's own field, to observe their preoperative deliberations, their ways of surgery and effective procedures which, apparently, are the result of vast experience. With respect to the fact that the writer had the opportunity to behold those professionals at their work within a short period of time, he was impressed by the variety of their approaches to the solution of surgical tasks.

The writer came to the conclusion that the reconstructive surgery of the breast after mastectomy tends for the reconstruction using living tissue. This reconstruction mode makes it possible to the oncological surgeon to consider as indicated even profylactic mastectomies, and in this way to minimise full development of the breast cancer disease.

A very interesting feature was the dispute, which began approximately at the time of the writer's U. S. visit, and which still continues there. It concerns the eventual limitation of the use of implants for the breast augmentation. The result of this dispute will, surely, be very interesting, and to a great extent will influence even the European plastic surgery routine.

The writer greatly appreciated the possibility to get acquainted relatively thoroughly with the American plastic surgery both in the broader as well in the narrower sense. Simultaneously, he brings well to his mind that he was happy in that sense that he was still young enough, in order to be eligible for the Visiting Scholarship, and at the same time old enough, in order to know well enough what is his particular interest, and what experience he would like to acquire, also in order that he would be able to compare the work of the professionals abroad and the work performed by plastic surgeons in his own country. In general it is possible to say that technically the plastic surgery departments in the U. S. are better off than those in Czechoslovakia. Also the moral and material recompensation of U. S. top professionals is

incomparably better, and it is a question, whether this aspect doesn't contribute to the full professionality of the human being. On the other hand it is possible to state that, in the qualitative, as well as in the quantitative sense, the care given to the patients by the Czechoslovak plastic and reconstructive surgery is comparable to that with which they are provided abroad.

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THE BURN INJURY CAMP — AN OPPORTUNITY FOR REHABILITATION AND RESOCIALIZATION

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In the last week of March 1991. patients with burn injuries had an opportunity to participate in the European Burn Injury Camp in Hengelhoef, Belgium. Held for a second time on the initiative of the University of Leuven, the Centre for Burn Injury, and the Youth and Health Service of the Union of Christian Mutualities VKM Limburg, it was an event intended for children and young people aged 6 to 25 years.

The camp was attended by 52 patients from seven European countries (Belgium, the Netherlands, Denmark, Luxembourg, Yugoslavia, Hungary and Czechoslovakia). This year's four Czechoslovak participants were patients aged 13, 16, 19 and 25 years. Selection of the would-be participants was difficult, so the main criterion adopted was who would benefit most from attending the camp. We chose patients with facial deformities which, in our experience, is a type of impairment making patients' integration to their social environment a most challenging problem.

The purpose of the whole project was to provide the campers with an opportunity, during their leisure time, of competitions in various sports and, in an atmosphere of camaraderie, to compare their skills and exchange views with other patients sustaining the same, or similar ideas as to how they feel about the injury, to encourage their self-confidence, to help them develop a realistic perspective of their individual skills and self-realization, to try to find his or her self, and to get an answer to the question of how to live in a society not accepting handicapped individuals.

The organising multidisciplinary team developed a programme taking into account the patients' physical limitations while not underestimating their preserved skills. The team was made of up experts in a variety of specialties — psychiatrists, psychologists, sexuologists, nurses, rehabilitation and social workers as well as teachers and people professionally engaged in camping. Before leaving, each participant had to complete a questionnaire providing information, in the perspective of his/her parents, on the child's behaviour, habits, responses to the injury, and limitations brought about by the injury. The patients had to introduce themselves, describe their hobbies, and their

own experience with the injury. Finally, the patients' health status was assessed by the physician. The information contained in the questionnaire was used as a form of introduction. Upon arrival, each camper received a list of participants with a brief description of their hobbies as indicated in the questionnaire. The same information was available to the patients about camp leaders.

The message making up an inseparable part of the programme was one of European integration disregarding national and language barriers and other differences as well as handicaps. Playing collective games the camp participants, despite the differences in age and nationality, were able to enjoy the feeling of "teamwork". Each day's programme had a fixed pattern incorporating, in most varied forms, topics related to coping with the sequelae of injury — often rather uncompromisingly straightforward while socially subtle on other occasions. Some activities designed to encourage self-confidence showed it is possible to practise rather demanding sports such as mountaineering — of course, with the assistance of experienced professionals. For many, daily visits to a swimming pool were the first opportunity to bathe in public since the day they had sustained the injury. While, initially, it was not easy for the patients to expose scarred, and often deformed parts of the body, after a week in a group of people with similar disfigurememt but mingling with other people coming to the pool to have a swim, the campers started to show some measure of self-confidence. Evenings were spent in discussions, with future being a frequent issue, which was also why the topics offered included cohabitation with a partner, the possibilities for self-realization available to the handicapped, and the emotional problems arising therefrom. The programme for younger participants included games and quizzes; in sessions featuring situations they were likely to encounter in life, the campers were learning how to use adequate arguments in conflicts, not to flight and hide behind the injury, behind the impairment. Despite considerable language barriers, new friendships and relationships were established. As English was the camp's official language, those not able to communicate in that language were provided yet another stimulus for the next meeting.

As the site was not completely isolated from the outer world the camp was an excellent opportunity, for many patients, to gain their self-confidence. There were other holidaymakers, with no health problems, in the recreational facility, who would meet the patients every day during mealtime and elsewhere within the campground as well as during such activities as balloon flying, an event attracting huge crowds of onlookers. It was this particular activity, balloon flying and, especially, their filling with hot air generated by propane-butane torches, which was intended to show, to our patients, fire in a different form.

For many young people attending the camp, the event was the first opportunity to talk freely about their impairment, to display their scars; for some it was the first time they visited town, experienced the feeling they were able to cope with a variety of situations and activities, or to see they

meant something to other people and somebody cared. This experience will certainly ease their return to society. In two years' time, other patients from burn centres are giong to meet again in the camp. In the meantime, national camps should be organized in individual European countries.

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