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EDITORIAL

On the day of its 40th anniversary the United Nations Organization declared 1986 the International Year of Peace. Thus, the year 1986 permit us, plastic surgeons, too, to support the endeavour to safeguard peace throughout the world. We are well aware of the fact that mankind has to choose between co-operation or confrontation, and that nuclear weapons are the means of genocide. Still more nuclear arms are being added to the existing stockpiles, a fact undermining confidence in the future of humanity. Human dignity continues to suffer the all too frequent use of force as human rights are trampled on. In the sphere of economy, abysmal differences and inequalities condemn large parts of the world to the hopelessness of poverty. There are still 4 to 5 million children dying annually as there is no money to buy vaccines for them. And yet, from 1960 to 1982 the outlay on armaments rose by 400 thousand million dollar, while expenditure on medical aid by only 70 thousand million. The annual expenditure on a single soldier runs into 19,300 dollars, that on one child to only 380 dollars. In a number of developing countries, there is only one doctor per a population of 100,000, and 95 % of the children have to access to medical care. Armaments case only harm to people's health, and fears of war have an unforeseeable negative impact on people's psyche. No generation has the right to destroy mankind, the only alternatives are co-existence or non-existence.

In the International Year of Peace we bear in mind that its main theme, the preservation of peace and future for mankind, is our programme for the years to come, too. For that reason, we must utilize every opportunity for promoting cooperation and understanding between nations. In this respect, it is particularly promising that in the year of peace the process of dialogue launched by the USSR and the US in Geneva last November will continue with another summit meeting.

Hence why our journal, too, intends to take up the opportunity and to live up to the year 1986 with confidence and with the conviction that we, too, can contribute to the cause of lasting peace and, through our efforts, help materialize the World Health Organization motto: "Health for All in the Year 2000".

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CRANIOFACIAL MORPHOLOGICAL FEATURES IN PARENTS OF CHILDREN WITH ISOLATED CLEFT PALATE

J. Procházková, M. Tolarová

Since several years, physicians and scientists have become more and more interested in problems of birth defects. The main attention has been concentrated to their prevention and new methods aimed to decrease number of malformed children have been investigated. In our Laboratory of Clinical Genetics of the Institute of Experimental Medicine, Czechoslovak Academy of Sciences, we have studied not only possibilities of prevention in the families with birth defects, but also in general population. The research has been directed to methods of detection of risk families, in which preventive methods could then be applied and thus the incidence of birth defects decreased.

Since 1957, when our Laboratory has been established by academician Burian, the main subject of our research have always been orofacial clefts (Tolarová 1985).

It is the aim of this study to analyze data related to a hypothesis suggesting existence of differences in orofacial morphology between parents of children with isolated cleft palate and general population. As the orthodontical examinations used in this study are included in examination procedure provided by general orthodontical health service, our results can be quite easily applied to the wide orthodontically treated population.

MATERIAL AND METHODS

The investigated sample consists of 20 fathers and 20 mothers of children with isolated cleft palate born between 1979 and 1980. The control group is formed by 35 males and 40 females, university students from Bratislava.

By means of normal orthodontical examination of the oral cavity, cephalometry, roentgen-cephalometry and measurements of dental casts, 34 characteristics were examined.

The orthodontical examination was based not only on the intermaxillary relationship — Angle classification — (Adam 1976), but the dental and periodental state of health was examined as well.

The cephalometric characteristics were used for determination of the type of the head and face — index cephalicus and index facialis. The first index

is given by the ratio of the largest head width (Eu-Eu) and the largest antero-posterior head dimension (G′-Op), while the second one by the largest face width (Zy-Zy) and the face height (N-Gn′) (Adam 1976, Figs. 1 and 2). For these measurements, the cephalometer was used.

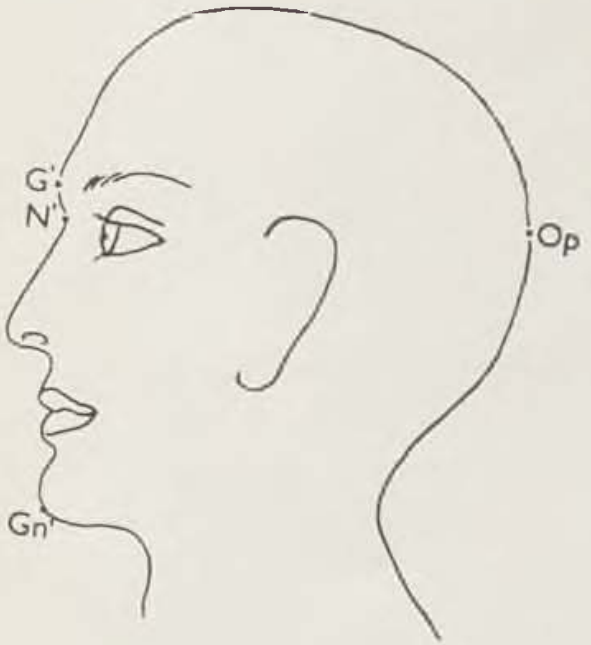

Fig. 1 Cephalometric points en face

Fig. 2 Cephalometric points in profile

The lateral cephalometric roentgenogram of every examined person was made by the standard method (Adam 1976). The roentgen-cephalometric analysis by Jarabak and Fizzel (1972), modified by Racek et al. (1982) and Šimeček and Velíšková (1984), was used in our study. The cephalometric points are shown in the Fig. 3.

The following characteristics were analyzed:

length of the anterior cranial base (S-N)
length of the posterior cranial base (S-Ar)
height of the mandibular ramus (Ar-Go)
length of the mandibular body (Go-Me)
anterior height of the face (N-Me)
posterior height of the face (S-Go)
percentual ratio of the two face heights (as a parameter designating a trend of facial growth)
length of the anterior nasal spine (A-Ans)
length of the maxilla (Ans-Pns)
distance between the sellar point and the posterior nasal spine (S-Pns)
height of the skeletal lower part of the face (Ans-Me)
overjet (H) and overbite (V) of maxillary incisors
height of the whole face with soft tissues (G′-Me′)

height of the upper face (G′-Sn′)
height of the lower face (Sn′-Me′)
height of the upper lip (Sn′-Sto)
height of the lower lip and the chin (Sto-Me′)
sellar angle (NSAr)
articular angle (SArGo)
gonial angle (ArGoMe)
angle of the upper jaw base (SNA)
angle of the lower jaw base (SNB)
differentiation angle of the jaw bases (ANB)
facial angle (SNPg)
interincisal angle (1+1/1—1)
angle between the anterior cranial base and the upper incisor long axis (SN/1+1)
angle between the lower incisor long axis and the mandibular plane (1—1/Go-Me)

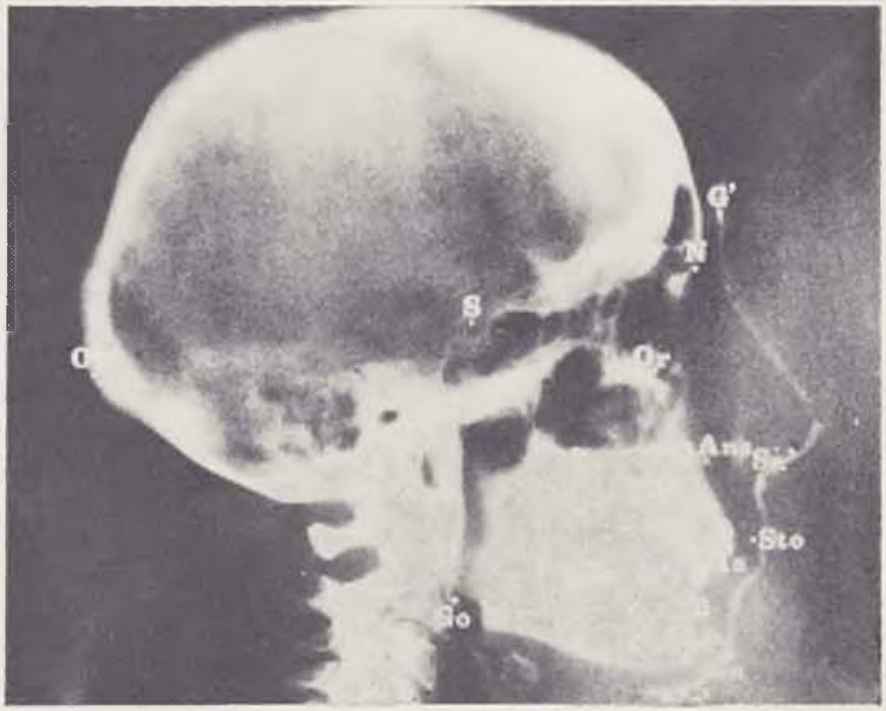

Fig. 3 Lateral roentgencephalogram with cephalometric points for cephalometric analysis

In the other part of the examination, dental impressions were taken by "Elastic" and dimensions of dental casts were evaluated. Three parameters of width of the palate were measured (Fig. 4).

The mean value ($\bar{x}$) and the standard deviation (s) were calculated for each characteristic. The statistical differences between the sample of examined parents and the control group were evaluated by the Student's t-test. The cephalometric indices and the intermaxillary relationships were indicated as percentages.

Angle class II malocclusion appeared more often in the sample of parents of children with isolated cleft palate than in the control group (Fig. 5).

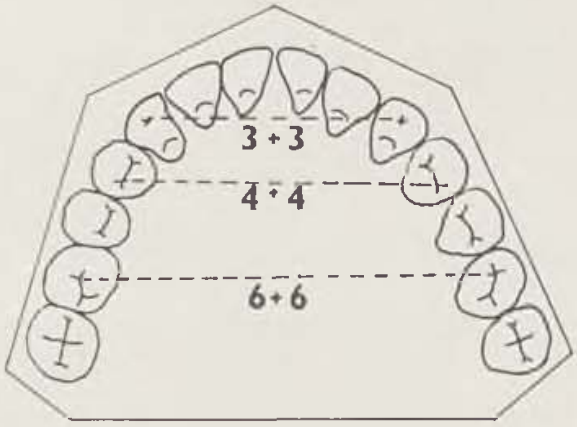

Fig. 4 Palatal width measurements

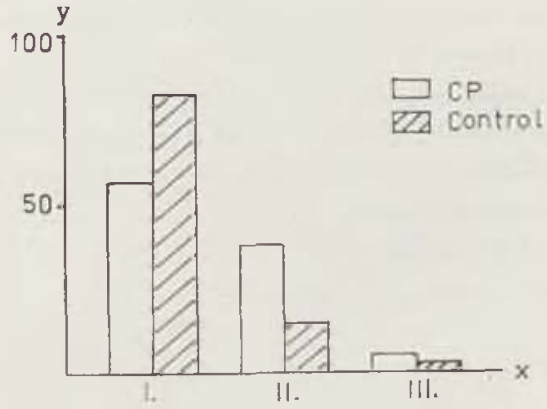

Fig. 5 Graph of intermaxillary relationships in both examined and control samples (Class Angle; in %), ▨ — Control □ CP, x — Class Angle, y — %

The brachycephalic type of the head was the most common one in the examined sample. This result corresponds with the head type of our general population (Adam 1976, Table 1).

The leptoprosop type of the face was most common type in our examined sample (Table 1).

In the number of characteristics, statistically significant differences ($p<0.05$ or $p<0.01$) between the examined and control groups were revealed. The parents of children with clefts had longer anterior cranial base, deeper maxilla and the mandibular body was shorter. The soft facial profile was higher mainly due to increased height of the lower face portion, especially expressed in the lower lip and chin (Table 2). The mandibular base angle was

Table 1. Craniofacial indices in %

Index cephalicus			Index facialis		
Type	Males	Females	Type	Males	Females
Brachycephalus >81	85	90	Euryprosop >84	10,5	6,2
Mesocephalus 76—80,9	15	10	Mesoprosop 84—87,9	31,6	18,8
Dolichocephalus <76	—	—	Leptoprosop <88	57,9	75,0
Mean value of index	85,9	87,7		92,3	90,1

sharper. Therefore, the differentiation angle of the jaw bases was increased. Also the angle between the anterior cranial base and the long axis of the upper incisors was sharper (Table 3).

The mothers in comparison to control females had significantly larger distance between the sellar point and the posterior nasal spine, smaller overjet (Table 2), sharper facial angle, larger interincisal angle (Table 3) and wider palate between the canines (Table 4).

On the other hand, the fathers had significantly higher skeletal lower part of the face and smaller overbite (Table 2).

DISCUSSION

The total of 34 parameters of orofacial morphology were examined, evaluated and compared in the two groups: in parents of children with isolated cleft palate and in the sample of normal population.

Mean configuration of the male face in these two groups is shown in Fig. 6. The face of the fathers is higher, upper incisors are moved frontally, mandible corrects this position by a little larger gonial angle and by the Angle class II malocclusion. Orbita is situated more ventrally, too.

The face of the mothers (Fig. 7) is moved to the front as well, maxilla is rotated counterclockwise. Correction of this position of incisors is achieved by distoocclusion — Angle class II.

The differences between fathers and mothers in some characteristics are shown in Fig. 8, as a curve of differences in standard deviations according to Vorrhies and Adams. Mostly the differences are not great, except such parameters like length of the ramus of mandible, overjet, interincisal angle and angle between the long axis of lower incisors and the mandibular plane, which can be explained by sexual dimorphism.

Table 2. Cephalometric analysis — linear measurements (mm)

Characteristics	Sex	$\bar{x}$ES	± s	$\bar{x}$CS	± s	t
N — S	males	79,19	4,10	73,06	2,98	+
	females	71,39	3,64	69,10	3,48	+
Ar — S	males	38,60	4,06	39,94	3,89	
	females	35,47	3,31	35,69	3,49	
Ar — Go	males	57,74	8,66	54,30	5,90	
	females	48,06	4,03	47,00	4,44	
Go — Me	males	75,26	6,18	79,00	3,98	+
	females	70,03	3,98	74,40	5,37	+ +
N — Me	males	128.25	8,49	127,90	10,79	
	females	115,85	5,33	116,60	7,33	
S — Go	males	91,92	7,22	89,70	6,30	
	females	79,18	4,75	78,95	4,99	
Heights' ratio %	males	71,82	5,74	71,60	5,09	
	females	68,44	3,85	67,90	5,37	
A — Ans	males	8,36	2,84	7,36	1,92	
	females	6,58	1,52	7,01	2,09	
Ans — Pns	males	61,64	4,98	55,53	2,55	+ +
	females	55,11	3,79	52,80	2,95	+
S — Pns	males	51,48	4,20	50,07	3,15	
	females	47,39	2,96	45,64	2,53	+
Ans — Me	males	75,65	8,47	68,07	5,20	+
	females	65,41	4,46	63,64	5,66	
Overjet	males	1,80	2,42	2,92	1,74	
	females	1,56	1,41	2,77	1,76	+ +
Overbite	males	2,18	2,15	4,00	1,46	+ +
	females	2,74	1,80	3,69	1,37	
G' — Me'	males	151,90	10,27	143,96	6,77	+
	females	139,00	6,10	133,73	7,70	+
G' — Sn'	males	73,33	4,56	74,01	4,18	
	females	69,39	6,52	69,78	4,44	
Sn' — Me'	males	82,17	8,49	73,76	5,36	+ +
	females	72,53	4.05	66,98	5,26	+ +
Sn' — Sto	males	24,17	3,57	22,56	2.10	
	females	20,56	3,27	20,58	2,49	
Sto — Me'	males	56,38	5,69	51,27	3,65	+ +
	females	51,47	2,72	46,21	3,94	+ +

\+ $p<0.05$ + + $p<0.01$ $\bar{x}$ mean value
ES examined sample CS control sample
s standard deviation t t-test

Table 3. Cephalometric analysis — angular measurements (mm)

Characteristics	Sex	$\bar{x}$ES ± s		$\bar{x}$CS ± s		t
NSAr	males	123.83	7,37	123,31	6,14	
	females	122,28	4,43	119,74	6,20	
SArGo	males	142,50	7,07	141,59	8,75	
	females	145,35	10,74	145,07	8,99	
ArGoMe	males	121,95	7,12	121,69	7,31	
	females	123,17	5,70	122,98	8,07	
SNA	males	83,02	3,58	82,40	5,48	
	females	82,22	4,84	82,60	5,10	
SNB	males	78,92	3,61	81,80	4,76	+
	females	78,59	3,51	81,50	5,03	+
ANB	males	3,80	3,54	0,88	3.29	+ +
	females	3,97	2,72	1,00	2,89	+ +
SNPg	males	80,55	4,53	83,20	4.84	
	females	79,38	3,95	82,60	4,88	+
1+1/1−1	males	135,42	10,70	130,53	9,60	
	females	138,74	15,98	128,34	8,50	+
NS/1+1	males	101,45	8,42	106,30	8,10	+
	females	99,06	7,81	105,19	8,81	+ +
1−1/GoMe	males	94,86	7,10	96,40	7,40	
	females	91,68	10,41	95,81	7,26	

\+ $p<0,05$ + + $p<0,01$ $\bar{x}$ mean value
ES examined sample CS control sample
s standard deviation t t-test

Table 4, Palatal width (mm)

Characteristics	Sex	$\bar{x}$ES ± s		$\bar{x}$CS ± s		t
3+3	males	35,71	2,96	35,13	2,39	
	females	35,35	2,17	33,75	1,65	+ +
4+4	males	37,29	3,03	37,07	2,63	
	females	35,82	1,81	35,08	2,33	
6+6	males	47,74	3,54	47,76	3,22	
	females	46,06	2,56	46,44	2,73	

+ + $p<0,01$ $\bar{x}$ mean value
ES examined sample CS control sample
s standard deviation t t-test

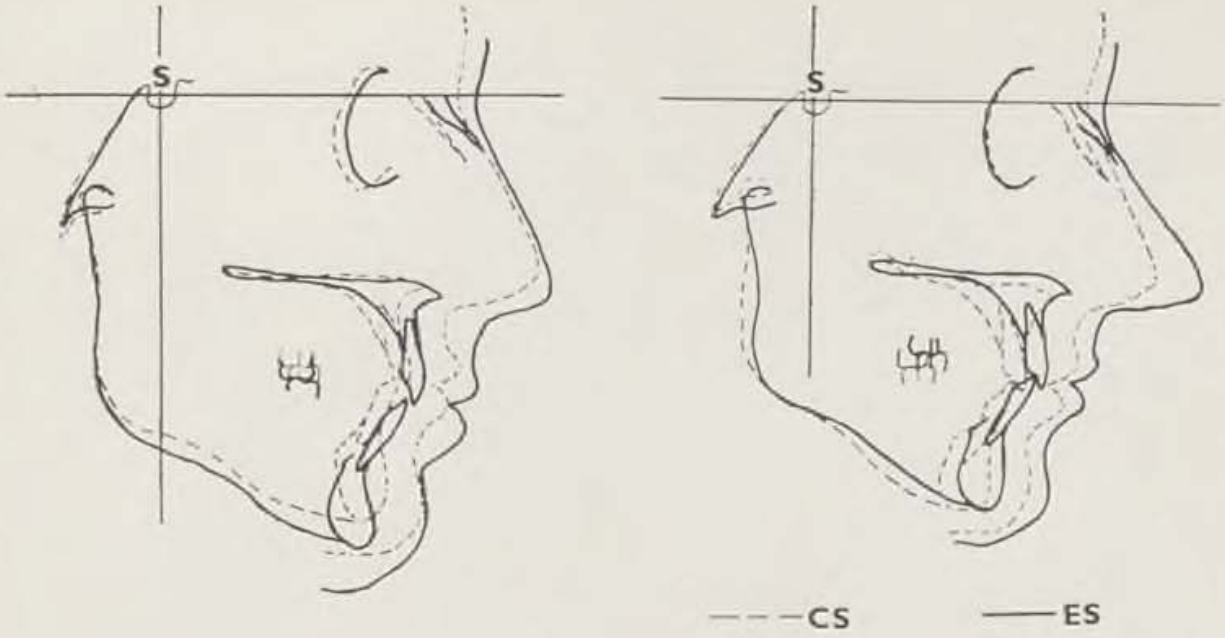

Fig. 6 Diagram of differences between fathers of cleft palate children and control group of males. (ES — examined sample — full line, CS — control sample — interrupted line)
Fig. 7 Diagram of differences between mothers of cleft palate children and control group of females. (ES — examined sample — full line, CS — control sample — interrupted line)

CONCLUSION

Our results support the hypothesis suggested in literature (Niswander et al. 1971, Coccaro et al. 1972, Procházková and Tolarová 1985) explaining differences in incidence of clefts in different populations by differences in craniofacial morphology. Nakasima and Ichinose (1983) evaluated roentgencephalometric analyses in japanese population and found different craniofacial morphology in parents of children with orofacial clefts.

There exists a genetical determination of many morphological features, some of which could play a role in predisposition to orofacial clefts. The human craniofacial morphology was studied by Nakata et al. (1973), who confirmed hereditary background of several orofacial characteristics, e. g. length of the anterior cranial base, length of the mandibular body and size of the gonial angle.

On the base of our results, it could be supposed that some craniofacial features, i. e. not only size and position of the upper jaw, but also some other features concerning the skeletal and soft tissue morphology of the face, are important for development of the isolated cleft palate in the human fetus.

An evaluation of larger samples, i. e. more data related to the tested hypothesis and to our recent results, are still required.

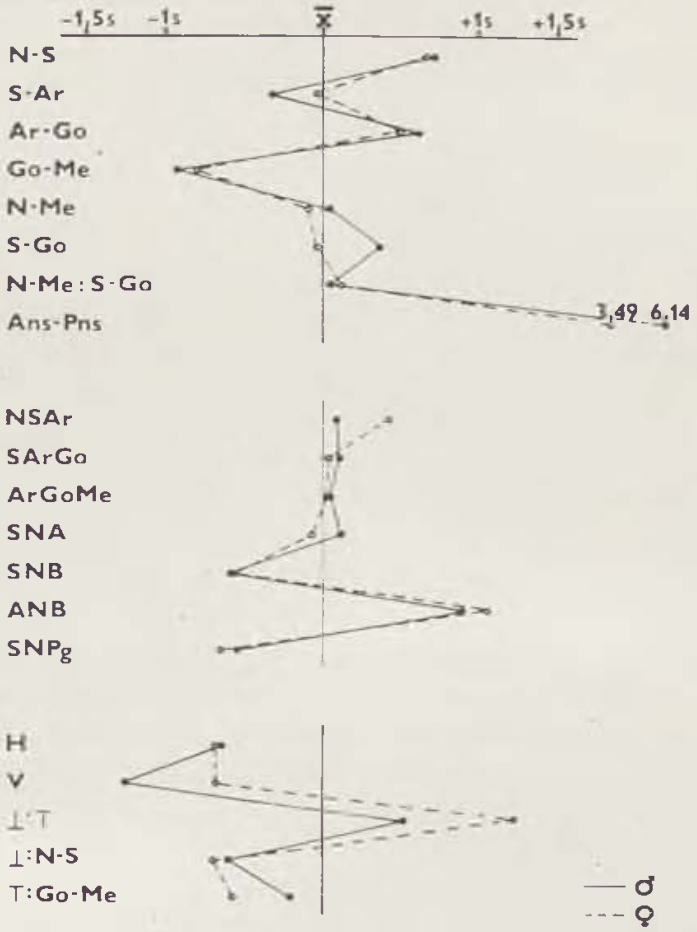

Fig. 8 The curve after Vorrhies and Adams of intersexual differences in the examined sample for some evaluated parameters. (Fathers — full line, mothers — interrupted line, $\bar{x}$ mean value of the control group, s standard deviation)

SUMMARY

With the aim to investigate possible craniofacial morphological differences between normal population and parents of children with isolated cleft palate, 20 fathers and 20 mothers were studied. The control group was formed by university students from Bratislava (35 males and 40 females).

The orthodontical examination, cephalometric measurements, evaluation of roentgen-cephalograms in profile and dental casts has been performed. In both samples, 34 characteristics have been compared. The malocclusion of Angle class II, longer frontal cranial base and deeper upper jaw were found in parents of children with isolated cleft palate. In comparison to the control group, also some other differences in configuration of the face and palate were found. Genetical determination of differences in craniofacial morphology could be one of the etiological factors and could play important role in the genetic counselling of the isolated cleft palate.

RESUME

La morphologie de la région craniofaciale chez les parents des enfants atteints de la fente palatine

Procházková, J., Tolarová, M.

Dans le but de vérifier s'il y a les différences de la morphologie craniofaciale chez les parents d'enfants atteints de la fente palatine isolée et chez la population normale, on a effectué une exploration de 20 pères et 20 mères d'enfants atteints. On a comparé les valeurs obtenues avec celles d'un groupe de contrôle, composé de 35 étudiants et 40 étudiante d'écoles supérieures de Bratislava. Chez les deux groupes, on a effectué une exploration orthodontique de la cavité buccale, le mesurage céphalométrique directe, l'évaluation des clichés télérentgenographiques de la tête en projection latérale et l'évaluation de modèles dentaires. Au total, on a soumis à la comparaison 34 caractéristiques. Chez les parents d'enfants atteints de la fente palatine isolée nous avons constaté la présence de disocclusion plus fréquente, la base crânienne antérieure plus longue et la plus grande profondeur des maxillaires. Aussi, en comparaison avec le groupe de contrôle, les différences de la configuration de la face ou du palais ont apparues. Une différente morphologie, conditionnée génétiquement, exprimée dans certaines régions faciales et crâniennes, pourrait être un des facteurs étiologique de la fente palatine et peut jouer un rôle important dans le pronostic génétique.

ZUSAMMENFASSUNG

Die Morphologie des Kraniofacialgebiets bei Eltern von Kindern mit isolierter Gaumenspalte

Procházková, J., Tolarová, M.

Zwecks Feststellung, ob es Unterschiede in der Kraniofacialmorphologie zwischen Eltern von Kindern mit isolierter Gaumenspalte und der normalen Bevölkerung gibt, wurde eine Untersuchung von 20 Vätern und 20 Müttern betroffener Kinder vorgenommen. Dann wurden die gefundenen Werte mit denen einer Kontrollgruppe von 35 Studenten und 40 Studentinnen aus Bratislaver Hochschulen verglichen. Bei beiden Gruppen wurden orthodontische Untersuchungen in der Mundhöhle ausgeführt, ferner direkte kephalometrische Messungen, Auswertungen von Fernröntgenaufnahmen des Kopfes in seitlicher Projektion sowie Auswertungen der Dentalmodelle. Insgesamt wurden 34 Charakteristiken miteinander verglichen. Bei den Eltern von Kindern mit isolierter Gaumenspalte haben wir ein häufigeres Vorkommen einer Distookklusion festgestellt, sowie eine längere vordere Schädelbasis und eine grössere Tiefe des Oberkiefers. Ausserdem wurden im Vergleich zur Kontrollgruppe Unterschiede in der Konfiguration des Gesichts und des Gaumens gefunden. Diese unterschiedliche, genetisch bedingte Morphologie gewisser Gesichts- und Schädelteile kann einer der ätiologischen Faktoren einer Gaumenspalte sein und bei der Feststellung einer genetischen Prognose eine wichtige Rolle spielen.

RESUMEN

La morfología de la región craneofacial en los padres de los niños con la hendidura aislada del paladar

Procházková, J., Tolarová, M.

Con el fin de averiguar la existencia de las diferencias en la morfología craneofacial entre los padres de los niños, sufridos por la hendidura aislada del paladar y la población normal, examinaron a 20 padres y 20 madres de los niñas afectuados. A los valores compararon con el grupo control, formado por 35 estudiantes y por 40 estudiantes de escuelas superiores de Bratislava. En ambos grupos realizaron el examen ortodóntico de la cavidad bucal, la comprobación directa cefalométrica y la valuación de placas radiográficas hechos a distancia de la cabeza en la proyección lateral, y también la valuación de modelos dentales. En total compararon a 34 características. En los padres de los niños con la hendidura aislada del paladar fué comprobada la más gran frecuencia de la discooclusión, más larga base anterior craneal y más gran profundidad del maxilar. Además, por la comparación con el grupo contról, encontraron las diferencias en la configuración de la cara y del paladar. La distinta — geneticamente condicionada morfología de ciertas zonas de la cara y del cráneo, puede estar por uno de los factores etiológicos de la hendidura del paladar, y desempeñar un papel importante en la determinación del pronóstico genético.

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MYOPLASTY FOR SURGICAL RECONSTRUCTION OF THE LARYNGEAL DIVIDING BIOMECHANISM

D. I. Tarasov, S. N. Laptchenko, V. V. Revo

In the USSR accepted schedule of a combined treatment of patients suffering from III degree cancer of the larynx has proved to be highly effective, securing cure of 70—75 % of patients followed for 5 and more years.

However, such an operation results in invalidity, as the patient looses the voice, effectivity of outer breathing is decreased, and there develops esthetic as well as moral discomfort due to permanent tracheostomy.

These conditions forced the development of new surgical methods, enabling us to perform simultaneously radical excision of the larynx affected by a tumour as well as its reconstruction (Serafini, 1967, 1970; Laptchenko and Revo, 1973; Traissac, 1976).

As the larynx is situated at the crossing of the air and digestive ways, of its basic functions the dividing biomechanism is the most important one. The reconstruction of the dividing biomechanism — i. e., the glottic closure — represents the most difficult point of the functional rehabilitation.

With the primary tumour localized prevailingly at the middle portion of the larynx, it is possible to reconstruct the dividing mechanism using the preserved parts of the hypopharynx. This approach is excluded in tumours localized in the vestibular portion of the larynx, when extensive excisions of the larynx as well as of the hypopharynx are necessary. Such subtotal resections result in a deficit of functionally valuable tissues and in deep functional disorders, including disturbed glottic closure accompanied by complications due to the aspiration. The incidence of the latter complications is quite high — i. e., from 30 to 76 % (Alaimo, 1974).

Individual parts and structures of the larynx differ in their functional significance. The same concerns factors influencing the swallowing, especially its second phase. In this respect, the disturbed innervation and function of the epiglottis (and of its individual components, especially of the m. aryepiglotticus) are very important (Zasosov, 1960; Denecke, 1961; Grebnyev, Smakov, 1967).

Also the following anatomical features influence significantly the dividing biomechanism:

a) a significant diastasis between the level of the tracheolaryngeal commisure and the level of the hyoid bone,

b) an insufficient height of the newly formed posterior wall of the larynx,

c) absence of the epiglottis,

d) simultaneous resection of the epiglottis and plicae aryepiglotticae and ventriculares,

e) removal of the praeepiglottic space,

f) transection of the n. sublingualis,

g) transection of the n. laryngeus superior.

(Khitrov, 1963; Dainiak and Antoniv, 1973; Mayer and Rieder, 1959; Labayale, 1972; Suzuki and Sazaki, 1976).

A different genesis and degree of the injury to the dividing biomechanism make possible to differentiate 3 forms and 3 degrees of these disturbances.

Forms of disturbances.

1. Functional disturbances — the spasm of the auditus into the oesophagus, discoordination between the pharynx and auditus into the oesophagus in the 2nd phase of swallowing.

2. Organic disturbances — extensive and deep defects and deformations of the hypopharynx, cicatricious narrowing and deformation of the auditus into the oesophagus.

3. Combination of 1. and 2.

Degrees of the injury.

1st degree — swallowed liquids are getting periodically into the airways.

2nd degree — not only liquids but also food gets into the airways during swallowing.

3rd degree — saliva, liquids and food are getting into the airways, regular hypersalivation.

Thus, it is necessary, in operations of the spread cancers of the larynx, to minimize disturbances of the glottic closure and, simultaneously, to ablate the ill tissues ad maximum.

Our method is based on principles of myoplastic reconstruction using mucoso-muscular flaps formed of the radix linguae. The technique of cutting out the mucoso-muscular flaps was substantially simplified by using an apparatus elaborated in cooperation with the VNIIIMT[1]) (Fig. 1).

The presented method of a subtotal resection of the larynx with reconstruction of the resected part of the upper airways in one stage is demonstrated using III A and III B stages of laryngeal cancers ($T_3N_0M_0$, $T_3N_1M_0$, $T_3N_2M_0$, $T_2N_1M_0$ and $T_2N_2M_0$) spread to the vocal and ventricular folds and to the laryngeal aspect of the epiglottis without penetration through the cartilaginous skelet and into the auditus laryngis.

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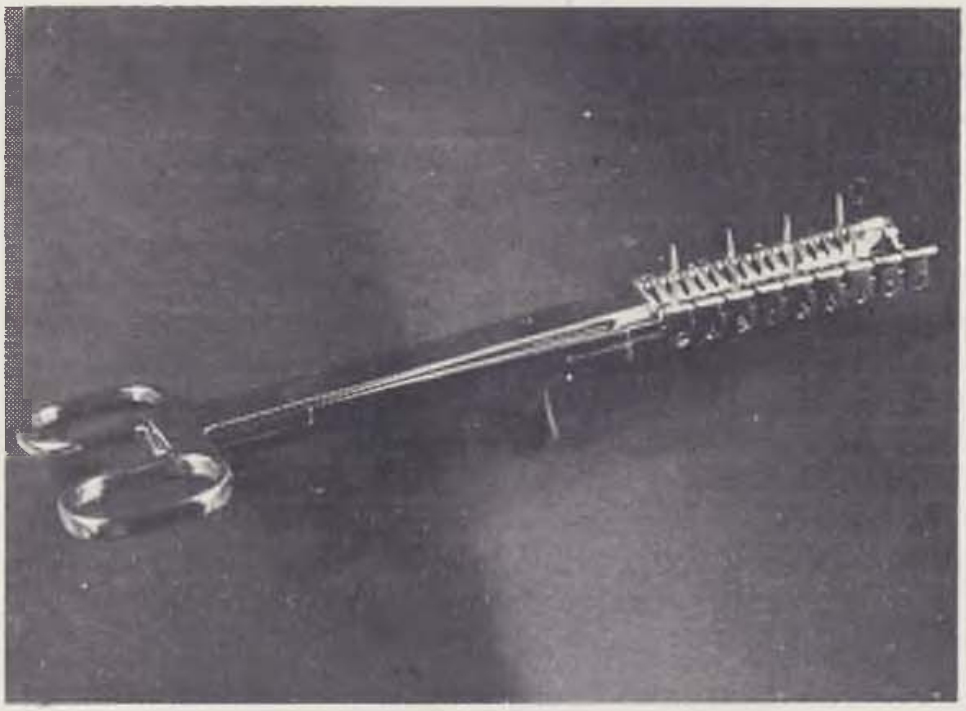
[1]) Author's certificate USSR No. 736969, Great Britain No. 1587085, USA No. 4162678, Japan No. 1095380, Switzerland No. 626246, West Germany No. 2750158, Canada No. 1098793.

The operation is performed under endotracheal anesthesia through the preventive tracheostomy (done under a local anesthesia). The tracheostomy is formed maximum low at the level from the 3rd to 6th cartilaginous ring, with



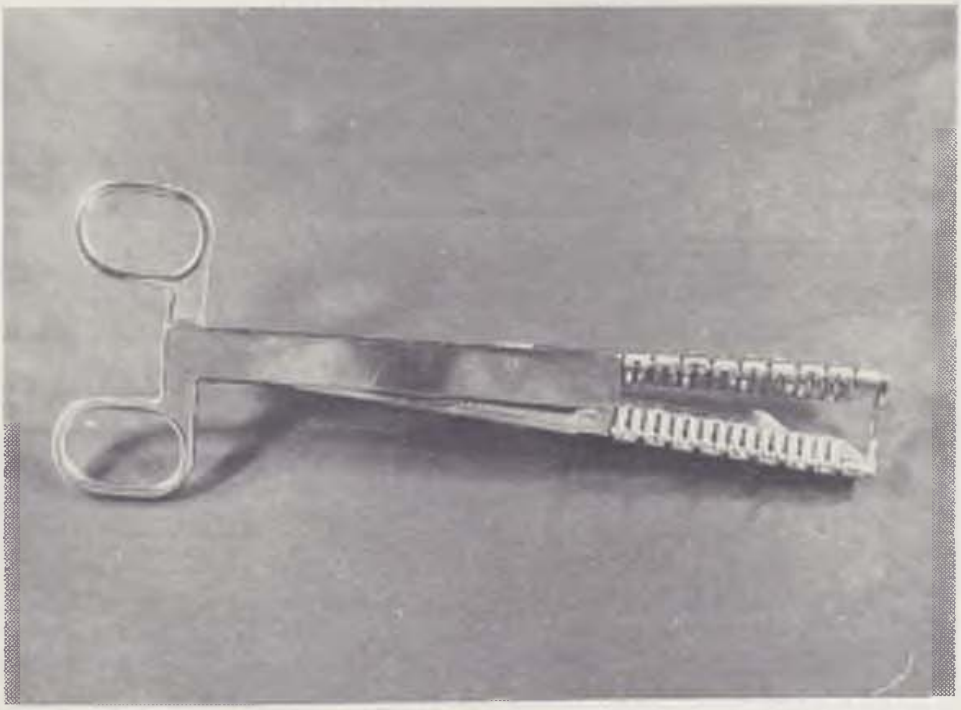


Figure 1a, b The apparatus for cutting of mucoso-muscular flaps with simultaneous automatic suturing of the donor wound
a — the lower holding part of the apparatus
b — the upper cutting and suturing part of the apparatus

regard to the physical status of the patient. The trachea is opened in the midline by a T-shaped incision. The laryngeal skeleton is exposed and the ventral and lateral surface of the trachea below the tracheostomy are separated from surrounding tissues. The length of the mobilized cervical and thoracic parts of the trachea can reach from 6 to 12 cartilaginous rings dependent on the physical status of the patient and the degree of physiological mobility of the larynx as influenced by previous operations and X ray therapy. During the tracheostomy transected isthmus of the thyroid gland is not separated neither from the lateral laryngeal walls nor from the cricoid cartilage in order to preserve optimum neurotrophic properties of the trachea above the tracheostomy. The direct cervical muscles are separated, thyrohyoid muscles are partially cut at their insertion to the hyoid bone, m. thyreohyoideus is transected at its insertion to the thyroid cartilage. The thyreodyoid membrane is incised at the iower margin of the hyoid bone, and after moving the hyoid bone upwards and the larynx downwards all connective and adipous tissues of the auditus laryngis are completely excised. The thyroid cartilage is spread, the lower constrictor of the pharynx is transected as well as cornua of the thyroid cartilage at both sides. With regard to roentgenologic and clinical estimation of the lower limits of the spread malignancy the larynx is parted from the trachea, with the cricoid cartilage being left with the trachea (Fig. 2a, b).

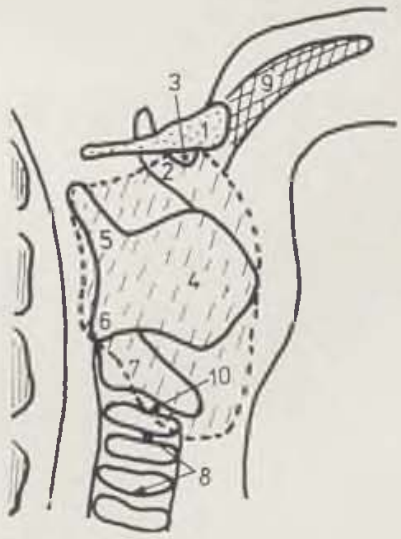


Fig. 2 A scheme of approximate volume of individual parts of the larynx with regard to the size of the mucoso-muscular flaps

1 — hyoid bone, 2 — epiglottis, 3 — valeculae, 4 — thyroid cartilage, 5 — cornu superior of the thyroid cartilage, 6 — cornu inferior of the thyroid cartilage, 7 — cricoid cartilage, 8 — cervical portion of the trachea, 9 — flaps of the tongue

The radix linguae is moved into the wound by means of thick catgut or silk sutures. The ventral oesophageal wall is separated and remnants of the medial constrictor pharyngis muscle are transected; the mobilized larynx is excised.

Using our instrument one mucoso-muscular flap is cut out of each upper lateral part of the radix linguae. The flap is 5—6 cm long and its base at the radix linguae is 2 cm wide and 1.5—2 cm thick (Fig. 3).

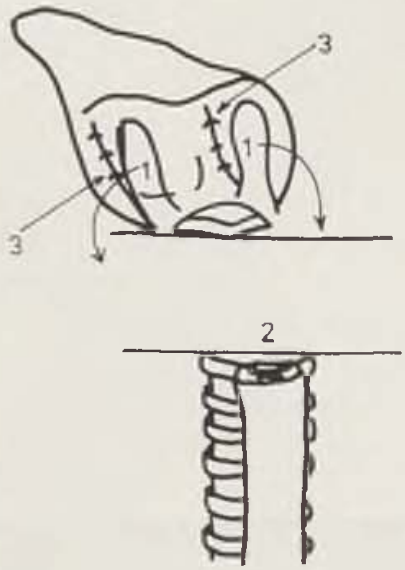


Fig. 3 Positions of the organs after resection of the larynx, cutting of the mucoso-muscular flaps of the tongue and suturing of the donor wound
1 — mucoso-muscular flaps 2 — auditus into the trachea 3 — sutured donor wound

Thick chromium catgut sutures are placed into the upper parts of the stump of the trachea and remnants of the arcus and lamina of the crocoid cartilage that are moved to the hyoid bone. The mucoso-muscular flaps are turned by 180 degrees, their inner margins are sutured with chromium catgut to the mucous membrane of the trachea. External margins of the flaps are sutured to the mucous membrane of the valaculae, epiglottis and oesophageal entrance (Fig. 4). The flaps are crossed and sutured at the posterior margin

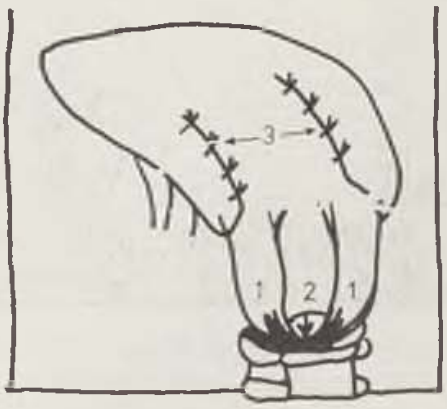


Fig. 4 A scheme of fixation of the mucoso-muscular flaps above the airways entrance. For legenda see Fig. 3

of the trachea to the remnants of the lamina of the cricoid cartilage. An obturator is placed into the inner diameter of the tracheo-pharyngeo-lingual anastomosis.

The chromium catgut sutures placed into the lateral walls of the tracheal stump are led around the hyoid bone and the trachea is moved and fixed to the hyoid bone. The sutures previously placed into the mucous membrane of the pharyngeal defect are knotted. A polyethylene draining tube is placed along the anastomosis. The wound is sutured by layers. The permanent tracheostomy is formed.

The dressing is changed daily during the first 5 to 6 postoperative days. The tracheostomy tube is cleaned, the wound is laved by antibiotics. The anastomosis is revised and the tracheostomy tube changed on the 6th or 7th day.

After primary healing of the wound on the 9th or 10th day the nasooesophageal tube is removed. Properly placed obturator prevents the aspiration.

12 to 14 days after the operation the tracheostomy tube is replaced by a silikon T-shaped tube of an original construction[2]) (Fig. 5). From this point

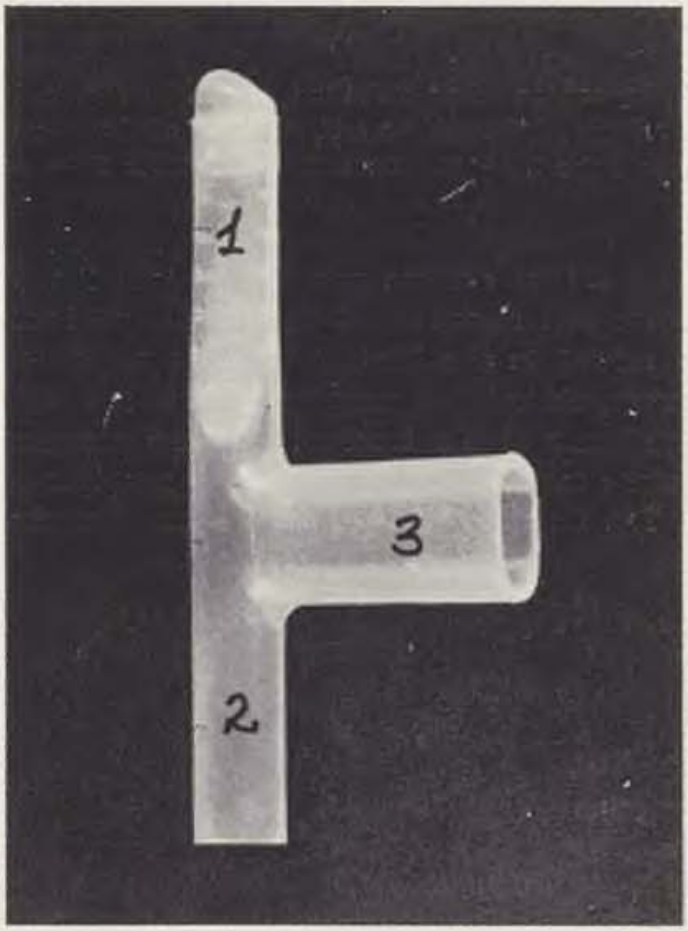


Fig. 5 The silikon T-shaped tube of our own construction.
1 — the cone-shaped upper vertical part, with a removable obturator 2 — the cylindrical lower vertical part 3 — the elipsoid horizontal part

[2]) Author's certificate USSR No. 871794.

the patient starts a logopaedic training and learns to swallow the liquid and food with temporarily removed T-shaped tubing.

Recovery of the dividing biomechanism takes place within from 4 week to several months dependant on the healing of the operation wound and accomodation of the mucoso-muscular flaps (Fig. 6 and 7).

Fig. 6 Roentgenogram of the reconstructed larynx (a cobalt contrasting was used) 1 — hyoid bone 2 — mucoso-muscular flaps 3 — airways 4 — laryngostoma

The process of recovery of the glottic closure was studied by means of contrast roentgenocinematography using various functional tests. Our method of reconstructive laryngectomy secures completely physiological mechanism of the swallowing. After the operation, the main groups of the muscles of the ventral part of the neck as well as of the pharyngeal ring are left at their original places or are fixed in a proper — with regard to their function — position. The first phase of the swallowing is not changed. In the second phase, the preserved groups of the muscles connected to the hyoid bone secure lifting of the hyoid as well as of the transposed parts of the trachea. Consequently, the auditus into the airways is lifted upwards and forwards to

the radix of the tongue. A simultaneous contraction of the tongue musculature moves the radix linguae backwards, so that it is hanging over the entrance into the airways and divides the food to the lateral parts. The mucoso-muscular flaps, bordering the entrance into the airways, contract simultaneously with the musculature of the radix of the tongue and close or reduce signifi-

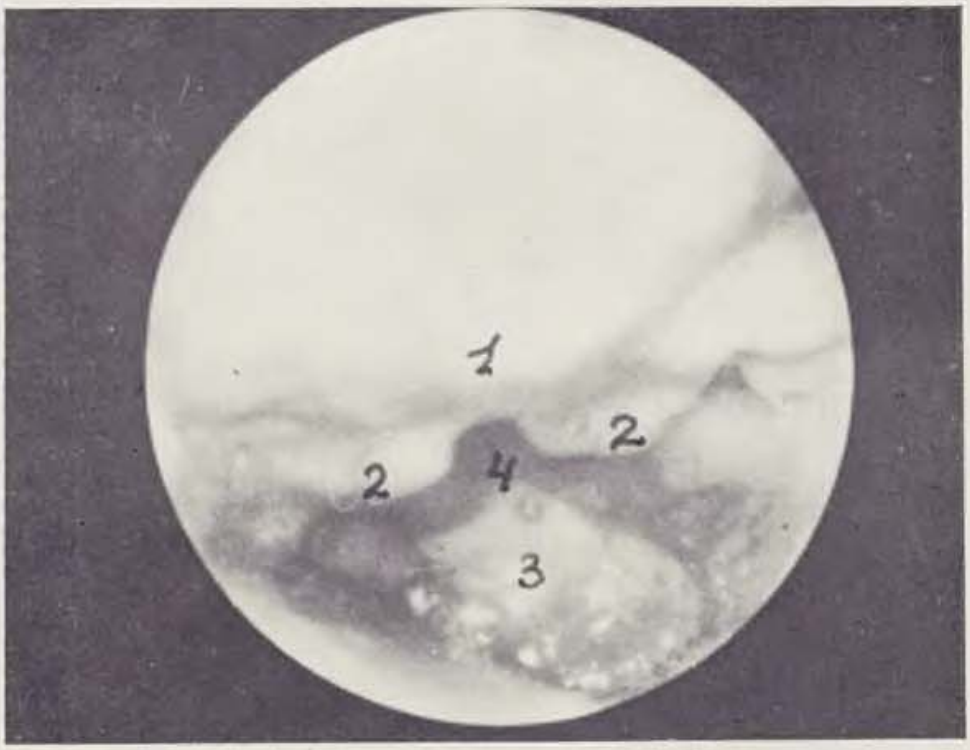


Fig. 7 Endophotograph of the reconstructed larynx
1 — the radix linguae 2 — the mucoso-muscular flaps 3 — the posterior wall of the reconstructed larynx 4 — entrance into the airways

cantly the entrance. The food is passing through one of the piriform sinuses and secures the beginning of the third phase of the swallowing.

The method described was used to treat 28 patients (25 males and 3 females) suffering from the laryngeal cancer of the III A and III B stage ($T_3N_0M_0$, $T_2N_1M_0$, $T_2N_2M_0$), localized, in most cases, at the vestibulum laryngis. Histologically, the cancer was composed of flat cells with varying degree of keratinization (in all patients). Metastases to the regional cervical lymph nodes were diagnosed in 3 patients. Therefore, the lymphatic drainage was sanated surgically. The patients were followed for 5 and more years. Cancers recidived at the original focus in 2 patients. This situation required a more extensive resection of the reconstructed segment of the upper airways. The regional cervical metastases occurred in 7 patients within from 3 months to 2 years after the surgery. The operation according Craile was performed in all patients. 2 patients died due to later diffuse metastases, one patient died in an accident 4 years after the primary operation.

Functional results were as follows. The ability to speak using the bronchopulmonal air was recovered in all patients. Loudness, tembre and modulation of the voice were quite satisfactory.

All functions of the larynx were compensated completely in 7 patients. In the other patients the breathing and the dividing mechanism decompensated partially. The patients were able to correct these functions by means of special prostheses.

Thus, our original technique of plastic reconstruction of the dividing mechanism of the larynx after its resection secures both the maximum ablation and complete or partial reconstruction of its functions.

SUMMARY

The authors report on their own operative technique of subtotal resection of the larynx with surgical reconstruction of its dividing biomechanism in one stage. The plasty makes use of mucoso-muscular flaps formed of the radix linguae. The method has proved to be very effective from both the oncologic and functional aspects.

RESUME

Plastie musculaire de reconstruction du bioméchanisme de l'épiglotte

Tarasov, D. I., Lapchenko, S. N., Revo, V. V.

Le travail rapporte une technique opératoire inventée par les auteurs. Celle-ci consiste à résection subtotale du larynx avec une reconstruction chirurgicale de l'épiglotte à un temps. La technique est fondée sur une plastie avec utilisation de lobes musculaires et muqueux de la base de la langue. Les résultats témoignent une grande efficacité de la méthode vue à la thérapie anticancéreuse.

ZUSAMMENFASSUNG

Muskelplastik zur Rekonstruktion des Biomechanismus des Kehlkopfverschlusses

Tarasow, D. I., Laptschenko, S. N., Rewo, W. W.

In der Arbeit beschreiben die Autoren die von ihnen ausgearbeitete Technik der subtotalen Resektion des Kehlkopfes mit einmaliger chirurgischer Rekonstruktion des Kehlkopfverschlusses. Die Technik basiert auf der Plastik mittels Lappen, die aus der Muskulatur gebildet werden, und der Schleimhaut der Zungenwurzel. Die Ergebnisse zeugen von der hohen funktionellen und onkologisch-therapeutischen Wirksamkeit der Methode.

RESUMEN

La plástica muscular para la reconstrucción del biomecanismo del obturados laríngeo

Tarasov, D. I., Lapchenko, S. N., Revo, V. V.

En su artículo los autores describen una técnica, elaborada por ellos mismos, de la operación de la resección subtotal del laringe con aislada reconstrucción quirúrgica

del obturador laríngeo. La técnica está basada en la plástica con ayuda de lóbulos, constituidos de la musculatura y la mucosa del raíz de la lengua. Los resultados testimonian sobre alta efectividad funcional y oncólogo-terapéutica de éste método.

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STUMP OF BRONCHUS ASSOCIATED WITH FREE DERMA AUTOGRAFT IN LUNG RESECTION

Y. M. Polous, V. G. Sardak

Common method of stump of bronchus associating in lung resection fully satisfactory for surgeons has not been developed yet. Failure of stump of bronchus and pleural empyema are the most common hard after-effects resulting in many cases in the persistant invalidity or mortality. Above stated after-effects incidency is 2—13,6 % of patients according to the experience of many authors (A. V. Alekseyenko, 1981; E. S. Vagner et al., 1981; A. Dumitriu, 1983; M. I. Perelman, G. P. Ambatyello, 1983; Pairolero, Linos, 1980; Aubert et al., 1981).

To prevent bronchial fistula many ways of additional stump of bronchus associating were proposed applying autohomografts and various polymers. (B. Sh. Zilbershteyn, 1971; P. M. Sklyarov, V. A. Grigoryan, 1983; A. Dimitru, 1983.)

The idea about free skin graft being used to associate stump of bronchus was based on analysis of available literature data about morphology and physiology of skin. The fibrin inherent in derma makes skin elastic and firm. Satures tailored on skin transplant errupt as the earliest after 14—16 days, that fully suffice for stump of bronchus to be regenerated. Peculiarity of skin microcirculation is the high rate of anastomosis of its vessels with vessels of the same or of different type in environment, and it is a fact very important for the transplant to heal. Skin resistance to infections is generally known.

We have gone through the experiment series in 30 dogs to study the strategy of associating stump of bronchus with derma autograft. Derma autograft was associated to stump of bronchus with U-shape sutures on intestinal needle "cup"-like and fixed with polyuretan glue KL-3. 13 pulmonectomies, 17 lobectomies and bilobectomies were experimented. The animals were examined after 6, 12 hours, 1, 2, 4, 6, 8, 10, 12, 14, 16, 20, 30, 60 and 75 days after operation.

Compression control of stump of bronchus associated with free skin graft method proved, that it got decompressed just under the pressure of 300—320 mm Hg. In a control group, sutured in traditional way (YO = 40) or with hand and following pleura grafting, the rates were much lower and represented 60—70 respectively and 40—50 mm Hg.

Macroscopic changes and histological examination results, carried out in above stated time after operation have not discovered any necrosis, purulent dehiscence or melting out of the skin transplant, associated with stump of bronchus. Even under the conditions of concomintant pleural empyema the skin graft remained to be viable and took firmly on peribronchial tissue. Histological examination also attested to changes taking place in skin transplant (10—12 days) to be local, starting with polynuclear cells, limphocytes and hystocytes infiltration. The layers of the newly formed connective tissue arised gradually in areas of distrophic changes. About the same time many newly formed capillaries are observed. It is the evidence of the microcirculation occurance between stump of bronchus walls and skin graft. Reliable evidence of transplant viability is the high rate of preserved elastic and argirophyl framework.

Positive results of the accomplished experiment research enabled to apply the developed method of derma autograft associating stump of bronchus on 53 patients. Data obtained and patients division in accord with sex and age are shown in the table.

Table 1. Data about patients in whom autodermaplasty was applied in associating stump of bronchus

Diagnosis	Total	Sex		Age of patients, years						
		m.	f.	up 20	21 to 30	31 to 40	41 to 50	51 to 60	61 to 70	over 70
Lung cancer	22	19	3	—	—	2	10	7	2	1
Lung abscess	19	18	1	1	1	3	9	5	—	—
Bronchiectasis	4	3	1	—	—	1	2	1	—	—
Polycystosis and bullosus desease of lungs	6	4	2	1	1	—	2	2	—	—
Bronchial fistula and chronic pleural empyema	2	2	—	—	—	—	2	—	—	—
Total	53	46	7	2	2	6	25	15	2	1

The following operations were carried out: lobectomy — 24, pulmonectomy — 17, bilobectomy — 11, additional resection of stump of bronchus — 2.

Technique and operation stages are following: from the margin of skin incision of operation wound we excise the flap of the size of 3 X 5 cm, remove the subcutaneous fed tissue, the surface epidermis layers and put it into saline solution (0,9 %) with antibiotics. After separate treatment of the base of the lung or of its segment we suture bronchus mechanically with the

aparatus YO = 40 (Fig. 1). We excise from the prepared transplant the rectangle flap, corresponding with the size of stump of bronchial tube and fix it with two (lobectomy) or three (pulmonectomy) U-shape sutures (supramide, proline) on intestinal needle (Fig. 2). Thin layer of glue Kl-3 is applied on stump of bronchus and basal surface of transplant before the thread is tied up (Fig. 3). Individual operation stages are shown in the drawings.

Fig. 1 Stump of bronchus sutured with mechanical sutures — Fig. 2 Scheme of associating ligatures carried out — Fig. 3 Stump of bronchus associated with derma autograft after finished plasty

Partial disability of stump of bronchus appeared in 2 patients after pulmonectomy. Invading of the stump of bronchus wall by cancer cells was discovered in one patient during histological examination of the bronchus along the incision line. Another patient was operated urgently because of the lung bleeding and partial disability of stump of bronchus developed in him, caused by patogenic flora of tracheobronchial tree generalisation that associated with substantial loss of blood caused the remarkable depression of regenerative processes.

Efficacy of autodermaplastic association of stump of bronchus was corroborated when compared with the control group of patients, in whom the stump of bronchus was additionally fixed with pleura pedicle flap after mechanical suturing. It was established the frequency of stump bronchus failure descended 5 times, frequency of other after-effects 4 times, mortality twice, the length of stay of patients in hospital was reduced to 10 days in average when the stump of bronchus was associated with free derma autograft.

Our initial clinical experience has shown the additional fixing of stump of bronchus with the free derma autograft be well substantiated and effective way of surgical intervention, securing smooth healing and reliable isolation of stump of bronchus in various lung diseases and clinical situations.

SUMMARY

The new method of stump of bronchus associating with free derma autograft, being fixed with U-shape sutures. The method was experimented on 30 dogs and attested in 53 patients in hospital. Derma autograft method of stump of bronchus fixing enabled to reduce the frequency of its failure, after operation mortality and the length of hospital stay. It is a simple and reliable technique.

RESUME

La fixation du moignon de la bronche par une greffe libre autodermique lors de la résection des poumons

Polous, J. M., Sardak, V. G.

Nous présentons une nouvelle méthode de fixation du moignon de la bronche par une greffe libre autodermique qui est cousue en manière de suture en U. Cette méthode a été étudiée en expérimentation sur 30 chiens et les résultats ont été attestés dans la clinique chez 53 malades. Cette méthode d'application de la greffe autodermique, ayante pour but la fixation du moignon de la bronche, a permis une baisse du nombre des cas où la fixation était impossible, baisse de la mortalité postopératoire et la réduction de la durée d'hospitalisation. La méthode se distingue par une technique simple et la sûreté des résultats.

ZUSAMMENFASSUNG

Die Festigung eines Bronchienstummels mittels freiem autodermalem Transplantat bei Lungenresektion

Polous, J. M., Sardak, V. G.

Wir legen eine neue Art der Festigung eines Bronchienstummels mittels freiem autodermalem Transplantat vor, das mit einer U-förmigen Naht angenäht wird. Diese Methode wurde versuchsweise bei 30 Hunden studiert und an der Klinik bei 53 Patienten beständigt. Die Anwendung der autodermalen Art der Festigung des Stummels der Bronchie gestattete es, die Anzahl von Fällen einer Nichtaufrechterhaltung, eines Absterbens nach der Operation herabzusetzen und die Länge des Aufenthalts des Patienten im Krankenhaus zu verkürzen. Die Methode zeichnet sich durch technische Einfachheit und Zuverlässigkeit aus.

RESUMEN

El fortalecimiento del muñon del bronquio por un libre trasplante autodermal durante la resección de pulmones

Polous, J. M., Sardak, V. G.

En el artículo está presentado un método nuevo del fortalecimiento del muñon del bronquio por medio del trasplante libre autodermal, al que suturan por la sutura en la forma U. Éste método se lo estudiaron en el experimento con 30 perros y comprobaron en la clínica en 53 enfermos. El empleo de la técnica autodermal del fortalecimiento del muñon del bronquio posibilitó disminuir el número de los casos de su imposibilidad de sostenerse, de la mortalidad posoperatoria y la prolongación de la hospitalización del enfermo. Ése método se caracteriza por la simplicidad técnica y por la seguridad.

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ELONGATION OF FINGERS AFTER POST-TRAUMATIC AMPUTATIONS IN CHILDREN AND ADOLESCENTS

E. Yankov

We used the distraction technique to lengthen the small tube-like bones of the hand in more than 80 patients. We have had somewhat less experience of finger elongation after post-traumatic amputation in children and adolescents (12 cases). For that purpose we have been using a minidistraction device of our own design.

Description of the minidistraction apparatus

The distraction device we used for the purpose is based on the principle of G. A. Ilizarov's apparatus (Kirschner's wires crossed and stretched by means of frames) with certain modifications with regard to the small dimensions and specific requirements of children's hands. The device is made up of frames, each in the shape of two thirds of a circle with a one-third gap between the ends. To apply the apparatus, we use 2 or 3 frames joining them together by means of "endless" nut-fixed bolts. Using holes in the frames at the required level, we introduce — at an angle of 45° to 60° — Kirschner's wires tightening them with a miniature spanner. The wires are blocked with screws (Fig. 1).

Specificities of surgical technique

Depending on the specific needs of bone elongation (1st metacarpal or phalanx) we use minidistraction devices of different size, placing them on the radial or ulnar sides of the hand. Two crossed Kirschner's wires, 1.2 or 1.6 mm in diameter, are introduced in each of the stumps at an angle of 45° to 60°. The wire fixation is determined by the frames of the apparatus. Then follows subperiosteal osteotomy. Distraction is applied in the course of the operation — never more than 2—3 mm. Beginning with the 3rd post-operative day we start stretching by 0.5—1.0 mm daily (preferably in two stages each day) taking into account sufficient blood supply and the patient's subjective state. Once the required elongation has been reached, a waiting period of about one month follows. Unless there are signs of spontaneous ossification, auto-osteoplasty is resorted to without dismantling the apparatus as this must serve

as a fixateur. Immobilization should continue until complete bone union has been reached.

In cases where the joint distal to the elongated bone is preserved we add a third frame to prevent flexion contracture during distraction.

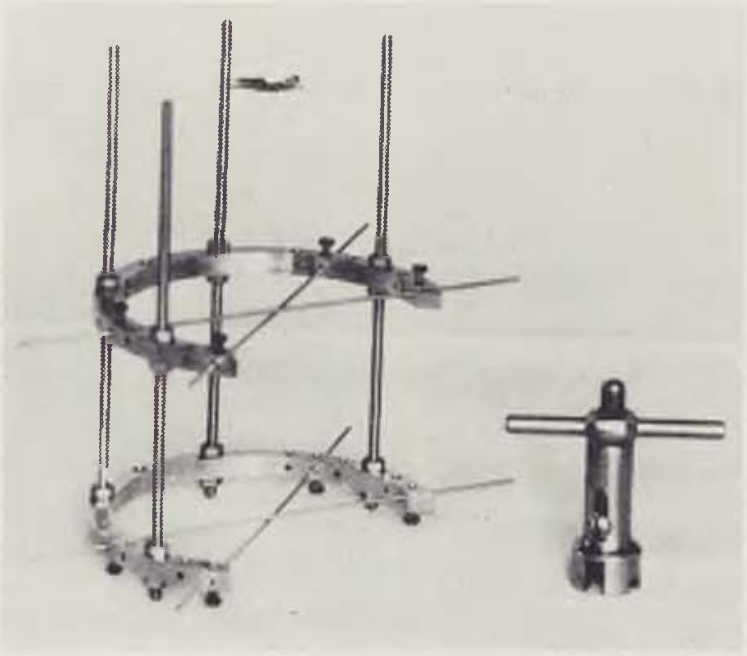

Fig. 1 — Minidistraction apparatus of the author's own design

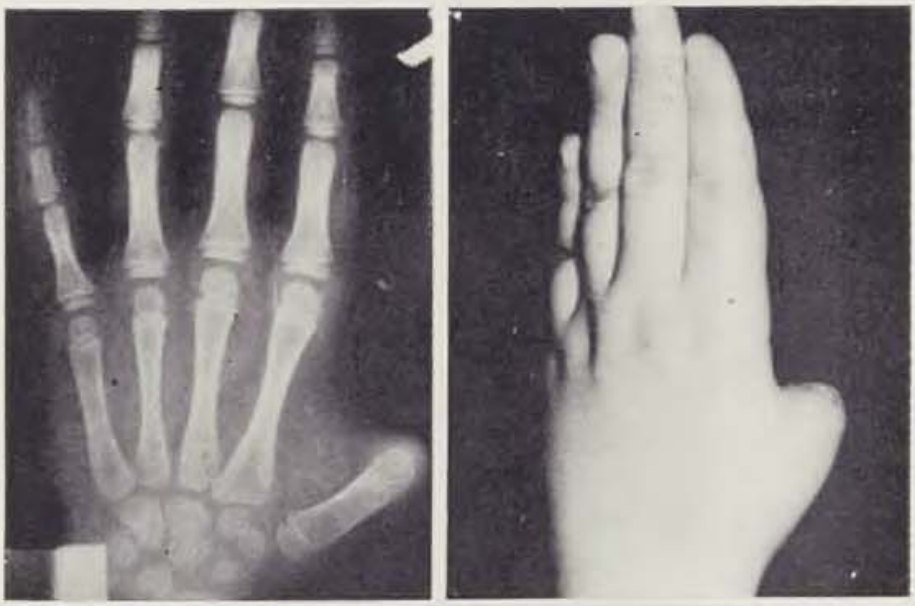

Fig. 2a, b — Patient N. D. A. with post-traumatic amputation of the left-hand thumb cutting across the metacarpo-phalangeal joint — initial state

Clinical experience

1. Thumb elongation was performed in 5 patients aged 6 to 13 years. Distraction of the 1st metacarpal bone was carried out in 4 cases, elongation

of the preserved stump of the basic phalanx of the amputated thumb — in one case. The elongation achieved was from 1.5 to 4.5 cm. To improve the aesthetic appearance of the elongated thumb, four patients had the interdigital space deepened by means of transposition of triangular flaps from the neighbourhood. All patients required autoosteoplasty using fragments from the hip bone. Total treatment time ranged between 2.5 to 4 months.

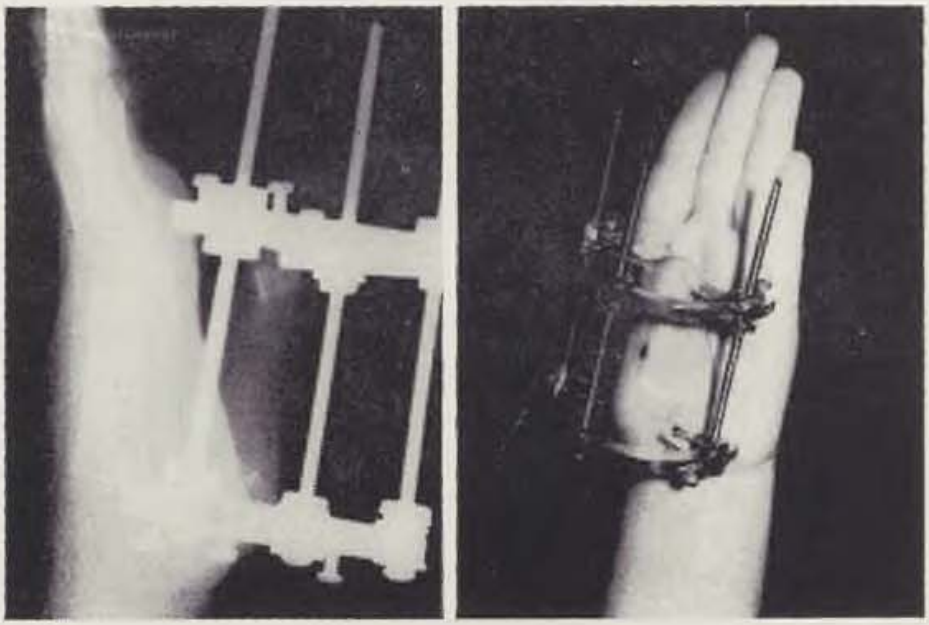

Fig. 3a, b — Metacarpal bone elongation reached in 40 days, 3.5 cm

Fig. 4 — Apparatus removed, autoosteoplasty performed with a fragment of the edge of the hip bone and fixed with Kirschner's wire

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Our experience can be illustrated by the following case:

N. D. A., a 6-year old girl, was admitted after post-traumatic amputation of the left-hand thumb cutting across the metacarpo-phalangeal joint (Fig. 2a, b). She was unable to grasp anything with her remaining fingers. We employed the usual surgical technique using a two-frame apparatus. After 40 days, an elongation of the metacarpal bone of 3.5 cm was achieved (Fig. 3a, b). After the elapse of one month, there were no signs of spontaneous ossification. The apparatus was removed to perform autoosteoplasty with a fragment of the

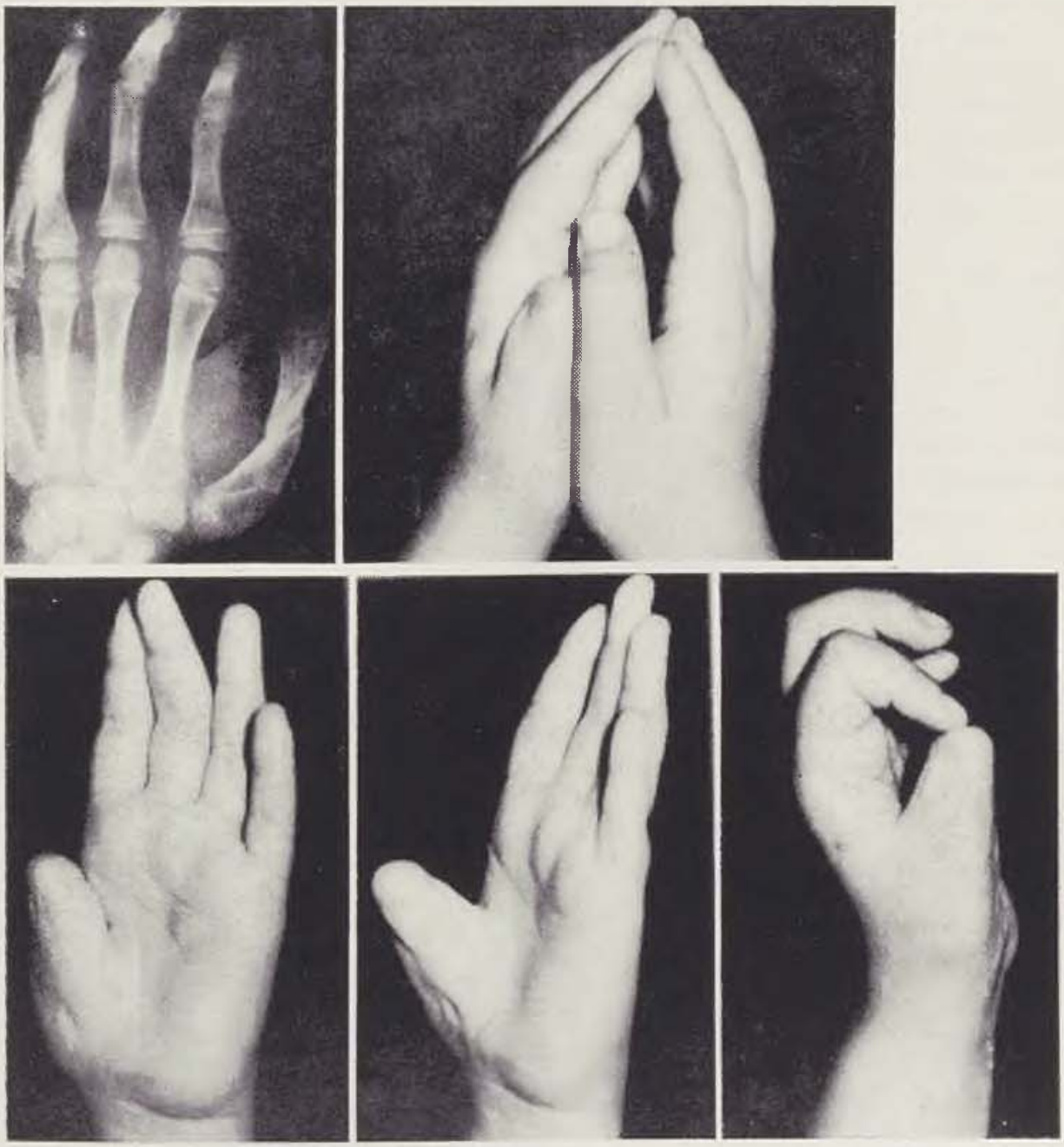

Fig. 5a, b, c, d, e — One year after treatment: bone transplant is well united, the elongated thumb well formed and permitting all-digit grasp

edge of the hip bone and with Kirschner's wire fixation (Fig. 4). At the same time, we deepened the interdigital spaces by transposition of triangular skin flaps from the neighbourhood. The device was definitively removed two months and a half after bone union. After another year following the termination of the course of treatment the bone transplant was found to have achieved perfectly satisfactory union, the elongated thumb is well shaped, permitting to grasp objects with all digits of the hand (Fig. 5a, b, c, d, e).

2. Elongation of phalanges of fingers II—IV was performed in 7 patients aged 10 to 15 years. 6 cases involved distraction of the basic phalanges of the amputated finger, 1 case — the middle phalanx. An elongation from 1.5 to 3.5 cm was achieved. One patient had phalanges of the 2nd and 3rd digits of the left hand distracted for elongation. Although we were often able to observe the development of dumb-bell-shaped bony callus in the absence of solid bone union was performed autoosteoplasty as scheduled. On average, the bones took two months and a half to achieve union while total treatment time was 3.5 to 4 months. Five patients had corrective osteotomy of the elongated phalanx performed at 35° flexion position in order to improve maximum grasping ability of the elongated digit. In those cases, the course of treatment took another month to complete.

For illustration we report on the following case:

A. K. M., a 10-year old boy, with post-traumatic amputation of left-hand digits II—V cutting across the proximal interphalangeal joints (Fig. 6a, b) with gravely impaired gripping ability. Gradual elongation of the basic phalanges of digits II and III was performed: first, distraction of the basic phalanx of digit II, using the above described technique. A 3-frame apparatus was used for the purpose. An elongation of 3.2 cm was achieved in 45 days (Fig. 7a, b).

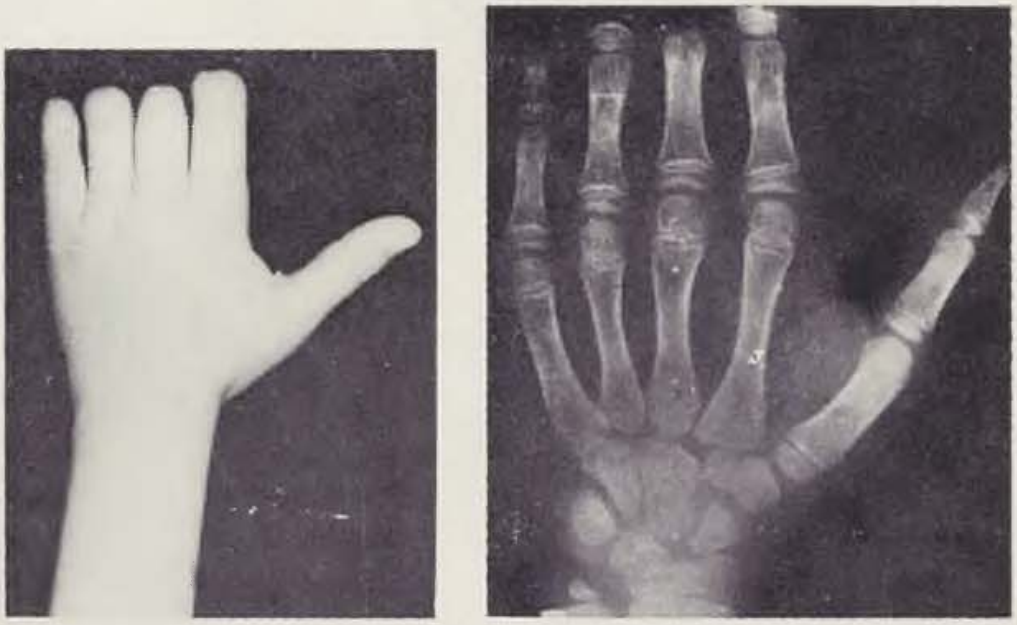

Fig. 6a, b — Patient A. K. M. with post-traumatic amputation of left-hand digits II—V at the level of proximal interphalangeal joints — initial state

Towards the end of the distraction period, some signs of spontaneous ossification were noticeable (Fig. 7c). Without removing the apparatus, therefore, we performed autoosteoplasty using a hip bone fragment (Fig. 8). Bone union was achieved after 2.5 months. The apparatus was removed to perform corrective osteotomy of the elongated phalanx and fixation with Kirschner's wire (Fig. 9). One year after the termination of the course of treatment, the result could be described as satisfactory from the esthetic and functional points of view (Fig. 10a, b). Then followed elongation of the basic phalanx of the 3rd

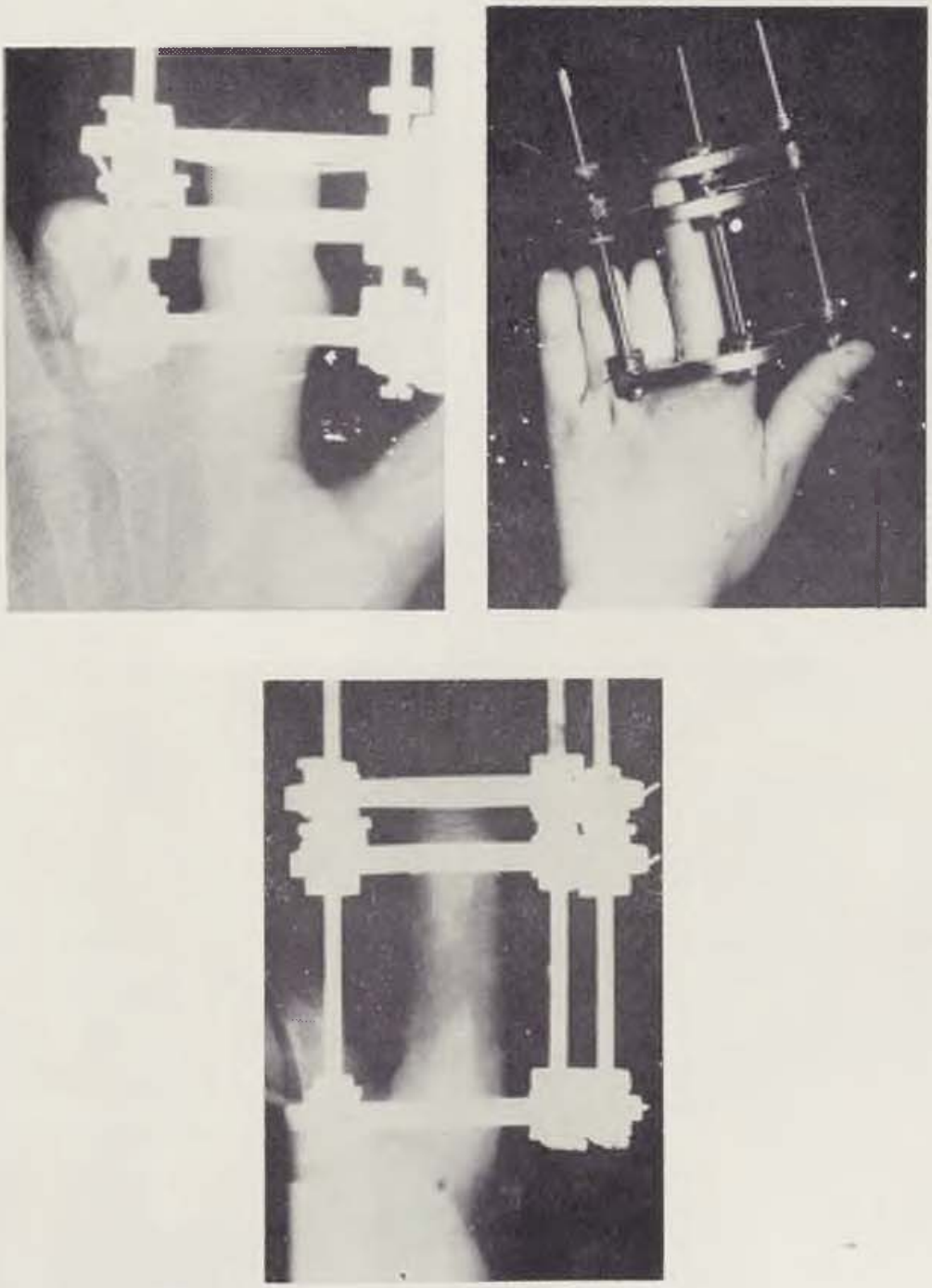

Fig. 7a, b, c — 3.2 cm elongation of digit-II basic phalanx reached in 45 days

Fig. 8 Autoosteoplasty with a hip bone fragment performed with apparatus in position — Fig. 9 After bone union and removal of the apparatus, corrective osteotomy of the elongated phalanx performed using Kirschner's wire fixation

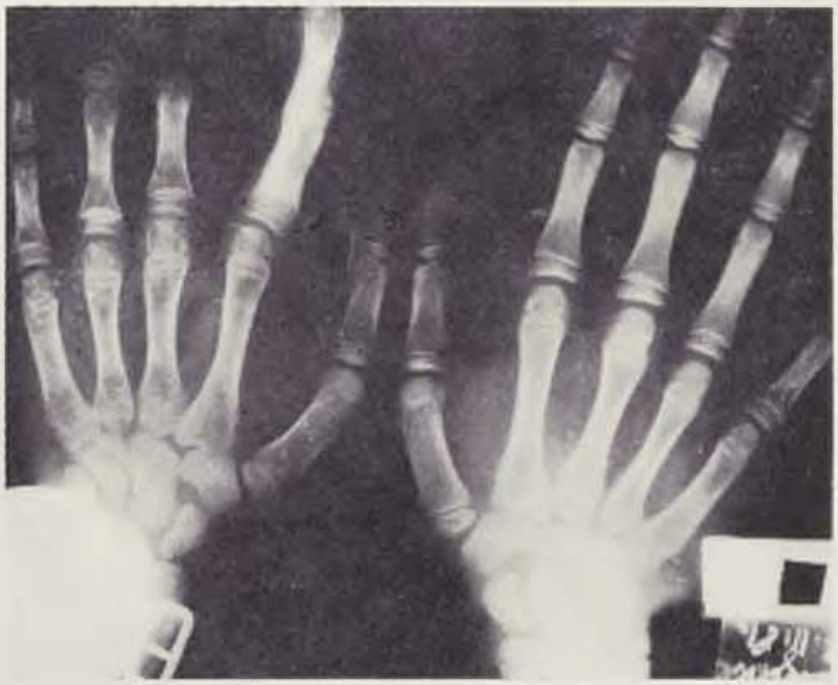

Fig. 10a, b — Satisfactory results of the elongation of digit II one year after treatment

digit. An elongation of 2.5 cm was achieved in 30 days, and autoosteoplasty with a fragment of the proximal part of the ulna was performed (Fig. 11a, b) without removing the apparatus. Bone union was achieved after about two months. We regard the result of the course of treatment as very good (Fig. 12a, b, c, d, e).

Fig. 10b

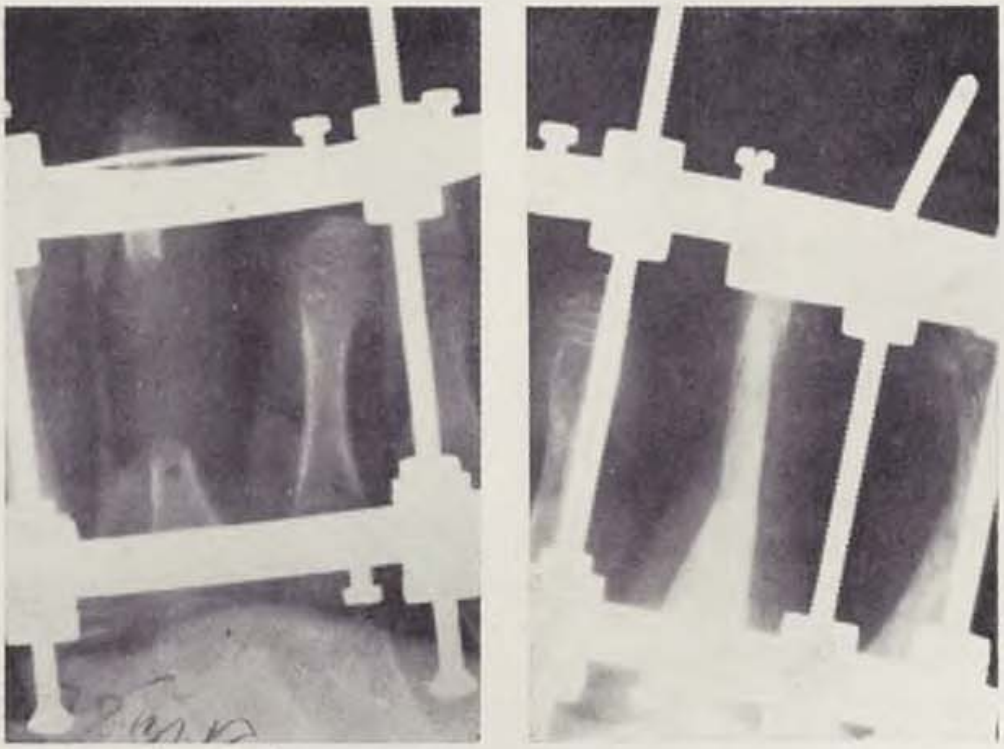

Fig. 11a, b — Elongation of the basic phalanx of digit III of the same hand

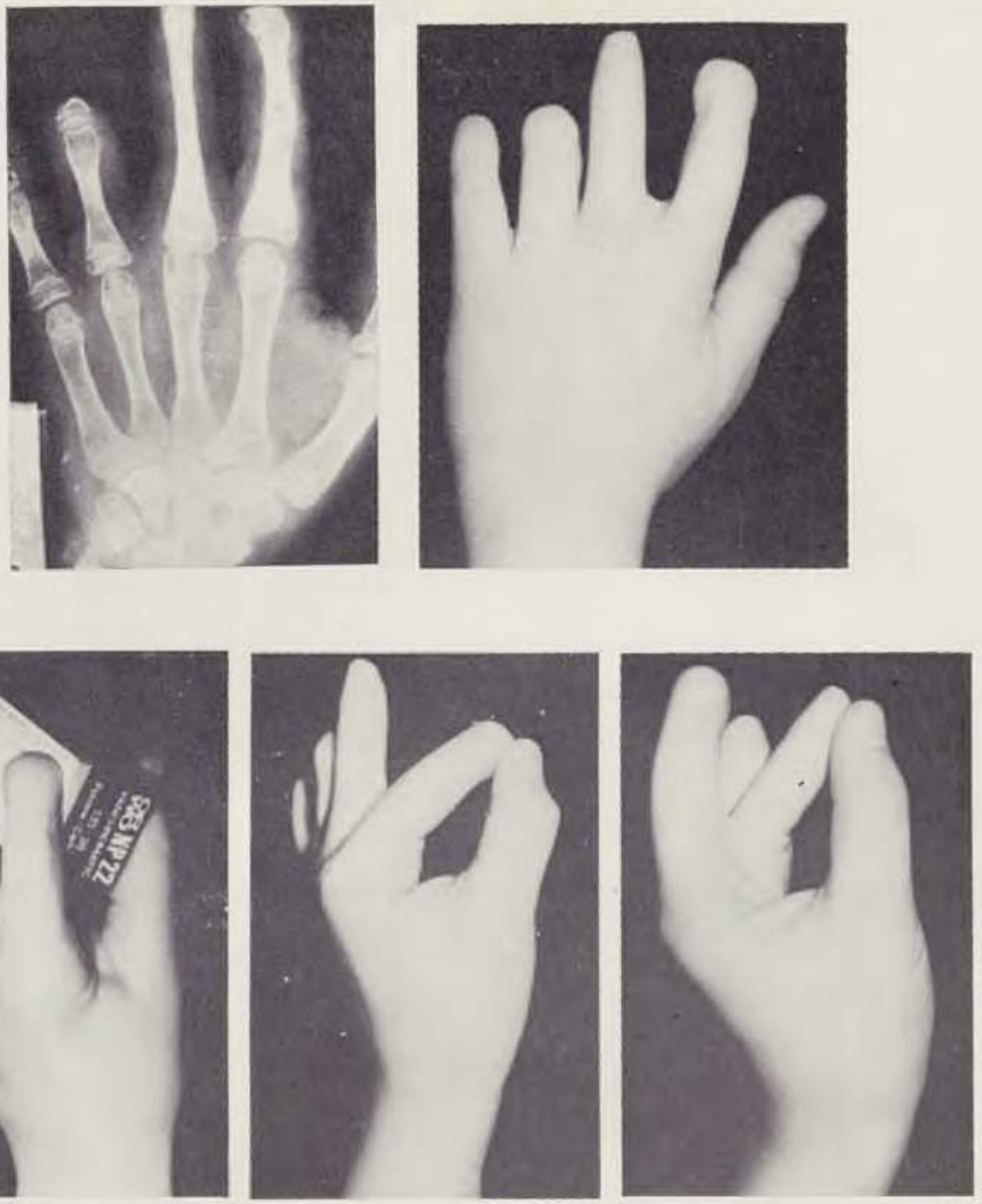

Fig. 12a, b, c, d, e — Final esthetic and functional results can be regarded as good

DISCUSSION

There is still rather a dearth of reports devoted to the distraction method of small tubular bone elongation. For that reason, our experience should be of use not only to adult patients but also to children and adolescents. Children's and adolescent's traumatism especially requires precisely defined indications, while special attention should be devoted to the preservation of the growth zones of metacarpal bones and phalanges. For exactly that reason we

avoid elongating children's amputated fingers with the method of distraction epiphysolysis. The operation technique and the mode of applying distraction are the same in adults and in children and adolescents alike.

SUMMARY

The author presents his experience of the elongation of digits of the hand in 12 cases of children's and adolescents' post-traumatic amputation. He uses his own modification of Ilizarov's minidistraction apparatus as required by the small size and the specific conditions prevailing in the hand. Thumb elongation was performed in five patients: four cases involving distraction of the 1st metacarpal bone, one case — elongation of the basic phalanx of the amputated thumb. Elongation of 1.5 up to 4.5 cm was reached. Elongation of digits II and III was carried out in 7 patients: in 6 cases distraction was applied to the basic phalanx of the amputated digit, in one case — the middle phalanx. Elongation of 1.5 up to 3.5 cm was achieved. One patient had distraction of the basic phalanges of digits II and III performed. All patients had autoosteoplasty performed using fragments from the hip bone or the proximal part of the ulna. To improve the esthetic and functional results, some patient had interdigital spaces deepened and corrective osteotomy of the elongated phalanx performed. The results reached can be regarded as esthetically and functionally good.

RESUME

L'allongement des doigts de la main chez les enfants et les adolescents aux cas d'amputation posttraumatique

Jankov, E.

L'auteur énonce ses expériences de l'allongement des doigts dans les cas d'amputation posttraumatique chez 12 enfants ou adolescents. Il utilise un appareil à minidistraction selon Ilizarov, lequel a été modifié pour convenir aux exigences de petites dimensions et des conditions spécifiques de la main. L'allongement du pouce a été exécuté chez 5 patients: 4 foils il s'agissait de la distraction de Ier os métacarpien et une fois de l'allongement du moignon de la phalange du pouce amputé. On a obtenu l'allongement de 1,5 à 4,5 cm. L'allongement de IIème et IIIème doigt a été exécuté chez 7 malades: en 6 cas, c'était la phalange du doigt amputé qui a été soumise à la distraction, une fois c'était la phalangine. L'allongement obtenu de 1,5 à 3,5 cm. Chez un malade, la distraction s'adressait à la phalange de IIème et IIIème doigt. Chez tous les malades, on a effectué les ostéoplasties en utilisant des fragments de l'os iliaque ou une partie proximale du cubitus. Afin d'atteindre de meilleurs résultats esthétiques ou fonctionnels, chez quelques malades on a approfondi des lacunes entre les doigts ou l'ostéotomie corrective a été exécutée sur la phalange allongée. Les résultats obtenus peuvent être considérés comme satisfaisant du point de vue d'esthétique et de fonctionnement.

ZUSAMMENFASSUNG

Die Verlängerung von Fingern bei Kindern und Jugendlichen in Fällen von posttraumatischer Amputierung

J a n k o v, E.

Der Autor legt seine Erfahrungen mit der Verlängerung von Fingern bei 12 Kindern und Jugendlichen in Fällen von posttraumatischer Amputierung vor. Er benutzt dabei ein Minidistraktionsgerät nach Ilizarov in eigener Modifizierung, die sich die geringen Ausmasse und die spezifischen Bedingungen im Falle von Kinderhänden erforderten. Eine Verlängerung des Daumens wurde bei 5 Patienten ausgeführt: viermal war es eine Distraktion des I. Knochens der Mittelhand und einmal eine Verlängerung des Stummels der Grundphalanx des amputierten Daumens. Die erzielte Verlängerung betrug 1,5 bis 4,5 cm. Eine Verlängerung des II. und III. Fingers wurde bei 7 Patienten ausgeführt: in 6 Fällen betraf sie die Grundphalanx des amputierten Fingers und einmal die Mittelphalanx. Hier betrug die erzielte Verlängerung 1,5 bis 3,5 cm. Bei einem Patienten wurde eine Distraktion der Grundphalanx des II. und III. Fingers ausgeführt. Bei sämtlichen Patienten wurde Autoosteoplastik mittels Knochenfragmenten des Beckens oder des Proximalteils der Ulna unternommen. Zur Verbesserung der ästhetischen oder Funktionsergebnisse wurden einigen Patienten die Zwischenräume zwischen den Fingern vertieft oder eine korrigierende Osteotomie der verlängerten Phalanx vorgenommen. Die erzielten Ergebnisse sind ästhetisch und funktionsgemäss als gut zu erachten.

RESUMEN

La prolongación de los dedos en niños y adolescentes en los casos de la amputación posttraumática

J a n k o v, E.

El autor presenta su propia experiencia en la prolongación de los dedos en 12 niños y adolescentes en los casos de la amputación posttraumática. Él emplea el aparato de minidistensión según Ilizarov en su propia modificación, la que exigieron los tamaños pequeños y las condiciones específicas en caso de la mano. La prolongación del dedo pulgar fué realizada en 5 enfermos: en 4 veces tuvo lugar la distensión de primer hueso metacarpal, y una vez la prolongación del muñon de falange proximal del dedo pulgar amputado. Fué lograda la prolongación en 1,5—4,5 cm. La prolongación del II. y del III. dedo fué realizada en 7 enfermos: en 6 casos a la distensión fué sometida la falange proximal del dedo amputado, y en 1 caso la falange media. Fué lograda la prolongación en 1,5—3,5 cm. En un enfermo fué realizada la distensión de la falange proximal del II. y del III. dedo. A todos enfermos hicieron la autoosteoplástica mediante los fragmentos del huseo coxal o por la parte proximal del cúbito. Con objeto de mejoramiento de resultados estéticos o funcionales a unos enfermos profundizaron los intersticios entre los dedos, o realizaron la osteotomía correctiva de la falange prolongada. A los resultados obtenidos se los puede calificar por buenos del aspecto estético y funcional.

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CLINICAL SALVAGE OF AN ISCHEMIC FLAP WITH DIODE LASER IRRADIATION

Y. Maruyama, T. Ohshiro, M. Motegi

INTRODUCTION

Skin flap necrosis is entirely due to inadequate blood supply, arterial inflow and venous outflow. Blood supply to the skin flap is determined at the time the flap is raised and depends largely on the vascularity at the pedicle.

Many factors are involved in the death of tissue following the interruption of blood supply. During the last decade, there have been many efforts to find methods to improve skin flap circulation and increase the surviving part of the flap in order to circumvent necrosis. We have been successful in using soft diode laser irradiation to encourage flap survival in the clinic.

CASE REPORT

A 16-year-old girl with an injury in the back of the leg caused by a car accident several years previously presented at our clinic for reconstruction. The injury had healed but left a concave deformity which the patient wanted reconstructed (Fig. 1). The latissimus dorsi was seemed appropriate as the donor site, and a free flap was designed. It was then attached to the soft tissue defect in popliteal region. The donor vessels (thoracodorsal artery and vein) were anastomosed microsurgically to the recipient vessels (sural artery and vein).

Four days after surgery, the greater portion of the free flap had taken well, but a 10 cm area at the distal end showed an ischemic color change, indicating onsetting necrosis (Fig. 2a). Soft diode laser irradiation was indicated, and sixty milliwatt dose of irradiation was administered to three points above the necrotic area for 20 seconds each, twice a day (Fig. 2b). The instrument used was a laser system which emitted a low-power gallium aluminium arsenide diode beam (Japan Medical Laser Laboratory, Panalas 4000. Figs. 5a, b).

Fig. 1 Concave deformity in left leg before treatment

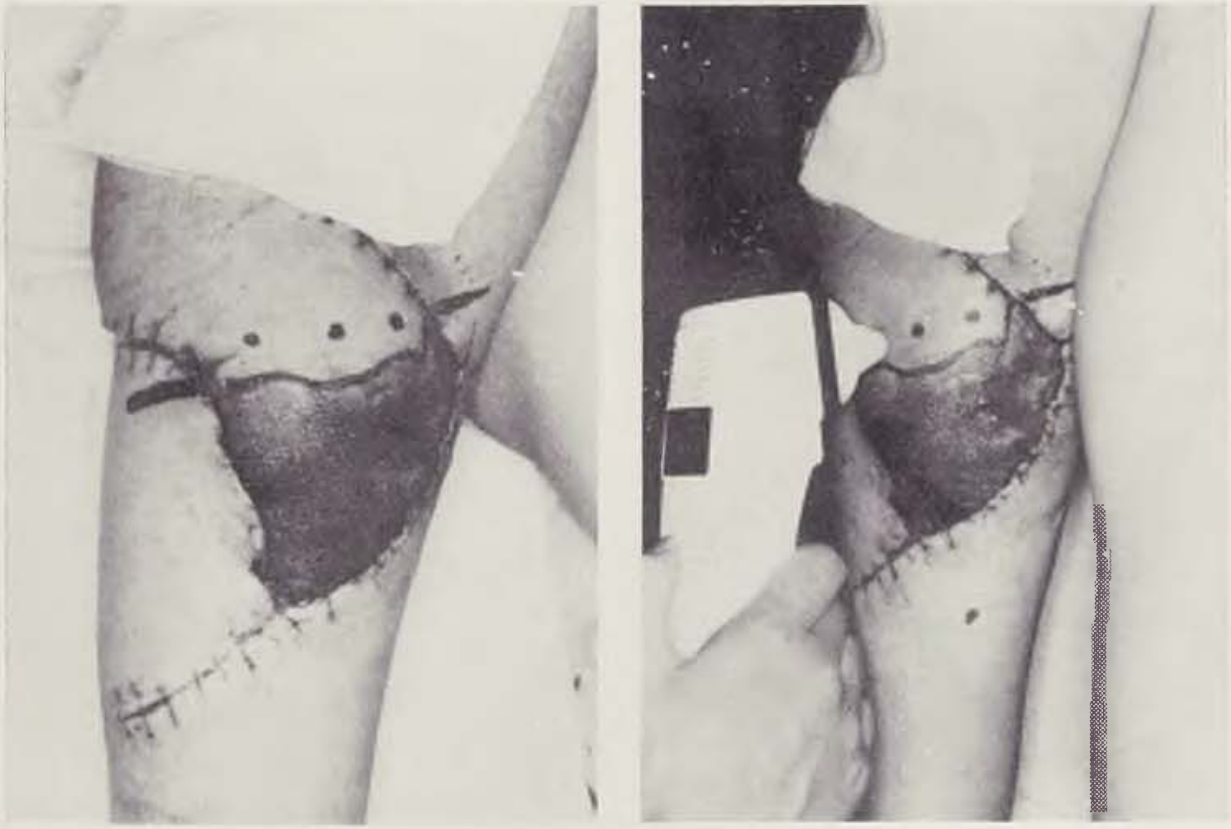

Fig. 2a Ischemic change at distal end of the flap; showing three irradiation points (dotted) — Fig. 2b Irradiating with the diode laser

Fig. 3 Enlargement of take area following irradiation (Top line indicates first irradiation on August 28; the second line, 3 days later; the fourth, Sept. 3; the fifth, Sept. 6 1984)

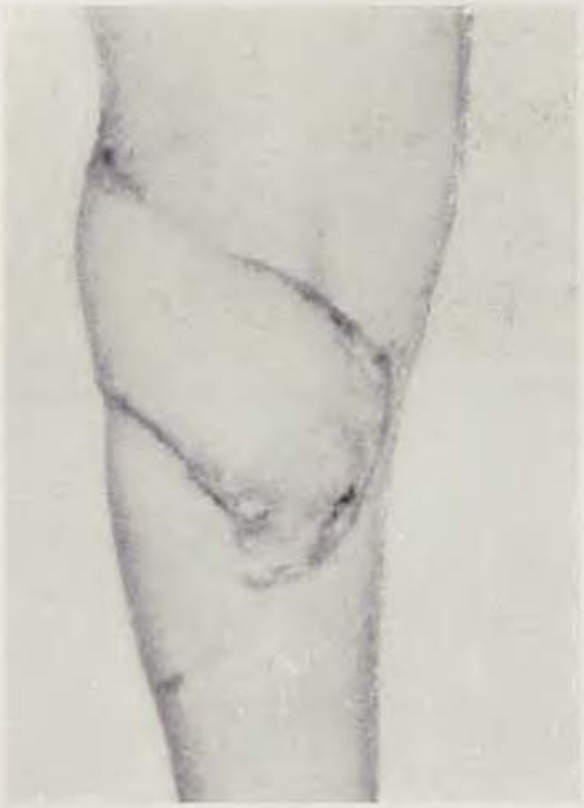

Fig. 4 Recovery of necrotic area and results

The continuous wave, 830 ± 10 nm. beam had an elliptical irradiation area of cca. 0.02 cm^2 and a maximum power density of 3.2 W/cm^2.

Laser treatment was continued for 10 days. On the third day of irradiation, the survival length had grown three centimeters, and by the end of the treatment, the necrotic area healed completely and good take was observed (Fig. 3, 4).

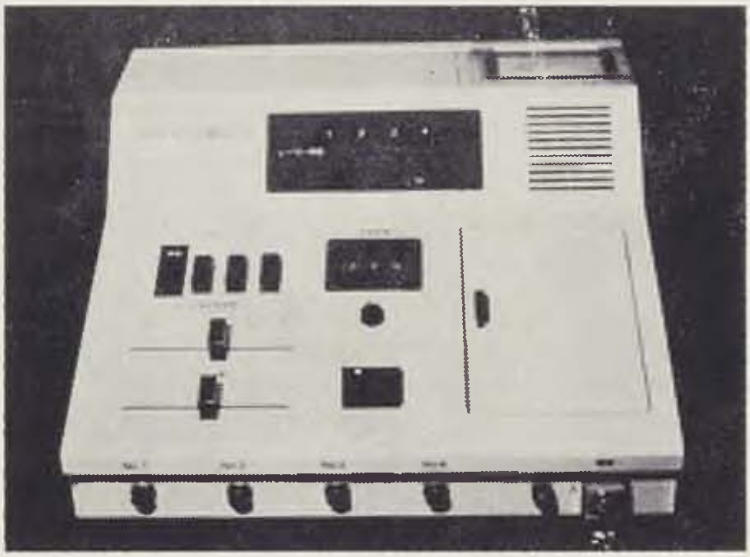

Fig. 5a The panalas 4000 GaAlAs diode laser

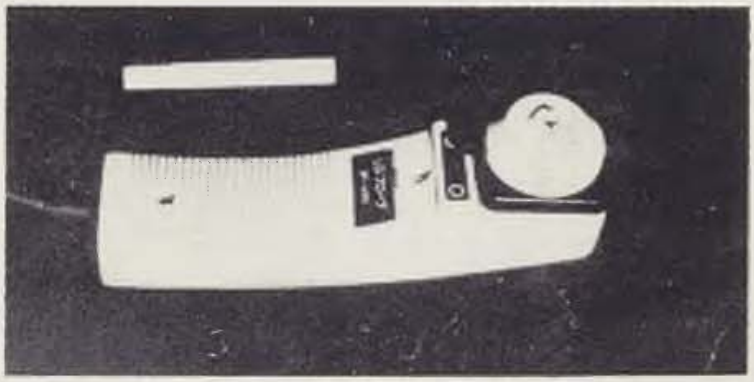

Fig. 5b Laser probe

DISCUSSION

The microsurgical free flap technique is viable reconstruction method in plastic and reconstructive surgery today. The latissimus dorsi musculocutaneous flap is an ideal donor and is frequently used (1, 2, 3).

Soft laser irradiation has been shown to be effective in stimulating hair growth, collagen synthesis and blood vessels by Mester (4) and Surinchak et al. (5), and in increasing flap survival and stimulating blood circulation experimentally (6, 7). Until now, an area of a flap that underwent an ischemic

change was thought inevitably to necrose. To combat necrosis, the delayed skin flap technique and certain medications have proven helpful, but we have now shown that the diode laser not only encourages flap take, but does so without any complications or side effects. In this case, where we irradiated three points above the necrotic area for 20 seconds each, twice a day for 10 days, the survival length increased on an average of one centimeter per day.

Although our methods differed from those used in experimental studies, we were able to obtain similar results, i. e., an increase in the take of the flap. It is clearly an effective form of therapy and with further investigation, we feel that other irradiation methods and parameters will be found.

We believe we are the first to succeed clinically in increasing flap take and survival area with soft diode laser irradiation.

SUMMARY

An ischemic area in the distal portion of the free flap was irradiated with a low-power gallium aluminum arsenide diode laser at 60 mW for 20 seconds, and this treatment was repeated twice a day for ten days. The ischemic area was restored to normal and excellent take was observed.

RESUME

Le sauvetage chirurgique d'un greffon ischémique par la laser-irradiation

Maruyama, Y.

La région ischémique de la partie distale du greffon cutané libre a été légérement irradiée à l'aide du laser-diode à gallium-aluminium-arsenide à 60 mW/s. Le traitement a été répété 2 fois par jour dans une période de 10 jours. L'ischémie a reculé jusqu'à la normale et une guérison parfaite a été constatée.

ZUSAMMENFASSUNG

Die klinische Rettung eines ischämischen Transplantats durch Laserbestrahlung

Maruyama, Y.

Der ischämische Abschnitt des distalen Teils eines freien Hauttransplantats wurde mittels Gallium-Aluminium-Arsenid-Dioden-Laser bei 60 mW auf eine Dauer von 20 s leicht bestrahlt. Die Behandlung wurde zweimal täglich 10 Tage lang wiederholt. Die Ischämie ging bis auf die Norm zurück, und es wurde eine ausgezeichnete Heilung beobachtet.

RESUMEN

La salvación clínica de trasplante isquémico por la irradiación por laser

Maruyama, Y.

La región isquémica de la parte distal del trasplante libre cutáneo fué sometida a la irradiación ligera por diódico laser de galio-aluminio-arsénico en condiciones de

60 mW/20 sec. La asistencia fué repetida 2 veces por día durante 10 días. La isquémia cedió hacia norma y fué comprobada la cicatrización perfecta.

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A NEW APPROACH TO HYPOSPADIAS REPAIR AT THE DEPARTMENT OF PLASTIC SURGERY BRNO

L. Dražan, T. Mrázek, A. Němec, J. Veselý

With its rate of incidence of one per 200 to 300 newborn boys, hypospadias ranks among the most frequent congenital development anomalies.

The diversity of the surgical operations employed today indicates the openness of the problem of how best to treat hypospadias. The parents' and later the patients' desire for the best possible morphological and functional result of the operation prompted us to look for new surgical approaches.

In cases of hypospadias, in which the first stage consists in shifting the orifice, we replaced the second and third stages (according to Nové Josserand) by a single-stage operation according to Young-Benjamin (urethral reconstruction with a skin transplant from the arm, and, simultaneously, anastomosis with the displaced meatus). As for distal penile and glandular hypospadias, formerly treated with Ombrédanne's technique, we now handle them either by advancing the orifice using a modification of Barran's operation

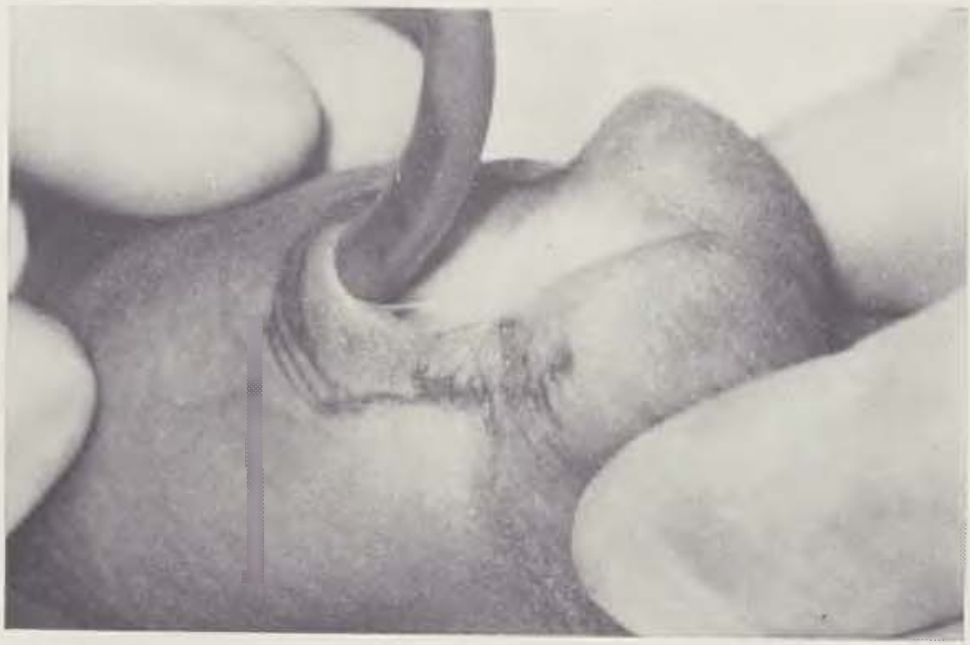
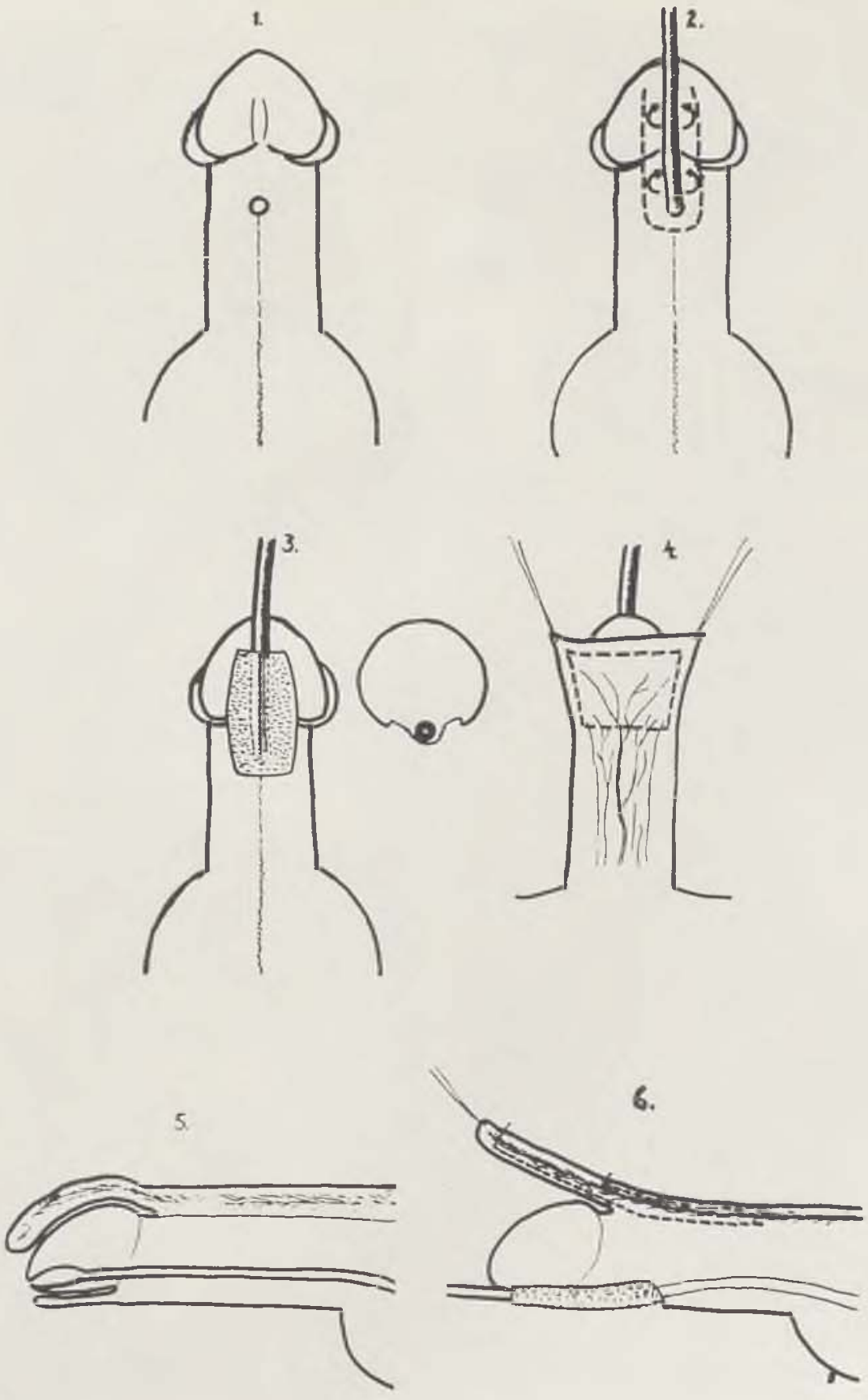
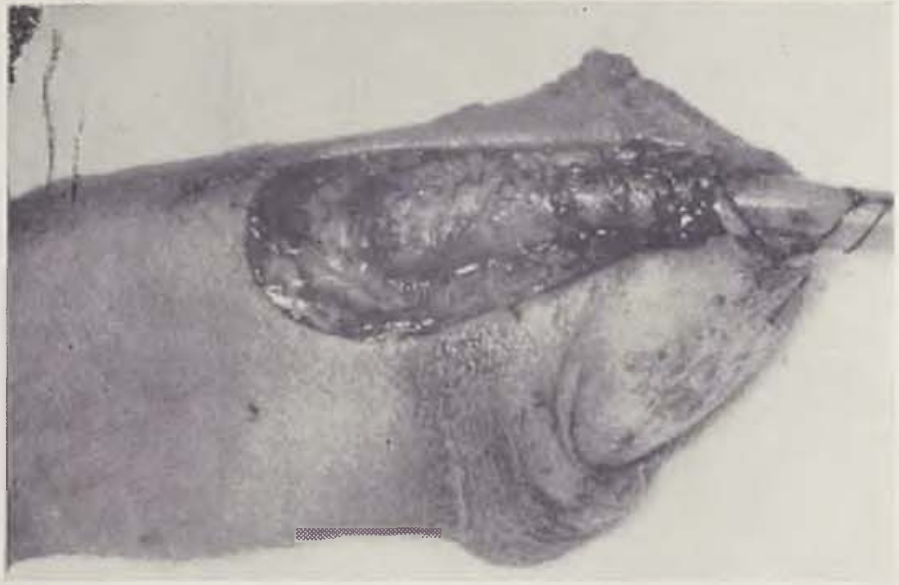


Fig. 1



Sketch 1, 2, 3, 4, 5, 6



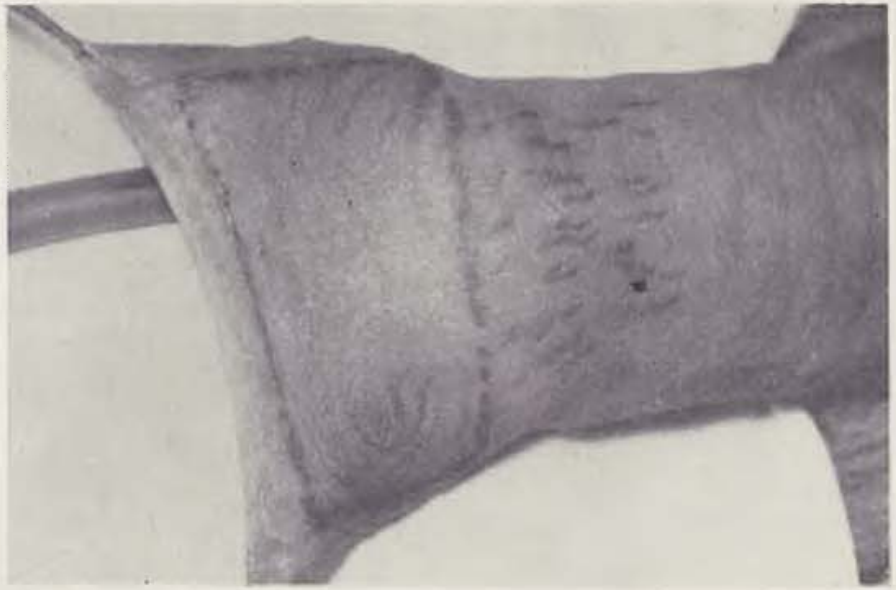
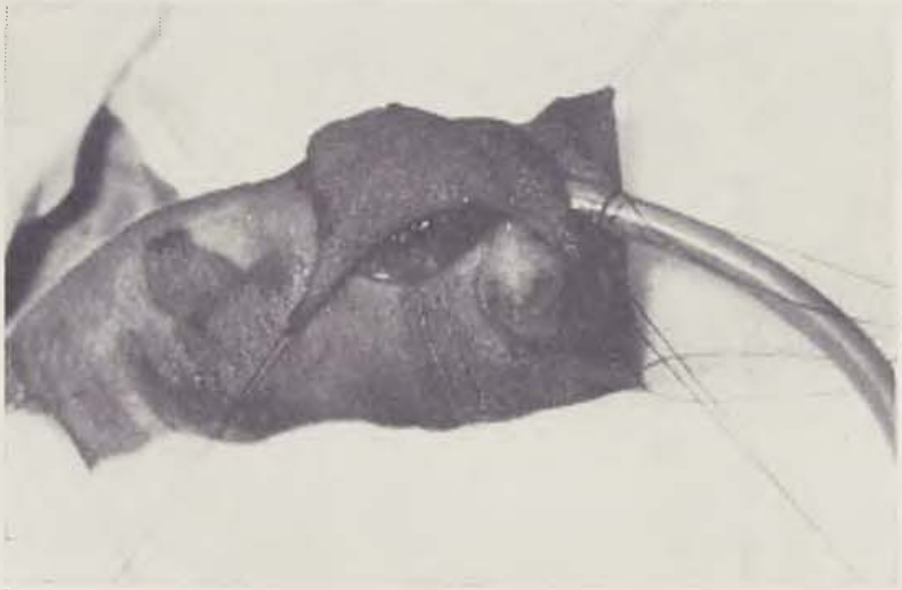


Fig. 2/3

Fig. 4/5



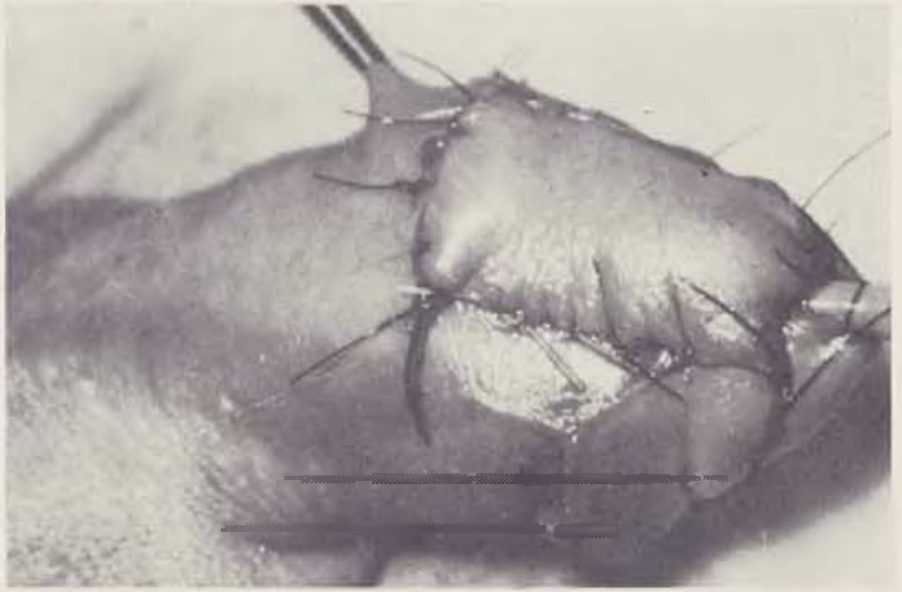


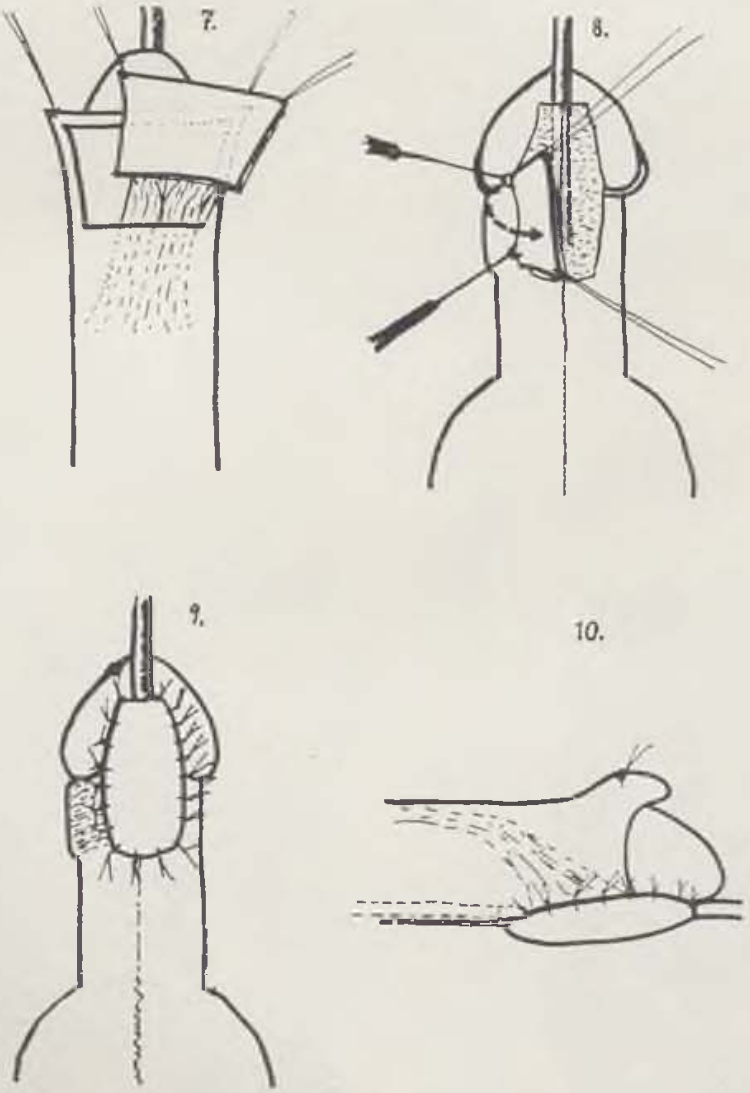
Fig. 6/7

Fig. 8/9

(indicated are those cases where the meatus is no further from the top of the glans penis than 15 mm), or, in the rest of the cases, by reconstructing the urethra in a single-stage operation with an island flap from the prepuce.

We use the last mentioned method in a modification devised by Prof. Mussinelli of Milan (1981), who developed it on the basis of studies by Des Prez (1961), Broadbent (1961) and Standoli (1979).

The inner urethral lining is constructed from two oblong flaps on the ventral side of the penis sutured together along the sagittal plane (sketch 1—3, Fig. 1, 2). The resulting skin defect is covered with an island flap with ample arterial supply from the prepuce (sketch 4, Fig. 3). It is essential to perform an extremely sparing mobilization of the flap pedicle, first close above the inner preputial fold and then close under the skin so as to keep the vessels in the pedicle intact (sketch 5, 6). With the whole flap sufficiently mobilized (sketch 7), one skin bridge on the lateral side of the penis is tunnelized, the flap slipped through underneath (sketch 8, Fig. 4, 5), rotated 90 degrees, and



Sketch 7, 8, 9, 10

sutured into the defect on the ventral side of the penis (sketch 9, 10, Fig. 6, 7). The secondary defect on the penile dorsum is then closed by direct suture.

Over the past 5 months, we have operated on 19 patients with the following results:

1. In 8 patients we obtained excellent results with the meatus at the tip of the glans and an uncomplicated post-operative course (Fig. 8, 9).

2. In 4 patients, we experienced some poor healing in the distal part of the flap with superficial desquamation and subsequent spontaneous epithelialization of the flap. Once again, there were excellent results as the external orifice remained on the ventral part of the glans.

3. 5 patients developed a fistula in the flap suture on the contralateral side of the pedicle on post-operative days 5 to 7. In two cases, the fistula healed spontaneously, the remaining three will require surgical closure.

4. One patient suffered from flap suture dehiscence on the contralateral side of the pedicle with subsequent flap retraction.

5. One patient suffered flap necrosis due to wrong flap mobilization.

DISCUSSION

Judging by our rather small group of surgical patients we can say that we now use Mussinelli's single-stage reconstruction of the urethra with the meatus ending up more distalward at the tip of the glans penis in the fossa navicularis than according to Ombrédanne's technique. The cosmetic and functional effects are also better for the absence of "ears" typical of the results of Ombrédanne's method. Also the preservation of a larger part of the prepuce on the dorsum of the penis is regarded as a positive feature of the operation. The above mentioned complications must be put down to inadequate flap mobilization and to the resulting tension felt the most on the flap on the contralateral side of the pedicle.

SUMMARY

A survey is presented of hypospadias repair operations used at the Brno Department of Plastic Surgery with special reference to single-stage urethral reconstruction using a preputial island flap in a modification of Mussinelli's method.

RESUME

Nouvel accès au problème des hypospadies à la Clinique de la chirurgie plastique à Brno

Dražan, L., Mrázek, T., Němec, A., Veselý, J.

On apporte une revue d'opérations des hypospadies, effectuées à la Clinique de la chirurgie plastique à Brno. La plus grande attention est posée sur la reconstruction de l'uretère à un temps, effectuée à l'aide d'un lobe-illôt préputial, en modification selon Mussinelli.

ZUSAMMENFASSUNG

Ein neuer Zutritt zur Beseitigung der Hypospadie an der Klinik für plastische Chirurgie in Brno

Dražan, L., Mrázek, T., Němec, A., Veselý, J.

Es wird eine Übersicht über die Operationen der Hypospadie an der Klinik für plastische Chirurgie in Brno vorgelegt mit der Ausrichtung auf eine einmalige Rekonstruktion der Urethra mittels eines inselartigen Lappens aus dem Präputium in der Modifizierung gemäss Mussinelli.

RESUMEN

Nuevo acceso en la resolución de las hipospadías en la clínica de cirugía plástica en Brno

Dražan, L., Mrázek, T., Němec, A., Veselý, J.

Está presentado el informe sobre las operaciones de hipospadías en la clínica de cirugía plástica en Brno, que son orientadas a la reconstrucción a una vez de la uretra con ayuda del lóbulo insular del prepucio en la modificación según Mussinelli.

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CORRECTIVE OPERATION ON PROTRUDING EARS

M. Králová

Aesthetic correction of protruding ears has been made for more than two centuries. About forty surgical techniques are on record, most of them belonging to history since they failed to involve the cartilage, thus producing no more than a temporary effect. It was not until 1910 that Luccket became the first to understand the need of operating on the cartilage, especially in the anthelical region. He succeeded in narrowing the scaphoconchal angle, thus achieving a permanent improvement in the position of what had been protruding pinnae.

This congenital anomaly, a dominant or recessive hereditary trait, is a farily frequent occurrence causing embarrassment to children and parents alike. At the Brno Department of Plastic Surgery we perform an annual average of 120 operations on protruding ears. Our patients are mostly children. We regard the age of nine years as the most suitable age because this is when the shape and size of the pinna have become relatively stabilized and when the child can undergo the operation in local anaesthesia.

The principle of the operation consists in the incision and transsection of the cartilage of the pinna throughout its thickness and surface, and in the subsequent modellation of the cartilage thus treated. The operation begins with the decortication of the marked strip of skin on the posterior surface of the outer ear (Fig. 1). Then follows the discission of the cartilage along the circumference of the decorticated area. Scissors and an elevator help us to mobilize the skin over the cavum conchae of the anterior side of the pinna (Fig. 2, 3). We then reshape the denuded cartilage by means of halfmoon-shaped incisions made in the contour of the concha. The cartilage must be cut through all its thickness to be shapeable and to preserve the desired shape and position. We use a dual-edged scalpel for the purpose to achieve fine, symmetrical lines of incision and to halve the time of the cutting (Fig. 4, 5). The definitive shape of the incised cartilage is fixed with a wick of flavin cotton wool to be covered in mastizol and stuck into all the contours of the skin cover of the anterior surface of the pinna, using monofil suture to fix the wick to the massive cartilaginous skeleton of the pinna. The fixation of the whole pinna is then secured with compressive elastic bandage to be left in position for 7 to 10 days.

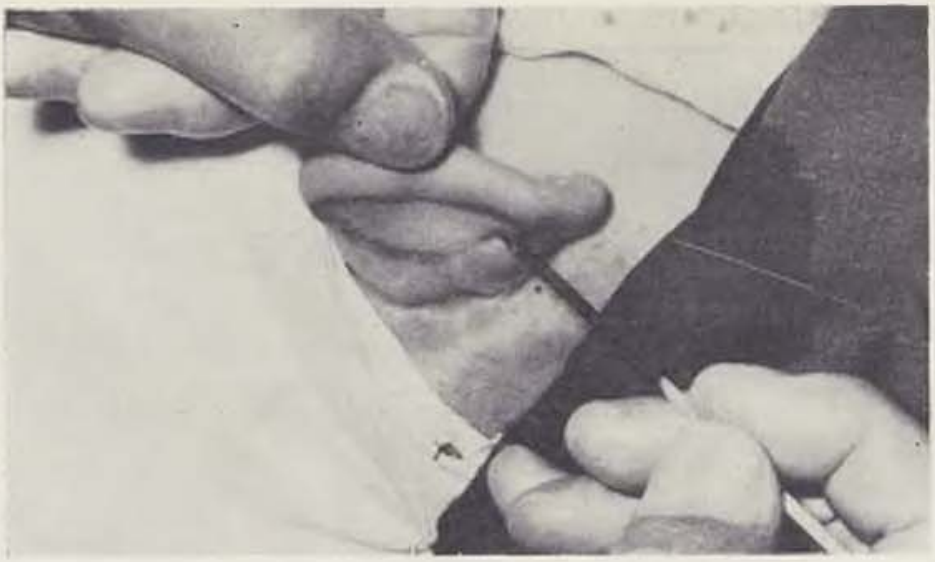

Fig. 1

Fig. 2

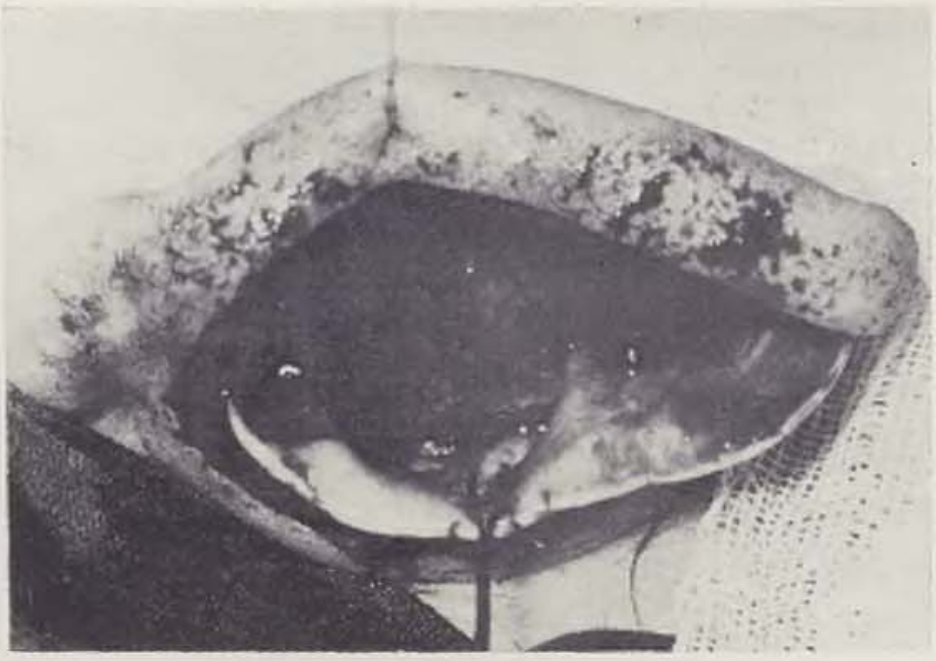

Fig. 3

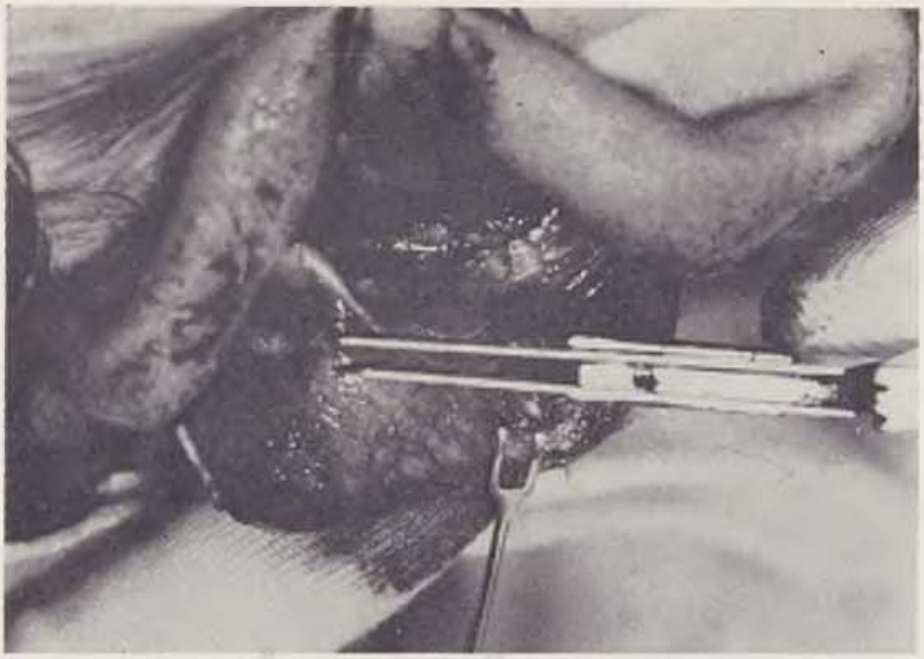

Fig. 4

Fig. 5

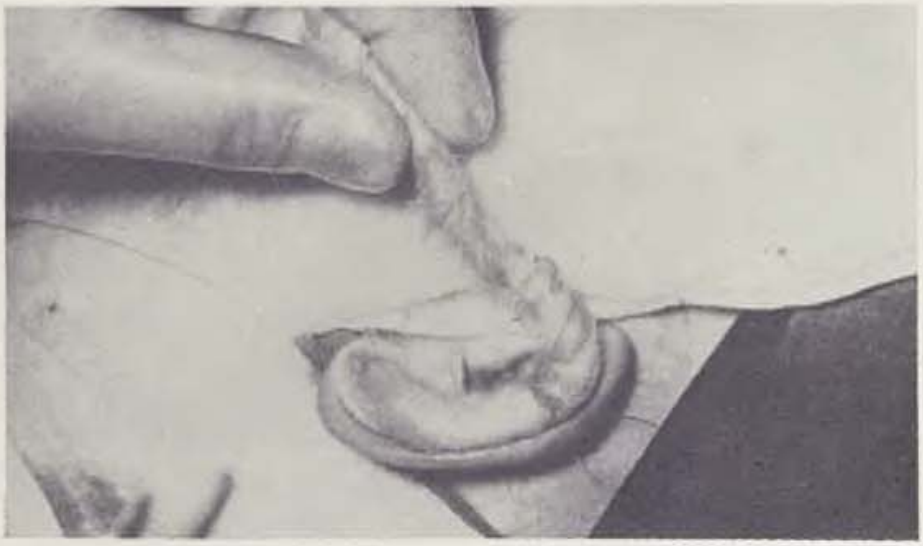

Fig. 6

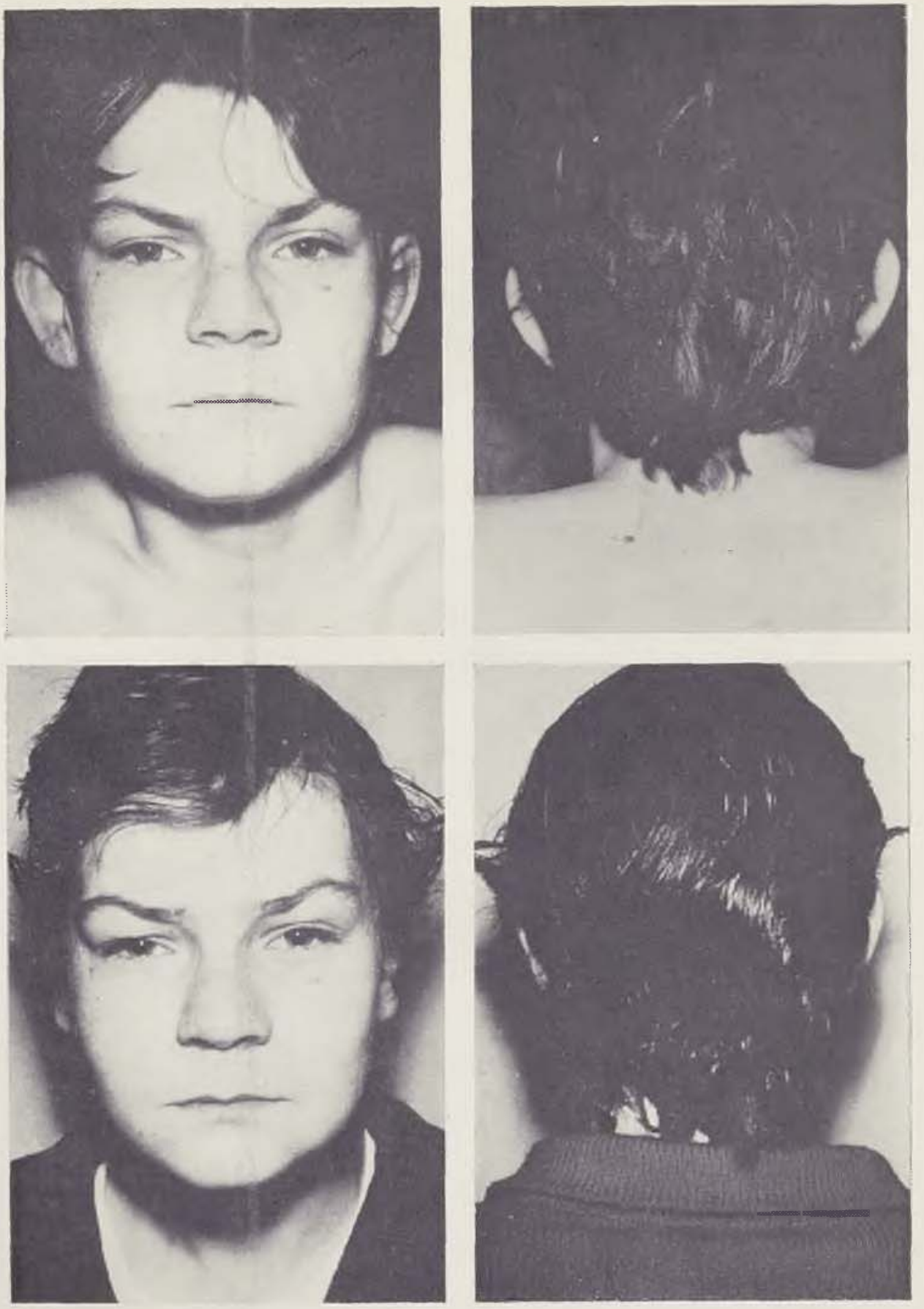

Fig. 7, 8, 9, 10

Fig. 11, 12, 13, 14

The pre-operative state and the post-operative results in several patients are shown in figures 7, 8, 9, 10, 11, 12, 13, 14.

And last, a few important principles which should be observed in the process: strict asepsis, fine surgical technique and meticulous arrest of all bleeding from even the smallest vessels are essential throught the operation. For fear of possible post-operative bleeding we keep the patients hospitalized for at least the first two to three days unlike some of our own cosmetological and foreign institutes where protruding ears are surgically treated on an outpatient basis.

SUMMARY

In her brief communication, the authoress reports on the surgical procedure and results of a corrective operation on protruding ears with special reference to the need for the surgical treatment of the cartilage, for observing the rules of delicate surgical technique, as well as to the advantages of using a dual-edged scalpel for the purpose.

RESUME

L'opération corrective du pavillon décolé

Králová, M.

Dans sa brève commmunication l'auteur énonce le procédé opératoire et les résultats d'une opération corrective du pavillon décolé. L'auteur souligne la nécessité de l'intervention sur le cartilage, accompagnée d'une minutieuse technique opératoire et l'avantage de l'utilisation d'un bistouri à deux lames.

ZUSAMMENFASSUNG

Korrektive Operationen abstehender Ohrmuscheln

Králová, M.

Die Autorin führt in einer kurzen Mitteilung den operativen Vorgang und die Ergebnisse korrektiver Operationen abstehender Ohrmuscheln an. Dabei macht sie auf die Notwendigkeit eines Eingriffs in das Knorpelgewebe aufmerksam sowie auf das notwendige Einhalten feiner Operationstechnik und die vorteilhafte Verwendung eines Doppelklingenskalpells.

RESUMEN

La operación correctiva de pabellones resaltados

Králová, M.

El autor en su corto informe presenta la tecnología y los resultados de la operación de los pabellones resaltados. Ella llama la atención sobre la necesidad de la intervención en cartílago, sobre el mantenimiento de una técnica delicada de la operación y de las ventajas del empleo del escalpelo de doble filo.

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Czechoslovakia

Fellowship in Burn Medicine 1986—1987

A one year fellowship in Burn Medicine is available in the Division of Burn Surgery in the University of Michigan Department of Surgery from July 1, 1986 through June 30, 1987. The UM Burn Center specializes in all phases of burn care; emergent, acute, and rehabilitation, and there are well developed programs in education, research, and outpatient care. The candidate will have training and responsibilities in each of these areas.

Qualifications for this position are (1) a graduate of a United States or Canadian medical school, (2) board certified or a candidate for certification in General Surgery, and (3) a special interest and skills in intensive care. Salary will be based on candidate's previous experience.

If you know of such an individual please have him/her send a curriculum vitae to Dr. Irving Feller, 200 North Ingalls, Ann Arbor, Michigan 48104.

The General Meeting of Polish Society of Plastic and Reconstructive Surgery Was Held in Warsaw on July 3rd, 1986

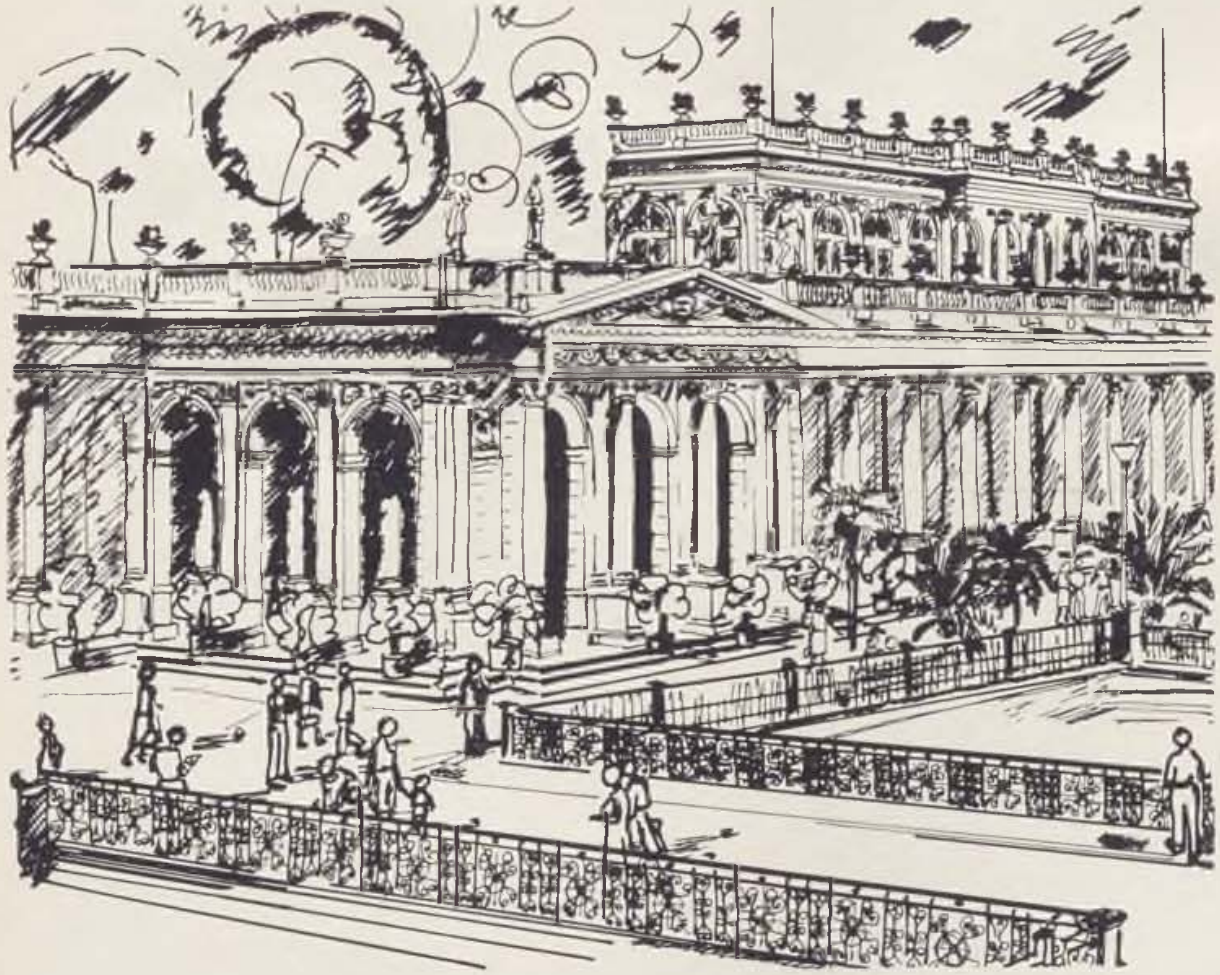
Officers of the Polish Society of Plastic and Reconstructive Surgery are:
President — Michał Krauss, M. D., Professor of plastic surgery,
Vice-President — Kazimierz Kobus, M. D., Assist. Professor of plastic surgery,
Secretary — Jerzy Potocki, M. D.,
Treasurer — Andrzej Sankowski, M. D.,
Council Members — Wanda Kondrat, M. D., Professor of plastic Surgery, Julia Kruk-Jeromin, M. D., Assist. Professor of plastic surgery.

Symposium Dedicated to Infections in Burns Will Be Held in Poznań on 4—5th December 1986

Further information can be obtained from Jerzy Sikorski, M. D., ul. Kniewskiego 24/8, 60-744 Poznań, Poland. The Congress of Polish Society of Plastic and Reconstructive Surgery will be held in Warsaw on 20—21st November 1987. The theme of the Congress will be: Reconstructive surgery of the head and neck, reconstructive microsurgery. For further information please contact: Jerzy Potocki, M. D., Department of Plastic Surgery, Medical Centre of Postgraduate Education, 231 Czerniakowska Str., 00-416 Warsaw, Poland.

CONTENTS

STOP FOR A MOMENT AND CONSIDER YOUR HEALTH



DAY AFTER DAY AND YEAR AFTER YEAR YOU ARE CONSTANTLY CHASING SOME AIM OR ANOTHER, YOU STRETCH THE MAINSPRING OF YOUR HEALTH TO THE VERY MAXIMUM. AND HOW LONG DO YOU THING YOU CAN CONTINUE TO DO SO? REMEMBER THAT YOU HAVE ONLY ONE HEALTH AND FINALLY MAKE UP YOUR MIND TO GRANT IT, AT A VERY REASONABLE PRICE, WHAT IT DESERVES: COMPLEX TREATMENT AT ONE OF THE OLDEST AND THE MOST WIDELY RECOGNIZED SPAS IN EUROPE.

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