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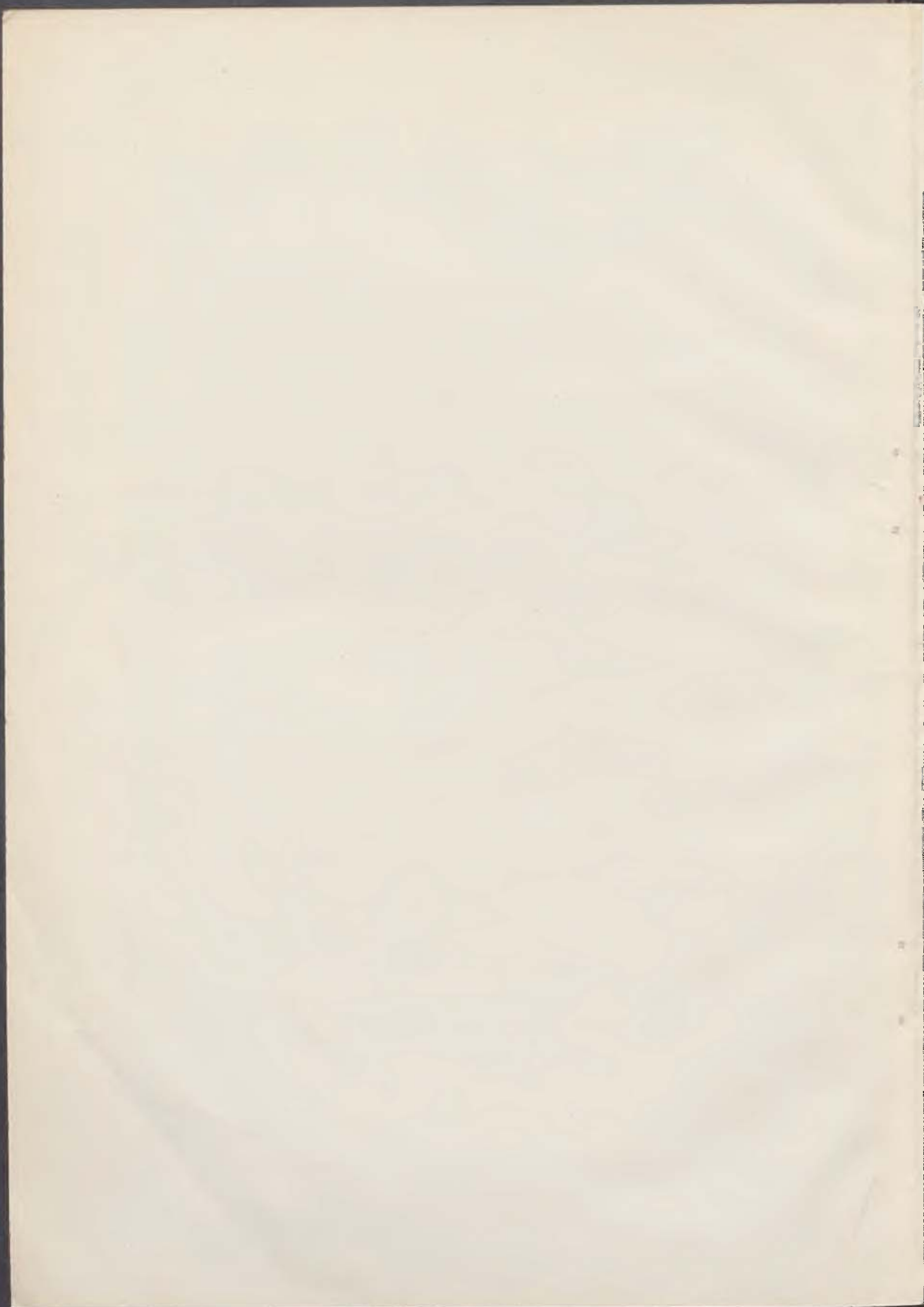
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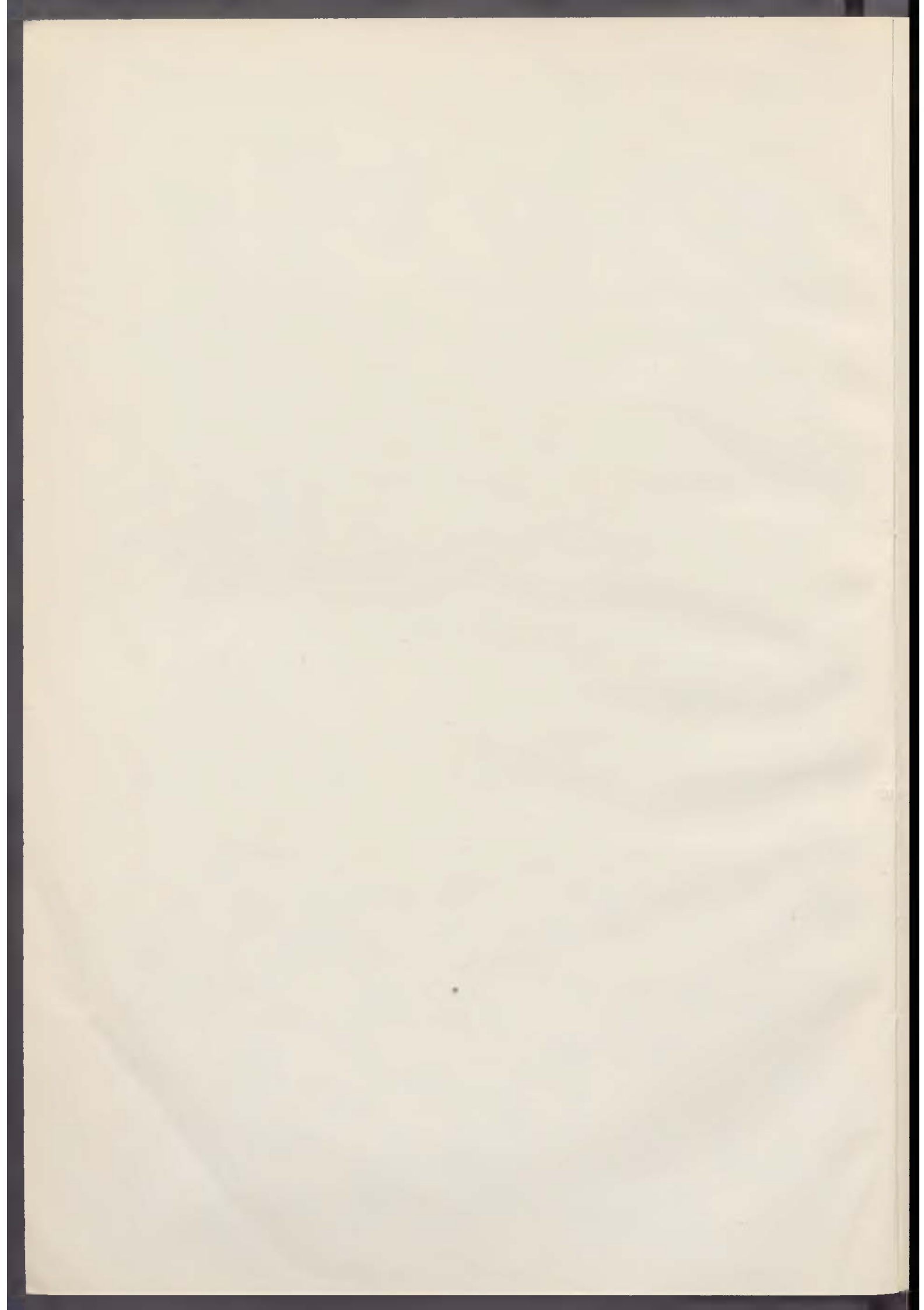


At the celebrations of the fiftieth anniversary of the Great Socialist October Revolution and of the formation of the first socialist state, the USSR, the Czechoslovakian plastic surgeons again recalled the famous tradition of reconstructive surgery in that country. Represented by Szymanowski, Rauer, Michelson, Filatov, Limberg and many others, this tradition lead to the remarkable organization of the branch even in the hard Second World War, when outstanding results of repair and of the return of an innumerable amount of wounded soldiers to fighting ability, had been achieved.

New workplaces of reconstructive surgery have been formed in the USSR since the start and still continue to be established, within the rapid development of health care and great attention is paid to the development of teaching, science and also of medical practice.

On our own behalf, as well as on behalf of all people of good will, we should like to wish all our readers that the peaceful policy of their country should bring permanent peace and the possibility of smooth cooperation with all the nations, so that no new terrible "apidemic of accidens" as Pirogov called the war, would happen again.

The editors



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PARANASAL (ORO-OCULAR) CLEFT OF THE FACE

Report of a case

W. PORADOWSKA, M. JAWORSKA, Z. DUDKIEWICZ, S. RESZKE

The purpose of this paper is a description of one case of oro-ocular cleft with a short account of the surgical measures. This relatively rare type of facial anomaly is classified to the group of paraxial clefts (2) which may be subdivided into 1. nasal or oblique — with direct involvement of structures of the nasal process and 2. paranasal or vertical in which nasal structures are unaffected (3).

Fronto-nasal process plays an essential role in the normal development of human face. In the early embrional stage, it is separated on both sides from maxillary process by the naso-optic grooves. Persistence of grooves in postnatal life is no longer attributed to the lack of fusion of their epiblastic edges as it was previously thought, but to the incomplete migration or deficiency of mesenchyme (1).

It explains the fact that oblique or vertical fissures are often associated with abnormalities of adjacent structures: of the nasolacrimal duct and sac, of the orbit with its contents and coverings, and with clefts of primary and secondary palate.

DESCRIPTION OF CASE

S. S., a male newborn, aged 12 days, was admitted in January 1971 with the following facial anomalies (Fig. 1 a, b).

Asymmetry of the face due to hypoplasia of its right upper portion. The cleft was running from the defect of the lower eyelid through the soft tissues of the cheek down to the oral cavity. The median structures (nose, premaxilla, prolabium) were shifted to the left in continuity with unaffected side of the face. The orbit was closed from below by the overlying bony element covered with mucosa and extending directly to the vomer. Orbital floor was fused with cleft hard palate.

Upper lid was small but otherwise normal and functioning. Medial half of the lower lid was missing. In its paranasal angle, there was a mass of tissue extending down to the fissure. Right eyeball reduced in size and hypoplastic. Coniunctivitis. Purulent dircharge appeared on compression of the lacrimal sac. No lacrimation.



Fig. 1 a, b. Appearance on admission

Mucus from the right nasal aperture was slightly coloured with milky substance, the introduced catheter failed to penetrate into nasopharynx. Left eyeball of normal shape and function.

Roentgenologic findings: cleft of the alveolar process with narrow osseous bridge in the anterior portion of secondary palate. Cleft of the upper jaw up to the maxillary border of the right orbit. Nasal septum deviated to the left. Bones of calvarium and of the cranial base unaffected.

Neurologic examination: no detectable signs of cerebral lesions.

Electrocardiogram and laboratory tests — normal.

SURGICAL MANAGEMENT

In the 5th week of age, correction of the cleft with Z-plasty technique (exchange of opposing triangular flaps) was performed with adjustment of vermillion borders of the upper lip. Its plastic reconstruction was postponed to the later stage of surgery (Fig. 2, Fig. 3 a, b).



Fig. 2. First operation

It was agreed with ophthalmologist that the right eyeball should be left intact as a natural prothesis. Excision of lacrimal sac was found necessary despite local inflammation. The sac was resected one month after the first operation.

Two months later, ophthalmologic examination demonstrated the opening of fistula located near the lacrimal punctum and showing purulent discharge on compression. On fistulography, Lipiodol filled the fistulous tract and visualized its downward and backward course. The upper portion of fistula was excised. Primary healing of surgical wound.

In the next year the second stage of surgical treatment was undertaken. Two incisions of the skin were made through the Z-shaped scars, one, trans-

verse, below the lower lid, another parallel to the vertical line of the cheek. The wound was opened and the mucous layers exposed along the osseous fissure of maxilla. The layers were closed with single sutures in order to produce the base of a tunnel for the bony graft.



Fig. 3 a, b. One year after the first operation

In the same time, a 2 cm piece of the sixth right rib was resected out of the area of anterior axillary line and the donor site was sutured. The graft was divided longitudinally into two plates. One plate was placed on another and both fixed in the anterior portion of the border of the lower orbital

wall. The graft was covered with periosteal fibrous flap produced by the anterior surface of maxillary tissues.

Triangular incision of the eyelid was made to liquidate conjunctival cleft. Conjunctiva was then released from adhesions and closed with single silk sutures. After suturing of palpebral borders, the eyelid easily covered the eyeball. The skin was closed in two layers — first, muscles and subcutaneous tissues were sutured, next, the skin borders were approached and sutured with silk. Soft tissues of the cheek were shifted towards the middle of the face.



Fig. 4. Effect of the second operation

In conclusion, the following procedures were performed in this stage of surgical treatment:

1. reconstruction of the lower border of the orbit,
2. liquidation of mucous fistula between the margin of the lower lid and the oral vestibulum,
3. elongation of the vertical line of the cheek,
4. adjustment of the vermilion borders of the lip and
5. full reconstruction of the oral vestibulum.

Postoperative course was uneventful.

Cosmetic effect is far to be satisfactory (Fig. 4) though it can be regarded as successful when compared with dramatic deformity of the face on admission.

The child will be supplied with special glasses covering the affected eye. Plastic correction of both lids of this eye and of the upper lid is considered. Further surgery will depend, however on the distant results of the last operation.

SUMMARY

The authors present surgical management of paranasal (oroocular) cleft of the face in a male infant.

RÉSUMÉ

Fissure paranasale (orooculaire) de la face — Rapport d'un cas

Poradowska W., Jaworska M., Dudkiewicz Z., Reszke S.

On décrit le traitement chirurgical de la fissure paranasale (orooculaire) de la face chez un petit fils.

ZUSAMMENFASSUNG

Paranasale (orookulare) Gesichtsspalte — Bericht über einen Krankheitsfall

Poradowska W., Jaworska M., Dudkiewicz Z., Reszke S.

Bericht über die chirurgische Behandlung der paranasalen (orookularen) Gesichtsspalte bei einem kleinen Knaben.

RESUMEN

Fisura paranasal (oroocular) de la cara — Informe de un caso

Poradowska W., Jaworska M., Dudkiewicz Z., Reszke S.

Se describe tratamiento quirurgico de una fisura paranasal (oroocular) de la cara de un niño pequeño.

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MIDDLE EAR COMPLICATIONS IN CLEFTS

Results of stage I. in longterm studies of hearing defects, considering type of cleft and age of patient

M. FÁRA, J. HRIVNÁKOVÁ, I. HORÁK

It is generally assumed that there are more frequently hearing defects in cleft-palate patients than in other persons. Whereas in the population not afflicted with cleft the frequency of hearing defects varies between 3,5 % to 4,8 %, the amount in the population with cleft is considerably higher (2, 6, 7, 9, 10).

This fact is considered to be caused by:

1) bad ventilating ability of the Eustachian tube because of the abnormal function of m. tensor and m. levator affecting the tube in not yet operated on children,

2) easy injury of the exposed orifice of the tube by food at the existing defect of the palatal barrier between the oral and nasal cavity,

2) per-operative damage of the tube, unphysiologic reconstruction of velar muscles and post-operative scarring around the tube.

With proceeding age the number of hearing defects decreases in cleft patients similarly as in individuals without cleft. Thus in a considerable part of the afflicted persons it is a disease of reversible type.

Most of the authors agree that the majority of these persons suffers of the conductive type of hearing loss (1, 2, 7, 9).

The most frequent cause of this type of hearing disorder are inflammations of the middle ear and catarrhs of the Eustachian tube. For this reason it is most important in longterm research of hearing losses that we ascertain carefully the incidence of these complications.

MATERIALS AND METHODS

Longterm studies are carried out by us in a group of 269 children now already aged 10—15 years with one of the 3 most important types of facial clefts: a) isolated cleft palate, b) total unilateral cleft (cheilo-gnathopalatoschisis unilateralis) and c) total bilateral cleft (cheilognathopalatoschisis bilateralis). We endeavour to determine in these children by periodic controls, the variance of percentual incidence and changes in the extent of hearing loss from early childhood till maturity.

In group I. (91 children) i.e. in isolated cleft of palate, 39 children (42,85 %) underwent one or several inflammations of the middle ear since infant age till the time of operation of the palate, i.e. till the age of approximately 4 years. After the operation this number decreased to 23 (25,27 %), i.e. to practically half.

In group II. (122 children) i.e. in total unilateral cleft, 16 children (13,11 %) underwent one or several inflammations of the middle ear before operation of the lip, i.e. till the age of approx. 6 months, 37 children (30,32 %) before operation of the palate. After operation this incidence decreased to 28 (22,95 %).

In group III., i.e. in total bilateral cleft, the incidence of inflammations of the middle ear was maintained in the individual periods — in view of the operational stages — practically at constant level. Till operation of the lip, 12 individuals (21,42 %) of the total number of 56 children were afflicted, 14 children (25 %) till operation of the palate and later 12 children (21,42 %).

No significant difference in the incidence of middle ear complications was ascertained after tonsilectomy and adenotomy and in children which did not undergo this operation.

DISCUSSION

Research carried out in Prague in 1970 [8] afforded comparison of the results of our investigation with the health status of the healthy population. According to this research 45,1 % of the children underwent inflammation of the middle ear before reaching the age of 6 years. The most frequent incidence was in the first year of age whereas after the third year already only 25 % of the children were ill. In children aged ten years the incidence of the disease did not exceed 7 %. One third of the afflicted boys and 28 % of the girls underwent otitis media more than 3 times in their life.

It appears that in isolated cleft of palate the incidence of inflammations of the middle ear and tube after operation decreases to the same extent as in the proceeding age of the child in the healthy control group.

There is a rather surprisingly low frequency of middle ear complications in individuals with total clefts which were not yet operated on, the frequency only rises after suture of the lip and approaches the mean in healthy children of the same age. After operation of the palate there is again a decrease to the level in the other children of the same age.

The following two conclusions may be drawn:

1) Because the incidence of inflammatory disorders of the middle ear in children not yet operated on for suture of the lip is lower than in the healthy control group, it may be assumed that the open lip (in spite of the other hazards to which the patient is exposed) play a favourable part mainly by improving for hygiene of the oral cavity.

2) Because the frequency of middle ear complications after operation of palate with retroposition and pharyngo-fixation with upper flap (currently carried out at the Clinic in Prague) does not rise above the standard in the healthy population, it may be assumed that this operation does not interfere with the mechanism of tubal ventilation (3, 4, 5).

SUMMARY

Statistical evaluation of the incidence of inflammations of the middle ear and the Eustachian tube was carried out within longterm studies of hearing loss in a group of 269 patients with cleft of the palate.

In no type of cleft and not at any age did the incidence of these diseases exceed the standard of the respective age group in the Czechoslovakian healthy population. In not yet operated on cases of cleft lip, the frequency of complications of the middle ear was even lower (13,11 % in total unilateral clefts and 21,42 % in total bilateral clefts).

The possible relations of these disorders to hygiene of the oral cavity and the type of operation on the palate, were discussed.

RÉSUMÉ

Complications d'oreille moyenne en cas des fissures

Fára M., Hrivnáková J., Horák J.

En observant à long terme l'état de l'ouïe sur un groupe de 269 malades avec la fente du palais, on a établi une évaluation statistique concernant l'existence de l'otite moyenne et l'inflammation de la trompe d'Eustache.

Sur aucun type de la fissure et à aucun âge la présence de ces maladies n'a dépassé la norme du groupe correspondant à l'âge de la population tchécoslovaque étant en bonne santé. Au contraire, la fréquence des complications d'oreille moyenne était plus basse chez les patients avec les lèvres pas encore opérées (13,11 % chez les fentes complètes unilatérales et 21,42 % chez les fentes complètes bilatérales).

On discute les relations possibles par rapport à l'hygiène de la cavité buccale et au type de l'opération du palais.

ZUSAMMENFASSUNG

Mittelohrkomplikationen bei den Spalten

Fára M., Hrivnáková J., Horák J.

Im Rahmen einer langfristigen Verfolgung des Gehörszustandes bei einer Gruppe von 269 Kranken mit Gaumenspalte wurde statistische Auswertung des Vorkommens der Mittelohr- und Ohrtrompetenentzündungen ausgeführt.

Bei keinem Spaltentyp und in keinem Alter hat das Vorkommen dieser Erkrankungen die Norm für die entsprechende Altersgruppe der gesunden tschechoslowakischen Bevölkerung überschritten. Bei den bisher nichtoperierten Lippen war die Frequenz der Mittelohrkomplikationen dagegen niedriger (13,11 % der totalen einseitigen Spalten und 21,42 % der totalen beiderseitigen Spalten).

Die möglichen Zusammenhänge mit Bezug auf die Hygiene der Mundhöhle und auf den Gaumenoperationstyp wurden diskutiert.

RESUMEN

Complicaciones del oído medio en fisurados

Fára M., Hrivnáková J., Horák J.

Dentro de observaciones de muchos años del estado del oído en un grupo de 269 pacientes con fisuras del labio fue llevada a cabo una evaluación estadística en cuanto a la frecuencia de la inflamación del oído medio y de la trompa de Eustaquio.

La frecuencia de estas enfermedades no ha sobrepasado en los pacientes con distinto tipo de fisuras y de diferentes edades la norma del grupo correspondiente de la población sana checoslovaca. Al contrario en los casos de labios hasta el presente no operados la frecuencia de complicaciones por otitis fue más baja (13,11 % en fisuras del paladar unilaterales complejas y 21,42 % en fisuras bilaterales complejas).

Se discutió sobre relaciones posibles considerando la higiene de la cavidad bucal y el tipo de la intervención en el paladar.

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SHAPE OF THE NOSE IN CHEILO-GNATHO-PALATOSCHISIS UNILATERALIS BEFORE OPERATIONAL REPAIR

K. HAJNIŠ, †P. FIGALOVÁ

Several authors submitted in the past a general description of nasal morphologic changes at unilateral cleft of the oral cavity. The papers of several contained a very extensive and complete description and we find amongst them some of the older reports by Burian (1937, 1954 a.o.).

We have been pointing out systematically in the past years that in plastic surgery mere descriptive-subjective documentation is quite insufficient (Burian, Farkaš, Hajniš 1964; Hajniš, Farkaš 1964, 1965, 1969; Hajniš, Farkaš, Hajnišová 1967; Farkaš, Hajniš, Kliment 1967). Yet till to-day, there exist only very few really objective data on nasal deformations of complete unilateral clefts in the metrical sense referring to the pre- or postoperational condition (Coupe and Subtelny 1960, Gunter 1963, Reynolds and Horton 1965, Cosman and Crikelair 1965, Ross and Johnston 1967 a.o.).

An objective (metrical) evaluation of the post-operational condition of the main features of the face (i.e. also of the nose) in adult patients with total bilateral cleft, has been recently reported by Farkas and Lindsay (1971).

MATERIAL AND METHODS

In order to assess the size and shape of nasal abnormalities at total unilateral clefts prior to operation, we examined 105 patients (33 girls, 72 boys) at the Clinic of Plastic Surgery, Medical Faculty of Hygiene, Charles University, Prague. None of our patients was older than one year. All examinations were carried out in the years 1964—1970.

Attempting maximal objectiveness of the local finding, we carried out — in agreement with the already previously suggested system — anthropometrical examination (Martin, Saller, 1957) according to our own modification (Hajniš, Farkaš 1964, 1965, 1969).

This article is dedicated to the late academician Fr. Burian, who was born ninety years ago.

Tab. 1a. Dimensions and indexes of nose. Girls

	Age in months	n	$\bar{X} \pm 3.s_{\bar{x}}$	s	V	min.	max.	Standard
n-sn	2- 6	13	$26,26 \pm 3.0,33$	1,91	7,27	22	30	27,40
	6-12	20	$30,00 \pm 3.0,63$	2,82	9,40	27	36	29,28
al-al	2- 6	13	$29,00 \pm 3.0,66$	2,44	8,41	24	33	22,00
	6-12	20	$30,00 \pm 3.0,64$	2,90	9,66	25	35	23,20
Index nasalis	2- 6	13	$109,42 \pm 3.4,03$	14,78	13,50	91	133	79,97
	6-12	20	$99,00 \pm 3.2,50$	11,18	11,29	76	124	79,78
Index nasozygomaticus	2- 6	13	$30,07 \pm 3.0,86$	3,16	10,50	25	35	22,89
	6-12	20	$29,50 \pm 3.0,73$	3,27	11,08	25	36	23,10
Index cheilonasalis	2- 6	13	$83,46 \pm 3.1,78$	6,53	7,82	71	97	73,58
	6-12	20	$82,20 \pm 3.1,75$	7,86	9,56	73	99	71,65
Index nasobasialis	2- 6	13	$31,15 \pm 3.0,89$	3,28	10,52	27	36	23,86
	6-12	20	$30,50 \pm 3.0,23$	1,04	3,40	23	37	23,77
Index nasofrontalis	2- 6	13	$37,07 \pm 3.1,09$	4,00	10,79	30	44	27,29
	6-12	20	$37,70 \pm 3.0,81$	3,64	9,65	30	44	27,31
Index nasogonialis	2- 6	13	$38,84 \pm 3.1,55$	5,68	14,62	29	49	27,64
	6-12	20	$36,90 \pm 3.1,11$	5,00	13,55	27	46	28,34

We ascertained the following nasal dimensions: 1. height of nose (n-sn), 2. width of nose (al-al), 3. width of left part of the nose from the reconstructed median plane (to the left point al), 4. width of the right part of the nose from the reconstructed median plane (to the right point al), 5. antero-posterior and vertical differences in the attachment of the lower parts of both nasal wings to the upper lip, given by the difference in the placement of both subalare points (sbal) (Hajniš, Farkaš, Hajnišová 1967), 6. deviation of the nasal bridge from the median plane in degrees (measured from nasion point), 7. deviation of the pronasale point (prn) from the median plane in millimeters, 8. deviation of the columella from the sagittal plane in degrees (measured from the subnasale point).

In order to assess the absolute as well as the relative deviation of the nasal width which is usually rather considerable in clefts, we calculated 6 indexes. They relate the nasal width (al-al) to different surrounding dimensions, again mainly to different widths. They are as follows:

1. index nasalis $\left(\frac{[al - al] \cdot 100}{n - sn} \right)$, 2. index nasozygomaticus $\left(\frac{[al - al] \cdot 100}{zy - zy} \right)$
3. index cheilonasalis $\left(\frac{[al - al] \cdot 100}{ch - ch} \right)$, 4. index nasobasialis $\left(\frac{[al - al] \cdot 100}{t - t} \right)$
5. index nasofrontalis $\left(\frac{[al - al] \cdot 100}{ft - ft} \right)$, 6. index nasogonialis $\left(\frac{[al - al] \cdot 100}{go - go} \right)$.

Both basic nasal dimensions (n-sn, al-al) and also the indexes of the examined patients were compared with the mean calculated values of the respective age classes of healthy children which have been prepared for this purpose as the Czech standard from birth till the age of 6 years (Figalová, report being prepared).

The differences of the means in relation to the standard were evaluated by t-test.

Furthermore we also assessed the type of deformation and the condition of the passage in nares nasi on the cleft- and on the healthy side.

Pre-operational condition of the nose in the patients

A comparison of the nasal height (n-sn) in both age classes of the girls with total unilateral cleft with the standard in Tab. 1 discloses rather very small differences. It was ascertained by the test that they do not even reach a 5% confidence limit and we may therefore assume that the height of the nose in both groups of girls does not differ in average (♀♀: 2—6 months): $t = 1,54$; 6—12 months: $t = 0,98$). The same findings was in boys of the first age class ($t = 1,78 < P_{0,05}$). In boys with cleft in their second half of their first year, we assessed in average a 3,5 mm higher nose than in healthy probands. This difference is of high statistical significance ($t = 5,73 > P_{0,01}$)

Table 1b. Dimensions and indexes of nose. Boys

	Age in months	n	$\bar{X} \pm 3 \cdot s_{\bar{X}}$	s	V	min.	max.	Stan- dard
n-sn	2—6	31	$29,32 \pm 3.0,59$	3,33	11,35	25	38	26,80
	6—12	41	$32,51 \pm 3.0,43$	3,09	9,50	27	39	29,01
al-al	2—6	31	$31,51 \pm 3.0,39$	2,19	6,95	27	35	21,70
	6—12	41	$30,51 \pm 3.0,46$	3,00	9,83	25	37	24,33
Index nasalis	2—6	31	$107,98 \pm 3.2,37$	13,19	12,21	86	137	81,12
	6—12	41	$94,81 \pm 3.1,79$	11,48	12,10	73	123	84,87
Index nasozygomaticus	2—6	31	$29,51 \pm 3.0,47$	2,63	8,91	23	34	22,99
	6—12	41	$28,02 \pm 3.0,44$	2,84	10,13	22	34	23,80
Index cheilonasalis	2—6	31	$85,41 \pm 3.1,17$	6,56	7,68	72	100	74,06
	6—12	41	$81,00 \pm 3.1,25$	8,00	9,87	71	99	73,68
Index nasobasialis	2—6	31	$30,93 \pm 3.0,45$	2,55	8,24	25	38	23,96
	6—12	41	$29,04 \pm 3.0,43$	2,81	9,67	21	36	24,16
Index nasofrontalis	2—6	31	$36,12 \pm 3.0,64$	3,61	9,99	28	44	27,79
	6—12	41	$35,07 \pm 3.0,68$	4,41	12,57	28	45	27,43
Index nasogonialis	2—6	31	$37,90 \pm 3.0,60$	3,38	8,92	31	46	27,93
	6—12	41	$36,75 \pm 3.0,70$	4,50	12,24	29	49	29,59

Tab. 2. Width of right and left part of the nose from the median plane

	Width of right part of the nose					Width of left part of the nose				
	n	$\bar{X} \pm 3.s_{\bar{X}}$	s	V	min-max	n	$\bar{X} \pm 3.s_{\bar{X}}$	s	V	min-max
♀♀ Total cleft dx	9	16,00 ± 3.0,70	2,12	13,25	12—19	9	14,55 ± 3.0,35	1,05	7,21	13—16
♀♀ Total cleft sin	24	16,29 ± 3.0,48	2,33	14,30	13—22	24	14,95 ± 3.0,46	2,21	14,78	11—19
♂♂ Total cleft dx	27	15,55 ± 3.0,43	2,24	14,40	12—21	27	15,62 ± 3.0,43	2,24	14,34	12—20
♂♂ Total cleft sin	45	16,80 ± 3.0,32	2,16	12,85	13—21	45	15,53 ± 3.0,29	1,98	12,74	12—21

and tends to confirm that the height of the nose must be affected by cleft changes on the face.

Our findings do not confirm the statement by Ross et al. [1967] that x-ray pictures of patients with total unilateral cleft disclosed lower noses than the control group.

The nose in patients with total unilateral cleft is in both sexes and in both age classes very distinctly broader than in healthy children (Tab. 1). Without any exception, all the differences are of high statistical significance ($> P_{0,01}$) [t-test: ♀♀: 2—6 months: 9,45; 6—12 months: 9,85; ♂♂: 2—6 months: 6,95; 6—12 months: 11,66].

It should be expected that due to the divergence of maxilla and prae-maxilla the excessive widening of the nose — owing to the reconstructed median plane — will mainly occur on the cleft side. In order to verify this assumption, we calculated the mean values of width of the right and left part of the nose from the reconstructed median plane and tested their differences separately for left-sided and right-sided clefts (Tab. 2). Because it is a problem not influenced by age, the differences in both age classes were evaluated together.

It is evident that there exist no differences in the mentioned sense. This was again confirmed by the t-test (♀♀: cleft dx-1,75; cleft sin-2,03; ♂♂: cleft dx-0,11; cleft sin-2,95). The t-test of the difference in the width of both parts of the nose in total left-sided cleft in boys is of statistical significance ($> P_{0,01}$) and in girls too this difference for the left-sided cleft is at the limit

of confidence, but in both cases the part on the healthy side is — contrary to expectations — wider. It may be therefore concluded that in total one-sided cleft the reconstructed median plane does not cause the nose on the defective side to be wider than on the healthy side. Our finding agrees with the opinion by Cosman and Crikelair (1965) who believe that the nasal part of the cleft side — in comparison to the healthy side — is never wider by

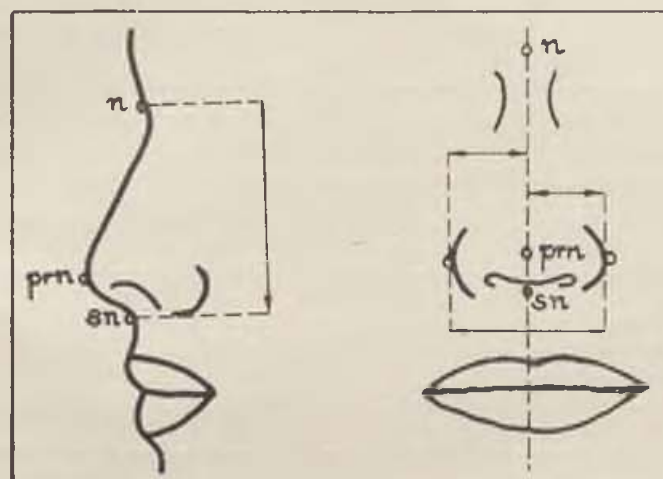


Fig. 1. Height and width of nose. Width of right and left part

more than 2 mm. This findings as well as the opinion by both the cited authors (in respect of soft tissue) disputes the belief by Ortiz-Monasterio et al. (1966) that there is no lack of tissue in unilateral clefts and that there only exists a malposition of structures.

Equal width of both nasal parts from the median plane was very rarely recorded in both sexes irrespective of the cleft being on the left or on the right side.

Because of the quite abnormally enlarged absolute width of the nose in total unilateral clefts, we also attempted to assess the relation of this dimension to some further dimensions of face and cranium, in form of indexes.

Tab. 3. The mutual placement of the subalare points (sbal) — (♀♀ + ♂♂)

	Total right-sided cleft				Total left-sided cleft			
		n	\bar{X} (mm)			n	\bar{X} (mm)	
sbal	more backwards	5	2,25	n = 30	more backwards	46	2,46	n = 51
	sin				sin			
	lower	3	3,00		lower	39	2,07	
	more backwards	24	3,81		more backwards	2	1,50	
	dx				dx			
	lower	26	2,50		lower	5	2,00	

(without differences on placement = 6)

(without differences in placement = 18)

Tab. 4. Deviation of nasal bridge from median plane (in degrees) (♀♀ + ♂♂)

	Total right-sided cleft				Total left-sided cleft			
	n = 34				n = 62			
	$\bar{X} \pm 3.s_{\bar{X}}$	s	V	min-max	$\bar{X} \pm 3.s_{\bar{X}}$	s	V	min-max
sin	$8,90 \pm 3.1,22$	5,48	61,57	3-20	—	—	—	—
dx	—	—	—	—	$10,25 \pm 3.1,06$	6,29	61,36	1-23

without deviation = 2

without deviation = 7

	$\bar{X} \pm 3.s_{\bar{X}}$	s	V	min-max
Mean deviation of both sides (n = 96)	$9,76 \pm 3.0,81$	6,07	62,19	1-23

When comparing their mean values with the standard values on Tab. 1. they are without any exception evidently higher in patients with cleft. The differences again tested by Student's t-test appear to be in all cases of high statistical significance (all $t > P_{0,01}$). In relation to the standard, the greatest differences altogether are in the index nasalis, the lowest in both sexes of the older age class (6-12 months) are index nasozygomaticus and index nasobasialis.

Probably all the authors studying total unilateral clefts agree that the nasal wing of the afflicted side is usually lower placed than on the healthy side. According to the observations by Innis (1962) this condition persists till adolescence wherever the cleft was not operated on. In order to verify this claim objectively, we measured the differences of the vertical placement

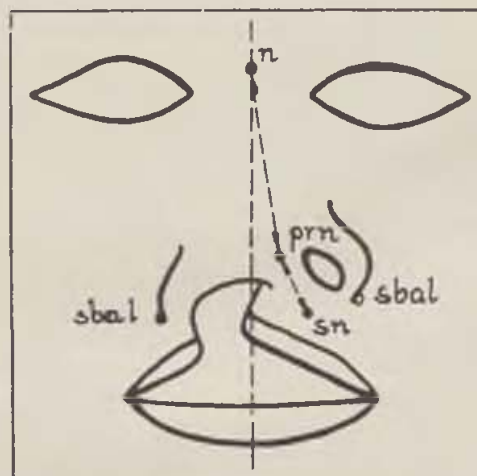


Fig. 2. Deviation of nasal bridge and columella. Placement of point prn (apex nasi)

of both sbal points in frontal line and the anteroposterior placement in the horizontal line.

The analysis disclosed that in approximately one quarter of the patients there are no differences in the placement of the sbal points even prior to the operation and thus there are also no differences in the anteroposterior and vertical placement of the nasal wings. Wherever such differences exist, the nasal wing on the side of the cleft is lower and more sunken into the face. Greater differences in placement against the sbal point on the other side are usually rather anteroposterior than vertical. Sometimes there is only an anteroposterior difference in the placement of the sbal points and both nasal wings are placed in the same height. But we also ascertained the opposite

Tab. 5. Deviation of point prn (apex nasi) from median plane (mm) — (♀♀ + ♂♂)

	Total right-sided cleft				Total left-sided cleft			
	n = 36				n = 68			
	$\bar{x} \pm 3.s_{\bar{x}}$	s	V	min-max	$\bar{x} \pm 3.s_{\bar{x}}$	s	V	min-max
sin	4,85 ± 3.0,47	2,11	43,50	2—10	—	—	—	—
dx	—	—	—	—	4,53 ± 3.0,33	1,80	39,73	2—9

without deviation = 0

without deviation = 1

	$\bar{x} \pm 3.s_{\bar{x}}$	s	V	min-max
Mean deviation of both sides (n = 104)	4,66 ± 3.0,27	1,91	40,98	2—10

condition, when there is a vertical difference in the placement of the nasal wings, without any anteroposterior differences being observed (this is a less frequent observation). In comparison to the cleft side, the sbal point on the healthy side and thus also the nasal wing, is only rarely placed lower and (or) more in the back.

Amongst the variety of data, one does not meet in studies of the mentioned problem with sufficiently clear evidence of the deviation of the nasal bridge and columella nasi from the central facial plane. Attempting to help in the clarification of these conditions we measured by protractor (in degrees) from the nasion point (n) the deviation of the nasal bridge from the median plane and wherever possible event the deviation of the nasal columella axis from the sagittal plane was measured from the middle of the base septum. Furthermore we measured in millimeters, the deviation of the pronasale point (prn-apex nasi) from the central facial line (Tab. 4 and 5).

The deviation of the nasal bridge and point prn from the central facial plane has to be considered simultaneously, because they are formations which due to their identical position must be equally affected by the shifting of the structures when the cleft is formed. The nasal bridge and the apex nasi (point prn) is usually deviated towards the healthy side. It is possible to observe only rarely that in the described type of cleft the nasal bridge is not deviated from the central plane. Apex nasi without deviation is an even more rare case. The differences in the number of deviations of the nasal bridge and point prn from the median plane are given by the fact that the skeletal dorsum nasi may be in the central facial plane, but gristles, special cartilages alares maiores may be to a certain extent deviate to the healthy side. We did not register evermore perceptible asymmetry of the interorbital region. Therefore can the nasion point (n) without exception serve for the determination of the central facial plane.

We did not quite succeed in ascertaining deviations of columella nasi from the sagittal plane. Usually the columella is very short in clefts and often it is practically missing. Measurements cease to be quite objective under such circumstances and this is why we do not state the digits of the results. Yet some conclusions may be drawn from observations of the columella nasi in total unilateral clefts before the operation. Similarly as the apex and dorsum nasi, the columella nasi too is always deviated from the central facial plane towards the healthy side. Because however the base of the columella and the base of the septum nasi are placed more laterally on the healthy side than the apex nasi, the columella nasi aims towards the cleft side. The mechanism of forces induced by the total unilateral cleft, affect to the greatest extent in the immediate vicinity of the cleft channel and shifts the base of septum and columella nasi much more laterally than the tip of the nose.

CONCLUSIONS AND DISCUSSION

Studies of morphologic changes in the splanchnocranium and thus also in the skeletal region of the nose at total unilateral clefts have been carried out by various scientists who made direct observations and mainly evaluated x-ray pictures. But there are only few authors who studied deformations of the soft nasal tissues in larger series of patients in this type of cleft. Attention might be merely drawn to the report by Gelbke (1956) on the shape of nares nasi, whereas all the other papers dealing with this problem and available to us are rather generally descriptive and usually not based on a small number of observed cases (Cosmas and Crikelair 1965, Pool 1966, Potter 1954 and Spira et al. 1970).

Studies of the changes of skeletal structures under the effect of the cleft form undoubtedly an important part of the research, because the skeleton decides to extent not only the external shape of the soft nasal tissues, it secures jointly with the nasal cartilages even sufficient passage of air into the respiratory ways. But the study of deformities of the non-skeletal parts

of the nose is of equal importance, because their deformation causes a narrowing or closing of the nares nasi.

Besides the finding that not even the height of the nose (n-sn) need remain quite normal in total unilateral cleft, we believe it to be most important that the width of both parts of the nose measured from the central plane of the head is not different in average and that the base of the columella nasi and thus also the base of the septum nasi is even more laterally shifted than the apex nasi, because the tissue diverges in direction from the cleft channel. The columella nasi aims thus towards the cleft side and this is something we did not expect.

As far as we know, nobody has yet attempted to ascertain in form of indexes, the relation of the objectively ascertained i.e. measured nasal width in patients with any type of cleft to other dimensions on the face or on the neurocranium. Our finding that in patients with total unilateral cleft (in spite of the rather small difference of the height of the nose) the index nasalis differs in average most of all studied indexes from normal values, may warn of the possibility that the other dimensions compared in indexes (smallest width of forehead, width of cranial base, bizygomatic width, width of oral slot and the bigonial width of mandibula) may perhaps also change in cleft children. The report to follow, should verify this assumption.

We also studied and compared the shape of nares nasi. Due to the small prominence of the nose at this age, the nostrils in healthy children are usually of circular shape. This may be even maintained in a partly deformed shape on the healthy side of the nose. Nares nasi is always deformed on the side of the cleft and is of slit shape and always in crosswise or semi-crosswise position rather latero-laterally protracted. If no soft or skeletal bridge is present, the nostril passes continuously into the cleft channel. The inclined up to crosswise position of the nostril is formed because in total unilateral cleft the nasal wing is practically always very flat. If the bridge is soft, the passage of the nostril may be decreased. It is also an interesting and doubtlessly important fact that the passage nares nasi may be even decreased on the healthy side. We never met with this observation in literature.

SUMMARY

In 105 children with total unilateral cleft (33 girls, 72 boys) the pre-operational condition of the size and shape of the nose was ascertained by means of the authors modification of the anthropometrical and anthroposcopical method, at the Department of Plastic Surgery, Charles University Prague.

In comparison to standard, the cleft was ascertained to cause extreme widening of the nose as well as shifting of the complete columella nasi to the healthy side, more at its base than towards apex nasi. This is the reason why the columella nasi is usually inclined to the cleft side. With rare exceptions the tip of the nose and thus also its bridge is always declined towards the healthy side. Even the height of the nose may deviate somewhat from standard. The nasal wing in the cleft side is usually lower and more sunken into

the face than on the healthy side. Even the indexes relating the nasal width to different dimensions of width and height of the splanchno- and neurocranium, differ usually very much from the average in healthy children of the same age. No differences in the width of the healthy and the cleft part of the nose from the reconstructed central facial line, were ascertained.

On the affected side, nares nasi is always slit-form, obliquely protracted to the tip, sometimes crosswise. But the deformation of the nostril and its decreased permeability was in some cases also ascertained on the healthy side. The nasal wing on the cleft side is always flat and longer from the recess to apex nasi than on the healthy side.

R É S U M É

La forme du nez chez la cheilo-gnatho-palatoschisis unilateralis avant et après l'intervention chirurgicale

Hajniš K., Figalová P.

Chez 105 des enfants souffrant du bec-de-lièvre unilatéral (dont 33 des filles et 72 des garçons) les auteurs ont à la clinique de la chirurgie plastique à Prague soumis à l'épreuve à l'aide d'une propre méthode anthropométrique de même que anthroposcopique modifiée l'état préopératoire de la grandeur et de la forme du nez.

Les auteurs ont trouvé qu'un bec de lièvre à part d'un extrême élargissement du nez a l'égard de la norme repousse la collumelle du nez du côté sain, plus à la base moins vers apex nasi. Voilà pourquoi la collumelle du nez se trouve repoussée vers la partie de la fente. À part des exceptions très rares la pointe du nez et avec elle le dorsum du nez se penche du côté sain. Même la hauteur du nez peut un peu différer de la norme. Les ailes du nez du côté de la fente se trouvent le plus souvent un peu plus bas et plus enfoncés dans la figure que du côté sain. Le plus souvent les indexes indiquant la largeur du nez en relation avec les différentes largeurs et hauteurs de splanchno et neurocrâne différent de ceux des enfants sains de même âge. Mais pourtant les différences de largeur chez la partie saine et celle en fente du nez en relation avec la ligne médiale réétablie n'ont pas été trouvées.

Nares nasi de la partie respective est toujours très étroite, retirée en biais vers la pointe du nez, parfois même oblique. La déformation de nostril et son passage amoindri est parfois trouvé même du côté sain. L'aile du nez du côté de la fente est toujours aplatie, plus long de la base vers l'apex nasi que du côté sain.

Z U S A M M E N F A S S U N G

Die Nasenform bei Cheilo-gnatho-palatoschisis unilateralis vor dem Operationseingriff

Hajniš K., Figalová P.

Bei 105 Kindern mit allgemeiner einseitiger Spalte (33 Mädchen und 72 Jungen) wurde an der Klinik der plastischen Chirurgie der Karlsuniversität in Prag mittels eigener modifizierter anthropometrischer und anthroposkopischer Methode der Voroperationsstand der Nasengrösse und -form ermittelt.

Es wurde ermittelt, dass die Spalte ausser einer in Bezug auf die Norm extremen Nasenerweiterung zugleich Verschiebung der gesamten columella Nasi nach rechts bewirkt, und zwar mehr bei ihrer Base als in der Richtung zu apex nasi. Deshalb pflegt die columella nasi geneigt zu sein. Zu der gesunden Seite ist ausser seltener Fälle stets auch die Nasenspitze geneigt und damit auch ihr Rücken. Leicht von der

Norm kann auch die Nasenhöhe abweichen. Der Nasenflügel an der Spaltenseite liegt üblicherweise niedriger und ist mehr in die Backe eingefallen, als an der gesunden Seite. In der Regel unterscheiden sich von dem Durchschnittswert gleich alter gesunder Kinder sehr wesentlich auch Indexe, bei denen die Nasenbreite zu verschiedenen Breiten- und Höhenmassen des Splanchno- und Neurocraniums in Korrelation gestellt werden. Es wurden keine Breitenunterschiede des gesunden und gespaltenen Nasenteiles von der rekonstruierten mittleren Gesichtslinie ermittelt.

Nares nasi der befallenen Seite sind stets schlitzartig, zur Spitze quer ausgedehnt, bisweilen schräg. Deformation des Nasenloches und seine verminderte Durchgangbarkeit ist jedoch in einigen Fällen gleichfalls an der gesunden Seite festgestellt worden. Der Nasenflügel der gespaltenen Seite ist in allen Fällen flach und vom Abstand zu apex nasi länger als an der gesunden Seite.

RESUMEN

Forma de la nariz en cheilo-gnatho-palatoschisis unilateralis antes de la intervención de operación

Hajniš K., Figalová P.

En 105 niños con la grieta unilateral total (33 muchachas, 72 muchachos) fue en la Clínica de Anaplastia de la Universidad de Carlos en Praga por medio del método propio antropométrico y antroposcópico modificado comprobado el estado de las dimensiones y el de la forma de la nariz antes de la operación.

Fue comprobado que la grieta causa además de la amplificación extrema de la nariz en consideración de la norma también el desplazamiento de toda la columela de la nariz a la parte sana, es decir más cerca de su base que hacia la punta de la nariz. Por esa razón la columela de la nariz suele ser bajada a la parte de la grieta. A la parte sana es siempre con excepción de los casos raros bajada también la punta de la nariz y de esta manera también su dorso. Un poco de la norma puede desviarse también la altura de la nariz. El ala de la nariz en la parte de la grieta suele ser de costumbre más abaja y más hundida en la mejilla que en la parte sana. Por regla general muy considerablemente del promedio de los niños sanos de la misma edad se diferencian también los índices en los que la anchura de la nariz es aplicada a varias dimensiones de anchura y las de altura de splanchno- y neurocráneo. No fueron comprobadas las diferencias de anchura de la parte sana y las de la parte de grieta de la nariz desde la línea central reconstruida de la cara.

El ojal de la nariz de la parte afectada tiene siempre una forma de hendidura, está extendido oblicuamente a la punta, a veces está transversal. Pero la deformación de las ventanas de la nariz y su paso reducido fue en algunos casos comprobada también en la parte sana. El ala de la nariz de la parte de grieta está siempre aplastada y desde la subida hacia la punta de la nariz más larga que él en la parte sana.

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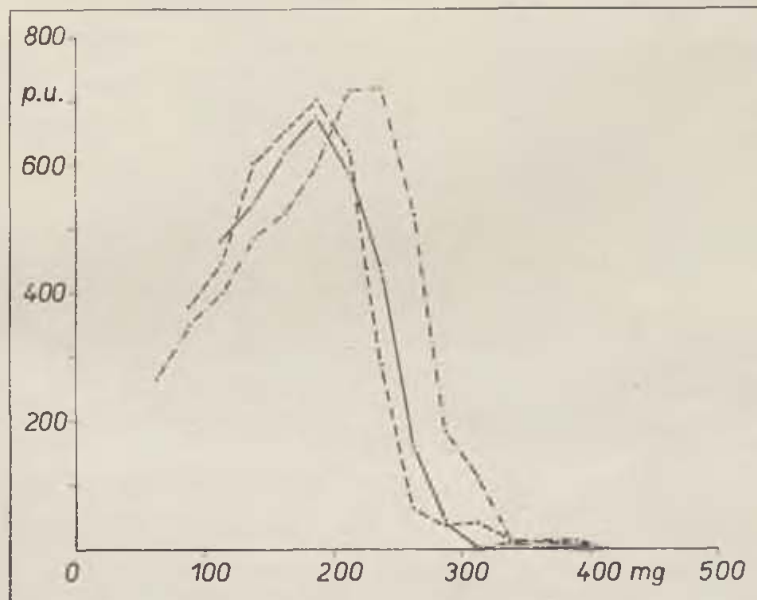
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THE COURSE OF PALATE CLOSURE IN EMBRYOS OF DIFFERENT MOUSE STRAINS

M. DOSTÁL, R. JELÍNEK

Fraser et al. [1954] reported that inbred mouse strains C57BL and A/J differ in sensitivity to induction of cleft palate by cortisone. On basis of reports by Walker and Fraser [1956, 1957] it is explained by Fraser [1965] that the embryos of both strains differ in the relation of the moment of horizontalisation of the palatal processes to the threshold width of the head (into which the processes must be horizontalised in order to touch and fuse in the midline). Cortisone postpones the moment of horizontalisation and shifts it behind this critical threshold. Thus the same dose of cortisone is more effective in strain A/J in which already in the population of normal embryos horizontalisation occurs later.

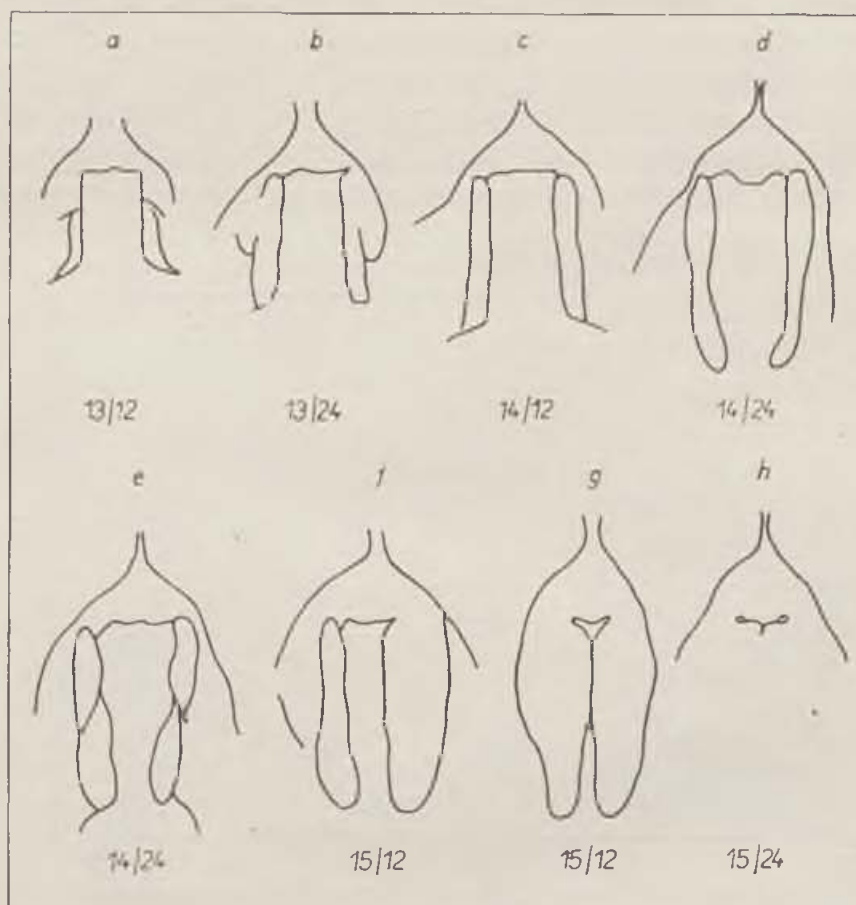


Scheme 1. Schematic view on the ceiling of the primitive oral cavity (after dissecting the tongue), depicting the development of palatal processes, a—e: processes vertically along the sides of the tongue, f: the right vertical process, the left horizontal process, g: both processes are in horizontal plane and touching in the midline, h: completely closed palate

The theory is based on the finding of a differing moment of horizontalisation in embryos of both strains (Walker and Fraser 1956). This reason caused us to study the course of development of the secondary palate in different mouse strains.

MATERIAL AND METHODS

Female inbred mice A/J, C57BL/6 and randombred mice H-Velaz were mated over night. The day of presence of the vaginal plug was considered as the first day of pregnancy. Embryos A/J (266 embryos) and C57BL/6 (266 embryos) were collected from the 13th till 16th day of pregnancy at 8 hour intervals, embryos H-Velaz (221 embryos) at 12 hour intervals. The development of the secondary palate was followed quantitatively. After fixation and preparation of the embryos we evaluated planimetrically projections of the area, frontally bordered by the posterior edge of premaxilla, laterally by the medial edge of both palatine shelves and dorsally by the connecting line of the inflexion points of the posterior edges of both palatine shelves.

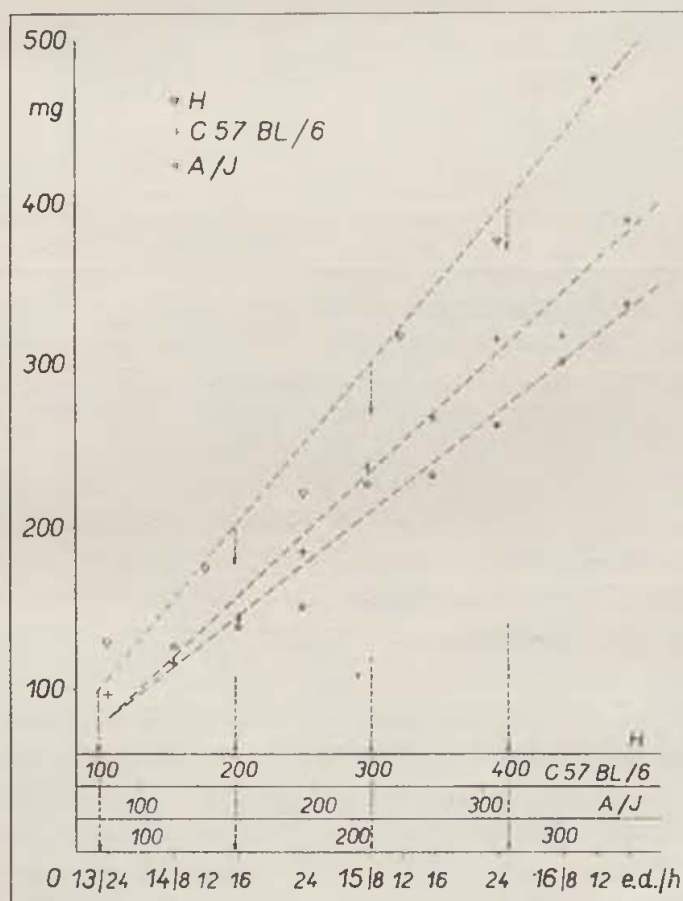


Graph 1. Closure of palate in embryos of A/J mice (full line) C57BL/6 (dashed line) and H-Velaz (dot and dash line) expressed by change in size of gap between palatal processes in relation to weight of embryos. Abscissa: weight of embryos in mg, ordinata: planimetric units

OBSERVATIONS

During palate development the size of the area between palatal processes increases at first with the growth of head. The palatal processes are at this stage, orientated vertically along the sides of the tongue and their growth is of no significant effect on size of the area. At the moment of horizontalisation of the palatal processes, the size of the area suddenly diminishes and disappears entirely in the gradual fusion of both palatal processes in the midline (Scheme 1).

In order to remove variability of developmental stages of the embryos within identical as well as different litters — which can be ascertained during any moment of pregnancy — we used as parameter of embryonic development directly the biological age of the embryos expressed by their weight. A curve was plotted (Graph 1) from the mean values of projection size in embryos divided into weight classes with an interval of 25 mg. The three different parts of the curve (rising, descending and tail) correspond to the above described process of palatal closure. The peak of the curve may be considered as the mean moment of starting horizontalisation of palatal processes in the population of embryos.



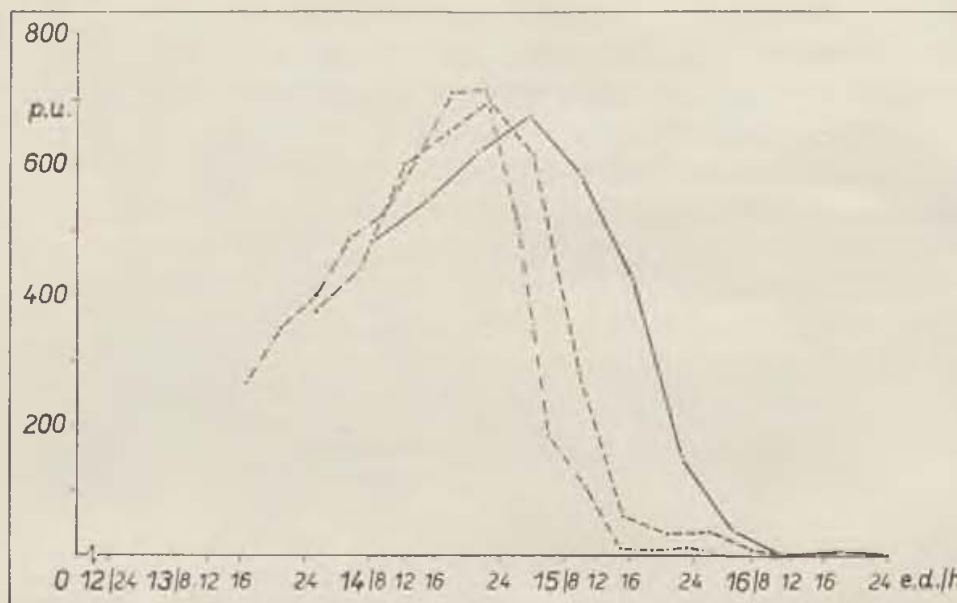
Graph 2. Regression line of weight of mouse embryos A/J, C57BL/6 and H-Velaz between day 13 and 16 of embryonic development and their projection on time axis.

Abcisa: day/hour of embryonic development, ordinata: weight in mg

Comparing the curves it may be seen that horizontalisation occurs in embryos A/J and C57BL/6 in the same weight class (175—200 mg), in embryos H-Velaz in class 225—250 mg.

DISCUSSION

The finding that horizontalisation of the palatal processes in embryos A/J and C57BL/6 occurs in the same weight class seems to contradict the findings by Walker and Fraser (1956). These authors expressed the biological age of the embryos by the developmental horizons and ascertained that in embryos



Graph 3. Closure of palate in embryos of mice A/J [full line] C57BL/6 [dashed line] and H-Velaz [dot and dash line] expressed by change in size of projection of the gap between palatal processes in relation to so called derived chronologic age. Abscisa: day/hour of embryonic development, ordinata: planimetric units.

C57BL horizontalisation occurs at lower total values of the horizons. This is explained by the fact that the curves of weight increase do not take the same course in the different mouse strains so that embryos C57BL/6 reach a weight class in which the mean moment of horizontalisation occurs earlier than in embryos A/J.

In comparison of the developmental process in embryos of both strains it is therefore not possible to use their weight as the common indicator of the biological age of the embryos. It also will not do, to use the horizons. Firstly because these external signs are liable to vary, secondly their total is based on the scoring of several signs so that we should have to verify whether mutual relations of signs used for scoring in the embryos of both strains do not differ.

Thus, if we are to compare the course and relation of two morphogenetic processes in embryos of different strains, we must ascertain the trend of both

of them in each strain. In the case of the relation of the critical width of head to the moment of horizontalisation of palatal processes we therefore lack verification whether the threshold width of the head equals in the embryos of both strains (the theory by Fraser is only assuming this).

When studying the course of one developmental process in embryos of different strains we have only the possibility to draw conclusions by comparing its time course. In order to remove the variability of the biologic age in embryos when measuring the stage of development by length of pregnancy it is of advantage to use the derived chronologic age instead of the actual chronologic age. The weight curves for the embryos of both strains in the required time interval are substituted by a regression line (even logarithmic transformation may be used) which we project back to the time axis (Graph 2). When plotting the developmental curves we derive the chronologic age of the embryos from their weight. If we compare in this way the moment of horizontalisation in embryos of both strains we find that horizontalisation starts in the embryos of strain C57BL/6 (and also in embryos H-Velaz) in stage 14/24 (i.e. on day 14 at midnight) and in embryos A/J 4 hours later.

SUMMARY

In studies of the course of development of the secondary palate we were seeking a suitable method for removing the variability in advancement of development in embryos in relation to their chronological age given by the duration of pregnancy and the possibility to compare the course of embryonic processes in embryos of different mouse strains. By using the so called derived chronological age and quantitative method of evaluating the development of the secondary palate, we ascertained that horizontalisation of the palatal processes occurs in embryos of inbred mice A/J in average 4 hours later than in embryos of inbred mice C57BL/6 and of randombred mice H-Velaz.

RÉSUMÉ

Différences au cours de la fermeture du palais chez les embryons des différentes souches des souris

Dostál M., Jelínek R.

En suivant le cours du développement du palais secondaire, nous avons cherché un mode convenable d'éliminer la variabilité se présentant dans un stade avancé du développement des embryons dans le temps donné de la gestation et la possibilité d'une comparaison des processus embryonnaires sur les embryons des différentes souches des souris. En employant un soit-disant âge chronologique et un mode quantitatif pour apprécier le développement du palais secondaire, nous avons constaté que la horizontalisation des disques palatins survient chez les embryons des souris inbrédées A/J en moyenne 4 heures plus tard que chez les embryons des souris inbrédées C57BL/6 et chez les souris randombrédées H-Velaz.

ZUSAMMENFASSUNG

Unterschiede im Verlauf der Gaumenschliessung bei den Embryos verschiedener Mäusestämme

Dostál M., Jelínek R.

Bei dem Studium des Entwicklungsverlaufes des sekundären Gaumens suchten wir nach einer geeigneten Methode zur Behebung der Variabilität im Vorgeschrrittenheitsgrad der Entwicklung der Embryos im gegebenen Augenblick der Trächtigkeitsdauer; zugleich untersuchten wir die Möglichkeiten eines Vergleiches zwischen dem Verlauf der Keimprozesse bei den Embryos verschiedener Mäusestämme. Mit Hilfe des sogenannten abgeleiteten chronologischen Alters und der quantitativen Auswertungsmethode für die Entwicklung des sekundären Gaumens haben wir festgestellt, dass die Horizontalisierung der Gaumenplättchen bei den Embryos der Inzuchtmäuse vom Stamm A/J durchschnittlich um vier Stunden später eintritt, als bei den Embryos der Inzuchtmäuse von Stamm C57BL/6 und der panmiktisch gezüchteten Mäuse vom Stamm H-Velaz.

RESUMEN

Diferencias en el transcurso del cierre del paladar en los embriones de varias cepas de ratones

Dostál M., Jelínek R.

Al observar el desarrollo del paladar secundario buscamos un método conveniente para eliminar la variabilidad en el estado del desarrollo de los embriones en un momento dado de gestación y las posibilidades de comparar los procesos embrionarios en los embriones de varias cepas de ratones. Empleando la llamada edad cronológica deducida y el método cuantitativo de evaluar el desarrollo del paladar secundario constatamos que la horizontalización de las placas palatinas ocurre en los embriones de los ratones tipo inbred A/J en promedio de 4 horas más tarde que en los embriones de ratones tipo inbred C57BL/6 y en ratones tipo randombred H-Velaz.

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TISSUE REACTION AFTER IMPLANTATION OF VARIOUS POLYMERS TO THYMECTOMIZED AND NON-THYMECTOMIZED RATS

K. VELIKOV, G. PAPUROV, D. MARKOV

The present-day production of plastic materials has made them a common article of human usage, and they have also gained a similar place in medicine. Plastic materials are used in the surgical treatment of maxillo-facial deformations, in oto-rhinolaryngology, neurosurgery, etc. The result of an alloplasty greatly depends on proper selection of the material with regard to its biological tolerance as well as lowering of the recipient's immunological reaction.

There is still no uniform opinion about the employment of plastic materials in alloplasty. Some authors refuse to implant non-biological material into the organism [8], others anticipate cancerogenic properties [7], and yet others point out that their blastomogenic properties are negligible [9]. When the necessary technological rules and proper selection are observed, the results achieved in their surgical employment are very good, indeed [1, 2, 3, 4, 6].

Disregarding the established fact about the participation of the thymus in producing immunity [5], its influence on alloplastic materials has been found inadequately elucidated in the available literature.

The authors therefore set themselves the task of studying the influence of the thymus in the surgical employment of plastic substances, most frequently used in medicine, by experiment.

MATERIAL AND METHOD

The experiments were carried out on 80 male Wistar rats, aged about three months. The animals were divided into four groups of 20 each. In half their numbers, thymectomy was carried out (by the method elaborated at the Department of Pathophysiology of the Higher Medical Institute in Varna, Bulgaria).

The material used in the experiment was modelled into little sticks of about 5 mm length. Thus silicone (Silastic) was implanted to the first,

Tephlon to the second, polyethylene to the third, and Duracryl to the fourth group.

On the 20th, 40th and 60th day after implantation, six rats (3 thymectomized and 3 non-thymectomized) were sacrificed in each group.

Skin and soft tissues were excised for histological investigation, and an effort was made to preserve the entire „capsule“ which had formed around the implanted material. After fixation in 10% neutral formalin, the specimens were embedded in paraffin. The histological sections were stained with haematoxylin-eosin, with azan according to Kruchaya, and according to van Gison for collagen.

RESULTS AND DISCUSSION

Microscopical examination has shown that the tissue reaction was alike, no matter what kind of plastic material had been used. In non-thymectomized rats, killed 20 days after implantation, a chronic inflammatory process, characterized by the presence of neutrophilic leucocytes, lymphoid elements, histiocytes, fibroblasts, fibrocytes, and eosinophilic leucocytes, had developed (Fig. 1). In the neighbourhood of the implant, a large number of foreign-body giant cells was found (Fig. 2).

In the centre of the inflammatory infiltrate, proliferation of endothelial cells and formation of young capillaries were observed (Fig. 3). There, too, collagenous strands and formation of a pseudocapsule could be seen (Fig. 4).

The most severe inflammatory process developed in the rats to which polyethylene had been implanted; at various sites abscesses had been formed.

In the rats sacrificed 40 days after implantation, the inflammatory process, with a predominance of lymphoid and plasma cells, persisted. A mass of eosinophilic leucocytes and collagenous fibres had formed a complete capsule around the implant. On the other hand, the number of foreign-body giant cells had decreased.

On the 60th day after implantation, a proper capsule had developed around the implant in all rats (Fig. 5). The amount of inflammatory cells was greatly reduced; there were only occasional lymphoid elements and few plasma cells, fibroblasts, and fibrocytes. Only in experimental animals which had received silicone or polyethylene, were the inflammatory infiltrates still quite well developed.

The tissue reaction in thymectomized rats which had been given the same plastic substances and were sacrificed after the same time intervals was similar to that of the non-thymectomized animals, with the exception of eosinophilic leucocytes, plasma cells, and small lymphocytes which, in the former, were only found occasionally or not at all (Fig. 6).

CONCLUSIONS

1. All experimental animals have tolerated the alloplasty well. Tissue reaction differs by the smaller number of plasma and eosinophilic cells in thymectomized as compared to nonthymectomized rats.

2. Inflammatory reaction is more marked in rats to which polyethylene and silicone has been implanted, which means that biological tolerance for these substances is worse than that for Tephlon or Duracryl.

SUMMARY

An experimental study of the influence of the thymus in alloplasty, using high-molecular polymers, was carried out by implanting little sticks of silicone, Tephlon, polyethylene, and Duracryl to 80 rats. The experimental series of animals consisted of thymectomized and non-thymectomized rats. They were sacrificed 20 days after implantation and examined histologically. All animals tolerated the implanted polymers well, but tolerance of the thymectomized rats was better.

RÉSUMÉ

Reaction des tissus par l'alloplastiques des differentes polymeres chez des rats thymectomes et non thymectomes

Velikov K., Papurov G., Markov D.

Les auteurs ont étudié expérimentalement l'influence du thymus pour les alloplastiques des polymères hautement moléculaires en implantant à 80 rats (silicone, teflon, polyéthylène, duracril). On a divisé les animaux témoins en thymectomisés et non thymectomisés. Les animaux sont tués, tous les vingt jours et sont étudiés histomorphologiquement. Tous les animaux ont montré une bonne tolérance, mais chez les animaux thymectomisés la tolérance est meilleure.

ZUSAMMENFASSUNG

Gewebereaktionen bei der Alloplastik verschiedener Polymere bei thymektomierten und nicht thymektomierten Ratten

Velikov K., Papurov G., Markov D.

Die Autoren erforschten experimentell die Wirkung des Thymus bei Alloplastiken von hochmolekularen Polymeren, indem sie in 80 Ratten Stifte aus Silikon, Teflon, Polyäthylen, Durakril implantierten. Die Versuchstiere wurden in thymektomierte und nicht thymektomierte eingeteilt.

Die Tiere wurden alle 20 Tage getötet und histomorphologisch untersucht. Alle Tiere zeigten eine gute Verträglichkeit den implantierten Polymeren gegenüber, aber bei den thymektomierten Tieren war die Verträglichkeit besser.

RESUMEN

Reacción de los tejidos en el empleo de sustancias artificiales en la aloplástica en ratas timectomizadas y no timectomizadas

Velikov K., Papurov G., Markov D.

Fue hecho un estudio experimental sobre la influencia del timo en la aloplástica de polimeros de alto peso molecular. Pedazos de silicon, teflon, polietileno y duracril fueron implantados a 80 ratas. Los animales bajo experimento fueron divididos en: timectomizados y en no timectomizados. Los animales fueron matados a los 20 días



después y examinada su histomorfología. Se mostró que todas las ratas habían soportado bien los polimeros implantados, si bien las ratas después de la timectomía los habían soportado mejor.

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BIOLOGICAL MATERIAL FOR BRIDGING DURA MATER DEFECTS

Experimental and Clinical Study

N. S. MESKHIA, N. D. LEYBZON, A. S. IMAMALIEV, A. M. BERMAN

The surgeons who operate on patients with cranio-cerebral injuries or tumours of the cerebrum and its meninges, are well acquainted with the difficulties which often arise in the postoperative period due to insufficiently hermetic closure of the subdural space, CSF fistulae, meningo-cerebral scar formations, meningitis, meningo-encephalitis, cerebral abscesses — this is an incomplete enumeration of the serious complications which may arise when infection reaches the cranial cavity [Shamov, 1933; Burdenko, 1946; Arendt, 1946; Arutyunov, 1948; Leybzon, 1962, and others]. To prevent such complications, impermeability of the dura mater must be restored. But this is not always practicable. Mobilization of tissue from the vicinity of the defect as well as splitting the dural sheet according to Brünig et Burdenko require great effort, and cannot be executed in every case. The material hitherto employed for transplantation does not meet all requirements for the coverage of meningeal defects. Some of it (synthetic material, fibrin sheets, etc.) does not effect hermetic closure of the subdural space, and the procurement of autoplatic material is frequently accompanied by an additional operation, which is not only undesirable but not even irrelevant to the patient. In addition, even this material does not prevent the development of adhesions [Smirnov, 1913; Bune, 1945; Crawford, 1957, and others]. All this which has been said above, forms the foundation for the present investigation. When making the selection of material for transplantation, preference was given to dura mater taken from cadavers, because this was the tissue which proved identical with the respective tissue of the patient with regard to both its physico-mechanical properties and its histo-biological structure. Homologous dura mater was conserved by freezing. In this respect, the following came within range of the problem to be solved by the investigators: a) determination of the optimal mode and time of storage of dura mater grafts at low temperatures, b) investigation of the influence of low temperatures on the antigenic activity of dura mater, c) study of the immunological reaction of the recipient organism to implantation of

conserved dura mater (CDM), d) experimental morphological investigation of CDM used as material for transplantation, e) producing evidence of successful clinical employment of CDM. — In accordance with these tasks, the structure of homologous-dura-mater grafts was studied after conservation with a protective medium (15% glycerin solution) and stored at temperatures of -30° and -70°C .

Histological examination showed that the morphological structure of dura mater remained essentially unchanged during the first five months of storage. Only swelling collagenous fibres and occasionally their homogenization were observed. The cellular elements remain preserved, but the nuclei had become pyknotic. The stainability of tissue remained unaltered. Picrofuchsin stained the collagenous fibres of CDM red. Starting with the fifth month of storage, picrofuchsin stained small areas in these fibres, which grew larger with the time of storage, gradually occupying considerable parts of the fibres. From the sixth month of storage, structural changes based on swelling and homogenization of collagenous fibres appeared in the form of circular cavities between the fibre bundles as well as between single fibres, which lent the altered section of the graft a rifle-pit appearance. Their number continued to increase, and in the eighth month of storage the cavities occupied a considerable area of the graft. In spite of this, the outer appearance of the dura mater did not undergo noticeable changes even after twelve months of conservation. It did not lose its characteristic lustre, elasticity and firmness, and its colour remained as pink as prior to conservation. Also the vascular pattern of the dura mater remained well preserved.

The structural changes in CDM, stored at -30° and -70°C , bore identical characteristics. The comparative analysis of structural changes in the grafts, stored at these temperatures, produced no evidence of any advantage of one over the other mode of storage.

Parallel with the investigation of these changes, the antigenic properties of fresh and conserved dura mater grafts were studied. For this purpose, a series of experiments were carried out with fresh (FDM) and conserved (CDM) dura mater. In the first series, 20 guinea-pigs were used in which an increased sensitivity by quick, anaphylactic reaction was reproduced. Sensitization of the experimental animals with saline extracts of FDM and CDM given in doses equal to twice the sensitizing dose showed that both FDM and CDM stored at low temperatures possess only slight antigenic properties. Apart from this, the anaphylactic reactions to introduction of FDM or CDM proteins were of the same kind and of equal intensity in all experimental animals. These findings corresponded to the clinical picture of the taking of second-set homologous-skin grafts after sensitization of 30 rabbits with homologous FDM and CDM. It was ascertained that preliminary implantation of CDM to experimental animals shortened the time of taking of second-set homologous-skin grafts to one-and-a-half days, as compared to the three days required in primary implantation of FDM. These findings, together with the weak antigenic properties of dura mater, seemed to give evidence of a certain favourable influence of low temperatures on the immunological properties of this tissue. In order to verify

this fact, additional investigations were required. The interest in the change of antigenic properties (decrease or loss of antigenic activity) of dura mater during conservation by freezing increased in connection with the fact that reduction in antigenic activity due to the influence of low temperatures on the immunological properties of tissues (and in this sense also of autologous grafts), as observed during conservation, proved contradictory (Mikhaylov et al., 1967).

In order to reveal the common and special antigens of FDM and CDM, the anaphylactic reaction during desensitization was utilized according to Zilber. The experiments, carried out on 20 guinea-pigs, comprised two series: 1. sensitization with a saline extract of FDM followed by desensitization with a CDM extract and introduction of FDM antigen; 2. sensitization with a CDM extract followed desensitization with a FDM extract and introduction of the CDM antigen which has been used for sensitization.

In none of these experiments did anaphylactic shock develop when the dose of protein, against which the guinea-pig had been sensitized, was injected into a vein. This furnished evidence of the fact that the experimental animals had ceased to be sensitized after introduction of the desensitizing dose of the CDM (series 1) or FDM (series 2) extract. In the negative case, incomplete desensitization of experimental animals would have been observed. In other words, if the dura mater had partly lost its antigens, or their activity had decreased under the influence of low temperatures, the CDM extract would have produced incomplete desensitization of the animal, sensitized with FDM protein, resulting in an anaphylactic reaction effecting neutralization of the FDM antigens by the CDM extract. The results of experimental series 2 furnished evidence of the fact that the dura mater had not even acquired new antigenic properties during conservation by low temperatures. Otherwise, anaphylactic shock would have developed, because desensitization against the new CDM antigens could not have been effected by the preceding introduction of FDM extract.

The results of the above experiments are, therefore, evidence of the fact that the antigenic properties of dura mater are preserved by low-temperature conservation and that they are identical with those of fresh dura mater. In addition, they also verify the results of the investigation of immunomorphological changes in the lymphatic nodes regional to the sites of implantation of homologous FDM or CDM grafts, as reported by Meskhia et Pertseva (1970) and Meskhia et al. (1971).

The low antigenic properties of CDM made uncomplicated integration of it in the tissues of the recipient possible, under experimental conditions.

The results of the study concerned with the suitability of conserved homologous-tissue grafts for plastic-surgery purposes and carried out on 26 dogs, gave evidence of the slow and gradual transformation of the implanted material, which proceeded simultaneously with its replacement by the connective tissue of the recipient. This process was completed within three-and-a-half to six months. Clinical signs of tissue incompatibility were absent as well as detachment of the transplants. The operation wound healed by first intention in all cases. Morphological examination showed that submeningeal space could be

traced almost over the whole area, where the arachnoid had remained intact. In injury to the brain and pia mater, adhesions developed of a character which was identical, if fresh autologous or homologous dura mater had been used for coverage.

The results of immunological and histological examinations permitted to try homologous-dura-mater grafts conserved at low temperatures on patients. Since January, 1971, more than 50 operations on the brain, including coverage of meningeal defects with this material, were carried out at the Burdenko's Neurosurgical Institute. The operation wound healed by first intention in all cases, only one patient developed a CSF fistula. He was suffering from an inoperable intracerebral tumour, and during operation the brain prolapsed, so that the resulting dural gap had to be bridged with CDM which was sutured in place with a few stitches and the cranial-bone flap had to be removed. In spite of the presence of a fistula, the lumbar CSF and that oozing out of the fistula remained sterile for a considerable period. Nor did the specimen taken from the dura mater transplant at the time of its implantation give any bacterial growth. The increased number of lymphocytes in the CSF shortly after operation became normal gradually, and the fistula, after opening of a subcutaneous abscess which had developed due to secondary infection of the operation wound, healed by second intention within a short time. It ought to be said that the patient felt as well as could be expected after such an operation and from the character of the basic disorder. His temperatures were subfebrile for the whole time, but he showed no symptoms of meningeal irritation.

The results of the experimental and clinical investigations have proved very satisfactory and thus permit to draw the following conclusions.

CONCLUSIONS

1. The structure of dura mater, conserved at low temperatures (-30° and -70°C), practically does not change in the first five months. With prolongation of the time of storage, there is a gradual increase in structural changes, but with regard to appearance, dura mater preserves its thickness, elasticity and firmness and thus remains suitable for transplantation even after one year of storage.

2. When comparing the structure of dura mater conserved at -30°C with that conserved at -70°C , no difference in its changes could be detected. There is, therefore, no advantage in conserving the tissue at -70° , and with regard to the available means, it is advisable to store it at -30°C .

3. Dura mater possesses very slight antigenic properties. The level of sensitization of the recipient organism is so insignificant and the changes produced by it so slight that they may be neglected in practice.

4. Conservation by freezing does not affect the antigenic properties of dura mater. When it has stayed long enough in a condition of lowered vital functions, the activity of its transplantation antigens is only slightly retarded.

5. Homologous grafts of CDM do not produce any noticeable incompatibility reaction in experiments, nor do they become detached from the recipient

bed. They undergo slow transformation, and simultaneously with the process of absorption, become replaced by the connective tissue of the recipient.

6. Under clinical conditions, replacement of the CDM implant by recipient tissue takes place without complications; general allergic as well as local incompatibility reactions are absent, and the healing of operation wounds proceeds uneventfully.

SUMMARY

Conservation of dura mater at -30° and -70°C preserves its structure practically unchanged up to five months of storage. With prolongation of the time of storage, morphological changes increase, but with regard to its physical properties (colour, thickness, elasticity, firmness, etc.) conserved dura mater remains a suitable material for transplantations even after one year. The changes in structure due to storage are identical at either temperature; therefore, with regard to availability of equipment, it is expedient to store it at -30°C . Dura mater possesses only slight antigenic properties, and the activity of its transplantation antigens does not change during conservation at low temperatures. Transplantation of homologous conserved dura mater produces no productive reactions of tissue incompatibility both in experiments and under clinical conditions. The operation wound healed by first intention after transplantation of homologous conserved dura mater in 26 experiments as well as in more than 50 patients, where it had been used as material for bridging meningeal defects.

RÉSUMÉ

Matériaux pour la réparation des défauts de la dure-mère

Meskiya M. Ch., Deybzon N. D., Imamaliyev A. S., Berman A. M.,
Khudaïdatov I. S.

La dure-mère étant conservée en température de -30° à -70° maintient sa structure inaltérée pratiquement pendant cinq mois. Il est vrai que la prolongation de l'exposition y entraîne une augmentation des modifications morphologiques, mais ses propriétés physiques (couleur, épaisseur, élasticité, solidité, etc.) la rendent toujours un matériel convenable à la transplantation même après une conservation d'une année. La structure de la dure-mère subit des modifications qui restent les mêmes pendant les deux températures. Ainsi, il est plus utile de la conserver en -30° . La dure-mère n'a pas de propriétés particulières d'antigène. Si l'on la conserve par la réfrigération, la fonction de ses antigènes de transplantation ne varie pas. Une dure-mère homologue ne provoque pas une réaction immunologique des tissus pendant la transplantation soit expérimentale, soit clinique. Après une homotransplantation de la dure-mère, les traumatismes opératoires ont guéri par première intention en cas de 26 applications expérimentales chez plus de 50 malades, quand celle-ci avait été utilisée pour la réparation des défauts des dure-mères.

ZUSAMMENFASSUNG

Materiale zur Deckung von Defekten in der harten Hirnhaut

Meschiya M. S., Dejbzon N. D., Imamaliyev A. S.,
Berman A. M., Chudajdatov I. S.

Die bei -30° und -70°C konservierte harte Hirnhaut bewahrt ihre Struktur praktisch bis 5 Monate lang unverändert. Durch Verlängerung der Expositionszeit

wachsen zwar in ihr morphologische Veränderungen an, ihre physikalischen Eigenschaften (Farbe, Dicke, Elastizität, Festigkeit, usw.) machen sie jedoch stets zum geeigneten Transplantationsmaterial auch nach einjähriger Konservierung. Die Struktur der harten Hirnhaut verändert sich in gleichem Grad bei beiden Temperaturen und aus diesem Grunde ist es zweckmässiger dieselbe bei -30°C zu konservieren. Die harte Hirnhaut besitzt keine besonderen antigenen Eigenschaften und bei Konservierung durch Kälte bleibt die Tätigkeit ihrer Transplantationsantigene unverändert. Die homologe harte Hirnhaut bewirkt keine immunologische Gewebereaktion bei Transplantation, und zwar weder im Experiment noch in der Klinik. Nach der Homotransplantation der harten Hirnhaut heilten die Operationswunden primär bei 26 Versuchsapplikationen bei mehr als 50 Kranken, in welchen sie zur Deckung von Defekten in den Hirnhäuten gebraucht wurde.

RESUMEN

Materiales para reparar los defectos en la duramadre

Mesjía M. S., Deybzon N. D., Imamaliyev A. S., Berman A. M.,
Judaidatov I. S.

La duramadre conservada a los -30° y -70° mantiene su estructura prácticamente sin alteraciones durante cinco meses. Al ser prolongada la exposición en verdad aparecen las alteraciones morfológicas, pero sus propiedades físicas (el color, el espesor, la elasticidad, la solidez etc.) la hacen conveniente como material para trasplantes aún después de un año de conservación. Estas dos temperaturas producen en la estructura de la duramadre alteraciones iguales y por eso es más práctico conservarla en la temperatura de -30° . La duramadre no tiene propiedades antígenas especiales y durante una conservación por enfriamiento la función de sus antígenos de trasplante no se cambia. Cuando la duramadre es homóloga, no causa reacciones inmunológicas en los tejidos durante la transplatación y esto tanto en forma experimental como en la clínica. Las heridas de operaciones cicatrizaron primariamente después de un homotrasplante de la duramadre en 26 aplicaciones experimentales y en más de 50 enfermos, donde la duramadre fue usada para reparar los defectos en las membranas del cerebro.

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SURGICAL TREATMENT OF VERTICALLY OPEN BITE

PETROVIČ

Open bite is an anomalous condition in which a space exists between upper and lower incisor teeth when the mouth is closed.

Vertically open bite in frontal plane is the most frequent. The anomalies vary, in the lighter cases they extend from canine tooth to canine tooth, in more serious cases not even the premolar teeth meet and there are cases when only the last molar teeth touch. The vertical space between the cutting edges of incisors of the upper and lower jaw may reach one and a half centimeters and even more.

In our literature Adam distinguishes the functional vertical open bite and the real open bite formed due to rickets. Whereas a favourable prognosis — unless it is treated too late — may be expressed about the functional open bite formed as a bad habit, the rachitic open bite resists orthodontic treatment and can only be repaired by surgery. The open bite may also form after jaw-bone accidents if the reposition was carried out badly, by contraction of scars on chin and neck, after burns and after bad orthodontic treatment chiefly in transversal anomalies. Literature reports that the anomaly leads to heavy functional disorders due to imperfect masticating function of the teeth and unnatural swallowing. As far as the gastrointestinal tract was concerned we observed no functional disorders in these patients. Even if the biting area was reduced by as much as 95 % the health condition of the patients was very good, the soldiers went through the basic military service without their classification being changed. It must be born in mind of course that their age was between 18 and 22 years.

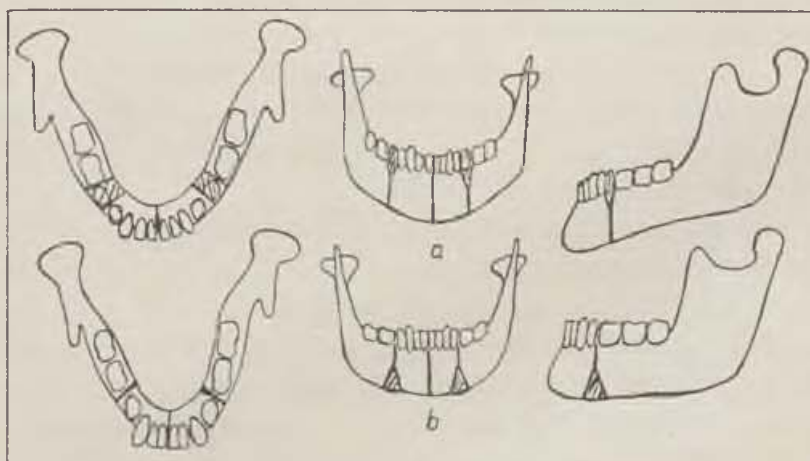
The very frequent cosmetic disorders are best assessed on the profile of the patient. No significant changes are ascertained in the vertically open bite caused by malocclusions on the upper jaw, but the open bite caused by malocclusions of the lower jaw, manifests sometimes in the lower third of the face as a striking prolongation of the chin, or a small often retroverted chin.

It is the task of surgical treatment to remove functional and cosmetic defects. The individual types of surgical therapy of open bite are reported in our [2, 4] and foreign [5] papers.

We always decide the method of operation according to the results of clinical examination, photographic documentation, analysis of plaster models

and X-ray pictures. Chiefly the results of gnathometrical and craniometrical analysis of teleroentgenography afford a perfect picture on the localisation of the anomaly and thus conditions for correct selection of the method of operation. We decide upon a method by means of which the functional and cosmetic defects may be removed simultaneously. The operation is performed under general anaesthesia. The vertically open bite which causes upward curvation of the upper jaw is operated on by modified method according to Cohn-Stock, after extraction of one of the premolar teeth on each side of the upper jaw. The extraction is not necessary in all cases. The spaces formed in places of horizontal osteotomy after shifting the mobilized part of the jaw into biting position, are filled up by bone grafts in order to prevent recurrence. Another operation used with us comparatively often on the upper jaws is the operation according to Schuchard which has been modified by Kufner. The repair of bite is achieved by this operation by repositioning the mobilized lateral segments of the upper maxilla into maxillary cavities.

If the vertically open bite is caused by distal curvation of the lower jaw, the operation is decided according to the extent of the anomaly. If only the last molar teeth occlude, the bite is repaired by the ramus of the mandible, mostly according to Obwegser [5]. If the open bite is caused by distal curvation of the mandible in the region of the first molar tooth, the bite is repaired by operation according to Limberg and Katz. We supplemented this operation by central osteotomy of the lower jaw (Scheme 1) for cases when the lower dental arch is much wider than the upper dental arch [9]. Open vertical bite of rachitic origin is generally known to manifest very frequently by larger or smaller compression of the upper mandible. Yet often the lower dental arch is wider than the upper arch and after freeing the frontal part of the lower jaw it is not possible to slip it into the upper dental arch. Central osteotomy affords contraction of the dental arch of the freed part of the lower jaw at the required extent. The operation is completely carried out either by intraoral approach only, or by combined intra-extraoral approach. The premolar



Scheme 1. Scheme of modified osteotomy of the lower jaw according to Limberg and Katz: a) scheme of osteotomy, b) condition after reposition and wedging of bone autografts into the defect of the lower edge of the lower jaw body.



Fig. 1 a, b. Profile of the female patient before and after operation of bite and after chin plasty

teeth are only extracted in case of protrusive occlusion of the lower jaw. Otherwise vertical osteotomy of the mandibular body is carried out without extraction. After freeing the frontal part of the lower jaw, from the vertical incision in the lower vestibule which we start below the central interdental papilla, we expose the front edge of the chin till its bottom edge and osteotomize the jaw by vibrating saw in safe distance from the apexes of the lower incisors, between apexes and roots of the central incisors we do so by means of a fine chisel. The arch of the osteotomized mobilized lower jaw is narrowed so as to afford slipping into the upper dental arch by rotating motion. The defects formed on the lower edge of the lower jaw body, are filled with bone autografts in order to prevent recurrence. The operation is terminated by intermaxillary fixation which is left for 9 weeks.

If the open bite is caused by bimaxillary anomaly and if the vertical distance between the edges of the lower and upper incisor teeth is too great, the bite is repaired by operation on the upper- and lower jaw.

Besides operation on upper jaws according to Cohn-Stock and operation of lower jaw according to Obwegser, Limberg and Katz, the vertically open bite is repaired by mobilisation of the segment of the alveolar process of infraoccluded teeth. When mobilizing the infraoccluded segment of the alveolar process of the lower jaw, the bone autograft is wedged into the space



below the line of horizontal osteotomy. This step is taken without interfering with the continuity of the lower jaw [3].

If operation of the bite did not succeed in repairing the shape of the chin and the chin is still retroverted or small, it is enlarged by bone autograft from the hip-bone crest [7] or by ventral shifting of the osteotomized lower bone edge of the chin as described by Kõle [3].

I should like to report the course of treatment of two patients.

1. Female patient D. J. aged 16 years, case history No 280/70 recommended to our Department by the school physician with the diagnosis of open bite, microgenia. We ascertained from "en face" view that the lower third of the face is diminished and view of profile disclosed small retroverted chin. Intra-oral examination disclosed vertically open bite measuring 12 mm between the edges of the upper and lower incisors.

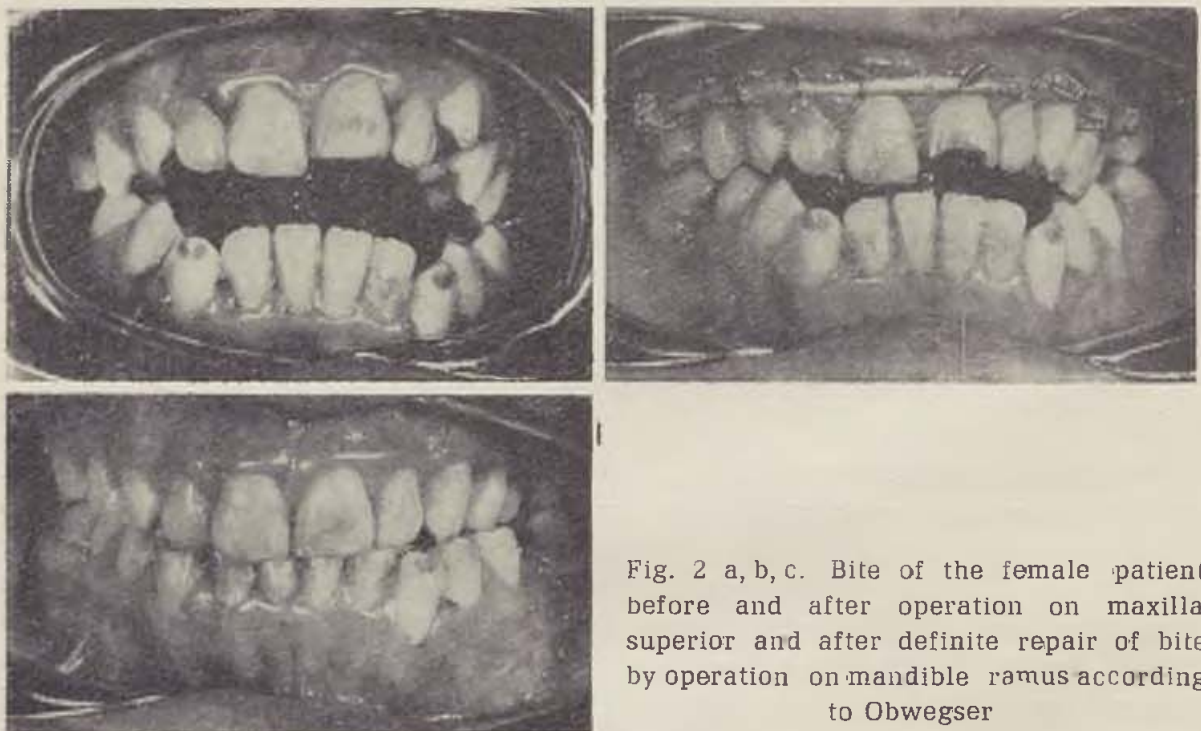


Fig. 2 a, b, c. Bite of the female patient before and after operation on maxilla superior and after definite repair of bite by operation on mandible ramus according to Obwegser

On 16. 6. 1970, tooth 5+ and the gangrenous tooth +6 were extracted under general anaesthesia, segment +4 and +5 was freed by alveolotomy and distally shifted. Tooth +3 was also freed by alveolotomy and moved into the dental arch. Finally segment 4+ to +2 was freed by modified operation according to Cohn-Stock. Two months later the bite was repaired by operation according to Obwegser on the ramus of the lower jaw. Fig. 1 a, b, demonstrate the profile of the patient before and after operation of the bite and operation of the chin according to Kõle. Fig. 2 a, b, c, demonstrate the bite before and after the operation on the upper and lower mandible.

2. Patient F. A. aged 19 years, case history No 578/70 was admitted to the Department with the diagnosis of open bite.



Fig. 3. a, b. Profile of patient before and after operation

View "en face" disclosed that the lower third of the face is prolonged, view of profile disclosed prolonged, slightly retroverted chin. Vertical open bite measuring 8 mm between the edges of the upper and lower incisors, was ascertained by intraoral examination. The teeth occluded distally on the right from the second- and on the left from the first molar teeth. The lower dental arch was wider than the upper arch and was shifted to the left by practically one width of the central lower incisor.

On 19. 11. 1970 the bite was repaired by modified method according to Limberg and Katz, under general anaesthesia. On the right the gangrenous tooth 5— was extracted and vertical osteotomy of the lower jaw body was carried out in this spot. On the left the lower jaw was osteotomized between

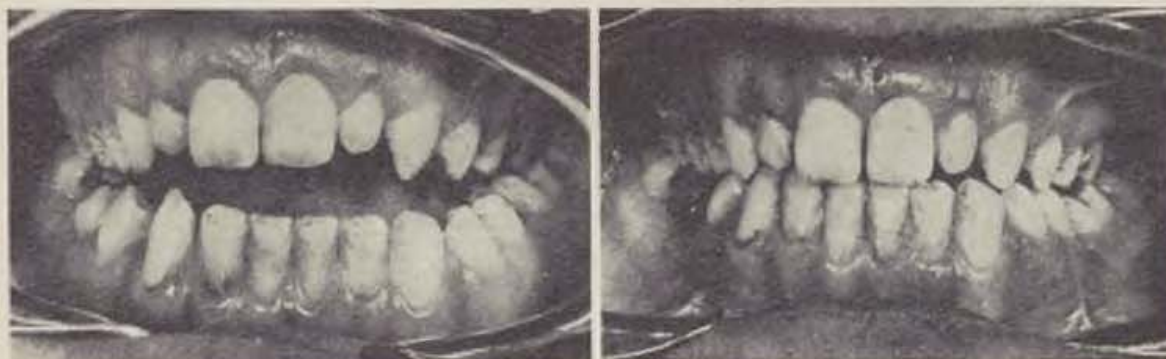


Fig. 4 a, b. Bite of patient before and after operation of mandible by modified procedure according to Limberg and Katz

the roots of the central incisor teeth and the arch was narrowed so as to afford slipping of the mandible into the upper dental arch. Defects on the lower edge of the mandible body were filled up with bone autografts. The profile of the patient is demonstrated on Fig. 3 a, b, the bite before and after the operation on Fig. 4 a, b.

DISCUSSION

Many methods of operation have been elaborated for surgical treatment of vertically open bite. Present surgical therapy was decided on basis of analysis of clinical examination, on photographic documentation, plaster models, gnatometric and craniometric examination. Functional and cosmetic defects are considered to be of equal importance and their simultaneous repair by suitably decided operational procedure is intended. This intention is not always successful. In such cases first the bite and then the cosmetic defect is repaired. Most frequently they are cases with slightly retroverted chin, where not even rotation of the lower mandible with ventral shifting, repairs the cosmetic defect. In such cases the chin is either repaired by filling it up with bone autograft or more often, by ventral shifting of the lower edge of the osteotomized chin according to Kõle.

In the described patients the method of operation was decided by the intention to repair the cosmetic and the functional defect. The female patient required first repair of the bite by operations of the upper and lower jaw, the chin was repaired by ventral shifting according to Kõle. The bite in patient F. A. was repaired by modified operation according to Limberg and Katz and correct bite as well as good cosmetical result was achieved.

SUMMARY

The author reports briefly on the causes of formation of vertically open bite in the frontal region. The most frequently applied surgical procedure at the Department of Maxillofacial Surgery, Central Military Hospital in Prague and modification of the Limberg-Katz method is described. Complex solution of the anomaly i.e. repair of the functional and cosmetic defects, is greatly stressed. The course of therapy in two patients and the results are described.

RÉSUMÉ

Traitement chirurgical de l'occlusion dentale verticalement ouverte

Petrovič Š.

L'auteur de l'article présente brièvement les causes de l'origine de l'occlusion dentale verticalement ouverte dans la région frontale. Il décrit les procédés chirurgicaux les plus courants pratiqués au Service de chirurgie maxillaire et faciale de l'Hôpital militaire central à Prague et la modification de la méthode de Limberg-Katz. Il souligne la solution complexe de cette anomalie, c'est-à-dire l'élimination des troubles fonctionnels et cosmétiques. Il décrit le cours d'une thérapie de deux malades et les événements de celle-ci.

ZUSAMMENFASSUNG

Chirurgische Behandlung des vertikal offenen Bisses

Petrovič Š.

Der Autor führt die Ursachen der Entstehung des vertikal offenen Bisses in der Frontalgegend kurz an. Er beschreibt die an der Abteilung für Kiefer- und Formchirurgie im Zentralen Militärkrankenhaus in Prag häufigst gebrauchten chirurgischen Verfahren und eine Modifikation der Limberg-Katzschen Methode. Grosses Gewicht legt er auf die komplexe Lösung der Anomalie, d.h. Behebung von Funktions- und kosmetischen Störungen. Der Verlauf der Behandlung von zwei Kranken wird beschrieben.

RESUMEN

El tratamiento quirúrgico de una oclusión verticalmente abierta

Petrovič Š.

El autor del artículo presenta en resumen las causas del origen de una oclusión verticalmente abierta en la región frontal. Describe los procedimientos quirúrgicos más a menudo empleados en el Departamento de la Cirujía Maxilar y Facial del Hospital Militar Central en Praga y la modificación del método Limberg-Katz. Subraya una solución compleja de la anomalía, es decir la eliminación de los defectos funcionales y cosméticos. Describe el procedimiento de la terapia de dos pacientes y los resultados de la misma.

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EMPLOYMENT OF HOMOLOGOUS FASCIA FOR FIRM ANCHORAGE OF HOMO- AND ALLOIMPLANTS USED AFTER ENUCLEATION OF THE EYE

A. A. KOLEN, O. D. MOROZOVA

In recent years, the problem of forming a socket after enucleation of the eye, which would ensure a maximum of movement for the eye prosthesis, prevent its receding into the conjunctival sac, and thus provide all conditions for a good cosmetic results, has attracted the attention of many ophthalmic surgeons both in the Soviet Union and elsewhere. There is no doubt about it that the conjunctival sac, if it is left empty, undergoes shrinkage. One cannot but agree with de Voe who regards the main cause of this to be the absence of a content in it. Recognition of this fact, therefore, set the task of how to fill this vacant cavity.

All the existing numerous methods are aimed at filling the residual cavity after enucleation of the eye with some kind of material. Papers dealing with this problem describe a large series of implants, differing both in material and shape, to be introduced into the orbit after enucleation of the eye. Most frequently, fatty tissue or cartilage are used. Autologous fat tissue and the various methods of its employment are giving way to cartilage and alloplastic material, because fat, after a time, undergoes absorption and thus grows smaller, although in rare cases it also may hypertrophy. One like the other interferes with effective application of an eye prosthesis.

The employment of autologous cartilage has not met with sympathy of the eye surgeons, because obtaining it subjects the patient to additional trauma. Homologous cartilage is being used more and more [D. G. Sverdlov, 1941; Y. I. Starodubtseva, 1961, 1965 and 1968; V. M. Pankin, 1968; Tikhomi-rova, 1968; O'Connor et Pierce, 1938, and others].

In recent years, plastic material has been used ever more frequently. Thus Sverdlov [1955], Kholina [1962] and Sokolenko [1963] employed AKR-7 for the construction of the socket after enucleation of the eye, Grusha took kapron tissue and polyvinylalcohol sponge, Gundorova penopolyurethane sponge, Efimova bioplastic, and Dambite made little balls and pins of polyethylene.

The data published in the literature bear witness of the fact that auto- and homologous tissues do not provoke any reaction of the surrounding tissue, and soon become enclosed in a capsule. The same is true of alloplastic materials, and they even give a better cosmetic results; but they frequently become exposed and are eliminated. This is why they must be firmly anchored and well covered with tissues.

Coverage of the implant is the main problem. In this respects, the paper of van de Velde deserves special attention. He rightly points out that a frequent cause of elimination of an orbital implant lies in that the conjunctiva and to a certain degree also Tenon's capsule, which cover the implant, are not fit to absorb the shocks necessarily occurring between the implant and the eye prosthesis. Tenon's capsule is very thin and delicate, supplied only by superficial vessels, and thus prone to traumatic damage.

The chemical nature of the implant or its shape are of no less importance. With regard to the anchorage of the implant, i.e. its relation to the recti bulbi muscles, which means whether to suture them (together or to the implant) in front or behind the implant, Soviet ophthalmologists prefer the first mode (Annenkova, 1958; Grusha, 1960; Gryaznova, 1966). The authors themselves use the same method.

Taking into account all what was said above, the authors set themselves the task to find a way of protecting the submerged implant from shocks by some firm tissue, and considered fascia lata to be best suited for the purpose. Its plastic properties, firmness and functional adaptability are well known.

Homologous cartilage or penopolyurethane sponge were chosen as material for the implant, since the authors had gained sufficient experience with using it beforehand. The implant was given a ball shape.

The surgical procedure was as follows: Local anaesthesia was provided by instillation of a 5% Dikain solution and by injecting 8.0 ml 2% novocain retrobulbarly, along the recti bulbi muscles and subconjunctivally, thus also achieving akinesia. The conjunctiva was incised along the limbus corneae and dissected off the eye ball. The recti were grasped by hooks, sutured together and then separated from their insertions on the eye. This was followed by severance of the optic nerve and enucleation of the eye. After bleeding had been controlled, the ball-shaped implant of conserved cadaver cartilage or penopolyurethane sponge was placed into Tenon's capsule, its size of 15 to 18 cm in diameter depending on that of the enucleated eye ball and the residual cavity. The anterior surface of the implant was covered with cadaver fascia conserved at -70°C , stripped of any fat and prepared in a penicillin solution. It was fixed to the implant by kapron stitches. The implant was placed into Tenon's capsule so that the covering fascia lay in front of it; an assistant kept holding it in this position with forceps. The entire implant was then covered by the recti bulbi muscles, whereby each of them was sutured to the edge of Tenon's capsule on the opposite side. Thus the implant came to lie behind the muscles. Tenon's capsule should not be sutured, because it is not subjected to tension due to the muscles being sutured to it. The con-

junctival wound was closed horizontally with interrupted silk stitches. An injection of 50 000 u. penicillin was given subconjunctivally, and a monocular pressure bandage applied. During the post-operative period, the patient received antiinflammatory and desensitizing treatment. Locally, 30% albucid was dripped into the socket.

A total of 22 patients, 12 male and 10 female, aged between 11 and 45 years, were operated in this way. Enucleation of the eye was carried out at the authors' own department in 18 patients. The indication for removal of the eye was subatrophy of the eye ball in ten, secondary posttraumatic glaucoma in four, and buphthalmos in another four patients.

Immediately after enucleation of the eye, the socket was constructed with cadaver cartilage in eight, and with polyurethane sponge in ten patients.

Secondary coverage of an exposed implant was carried out in four patients who had been operated on at other hospitals (two were Dambite implants, one socket had been constructed by using a polyethylene ball, and another with an adipo-dermal graft).

After operation, swelling of the conjunctiva was observed, which lasted for five to ten days. On the sixth or seventh day after operation, a thin-walled glass prosthesis was introduced into the socket, which the patients then wore for three to four months. After this lapse of time, and provided the socket had grown smaller, the thin-walled was exchanged for a double-walled artificial eye. The patients were checked up during a period ranging between 14 days and 18 months.

The fascial graft was eliminated only in one case, the one where secondary coverage of an exposed adipo-dermal graft had been carried out. In the other cases, even in those where secondary coverage of an exposed Dambite implant had been performed, dehiscence of the conjunctival wound and elimination of the fascial graft were not observed.

Experience, therefore, has shown that cadaver fascia represents an absolute reliable material for strengthening the tissues which cover the implant.

The present communication should be regarded as preliminary because of the small number of cases and the relatively short time of observation.

For the future, the authors not only intend to lengthen the time of observation and to investigate a larger number of cases, but also to employ cadaver fascia by various modifications of the method for coverage of implants, different both in shape and technical properties, in order to achieve the best possible cosmetic result.

SUMMARY

The problem of constructing a socket after enucleation of the eye, which would ensure a good cosmetic results, has, in recent years, attracted the attention of many ophthalmologists, particularly those who are engaged in plastic surgery. One of the main factors which keep an implant, introduced into the socket after enucleation of the eye ball, in place is firm anchorage. Up to the present, one meets with communications in the respective literature, which

report about the frequent exposure of implants introduced by the usual methods. This, of course, debases the primary cosmetic result. The authors recommend to use conserved homologous cadaver fascia for covering the implant, thus providing firmer anchorage for it. This method has been used in 22 patients, in four of whom for exposure of an implant introduced into the eye socket earlier at other hospitals. On check-up after a lapse of time up to 18 months, elimination of the fascial graft and re-exposure of the implant occurred only in one case where an adipo-dermal graft had been introduced on primary operation. Even after secondary coverage of an exposed implant, the method ensured firm anchorage, a fact which permits the authors to recommend it for general usage.

R É S U M É

Utilisation de la fascia homologue pour renforcer les homo- et aloimplants après une énucléation de l'oeil

Kolen A. A., Morozova O. D.

La problématique d'un effet cosmétique favorable après une énucléation du globe oculaire est traitée, récemment, par beaucoup d'ophtalmologues, surtout par ceux qui exécutent des opérations plastiques. Un des facteurs importants pour assurer la greffe placée dans la cavité résiduelle après l'énucléation, c'est son renforcement. Jusqu'à ce jour, nous rencontrons dans la littérature des articles publiant que l'implant se découvre souvent si l'on utilise les méthodes jusqu'ici courantes. Pour cette raison l'effet de la première opération est déprécié. C'est pourquoi les auteurs proposent de revêtir l'implant par une fascia obtenue d'un cadavre. Suivant cette méthode on a fait le renforcement de l'implant chez 22 malades. En 4 cas il s'agissait d'implants se dénudant chez les patients qui avaient été opérés auparavant dans d'autres instituts. Pendant le contrôle après 18 mois on a constaté la fascia enlevée et l'implant dénudé dans un seul cas, où le revêtement avait été fait après avoir dénudé le reste cutané et graisseux. Chez les autres malades, même chez ceux dont l'implant s'est dénudé après l'intervention subie dans d'autres instituts, c'était cette méthode qui a assuré le revêtement solide de l'implant. Ces résultats nous donnent le droit de recommander cette méthode de traitement à la pratique.

Z U S A M M E N F A S S U N G

Anwendung der homologen Faszie zur Stärkung von Homo- und Alloimplantaten nach durchgeführter Enukektion des Auges

Kolen A. A., Morozova O. D.

Mit der Problematik der Erreichung eines guten kosmetischen Ergebnisses nach durchgeführter Enukektion des Augapfels befassen sich in jüngster Zeit viele Ophthalmologen und unter ihnen hauptsächlich diejenigen, die mit der Durchführung der plastischen Operationen zu tun haben. Einer der wichtigsten Faktoren für die Sicherung des nach Enukektion in die residuelle Höhle einzusetzenden Implantats ist seine Verstärkung. Bis zum heutigen Tag findet man in der Literatur Aufsätze mit Berichten, dass bei den bisher angewandten Methoden das Implantat oftmals blossgelegt und hiermit das Ergebnis der ersten Operation entwertet wird. Die Autoren empfehlen deshalb das Implantat mit einer vom Leichnam gewonnenen Faszie zu überdecken. Mittels dieser Methode wurde die Implantatverstärkung bei 22 Kranken vorge-

nommen, darunter in vier Fällen, wo es sich um sich entblössende Implantate bei Kranken gehandelt hat, die früher in anderen Anstalten operiert wurden. Bei Kontrolle nach 1½ Jahr wurde festgestellt, dass es zum Losreißen der Faszie und Entblößen des Implantats lediglich in einem einzigen Fall gekommen ist, in dem die Überdeckung nach Entblössung des Hautfettstumpfes durchgeführt worden ist. Bei den übrigen Patienten und sogar auch bei denjenigen, bei denen die Entblössung des Implantates nach in anderen Anstalten durchgeführten Operationen vorgekommen ist, hat diese Methode feste Überdeckung des Implantates gesichert. Diese Ergebnisse berechtigen uns, diese Behandlungsmethode zum praktischen Gebrauch zu empfehlen.

RESUMEN

Aplicación de una fascia homóloga para reforzar los homo- y aloinjertos después de una enucleación del ojo

Kolen A. A., Morozova O. D.

La problemática de cómo obtener un buen resultado cosmético después de una enucleación del bulbo fue tratada recientemente por una serie de oftalmólogos, principalmente por los que ejecutan las intervenciones plásticas. Uno de los factores importantes para asegurar el injerto encajado en la cavidad residual después de una enucleación es un refuerzo del mismo. Hasta hoy hemos encontrado en la literatura artículos sobre el hecho de que con los métodos usados hasta el presente el injerto muchas veces se expone, lo que desvalora el resultado de la primera intervención. Por esa razón los autores proponen cubrir el injerto de una fascia homóloga adquirida de un cadáver. Un refuerzo del injerto fue realizado por éste método en 22 enfermos que habían sido operado hacía un tiempo en otros hospitales, 4 de los cuales fueron con injertos que se desnudaban. Al controlar los casos después de un año y medio fue constatada separación de la fascia y el injerto desnudo sólo en un caso en el que el integumento fue hecho después de la exposición de un resto cutáneo-sebáceo. En los demás enfermos, hasta en los casos en los cuales el injerto se desnudó después de una operación ejecutada en otros hospitales, éste método aseguró un integumento fijo del injerto. Dichos resultados justifican el recomendar éste método de cura para uso práctico.

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AN ALTERNATE METHOD IN THE TREATMENT OF ZYGOMATIC FRACTURES

N. I. ELSAHY, M. VISTNES

Fractures of the zygomatic bone per se do occur, but in most instances the fracture involves disruption of the adjacent bones as well. Separation rarely occurs exactly within the lines of suture. The typical zygomatic fracture is in the form of a tripod with separation medially by fracture of the maxilla through the floor of the orbit, laterally by fracture of the zygomatic process of the temporal bone, and above and behind by separation at the zygomatico-frontal and zygomatic sphenoid sutures [1]. The malar complex is usually displaced posteriorly, medially and slightly inferiorly.

Numerous surgical techniques are available for the treatment of zygomatic fractures. These can be summarized as follows:

1. Lothrop (1906) approach through the maxillary sinus [2]: A curved trocar is passed through an antrostomy opening under the inferior turbinate into the maxillary sinus to rotate the depressed fragments into position.

2. Keen's approach (1909) through the buccal mucosa [3]: A sharp, curved elevator passed up behind the maxillary tuberosity and force the zygoma in an upward and forward direction.

3. Gillies' approach (1927) through the temporal region [4]: An elevator is slipped between the heavy temporal fascia and the muscle to gain access to the under surface of the zygoma.

4. Caldwell-Luc intra-oral approach for packing the maxillary sinus.

5. Kazanjian's (1933) infraorbital approach [5]: A hole is drilled through the infraorbital rim and a suspension wire is inserted with both ends brought out through the wound. Rubber band traction between the suspension wire and an outrigger on a head cap provides support for the zygomatic fragments.

6. Dingman's (1964) approach through two incisions [1]: One in the lateral end of the brow and the other at the inferior margin of the lower lid. The zygomatico-frontal suture and zygomatico maxillary suture may be exposed and the zygoma can be elevated and fixed in place by interosseous wire.

7. Brown, Freyer, and McDowell (1952) [6]: After reduction, pins are driven through the skin and fractured zygomatic bone, maxilla and zygoma on the opposite side.



Of these methods, Gillies method is now in less use than when it was first suggested. Some surgeons find it more convenient to place an instrument under the zygomatic arch through an eyebrow incision which is usually required anyway [7]. Dingman and Natvig tested the effectiveness of this method in patients in whom an immediate satisfactory clinical result seemed to have been achieved. The fracture sites were exposed later, and the healed area was inspected. It was found that the position of the reduced fracture was less desirable than it had appeared to be from clinical and roentgenographic evaluation. In some instances the true condition has been obscured by edema and hematoma. Displacement recurring after closed reduction was attributed to the pull of the Masseter Muscle [8].

These findings are substantiated by our own statistics. At the Winnipeg General Hospital many of the depressed fractures of the zygoma were treated in the past by Gillies temporal approach. The reduction was easily accomplished but displacement recurred afterward in about 10 % of cases.

McCoy et al. [1962] [9] reported a case in which packing of the maxillary sinus caused fragments of bone to be forced against the optic nerve to produce blindness. He condemned this method as dangerous and ineffective. "K" wire fixation alone is not enough to deal with the problem. Since the fracture occurs in several places, it needs more than one point of fixation (Fig. 1). Dingman's method achieves excellent fixation but the infraorbital incision has the following disadvantages:

1. It endangers the infraorbital nerve during the dissection and application of the interosseous wire.
2. The bones at the zygomatico-maxillary suture are usually very thin near the floor of the orbit (Fig. 1) and it is difficult to apply an interosseous wire in this area.
3. An added scar, with post-operative swelling and ecchymosis. We use this method only if there are clinical or radiological indications to explore the orbital floor.

It was concluded from the above that it was necessary to treat these fractures by elevation and fixation at more than one point. The following method was evolved: An incision about one cm. in length is made in the lateral brow through which the zygomatico-frontal fracture is exposed. Drill holes are placed through the bone on each side of the fracture and a wire is passed through the holes and twisted tightly to achieve the best anatomic position of the displaced bones. A heavy elevator is placed beneath the arch of the zygoma through the same incision. The zygoma is manipulated into a satisfactory position. With the zygoma in this position, a Kirschner wire is passed in a horizontal and slightly downward position starting in the skin immediately over the zygoma and passing through the fractured zygomatic bone, the maxilla, the bones of the nasal cavity and may include the maxilla on the opposite side. The pin is cut off five millimeters away from the skin for easier removal after 2 weeks. The end can be covered by a piece of adhesive tape during this period for protection and for cosmetic reasons (Fig. 2).

The described method was applied on twenty of our patients to the time of writing this paper with no complications. It has the following advantages:

1. Both elevation and fixation of the zygoma is achieved.
2. The temporal and the infraorbital incisions are eliminated.
3. It can be used for comminuted fracture in combination with orbital floor exploration.
4. The method may be used to deal with relatively old fractures (about 2 weeks) quite easily.
5. There is no displacement of the fracture following reduction.

SUMMARY

A method for treatment of the displaced zygomatic fracture is presented, using transosseous Kirschner wire for stabilization of the displaced bone after one point fixation has been obtained by open reduction and wiring at the zygomatico-frontal line of separation. The rationals and the advantages of the method are outlined.

RÉSUMÉ

Ultérieure méthode du traitement des fractures de l'os zygomatique

Elsahy N. I., Vistnes L. M.

On a décrit la méthode du traitement des fractures disloquées de l'os zygomatique. Pour stabiliser l'os déplacé on utilise le fil de fer transosseux de Kirschner, fixé dans un point après avoir fait la reposition et la fixation par le fil de fer dans la ligne zygomatique-frontale. On présente le raisonnement pour la méthode proposée et on indique ses avantages.

ZUSAMMENFASSUNG

Eine weitere Methode für die Behandlung der Backenknochenfrakturen

Elsahy N. I., Vistnes L. M.

Die Autoren beschreiben eine Methode für die Behandlung der dislozierten Backenknochenfrakturen. Zur Stabilisierung des verschobenen Knochens benutzen die Autoren die Kirschnersche Drahtextension mit Fixation in einem Punkt nach durchgeführter offener Reposition und Drahtanlegung an der Jochbein-Stirnbeintrennlinie. Die Begründung der entworfenen Methode wurde vorgelegt und ihre Vorteile ange-deutet.

RESUMEN

Un ulterio método en el tratamiento de las fracturas del hueso facial

Elsahy N. I., Vistnes L. M.

Fue descrito el método de tratar las fracturas dislocadas del hueso facial. Después de estabilizar el hueso dislocado se emplea el alambre transóseo de Kirschner con fijación en un punto después de haber hecho una reposición abierta y fijación con el alambre en la línea divisoria cigomático-frontal. Fue presentado el por qué se recomienda el método propuesto y se recalcan sus ventajas.

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A NEW KNIFE FOR OPERATION OF PROMINENT EARS

J. JAKUBÍK

Some modern methods of operation of prominent ears (Cloutier, Stenström, Chongchet) apply the findings by Gibson and Davis in practice. Their research disclosed that a state of tension exists in costal cartilage; the tense external layer prevents the cartilage mass in its tendency to expand. This applies to the auricular cartilage too — its shape is in a certain sense the consequence of balanced equilibrium of two tense external layers. If we scarificate or scratch one of the layers, we liquidate its tension and the cartilage bends in the opposite direction and the incised part curves outwards. The experiments by Stenström with auricular cartilage in corpse disclose similar conclusions. Baruch and partly Neuner also avail themselves of these results in operations of prominent ears. These authors use in their operations either special scarificators or knives which they designed themselves. It is rather interesting that several of these new instruments have been thought out almost simultaneously and without any mutual connection they were designed and published.

For the past three years we have been operating prominent ears at the Department of Plastic Surgery in Brno by means of technique according to Chongchet, modified according to Bařinka. The method of operation applied previously by us, consisted in the excision of half-moon parts of the cartilage in antihelix line. The results were not always good, sometimes the antihelix was too sharp, its oblique contour was lost and we recorded recurrences. The cosmetic results has also not been always fully satisfactory. Now we operate prominent ears by excision of a spindleshaped skin slice from the dorsal auricle area, saving thus the subpapillary vascular plexus. We then make an incision through the cartilage running parallel with the lateral edge of the previous spindleform excision. We take care not to cut through the skin of the ventral auricle area. By means of blunt preparation with elevator we separate the skin graft of the cartilage from the ventral area till penetration into fossa scaphoides. The thus exposed cartilage (Fig. 1) is incised by long numerous semicircular incisions (Fig. 2) along the antihelix line. The incisions penetrate the cartilage up to the dorsal perichondrium which should not be intersected

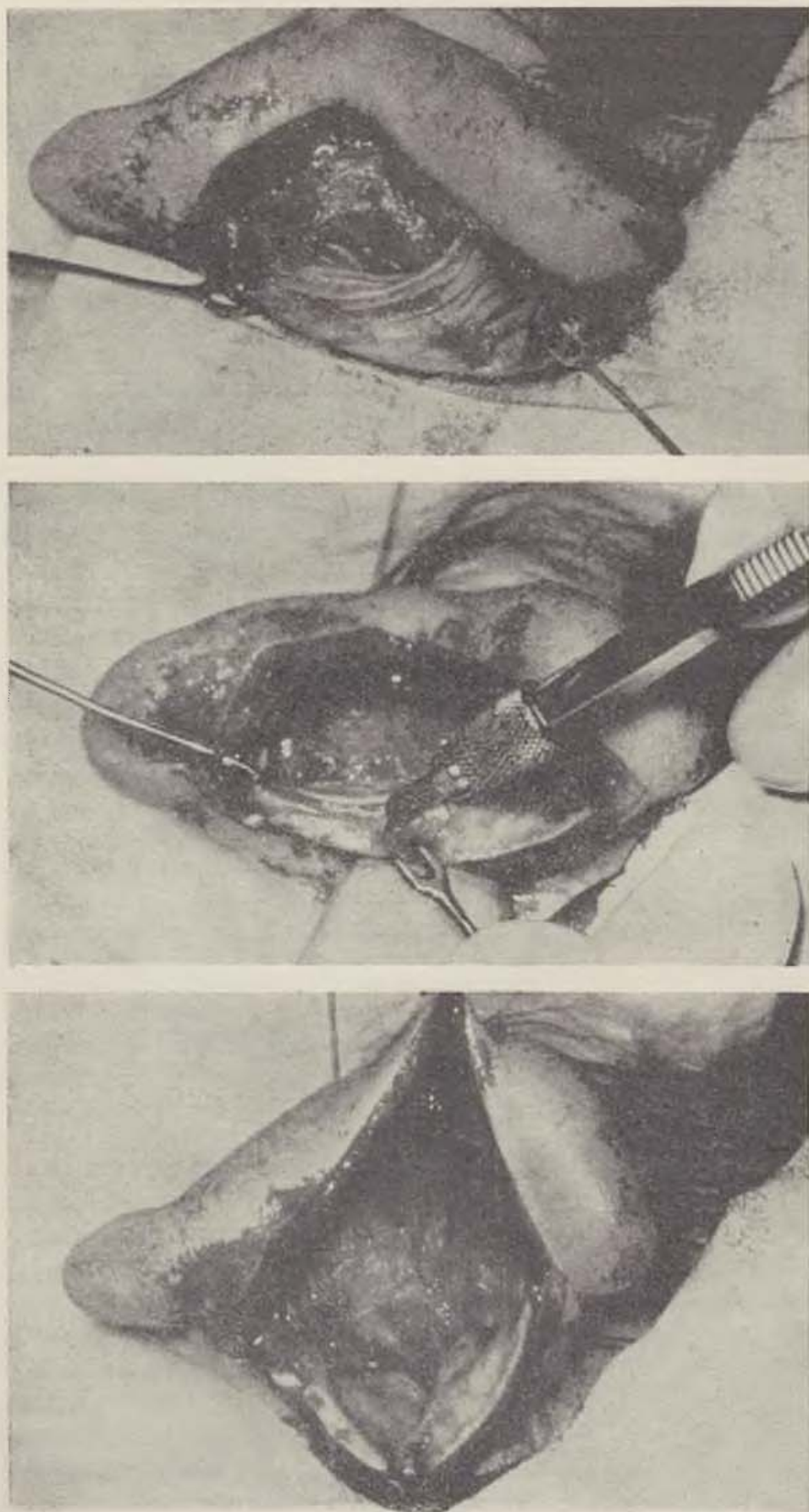


Fig. 1. Skin has been dissected from the ventral aspect of the auricle cartilage. While the hook is displacing the cartilage to the left, a suture pushes the skin away. The ventral aspect of the cartilage can be seen. — Fig. 2. A semioblique incision on the ventral aspect of the cartilage accomplished by the double-blade scalpel. — Fig. 3. Multiple incisions on the ventral aspect of the cartilage

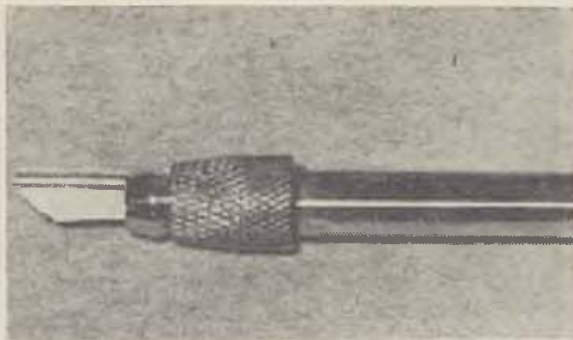
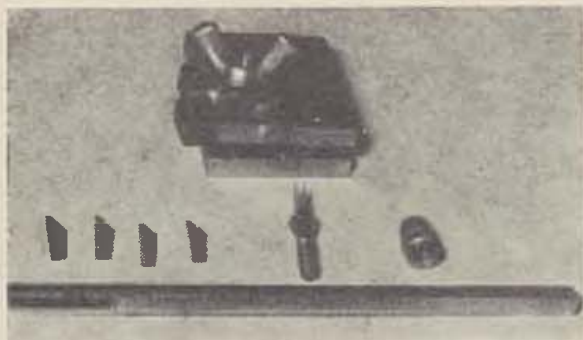


Fig. 4. The double-blade scalpel dismantled to its components. The upper part of the picture shows the device to breaking the blades. — Fig. 5. A detail of two blades of the scalpel

(Fig. 3). After bleeding has been stopped be simply suture both edges of the spindleform excision on the dorsal area intradermally by strong catgut and apply compression. We place modelling flavin cotton between helix and anti-helix and in to concha.

We have also designed a special instrument for operation of prominent ears. It is a double-blade scalpel with exchangeable cutting edge (patent Nr. 7250-71 applied for). It has several advantages: its knives are always absolutely sharp, incision requires exertion of only small pressure on the instrument and the cartilage is thus not being deformed or damaged. Approxi-



Fig. 6. The condition before the operation



Fig. 7—8. The condition after the operation

mately 1 mm wide cartilage slices of equal length are formed by the incision. The incision does not cross anywhere and does not form thorns which could be visible under the skin graft of the frontal auricle area. If a normal knife is applied thorns are quite often formed. And finally — the continuity and certainty of the incision is improved because we place two cutting edges into the cartilage which represent two points of support — the third being the hand which holds the knife.

The double-blade scalpel may be used for other purposes too, for ex. for removal of hairy skin in alopecia operation, in eye-brow substitution etc. The firm Vic Corp. introduced a similar knife on the market, it was suggested by Dr. Ch. P. Wallis. The modification of the double-blade knife is the scalpel with one exchangeable cutting edge, designed on the same principle.

The scalpel consists of a holder and two blades which are placed into the blade holder (fig. 4, 5) — the knives break in the simple device from strong Gillette shaving blades or with the strong knife (Gillette band) for the vacutome.

We believe cartilage scarification to be insufficient in operation of prominent ears and that it is more expedient to carry out incision through the cartilage to the dorsal perichondrium and to conduct the incision in the antihelix line. We thus achieve greater flexibility of the cartilage and are better able to model it. We control the field of operation by sight and we adapt the incision to the individual relief of the cartilaginous skeleton. We achieve by means of the described operational technique better cosmetic results than those achieved before this method was introduced (Fig. 6, 7, 8). We have not recorded a recurrence yet. The double-blade knife is an instrument which has been fully satisfactory in operation of prominent ears.

SUMMARY

The author refers to the results of research by Gibson and Davis concerning costal cartilage and its application in operation of prominent ears. The modern operative procedures correcting prominent ears often use special instruments designed on basis of practical application of research carried out by Gibson and Davis. The author describes the operation of prominent ears as carried out at the Department of Plastic Surgery in Brno and draws attention to the new double blade scalpel which has proved satisfactory in this operation. Photographs documentate good results.

RÉSUMÉ

Nouveau couteau destiné à opérer des oreilles décollées

Jakubík J.

Dans son article, l'auteur démontre les résultats de la recherche de Gibson et Davis en ce qui concerne le cartilage costal et les applications pratiques de celle-là pendant les opérations des oreilles décollées. Les procédés opératoires modernes qui corrigent les pavillons en question utilisent souvent des instruments spéciaux étant

construits même sur la base d'une application pratique des recherches de Gibson et Davis. Ensuite, l'auteur décrit l'opération des pavillons de l'oreille qui s'écartent faite de manière pratiquée à la clinique de chirurgie plastique à Brno en appelant l'attention sur le nouveau scalpel à deux lames qui a fait ses épreuves pendant l'opération ci-dessus mentionnée. Les photographies ajoutées témoignent de bons résultats.

ZUSAMMENFASSUNG

Ein neues Messer zur Operation der abstehenden Ohrmuscheln

Jakubík J.

In dem Beitrag verweist der Autor auf die Forschungsergebnisse von Gibson und Davis, die sich auf den Rippenknorpel und auf die praktische Applikation derselben bei der Operation der abstehenden Ohrmuscheln beziehen. Moderne Operationsverfahren zur Korrektur der abstehenden Ohrmuscheln benutzen häufig spezielle Instrumente, die gerade an Hand der praktischen Applikation der Forschungen von Gibson und Davis konstruiert wurden. Ferner beschreibt der Autor die Operation der abstehenden Ohrmuscheln, wie sie an der Klinik der plastischen Chirurgie in Brno durchgeführt wird und weist auf das neue Skalpel mit zwei Klingen hin, das sich bei dieser Operation bewährt hat. Photographien dokumentieren die guten Ergebnisse.

RESUMEN

Un escalpelo nuevo para operar los pabellones resaltados

Jakubík J.

En su aportación el autor hace observar los resultados de la investigación de Gibson y Davis, la que se refiere al cartilago costal y a la aplicación practica de la misma en la operación de los pabellones resaltados. En los procedimientos operativos modernos, que corrigen los pabellones resaltados, a menudo se emplean instrumentos especiales que están contruidos en base de las aplicaciones prácticas de las investigaciones de Gibson y Davis. El autor describe una operación de los pabellones resaltados que fue llevada a cabo en la Clínica de la Cirujía Plástica en Brno y llama la atención sobre un escalpelo nuevo de dos filos que die buenos resultados en ésta operación. Las fotografías muestran los resultados.

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NEWS

The 8th Course of Plastic Surgery for Postgraduates organized by the Department of Plastic-Aesthetic and Reconstructive Surgery of the Institute-Policlinic in Barcelona will take place (d., m.) from the 22nd to the 27th of January 1973 and will be dedicated to Conceptions and general techniques in Plastic Surgery (days: the 22nd and 23rd), Cranio-facial Osteosurgery (days: the 23rd, 24th, and 25th), Aesthetic surgery of the breast (days: the 26th and 27th).

Director of the course: Lorenzo Mir y Mir (Head of the Institute-Policlinic and the former associate Professor of the Department of Prof. Piulachs) with the valuable collaboration of the Professors and Doctors: Roberto Benedito Ramón (Barcelona), Gustavo Bernard Clavería (Zaragoza), Antonio Brualla Planes (Barcelona), Luis Calatrava Paramo (Madrid), Luis Carol Murillo (Barcelona), Miguel Gras Artero (Barcelona), Ulrich Hinderer Meise (Madrid), Juan Quetglas Moll (Madrid), Paul Tessier (Paris).

It has been a tradition to dedicate these reduced courses, which are organized by the Department of Plastic Surgery (Aesthetic and Reconstructive) in January every year, to expose and focus the aspects defined within our ample specialty. In the previous years we had taken up such themes of interest as "Plastic Surgery and the Trauma", "General Techniques in Plastic Surgery", "Aesthetic Surgery" etc. Since the last year we have initiated a new program of the course in three parts. The two first days are dedicated to presenting the specialty as a whole and to showing consisely the conception and basical techniques used in plastic surgery.

The second part has a concrete theme on reconstructive surgery (about the "Cranio-facial osteosurgery") and finally we will proceed to a concrete theme of the aesthetic surgery on the two final days ("Mastoplastia" in this course).

Illustrations constitute the basis of the teaching in our specialty, therefore as much as possible time will be dedicated to demonstration and discussion on the cases illustrated (lantern slides, films), without forgetting direct interventions or those transmitted by means of the TV with closed circuit.

Enrolment fees: 3500 pesetas, lunch at the clinic included. Places limited.

Information: Instituto Policlínico (Clínica Platón) — c) Platón 21 - Barcelona (6), Curso sobre Cirujía Plástico-Estética y Reparadora

Institute-Policlinic (Clinic Platón) — street Platón 21, Barcelona (6), Course of Plastic-aesthetic and Reconstructive Surgery.

In Nov., 1972, a section of plastic surgery was established at the **Scientific Society of Bulgarian Surgeons**. Its president has become D. Ranev, doc., M. D., Pirogov Institute, Sofia, vicepresident V. Yovchev, prof., M. D., DrSc., Medical Academy, Sofia, secretary D. Milcheva, CSc., M. D., Pirogov Institute, Sofia. Committee members: E. Panceva-Holevich, doc., M. D., DrSc., Sofia, B. Shindarsky, doc., M. D., CSc., Sofia, K. Troshev, M. D., Varna, R. Georgieva, M. D., Pleven.



The 8th Congress of the European Society for Experimental Surgery will be held in Oslo, Norway, May 2—5, 1973. Application forms and further information may be obtained from: H. F. Kingenberg, Congress Department, P. o. Box 87, Oslo 1, Norway. Scientific presentations should be submitted to the same address not later than 15th January.

The Czechoslovak Medical Society J. E. Purkyně, the Czech Society for Plastic Surgery, and the Charles University, the Medical Faculty of Hygiene, will hold Symposium for the Treatment of Burns with international participation which will be organized in cooperation with the International Society for Burn Injuries in Prague, September 13—15, 1973 on the occasion of the 20th foundation anniversary of the Prague Burns Institute, Department for Plastic Surgery.

Main topics of the proposed scientific programme: 1. Surgery of the burn wound, 2. Resuscitation and anaesthesiology, 3. Septicaemia, 4. Complications of the burn illness.

In all sessions there will be introductory lectures presented by invited speakers. A recorded discussion will follow.

Symposium language: English, Russian and Czech or Slovak with simultaneous translation.

Site of the Symposium: Lecture Hall of the Carolinum, Charles University, Celetná 16, Praha 1.

The detailed programme, containing also particulars on the social programme, and final applications forms will be sent early in 1973 to all who are interested in.

Please write: Czechoslovak Medical Society J. E. Purkyně, Symposium for the Treatment of Burns, Sokolská 31, Praha 2.

Important Notice

Beginning in January 1973, Institute for Scientific Information, Philadelphia, U.S.A., will introduce a new Current Contents edition, entitled **Current Contents/Clinical Practice**. CC/Clinical Practice will differ from the present CC editions by covering journals which emphasize day-to-day medical situations as well as or instead of pure research. It will be particularly useful not only to physicians and surgeons but also to allied professionals with patient-care responsibilities, who have limited access to available literature in their respective fields.

The Board of the Editorship announces that the journal *Acta Chirurgiae Plasticae* has been selected for inclusion in Current Contents/Clinical Practice from No. 15, 1, 1973.

INSTRUCTIONS TO AUTHORS

Acta Chirurgiae Plasticae, the international journal of plastic surgery, is issued in two versions four times a year. One version is in English (or, as requested by the author, in French or German) and the other in Russian. The aim of the Journal is to make specialists acquainted with the work of authors of the socialist countries, but studies from other countries are also published and welcomed.

Articles are accepted for publication which deal with the problems of plastic surgery and allied branches (clinical, laboratory, experimental studies); they must be original and not yet been published elsewhere. Articles written by authors of the countries which are represented in the editorial board of the Journal, must be given their imprimatur by the respective members.

Kindly send your manuscripts to the following address: Acta Chirurgiae Plasticae, c/o R. Vrabec, M. D., the secretary, Legerova 63, 120 00 Praha 2, Czechoslovakia.

The manuscript must be typewritten in two copies (1 original plus 1 carbon-copy), one page per sheet, with doublespacing between the lines, 60 types per line and no more than 30 lines per page. There must not be more than five corrections by handwriting per manuscript. The manuscript should not exceed eight pages and contain no more than 10—12 illustrations. The institute the author work at, its director, the title of the article and the full name of the author (or authors), must be stated on the first page. All other pages should be numbered consecutively. Every paper must have a summary which is then translated into French, German and Spanish. The summary, the references and the captions to the figures are to be written each on a separate page and added to both copies of the manuscript. The address of the main author should be given at the bottom of the references. The place where the tables are to be inserted, must be marked in ink on the margin of the text. Figures are to be separate and not affixed in the text. On the back of each figure, the author is requested to write his name, the short title of the paper and the consecutive number of the illustration which must tally with the number marked on the margin of the text. An arrow indicates the way the figure should be set. Photographs must be clear, with good contrast and of the same size (best 6×9 cm.). The tables and graphs should be lined with Indian ink on white paper so as to make them well readable.

References should be limited, quoted from internationally accessible sources and not older than five years. If the number of references exceed ten, the editors are entitled to pick their choice.

Quotations should be adjusted according to Czechoslovak norm as follows: Articles in journals — author's surname and initials, title of the article (may be left out), international abbreviation of the journal, volume, number, page and year of issue. For instance: Frazer, F. C., Warburton, D.: *Plast. reconstr. Surg.*, 33, 4: 395, 1964.

Books and monographs — name of author, title of publication, place of issue, publisher, year of issue and — maybe — also page from which quotations has been taken. For instance: Burian, F.: *Surgery of Cleft*. Praha, SZdN 1954.

Manuscripts which do not comply with these requirements, cannot be published.

The editorial board reserves the right to suggest to the author publication of his article in the form of an annotation, shorten the original manuscript, make corrections or, on account of comments made by the reviewers, return the manuscript to the author for redrafting. The papers must be sent to the editor in their final formulation. The galley proofs are done by the author, but no essential changes are permitted. The authors of original papers receive 50 reprints free of charge and without special order.

TISSUE REACTION AFTER IMPLANTATION OF VARIOUS POLYMERS TO THYMECTOMIZED AND NON-THYMECTOMIZED RATS

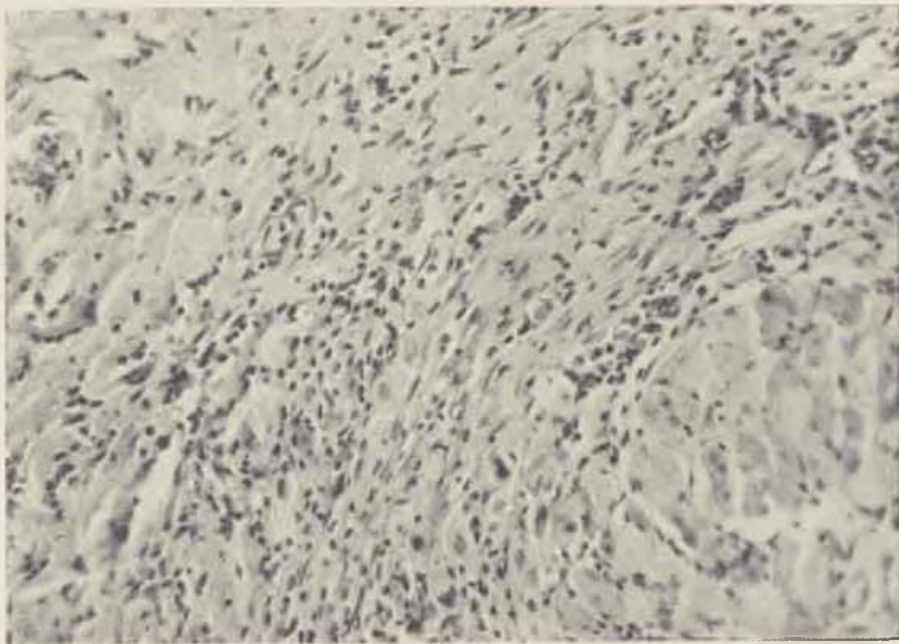


Fig. 1. Chronic inflammatory process in soft tissues in the neighbourhood of implanted plastic substance. Stained with haematoxylin-eosin, magnified 10×10 .

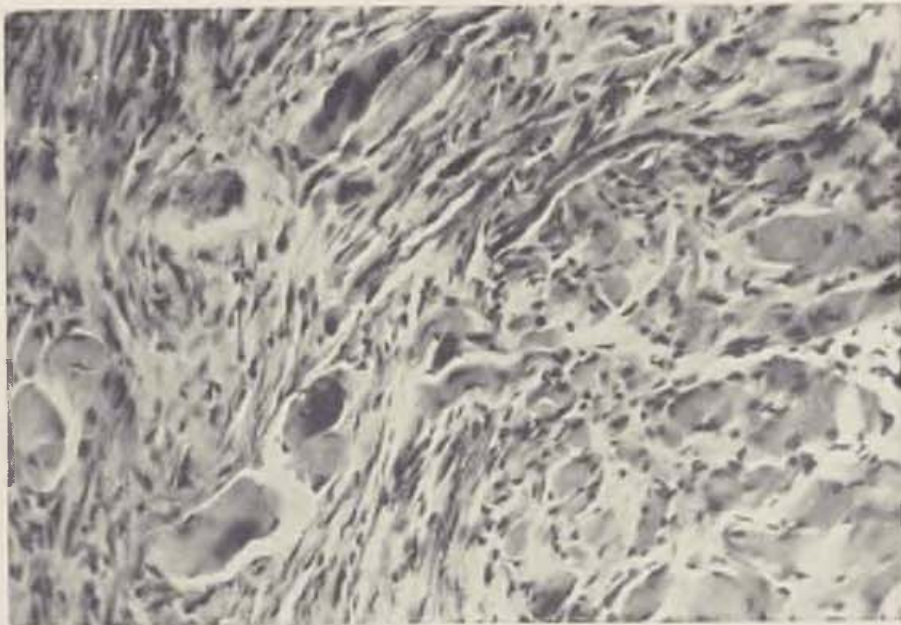


Fig. 2. Large number of foreign-body giant cells. Stained with haematoxylin-eosin, magnified 10×10 .

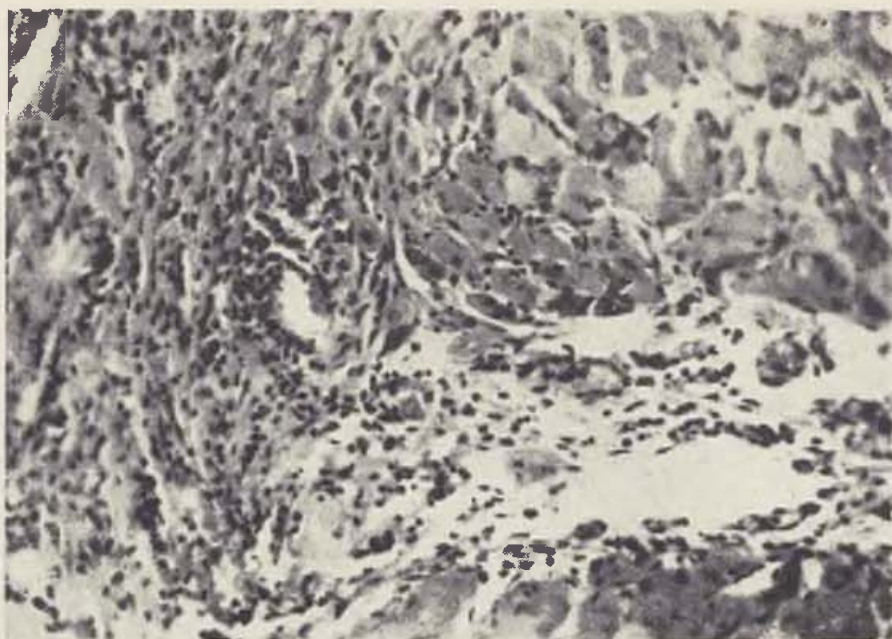


Fig. 3. Chronic inflammatory process and granulation tissue. Stained with haematoxylin-eosin, magnified 10X10.

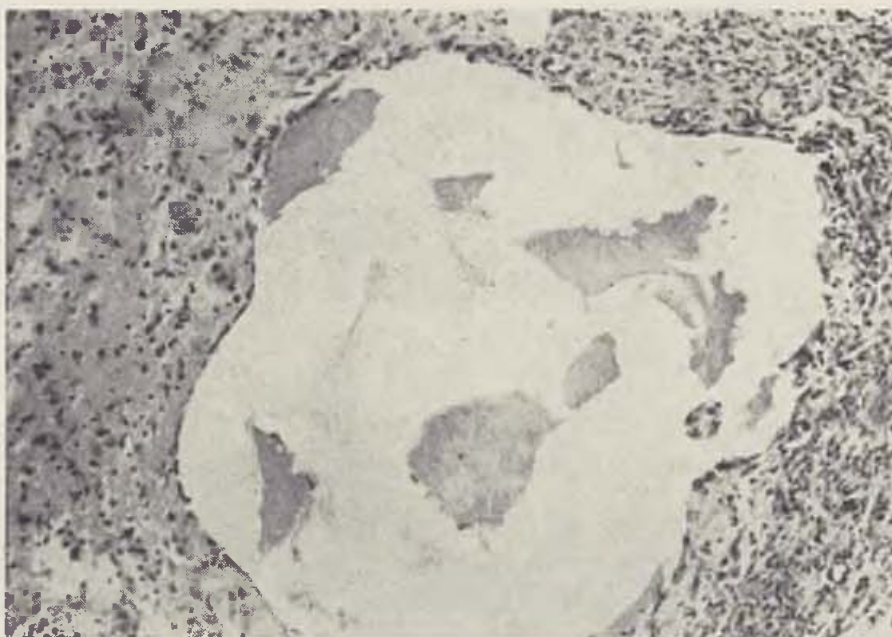


Fig. 4. Formation of a pseudocapsule in the neighbourhood of plastic implant. Stained with haematoxylin-eosin, magnified 10 X 10.

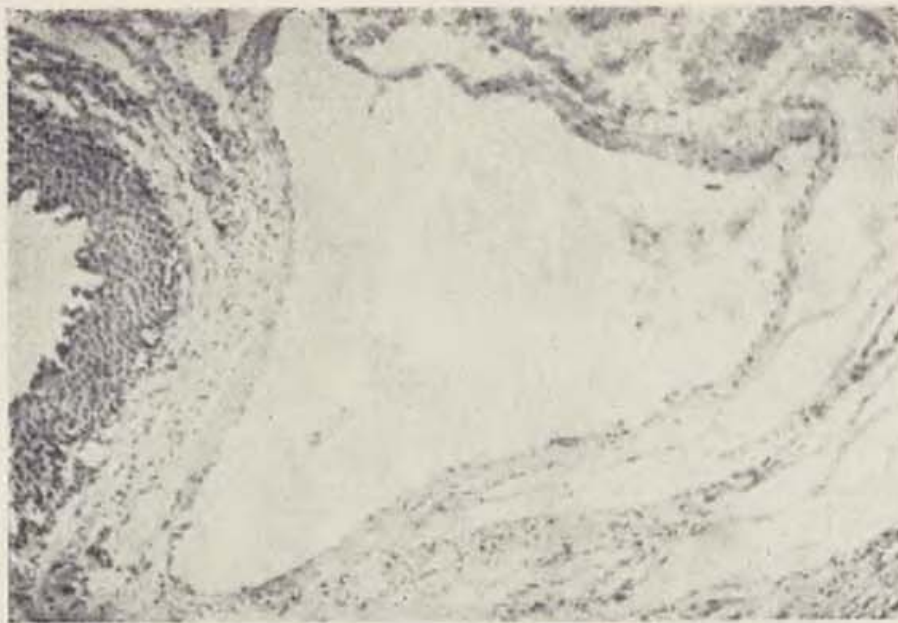


Fig. 5. Well developed pseudocapsule. Stained with haematoxylin-eosin, magnified 10X10.

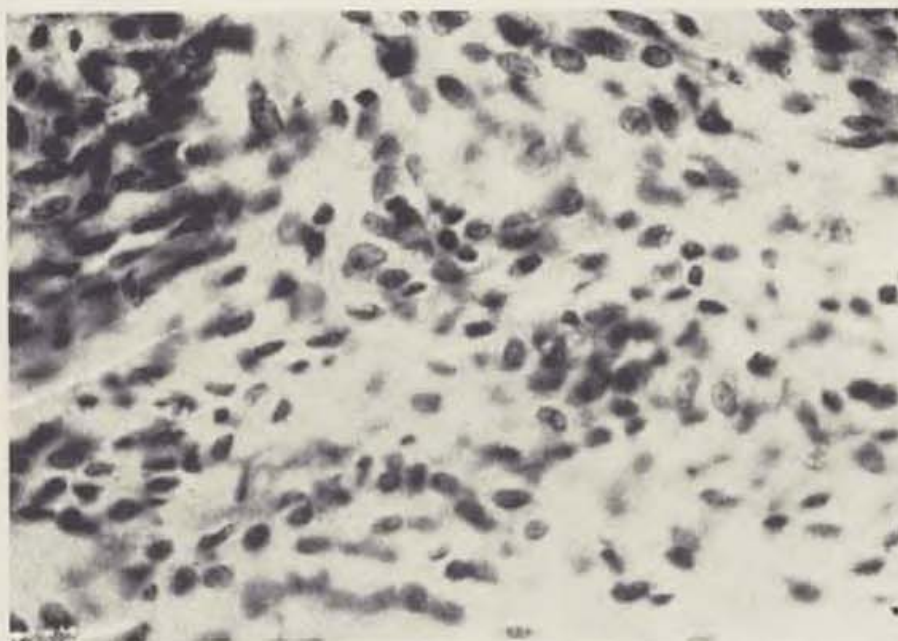


Fig. 6. Chronic inflammatory process; small lymphocytes and eosinophilic leucocytes are missing. Stained with haematoxylin-eosin, magnified 10 X 10.

N. I. Elsahy, M. Vistnes

AN ALTERNATE METHOD IN THE TREATMENT OF ZYGOMATIC FRACTURES

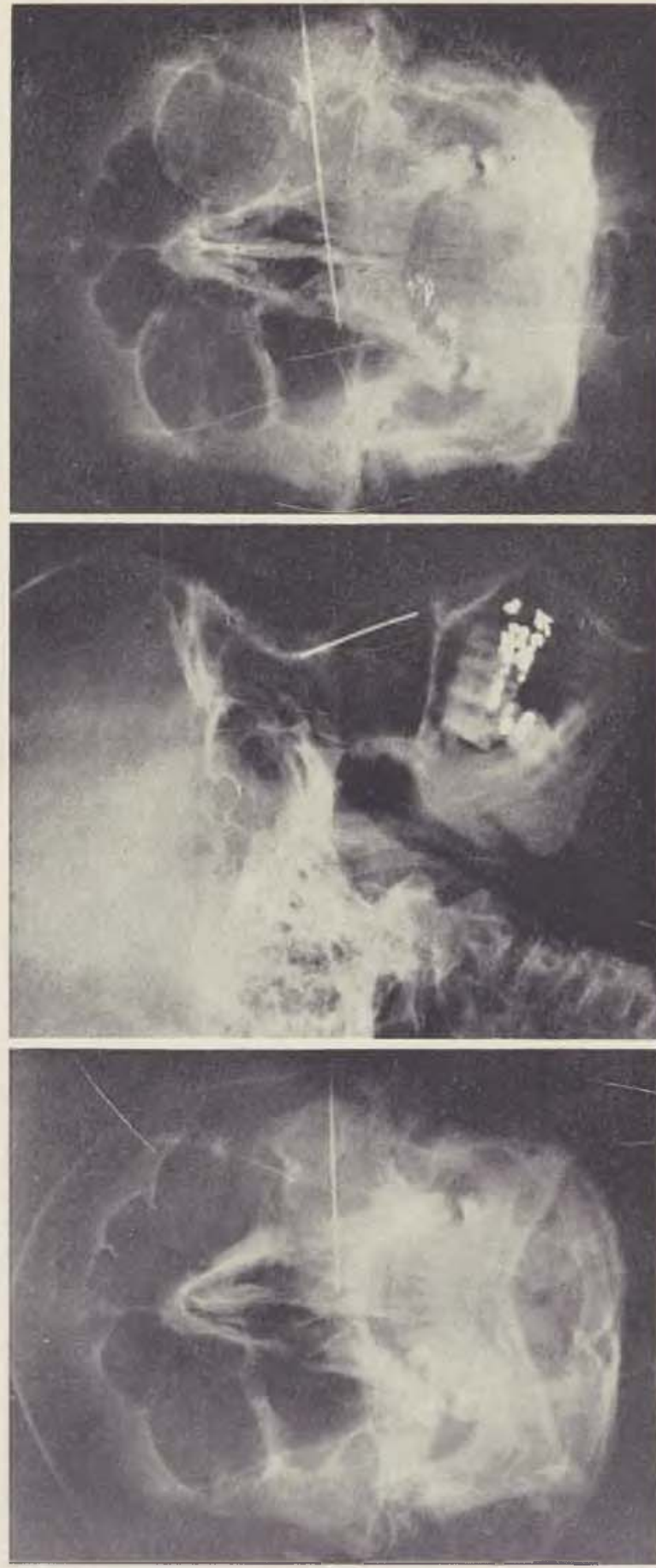


Fig. 1. Displacement of zygomatic fracture following open reduction and fixation with "K" wire only. Note thin infraorbital bone structure. — Fig. 2. The patient shown in Fig. 1 after a second operation using the suggested method.