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Plastic Surgery

HISTORY OF LIP RECONSTRUCTION (CHEILOPLASTY)

D. J. HAUBEN

As a passage in the Sushruta (1) suggests, ancient Indians used to know both lip and nose reconstruction a long time ago.

According to that, the beginnings of cheiloplasty can be traced back to Celsus (2).

Zeis (3) says in a quotation that as early as the 15th century "Facius and Vincenc Auria both found out that after the art of nasal reconstruction had been developed by Branca, the father, his son Antonius extended this art to reconstruct both lips and ears".

Tagliacozzi devoted a special chapter to this particular operation (Lib. II, Chapter 19). It should be performed according to the same rules as in rhinoplasty, though a skin flap from the arm — if it is to serve as a lower lip replacement — must be lifted from the deepest place on the arm in a manner different from that in reconstructing the nose or the upper lip (4).

Chopart (5) dealt with surgical operations for cancer of the lips, which leaves a defect. His operation resembles that by Celsus, and consists of the following:

1. the pathological site should be turned into a square,
2. the replacement flap is rotated in itself,
3. after it has been sutured in, no open wound remains.

However, Chopart's surgical method differs frfom Celsus's technique in that 1. in it, the replacement is taken not from the middle of the wound but from the chin, 2. the replacement does not consist from the full thickness of the wall of the mouth but solely from the skin, and 3. the flap is turned against the jaw and the teeth with the blody surface, which is not the case in Celsus's method.

Dieffenbach used his method of lateral shift even for purposes of cheiloplasty (6). Velpeau described a modification of Dieffenbach's method (Gaz. d. hop. 1840, No. 95), in particular upper lip cheiloplasty (Nouveaux éléments de médicine opératoire, 2nd ed., Paris 1839) (7).

Progress in cheiloplasty can be seen in the "cross lip flaps" technique described in 1848 by Stein (1797—1868) (8), in 1872 by Estlander (1831—1881) (9), and in 1898 by Abbé (10).

Stein performed his cheiloplasty in 1847 using two skin flaps from the unaffected lip. It is worth remembering that in 1862 he performed a simple skin flap procedure which is now known as Abbe's flap but which he never published.

In 1872, Estlander published his method for the reconstruction of the lips and cheeks.

Abbe, remembered for his skin flap described in 1898, was really interested in the surgical repair of harelip and cleft soft palate.

J. H.

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BASIC CEPHALOMETRIC FACIAL CHARACTERISTICS IN CLEFT LIP AND/OR CLEFT PALATE PRIOR TO THE FIRST SURGICAL REPAIR

Z. ŠMAHEL, Z. POBIŠOVÁ, P. FIGALOVÁ

The present study was aimed at a definition and mutual comparison of deviations of basic facial parameters in individual types of clefts prior to initial surgery. Its further task was to determine to what extent the deviations were influenced by the presence of an overbridging of the cleft, or by the completeness of the cleft resp. The findings characterize the original anomaly still uninfluenced by treatment or by secondary postoperative effects. Thus they can serve as the basis for the studies of deviations and of their dynamics in individual phases of the postoperative development. They provide the possibility to assess the therapeutic results with regard to the initial situation. Simultaneously they illustrate the consequences of the antecedent embryonal and prenatal development and this allow to make certain etiopathogenetic interpretations. The study consisted of cephalometric measurements.

MATERIAL AND METHODS

The series included boys with cleft lip and cleft lip and palate prior to cheiloplasty and girls with isolated cleft palate prior to palatoplasty. Boys ranged in age from 5 to 10 months and girls from 3.5 to 5 years. All of them were examined on an in-patient basis at the Clinic for Plastic Surgery in Prague. None of these patients was treated previously by surgery or orthodontic therapy. The individuals examine included 30 boys with bilateral (BCLP) and 62 with unilateral (UCLP) cleft lip and palate, 17 boys with unilateral cleft lip with or without an involvement of the alveolar process (UCL) and 18 girls with isolated cleft palate varying in extent (CP). Among boys with bilateral cleft lip and palate were 18 individuals with complete clefts ($BCLP_c$), 5 incomplete clefts with bilateral bridges ($BCLP_i$) and 7 mixed clefts, i. e. with unilateral bridges ($BCLP_m$). The series with unilateral cleft lip and palate included 36 complete ($UCLP_c$) and 26 incomplete ($UCLP_i$) clefts. Within the group of cleft lip all but one patient had incomplete clefts. All three authors participated in the examination of these patients.

The series of controls consisted of individuals selected from the material examined by one of the authors (P. F.) as follows: The 32 boys ranged in age from 5 to 10 months, so that their mean age did not differ from that in any individual group with cleft lip (± palate). Into the control series of girls,

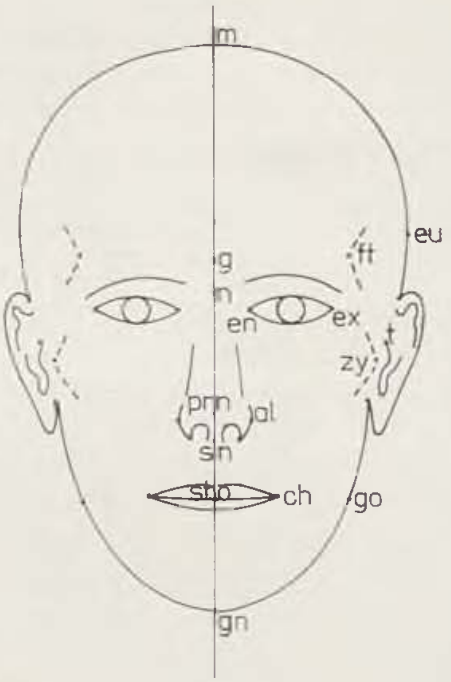

Fig. 1. Cephalometric points used in the study (Op = opisthocranion — point on the occipital bone farthest from glabella, this point is not visualised on the figure)

each girl suffering from a cleft was coupled with two normal girls matched in age (i. e. 36 girls). This procedure eliminated the drawback of the large range of age of our series. Since nasal deviations were not determined in controls, this characteristic was measured later in 25 infants matched in age.

Tables 1—2 contain the investigated characteristics; the cephalometric points used throughout these studies are presented on Fig. 1. The subnasal arch (t-sn-t) and the submandibular arch (t-gn-t) were measured with measuring tape between both tragions across the upper lip and chin. The other dimensions represented direct measurements, one of them (sto-gn) was computed as the difference between total facial height (n-gn) and the upper facial height (n-sto). Nasal deviations (dev. prn) were determined as the deviation of the apex from the median plane with a semicircular goniometer, the centre of which was placed on the root of the nose. The right and left half of the subnasal arch (t-sn dx et sin) were measured as well and asymmetry was determined by the comparison of the normal with the affected side. Features characteristic for an asymmetry (dev. prn and t-sn dx et sin) were not determined in isolated cleft palate in which no deviations were present. The examinations began with measurements of dimensions of mobile structures within the oronasal area when the child still kept quite and then continued

with the measurements of dimensions which were less influenced by the increasing unrest of the child. The ascertained dimensions were used for the calculation of the following indexes: i. cephalicus (100 x eu-eu:g-op), i. frontoparietalis (100 x ft-ft:eu-eu), i. facialis (100 x n-gn:zy-zy), i. facialis superior (100 x n-sto:zy-zy), i. mandibularis (100 x sto-gn:go-go), i. intercanthalis (100 x en-en:ex-ex), i. nasalis (100 x al-al:n-sn), i. nasozygomaticus (100 x al-al:zy-zy) and i. cheilozygomaticus (100 x ch-ch:zy-zy). These indexes characterize the proportions of individual facial regions.

Tab. 1. Differences of preoperative cephalometric characteristics in individual types of clefts from values in controls with significance levels (BCLP = bilateral cleft lip and palate, UCLP = = unilateral cleft lip and palate, UCL = unilateral cleft lip, CP = isolated cleft palate, K_{cp} = = control for isolated cleft palate

Variable	BCLP	UCLP	UCL	CP	K_{cp}
age (months)	−0.58	−0.15	0.59	0.00	49.72
g-op (mm)	−1.00	−0.77	2.47	−1.23	161.42
eu-eu	6.97××	8.70×××	8.50××	−4.11××	140.83
ft-ft	1.76	2.98×	2.27	−2.75×	95.92
zy-zy	7.66×××	9.11×××	6.47×××	2.14	112.64
go-go	3.11×	3.67××	2.90	4.03×××	84.19
en-en	3.04××+	2.91×××	1.81××	−0.11	26.83
ex-ex	1.29	1.88×	0.10	−0.81	76.14
al-al+++!!!	10.29×××	7.63×××	4.53×××	1.14×	25.92
ch-ch!	7.13×××	6.29×××	3.15×	1.69	35.81
n-gn	0.41	2.67×	3.54×	−4.50××	89.33
n-sto+	−1.44	0.97	0.63	−1.79	55.67
n-sn+++	0.16	3.25×××	2.91×××	1.14	36.58
sto-gn	1.38	1.71	2.44	−2.81×××	33.75
t-sn-t	9.88××	9.06××	9.41×	−1.89	230.42
t-gn-t	−0.63	4.93	7.47×	−2.61	236.89
[1]dev. prn!!!	tab. 2	10.87×× nc	5.46××× nc	—	—
i. cephalicus	5.73×××	7.23×××	4.59×	1.91	87.40
i. frontopariet.	−2.28	−2.73×	−3.19×	0.09	68.15
i. facialis	−4.11××	−2.90×	−0.70	−5.34×××	79.34
i. fac. sup.	−4.28×××	−2.64××	−1.97	−2.44××	49.44
i. mandib.	0.66	0.87	1.83	−4.99××+	40.15
i. intercanthal.	3.60×××	3.06×××	2.47××	0.23	35.27
i. nasalis+++!	37.37×××	16.14×××	5.92	1.06	71.02
i. nasozyg.+++!	7.83×××	4.96×××	2.82××	0.56	23.03
i. cheilozygomat.	4.18×××	2.96××	0.81	0.87	31.81
n	30	62	17	18	36

appendix:	UCLP	$UCLP_c$	$UCLP_i$	UCL
[2]t-sn noncleft: cleft side+	−7.97×××	−9.91×××	−5.42×××	−5.67×

×p<0.05 ××p<0.01 ×××p<0.001

+significant differences between BCLP and UCLP

!significant differences between UCLP and UCL

[1]the mean value (in degrees), nc = deviation to the noncleft side

[2]noncleft side smaller (+ = significant difference between $UCLP_c$ and $UCLP_i$ at $p<0.05$; c = complete, i = incomplete clefts)

The results were tested with the F-test and with the t-test. The difference between the two halves of the subnasal arch was tested with the t-test for paired values. The numbers of cases were reduced negligibly in some dimensions which could not be measured accurately. The tables with our results present only differences from the series of controls, as well as the mean values in the series of controls.

Tab. 2. Differences of preoperative cephalometric characteristics in individual types of clefts from values in controls with significance levels ($UCLP_c$ = complete unilateral cleft lip and palate, $UCLP_i$ = incomplete unilateral cleft lip and palate, $BCLP_c$ = complete bilateral cleft lip and palate, $BCLP_i$ = incomplete bilateral cleft lip and palate, $BCLP_m$ = mixed bilateral cleft lip and palate, K_{cl} = control for cleft lip + palate; significance levels see tab. 1)

Variable	$UCLP_c$	$UCLP_i$	$BCLP_c$	$BCLP_{i+m}$	K_{cl}
age (months)+	−0.52	0.36	−0.85	−0.16	7.41
g-op (mm)	−2.41	1.66	−3.08	2.11	141.47
eu-eu	9.00×××	8.29××	5.76	8.19××	119.56
ft-ft	2.72×	3.32×	1.31	2.42	85.91
zy-zy	9.20×××	8.98×××	9.17×××	5.39××	101.94
go-go	3.81××	3.47×	4.11×	1.61	81.22
en-en	2.89×××	2.93×××	4.10×××	1.49	24.69
ex-ex+	0.86	3.30××	2.61	−0.70	74.28
al-al+++	9.12×××	5.48×××	10.34×××	10.20 ××	23.88
ch-ch	7.09×××	5.17×××	7.96×××	5.90×××	32.10
n-gn++	0.85	4.78×××	0.78	−0.18	65.59
n-sto++	−0.78	3.38×	1.53	−1.30	42.97
n-sn	3.19 ××	3.34××	0.08	0.27	28.31
sto-gn	1.16	2.49×	1.85	0.66	23.09
t-sn-t	8.62××	9.67××	11.09××	8.43	204.19
t-gn-t	5.31×	4.42	−1.39	0.50	199.00
[1]dev. prn+++	12.79_{nc}×××	7.60_{nc}×××	2.56_{dx}××	appendix	0.12_{sin}
i. cephalicus	8.18×××	5.83××	6.41×	4.71	84.63
i. frontopariet.	−3.08×	−2.26	−1.89	−2.83	72.12
i. facialis++	−4.63×××	−0.52	−4.58××	−3.40	64.46
i. fac. sup.++	−4.25×××	−0.41	−4.89×××	−3.36×	42.23
i. mandib.	0.22	1.77	0.93	0.24	28.48
i. intercanthal.	3.49×××	2.46×	4.39×××	2.42	33.27
i. nasalis+++	21.57×××	8.32××	37.42×××	37.38×××	84.55
i. nasozygomat.+++	5.90×××	3.04×××	7.46×××	8.38×××	23.44
i. cheilozygomat.	3.63××	2.02	4.38××	3.87×	31.69
n	36	26	18	12	32

appendix: [1]dev. prn!! $BCLP_i$ = 0.60 dx (n = 5), $BCLP_m$ = 12.29_{in}××× (n = 7)

+significant differences between complete and incomplete unilateral cleft lip and palate (significance levels see tab. 1)

[1]the mean value (in degrees), nc = deviation to the noncleft side, dx = deviation to the right, sin = deviation to the left, in = deviation to the incomplete cleft side (!! significant difference between $BCLP_m$ and $BCLP_i$ or $BCLP_c$ at $p<0.01$)

RESULTS

Deviations in individual types of clefts (Tab. 1): In cleft lip with or without cleft palate the basic differences are similar and differ from those recorded in isolated cleft palate. There is always an increased width of the neurocranium (eu-eu), while its length (g-op) remains unchanged. This results in changes of the length-width proportion of the neurocranium (i. cephalicus). The supraorbital frontal width (ft-ft) is slightly increased as well but this parameter was significant in unilateral cleft lip and palate only. Thus there can be changes of the values of the front-oparietal index. Facial width is increased regularly (zy-zy) and in a slighter degree also the width of the lower jaw (go-go). There is equally an enlargement of the interocular distance (en-en), especially in cleft lip and palate, while the distance between the outer eye canthi (ex-ex) remains mostly unchanged (except in UCLP). This leads to higher values of the intercanthal index. Nasal width (al-al) is increased most markedly in bilateral cleft lip and palate and in the smallest degree in cleft lip alone. The widening of the oral slot (ch-ch) increases equally with the severity of the cleft (UCL — UCLP — BCLP). The gradation of changes of both characteristics is confirmed by the pertinent values of the nasal, nasozygomatic, and cheilozygomatic indexes. In cleft lip alone there is no significant increase of the oral slot width in relation to facial width (cheilozygomatic index), or of nasal width in relation to nasal height (nasal index). Particularly marked disproportions between nasal height and width are present in bilateral cleft lip and palate.

Vertical facial dimensions are unchanged in bilateral cleft lip and palate, while in unilateral clefts and in cleft lip alone total facial height is slightly increased (n-gn) and the nose is highly significantly prolonged (n-sn). Since the height of the upper face (n-sto) is unchanged, the increase of nasal height is due, most probably, to the deviation of the base of the columella and to the anomalous configuration of the transition between the columella and the lip. These deviations probably exerted an influence on the measurements of nasal height. The height of the lower face, or of the mandible (sto-gn) and its height-width relation (mandibular index) are unchanged. Because of the marked increase of the bizygomatic distance cleft lip and palate are associated with impaired height-width proportions, both of total and of upper face (facial index and superior facial index). In individuals with cleft lip alone a broader face shows a direct relation to vertical dimensions (see index values). The subnasal arch is regularly enlarged (t-sn-t) due to the increased facial width and to the anterior displacement of the premaxilla in BCLP and to increased nasal heigh with lip deformation in UCLP and UCL. The submandibular arch is enlarged (t-gn-t) in cleft lip alone and corresponds to the increased facial height. The nose is deviated always towards the normal side (prn dev.). In unilateral clefts of the lip and palate the deviation is of double degree, as compared to cleft lip alone. In bilateral clefts the deviation depends on the presence of bridges across the cleft (Tab. 2). The half of the subnasal arch (t-sn) which is situated on the affected side is always larger than on the

normal side, because of the deviated columella basis (subnasal point) from the median plane to this side. The difference due to the deviation is again more marked in UCLP than in UCL (Tab. 1, Appendix).

The comparison of the main facial deviations in the three described types of clefts showed that bilateral cleft lip and palate differs from unilateral clefts in the first place by the more marked nasal widening ($p<0.001$), by the distinct circumstances at the time of the development of nasal deviation and by some differences between vertical facial dimensions. Unilateral cleft lip and palate differs from unilateral cleft lip alone by a larger nasal width ($p<0.001$) and oral slot ($p<0.05$), by a more marked nasal deviation ($p<0.001$), as well as by a larger facial width ($p<0.1$) and a nonsignificant larger distance between both inner and outer eye canthi, i. e. by the facial width parameters.

Facial changes were investigated in isolated cleft palate at a more mature age than in other types of clefts and obviously are smaller in extent. There is a reduction of neurocranial width (eu-eu) and of frontal width (ft-ft), however the proportions of neurocranial dimensions are unchanged (cephalic index, frontoparietal index). But for the larger width of the mandible (go-go) the facial width dimensions, inclusive of the interocular distance (en-en) show no deviations. The larger width of the mandible is attributed rather to the low mean values obtained in controls, which was confirmed by the comparison with the norms given by other Czech authors. Therefore we do not consider this findings as definite. Nasal widening (al-al) is negligible (1 mm). Of vertical dimensions total facial height was reduced (n-gn), which was due mainly to small mandibular height (sto-gn). The shortening of the upper face height remained below the significance level (n-sto, $t = 1.98$), yet together with other deviations of vertical characteristics resulted in changes of facial height-width proportions (facial, superior facial, and mandibular indexes). The other indexes of facial proportions are unchanged (nasal, intercanthal, nasozygomatic and cheilozygomatic indexes). The values of facial arches (t-sn-t, t-gn-t) were consistent with those in controls. Contrary to the other types of clefts where all significant deviations from the norm consisted of increased values isolated cleft palate was characterized rather by lower values. This could be suggestive of a certain cranial gracility.

Differences between complete and incomplete clefts (Tab. 2): With the exception of nasal deviations no significant differences were disclosed between complete and incomplete bilateral cleft lip and palate. This was obviously due to the small numbers of individuals with incomplete clefts including also mixed clefts. Yet in spite of this complete clefts showed a more marked enlargement of facial width parameters including bizygomatic width (zy-zy), mandibular width (go-go), interocular distance (en-en), and the oral slot width (ch-ch). The differences were reflected by the pertinent index values (facial, superior facial, intercanthal indexes). Both subgroups had similar widening of the nose (al-al). The subnasal arch (t-sn-t) was enlarged significantly in complete clefts alone, which was due obviously to the protru-

sion of the premaxilla. Vertical facial dimensions were never affected. In complete clefts the nose was slightly deviated to the right (dev. prn); incomplete clefts were associated with a minimum deviation (appendix), while mixed clefts were accompanied by a marked deviation towards the side with a bridge. The extent of the deviation was exactly the same as in complete unilateral cleft lip and palate.

In unilateral cleft lip and palate some parameters differed significantly in complete and incomplete clefts. However, contrary to bilateral clefts, they did not include the facial width dimensions (zy-zy, go-go, en-en), but for the distance between the outer canthi (ex-ex). The increase of this distance in incomplete clefts alone most probably represented an accidental finding which was not reflected by a significant difference of the values of the intercanthal index occuring between complete and incomplete clefts. On the contrary the widening and the deviation of the nose (al-al, dev. prn, nasal index and nasozygomatic index) were much more marked, almost double, in complete clefts as compared to incomplete clefts. A more marked widening of the oral slot (ch-ch) in complete clefts was less conspicuous, but it was confirmed equally by the values of the cheilozygomatic index. Significant differences between the investigated subgroups were recorded also in the height of the upper (n-sto) and thus of the whole face (n-gn). These parameters were increased in incomplete clefts, but were still proportional to the dimensions of facial width (facial and superior facial indexes). In complete clefts the above mentioned two dimensions did not differ from those in controls, yet they were below the average in relation to the bizygomatic width, as it was documented by reduced index values. There were highly significant differences of the two dimensions and indexes between the investigated subgroups. No differences were disclosed in the height of the mandible (sto-gn, mandibular index) and in the values of facial arches (t-sn-t, t-gn-t) between the two subgroups.

DISCUSSION

The above described results of our studies disclosed substantial differences between cranial configuration between individuals with isolated cleft palate and individuals with the other types of clefts prior to the first surgical repair. On visual inspection we failed to disclose any conspicuous facial changes in individuals with isolated cleft palate, but cephalometry revealed some deviations. Most significant was the reduction of the anterior mandibular height which was suggestive of a smaller mandible. It was demonstrated early after birth by Dahl et al. (1982) with the use of roentgencephalometry. These individuals were encountered frequently in series of patients with isolated cleft palate and the most severe forms of this anomaly were designated as Pierre-Robin syndrome. This finding was consistent with the mechanism of development of a cleft palate and the interference with the growth of the mandibular "anlage" towards the end of the second month of embryonal life. This mechanism is responsible exclusively for the development of isolated cleft palate (Jelínek and Peterka, 1977). The other reduced characteristics include only the height of the upper and whole face, as well as the width of the neurocranium and of the frontal bone. They can be characteristic for more subtile

individuals, as it has been reported sometimes in isolated cleft palate and which can be related possibly with the more potent teratogenic impulse, as compared to other types of clefts (Jelínek et al. 1983, Šmahel 1983). The relatively smaller mandible persisted up to adult age when an additional deviation, i. e. maxillar retrusion develops as the sequelae of postoperative inhibition of upper jaw growth in anterior direction (Šmahel, 1984a).

In cleft lip, with or without cleft palate preoperative facial deviations, regardless of the cleft per se, are much more marked than in an isolated cleft palate. Most conspicuous is the widening of the nose and its deviation towards the unaffected side. This is due to changes of anatomical interrelations and to an abnormal insertion of nasolabial muscles. The increased width of the oral slot results, beyond any doubt, from the disruption of the continuity of the m. orbicularis oris. These deviations show a relation to the severity of the cleft, i. e. to its type and extent. The interocular distance is increased as well as it was confirmed by numerous authors and this is most probably primarily related to cleft lip (see Šmahel, 1984b). Besides these changes, which are in many cases obvious on visual inspection, cephalometry demonstrated deviation of height and especially of width cranial parameters. In the presence of a normal height of the upper face an increased height of the nose represents probably an artefact of the anomaly (see above) and the slight prolongation of the face as a whole results most probably from the impaired articulation, which is induced regularly during the examination of young infants (yet absent in bilateral clefts with premaxillar protrusion). Therefore the differences of vertical facial dimensions from normal are considered as representing secondary changes. However, the situation is quite different in width dimensions with an increase of neurocranial and facial widths and a somewhat slighter increase of frontal and mandibular widths. Though the increased frontal width can be related to the wider interocular distance (Šmahel and Brejcha, in press), the increased facial width to a lateral displacement of maxillar segments and a wider neurocranium can be due to the supine position in which these children must be kept in order to prevent a deformation of the cleft maxilla, the mutual correlation of all characteristics, inclusive of larger mandibular width document that the individuals examined have a primarily wider type of the head. This is confirmed also by the increase of facial width in incomplete clefts, without any substantial lateral displacement of maxillar segments. The comparison of our controls with other Czech norms confirmed this difference as well. In order to verify these results we have evaluated the measurements of facial width in UCLP which were carried out by the author of the control series who investigated 25 children with this type of cleft. The mean value was 110.96 mm as compared to 111.11 mm in patients measured by the other authors. Thus the widening was confirmed by the results obtained by the author who examined the series of controls. Her measurements were in full agreement with the results of the other co-authors. This offers an interpretation with regard to the etiopathogenesis of these anomalies. It is well known that cleft palate can develop in the presence of a very wide primordial oral cavity when palatal plates after horizontalization do not come into con-

tact and thus cannot grow into a secondary palate. Thus the wide type of the face can lead to the development of cleft palate. This is consistent also with disturbed height-width proportions of the face in cleft lip and palate. In cleft lip alone the width parameters of the face are increased as well, yet somewhat slighter and in proportion to vertical characteristics. Contrary to the latter in an isolated cleft palate the height-width proportions of the upper face and of the face as a whole are impaired, since the width of the face is too large as compared to its height (facial and superior facial indexes). These proportional changes can be of greater importance than absolute deviations when in a subtle face of individuals with palatoschisis the bizygomatic enlargement is insignificant.

A widening of maxillar structures was confirmed by numerous investigators (Subtelny 1955, Coupe and Subtelny 1960, Atherton et al. 1972 a. o.). It is conspicuous especially prior to surgical repair of the palate and can exert an effect on the facial width. However, Subtelny (1955) failed to confirm any significant effects exerted by these features and therefore it is not possible to exclude the primary origin of a wider face. In children with clefts it was reported by Dixon (1966) and by Ishiguro et al (1976) who mentioned also an increased biantegonial width of the mandible. These deviations can subside postoperatively and in a more mature age. Thus widening of the face was not found in adult age (Dahl 1970, Farkas and Lindsay 1971 and 1973, Šmahel and Brejcha 1983, Šmahel 1984c).

The results of our studies disclosed certain differences between complete and incomplete clefts. They were situated mostly within the oronasal area which is most markedly affected by the extent of the cleft. The differences in unilateral clefts were present in the width of the nose and of the oral slot, in nasal deviation and in the deviation of the columella basis from the median plane (determined by the comparison of the two halves of the subnasal arch t-sn dx:sin). They were due to the more marked or distinct changes of anatomical interrelations in complete clefts. A somewhat larger widening of the face and of facial structures in complete bilateral clefts as compared to incomplete clefts was most probably due to secondary factors (lateral displacement of maxillary segments). However the differences did not attain the significance level and a similar relationship was not evident in unilateral clefts. In the latter clefts we have recorded, on the contrary, a difference between the height of the upper and thus also of the whole face. Both dimensions were increased in incomplete clefts (similar findings were mentioned by Krogman et al. 1975, in CL±P), yet they were proportional to the width of the face. However in complete clefts was demonstrated in another of our studies in adult males (Šma- superior facial indexes). The deficient vertical growth of the upper face in complete clefts was demonstrated in another of our studies in adult mmales (Šmahel and Brejcha, 1983). Recent findings confirmed our conclusion that it represented an early (primary) deviation which was present preoperatively. Nordin et al. (1983) on the basis of their findings draw the conclusion that the limitation of the vertical growth of the upper face occurred prior to the age of seven years, which was the age from which they followed the growth of the face.

In complete bilateral clefts this characteristic was influenced by the position of the premaxilla and thus an adequate assessment was not possible.

We failed to disclose in the available literature any cephalometric study of a similar type on children with clefts prior to surgery. Roentgencephalometric studies were initiated regularly at a more mature age as well. Therefore there are only a few comparable findings. The configuration of the nose in individual types of clefts was assessed by Hajniš and Figalová (1973 a, b, 1974). They demonstrated a widening and deviation of the nose towards the normal side in cleft lip and palate. They did not assess the relation of the deviations to the presence of a bridge across the cleft which exerts marked effects on the configuration of the nose.

The use of cephalometry is associated with difficulties during the examination of small infants, in particular in those who won't keep quite, and this can be reflected by the lack of accuracy of measurements. Therefore caution should be applied during the interpretation of the results obtained, as well as in the course of further studies. The confirmation requires a demonstration of a wider head type in individuals with cleft lip and palate. Because of its easy use and minimum discomfort for the patient this method is particularly convenient in early infancy when roentgencephalometry cannot be applied without special appliances for keeping the infant in precise position and without medication. During the comparison of our findings in individual types of clefts we are well aware of the fact that changes in boys aged 7 months suffering from cleft lip and palate cannot be compared without reservations with changes in girls aged several years suffering from an isolated cleft palate. However a general comparison is possible. Both series include individuals of the less severaly affected sex.

SUMMARY

Cephalometric studies were carried out in 30 boys with bilateral cleft lip and palate, 62 with unilateral cleft lip and palate, and 17 with unilateral cleft lip, in all of them prior to cheiloplasty, as well as in 18 girls with isolated cleft palate prior to palatoplasty. The comparison with adequate series of controls disclosed a distinct type of deviations in isolated cleft palate as compared to those encountered in the other types of clefts. Individuals with isolated cleft palate had a reduced height of the mandible and thus of the whole face and reduced widths of the neurocranium. Simultaneously they showed changes of the height-width proportions of the face, as well as of its upper and lower portion. As compared to the other types of clefts they were characterized by a certain cranial gracility. The interocular distance was unchanged.

Individuals with cleft lip, or cleft lip and palate have a wider type both of the head and face and have regularly an increased interocular distance. The nose and the oral slot are wider, the deviation increases with the severity of the cleft. Vertical facial dimensions show no substantial changes, the in-

creased height of the nose in unilateral involvement is an artefact of the anomaly. The proportions of the cranium and of its individual parts show a variety of disorders, especially in cleft lip and palate. In cleft lip alone the height-width facial proportions remain unchanged. The nose is deviated regularly to the normal side (or in mixed bilateral clefts to the less affected side); the deviation is two times larger in cleft lip and palate, as compared to cleft lip alone. A similar interrelation can be observed in the deviation of the columella basis.

The presence of a bridge across the cleft exerts an influence on some facial parameters, in particular within the oronasal region. In unilateral clefts the bridge results in a reduction of the widening of the nose and of the oral slot, as well as of the deviation of the nose and of the columella basis, almost to the level recorded in cleft lip alone. Individuals with incomplete clefts have increased vertical facial dimensions, but the height-width proportions are not disturbed, while in complete clefts the height of the upper face is relatively low as compared to its width. Complete bilateral clefts show a more marked widening of facial structures and of the oral slot, as well as an enlarged subnasal arch (protrusion of the premaxilla) as compared to incomplete clefts.

The lower height of the mandible (a smaller lower jaw) in an isolated cleft palate and a wider type of the face in the other types of clefts (proportionally also in isolated cleft palate, but not in cleft lip alone) can be of importance in the etiopathogenesis of these malformations. Our findings showed simultaneously the original extent of changes within the oronasal region in individual types of clefts.

RESUME

Caractéristiques céphalométriques basales du visage chez la division labiale ou palatine avant première intervention chirurgicale

Šmahel, Z., Pobišová, Z., Figalová, P.

30 garçons atteints de la division labiopalatine bilatérale, 62 garçons avec la division labio-palatine unilatérale, 17 garçons avec la division labiale unilatérale ont été soumis aux explorations céphalométriques précédentes une chéiloplastie envisagée et 18 jeunes filles avec la division palatine isolée ont été examinées avant l'exécution d'une palatoplastie. La comparaison avec de groupes adéquats a mis en évidence la différence d'anomalies liées à la division palatine isolée avec celles-ci, liées aux autres types de division. La division palatine isolée présentait une diminution de la hauteur du maxillaire inférieur dont résultait l'abaissement de la hauteur du visage entier et l'amenuisement de la largeur du neurocranium. De changements dans la proportionnalité hauteur-largeur du visage sont également constatés. En comparaison avec d'autres divisions, la gracilité du cranium est plus remarquable. La distance interorbitaire n'est pas diminuée.

Chez les individus ayant la division labiale ou la division labio-palatine, un type du crâne plus large est présent, la distance interorbitaire est toujours augmentée. Le nez et la fissure labiale son élargis, cette anomalie s'aggrave avec l'importance de division. Les dimensions verticales du visage ne prouvent pas de graves changements, la hauteur plus grande du nez semble être l'artefacte d'anomalie. La propor-

tionnalité du cranium et de ses parties particulières est troublée aux plusieurs sens, surtout chez la division labiopalatine. La seule division labiale n'influence pas la proportionnalité hauteur-largeur du visage. Le nez est toujours dévié au coté sain ou moins atteint, deux fois plus chez la division labio-palatine auprès des divisions labiales uniques. Une dépendance pareille est remarquable chez la déviation de la base de columelle. La présence du pont traversant la fissure de division paraît influencer quelques paramètres du visage, surtout dans la région oralo-nasale. Chez les divisions unilatérales, elle produit une modération de l'élargissement de nez et de fissure labiale, aussi que celui de base columellaire, presque jusqu'au niveau de la division labiale unique. Les divisions incomplètes présentent l'augmentation de dimensions verticales du visage, sans troubles de proportionnalité dans le domaine hauteur-largeur, tandis que les divisions complètes se distinguent par l'abaissement de l'étage supérieur du visage à l'égard de largeur. Les divisions bilatérales complètes, comparées avec les divisions incomplètes, présentent l'élargissement plus grand du splanchnocranium et de la fissure labiale et l'augmentation de l'arc sous-nasal (l'avancement du pré-maxillaire).

La hauteur moins grande du maxillaire inférieur chez la division palatine isolée et le type de visage plus large chez d'autres divisions (proportionnellement aussi chez la division palatine isolée, mais pas chez la division labiale unique) peuvent être considérables du point de vue de l'étiopathogénèse du défaut. Nos examens ont simultanément fait enregistrer l'état initial et l'étendue d'anomalies de la région oralo-nasale selon type de division.

ZUSAMMENFASSUNG

Grundlegende kephalometrische Charakteristiken eines Gesichts mit einer Lippenspaltbildung oder einer Gaumenspaltbildung vor der ersten Operation

Šmahel, Z., Pobišová, Z., Figalová, P.

30 Knaben mit beiderseitiger Lippen- und Gaumenspaltbildung, 62 Knaben mit einseitiger Lippen- und Gaumenspaltbildung, 17 Knaben mit einseitiger Lippenspaltbildung stets vor der Cheiloplastik sowie 18 Mädchen mit isolierter Gaumenspaltbildung vor der Palatoplastik wurden kephalometrisch untersucht. Der Vergleich mit einer adequaten Kontrollgruppe zeigte einen abweichenden Charakter der Defekte bei einer isolierten Spaltbildung des Gaumens als bei den sonstigen Typen von Spaltbildungen. Bei einer isolierten Spaltbildung des Gaumens erschien die Höhe des Unterkiefers und damit auch des ganzen Gesichts sowie die Breite des Neurokraniums verkleinert, zu gleicher Zeit war auch die Höhen- und Breitenproportionalität des Gesichts verändert. Nur der Abstand der Augen voneinander war unverändert.

Die Patienten dagegen mit einer Spaltbildung der Lippe oder der Lippe und des Gaumens besitzen einen breiteren Kopf- und Gesichtstyp, und der Abstand der Augen voneinander ist ebenfalls vergrössert. Die Nase und der Mundspalt sind erweitert, und die Abweichung vergrössert sich mit der Schwerwiegigkeit der Spaltbildung. Die vertikalen Abmessungen des Gesichts zeigen keine grundsätzlichen Veränderungen, und die Erhöhung der Nase bei einseitiger Spaltbildung ist nur ein Artefakt einer Anomalie. Die Proportionalität des Schädels und seiner einzelnen Teile ist in vieler Richtung gestört, insbesonders bei Spaltbildungen der Lippe und des Gaumens. Bei einer Spaltbildung nur der Lippe erscheint die Höhen- und Breitenproportionalität des Gesichts nicht verändert. Die Nase erscheint stets zur gesunden (oder weniger betroffenen) Seite hin geneigt, und zwar bei einer Lippen- und Gaumenspaltbildung doppelt so weit

wie bei einer Spaltbildung lediglich der Lippe. Eine ähnliche Abhängigkeit wird auch bei einer Abweichung der Kollumelbasis deutlich.

Befindet sich eine Brücke über dem Spalt, so werden die Parameter des Gesichts beeinflusst, insbesonders in der oronasalen Region. Bei einseitigen Spaltbildungen mindert die Verbreiterung der Nase und der Mundspalte auch die Abweichung der Nase und der Kollumelbasis fast bis auf das Niveau der Spaltbildung der Lippe selbst. Bei unvollständigen Spaltbildungen erscheinen die vertikalen Abmessungen des Gesichts vergrössert, jedoch die Höhen- und Breitenproportionalität ist nicht gestört, während bei vollständigen Spaltbildungen die obere Gesichtshälfte im Verhältnis zur Breite niedriger ist. Bei vollständigen beiderseitigen Spaltbildungen wird gegenüber unvollständigen eine grössere Erweiterung der Splanchnokranialformen und der Mundspalte deutlich sowie eine Vergrösserung des Subnasalbogens (Herausschieben der Prämaxilla).

Die geringere Höhe des Unterkiefers (geringere Mandibula) bei isolierten Gaumenspaltbildungen und der breitere Typ des Gesichts bei den sonstigen Typen der Spaltbildung (und proportional auch bei isolierter Gaumenspaltbildung, jedoch nicht bei Spaltbildung lediglich der Lippe) können vom Gesichtspunkt der Ätiopathogenesis des Defekts aus bedeutsam sein. Die Befunde zeigten gleichzeitig den Ausgangsbereich der Veränderungen der Oronasalregion bei den einzelnen Formen von Spaltbildungen.

RESUMEN

Características básicas cefalométricas de la cara con una escisión labial y /o palatal previas a la primera operación

Šmahel, Z., Pobišová, Z., Figalová, P.

Se hizo diagnóstico cefalométrico en 30 muchachos que padecen escisión bilateral del labio y el paladar, en 62 con el mismo defecto pero unilateral y en 17 con escisión labial unilateral, siempre antes de hacerse la queiloplástica, y en 18 muchachas con escisión del paladar aislada antes de procederse a la palatoplástica. La comparación con conjuntos adecuados de control demostró el distinto carácter de las diferencias en una escisión aislada del paladar comparado con los demás tipos de dichas escisiones. En la aislada escisión del paladar se detectaba una aminoración de la altura de la mandíbula y por ende de toda la cara y de la anchura del neurocranio. A la vez se detecta un cambio de la proporcionalidad entre la altura y la anchura de la cara. En comparación con otras escisiones se destaca una mayor gracilidad del cranio. No hay alteración en la distancia interocular.

Los individuos con la escisión del labio, o del mismo y el paladar cuentan con un tipo más ancho de cabeza y la cara, detectándose siempre también una mayor distancia entre los ojos. La nariz y la rendija bucal están más anchas creciendo la diferencia conforme a la gravedad de la escisión. Las dimensiones verticales de la cara quedan básicamente sin alteración alguna, la elevación de la nariz en caso de afección unilateral es producto de anomalía.

La proporcionalidad del cranio y de sus partes individuales se ve en muchos casos perturbada, particularmente en las escisiones labiales y palatales. En la escisión misma del labio lo proporcional entre la altura y la anchura de la cara queda sin alterar. La nariz siempre está desviada hacia el lado saludable (o menos afectado), a saber en intensidad doble en la escisión del labio y el paladar frente a la del labio solo. Análogamente sucede en la desviación de la base de la colúmela.

La presencia del puente que une la rendija de escisión influye sobre algunos parámetros de la cara, particularmente en la zona oronasal. En las escisiones unilaterales, el ensanchamiento de la nariz y la rendija bucal reduce también la desviación de la nariz así como la de la base de la colúmela, casi hasta el nivel existente en caso de

escisión del labio solo. En escisiones incompletas se agrandan las dimensiones verticales de la cara sin, no obstante, cambiar la proporcionalidad altura-anchura, mientras que en las completas la cara superior resulta baja con vistas a la anchura. En casos de escisiones bilaterales completas se destaca en comparación con las incompletas una mayor amplitud de las conformaciones del esplancnocranio y la rendija bucal y un crecimiento del arco subnasal (proeminencia de la premaxila).

El tamaño menor de la mandíbula en una escisión aislada del paladar, así como un tipo más ancho de la cara en los demás tipos de las esciciones (y proporcionalmente también en la escisión aislada del paladar, pero no en la del labio solo) pueden ser importantes desde el punto de vista de la etiopatogenésis del defecto. Los diagnósticos mostraron a la vez el tamaño básico de las alteraciones de la zona oronasal en las individuales formas de escisiones.

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SELECTION OF THE SKIN GRAFT THICKNESS WITH REGARD TO STRUCTURE OF THE DONOR SITE SKIN

N. V. OSTROVSKIY

The proper choice of the thickness of grafts cut by a dermatome with regard to sex and age of the patient as well as to donor skin thickness represents one of unsolved problems.

It is held that a skin graft should consist of the whole epidermis, the papillary layer of the dermis, as well as of a part of the reticular layer, and that the adnexal structures of the donor site, securing its reepithelization, should be preserved ad maximum (Arjev 1966, Kazantseva 1969, Padgett 1939, Zoltan 1962).

It is no secret that surgeons are often unsatisfied with the grafts obtained, for in different patients the autografts taken from the same body region can be either thicker or thinner than required, which has negative consequences. In spite of more rapid accomodation of the thin grafts, the reconstructed skin cover has limited resistance to mechanical traumas and cosmetic results are far from the best. Use of thick grafts makes it possible to form a resistant skin cover resembling the healthy skin to a maximum extent. But, as the vascularization of thick grafts proceed rather slowly, the frequency of unsuccessful operations is higher. Use of thick grafts is considerably limited also by a slow and complicated reepithelization of the donor site which precludes us from taking grafts repeatedly from the same site. Thus the problem of the proper selection of the thickness and composition of the graft considering the donor skin structure is quite pertinent.

METHODS

Morphology of the skin of the inner and outer aspects of arms, inner, outer, anterior, and posterior aspects of thigs, lateral aspects of abdomen, and of the lumbal and gluteal regions, i. e., of the most frequent donor sites of skin grafts, was examined. The morphology of the skin was followed using 100 cadavers of both sexes, aged between 21 and 74 years. The grafts cut with different adjustments of a dermatome were taken from 50 cadavers of male

Table 1. Surgical operative of cutting the dermatome grafts (in mm)

Donor sites	Surgical operative levels	Men				Women	
		22–35 years	36–45 years	46–60 years	61–74 years	21–35 years	46–55 years
	The thin skin						
Inner aspects of arms	Minimum acceptable	0.20	0.15	0.15	0.15	0.20	0.15
	Optimum	0.30	0.25	0.20	0.20	0.30	0.25
	Maximum acceptable	0.40	0.40	0.35	0.35	0.40	0.35
Inner aspects of thighs	Minimum acceptable	0.20	0.15	0.15	0.15	0.15	0.15
	Optimum	0.30	0.25	0.25	0.20	0.30	0.30
	Maximum acceptable	0.45	0.45	0.40	0.35	0.35	0.35
	The intermediate skin						
Outer aspects of arms	Minimum acceptable	0.20	0.20	0.20	0.20	0.20	0.20
	Optimum	0.30	0.25	0.25	0.25	0.25	0.25
	Maximum acceptable	0.50	0.40	0.40	0.35	0.50	0.40
Aspects of thighs:							
ventral	Minimum acceptable	0.20	0.20	0.20	0.20	0.20	0.20
	Optimum	0.35	0.30	0.30	0.25	0.30	0.30
	Maximum acceptable	0.55	0.45	0.45	0.40	0.45	0.45
outer	Minimum acceptable	0.25	0.20	0.20	0.20	0.20	0.20
	Optimum	0.35	0.30	0.25	0.25	0.30	0.25
	Maximum acceptable	0.65	0.55	0.40	0.40	0.45	0.40
dorsal	Minimum acceptable	0.25	0.20	0.20	0.20	0.20	0.20
	Optimum	0.35	0.30	0.30	0.25	0.30	0.25
	Maximum acceptable	0.60	0.50	0.45	0.40	0.45	0.40
Lateral abdominal aspects	Minimum acceptable	0.20	0.20	0.20	0.20	0.20	0.20
	Optimum	0.35	0.30	0.30	0.30	0.30	0.25
	Maximum acceptable	0.60	0.55	0.50	0.50	0.45	0.40
	The thick skin						
Lumbal region	Minimum acceptable	0.25	0.25	0.20	0.20	0.25	0.20
	Optimum	0.40	0.35	0.30	0.25	0.35	0.25
	Maximum acceptable	0.65	0.55	0.50	0.50	0.50	0.40
Gluteal region	Minimum acceptable	0.25	0.20	0.20	0.20	0.25	0.20
	Optimum	0.40	0.35	0.30	0.30	0.35	0.25
	Maximum acceptable	0.70	0.60	0.50	0.50	0.60	0.50

sex aged between 22—60 years, and from 36 patients during plastic operations. Cutting of the grafts was preceded by biopsy of the donor site skin.

Specimens of the skin and skin grafts were examined histologically in haematoxylin-eosin stained sections. Measurements were done by means of the ocular micrometer. The thickness of the skin and of all its layers was measured, and the depth of the adnexal structures was examined, too. With regard to

the need for inclusion of the full-thickness epidermis plus the papillary layer of the dermis into the graft, we measured their thickness as a whole, i. e., the epidermal-papillary portion. Because of the requirement to save the maximum amount of the adnexal structures of the donor site we focused on establishing their minimum depth.

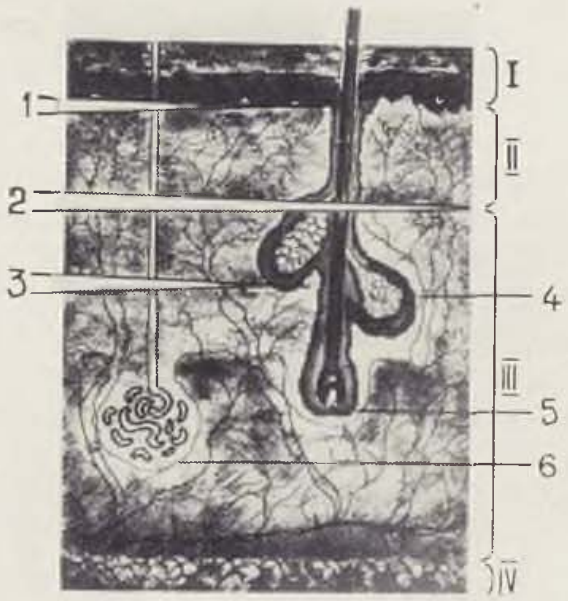

Fig. 1. Surgical operative levels of cutting the dermatome grafts. 1 — minimum acceptable, 2 — optimum, 3 — maximum acceptable, 4 — the sweat gland, 5 — the hair follicle, 6 — the sebaceous gland; I — the epidermis, II — the papillary layer, III — the reticular layer, IV — the subcutaneous adipose tissue

The course of epithelization of the donor site, with regard to the differences in dermatome adjustment, was followed using histories of 73 patients subjected to repeated atugrafting. The data were evaluated by analysis of variance and correlation.

RESULTS AND DISCUSSION

Our results have demonstrated that although individual selection of the thickness and structure of the skin grafts is difficult due to individual age, sex and topographical differences in morphology of the skin, a systemization is possible.

With respect to the localization of the donor site, the skin can be divided into three groups: thin, intermediate and thick. The skin of each group can be classified according to the following parameters: the total thickness of the skin, thickness of individual skin layers, depth of the adnexal structures.

The thin skin is characterized by the smallest values of the above mentioned structural parameters. The intermediate skin exceeds the thin skin 1.1—1.3 times in the total thickness, thickness of the epidermis, epidermal-papillary

portion, reticular layer, as well as in the minimum depth of the hair follicles, sweat and sebaceous glands. In the thick skin, these values are 1.1—1.3 times and 1.1—1.9 times higher than in the intermediate and thin skin, respectively. No such data have been available in the literature so far.

At the age of 36—45 years the values of structural parameters vary with localization of the donor site. In the thin skin, the thickness of the papillary layer and epidermal-papillary portion decreases by 9.1—12.5 %, the changes of the adnexal structures depth are nonsignificant. On the other hand, the thickness of the papillary layer and of epidermal-papillary portion of the thick skin nearly does not change ($p > 0.05$), whereas location of its adnexal structures is by 14 % more superficial. At this age period, the total thickness of the skin and that of the reticular layer decreases by 15.5—20.5 % independently of the donor site localization.

At the age of 46—60 years 50 % of parameters examined, i. e., epidermis, epidermal-papillary portion and adnexal structures, vary unsystematically with the donor site, and the other parameters keep their former values. At the more advanced age all the parameters examined change independently of the donor site. The total thickness of the skin, the thickness of the epidermis, reticular layer, as well as the depth of the adnexal structures decrease by 9.5—25.9 %, the thickness of the papillary layer and epidermal-papillary portion do not change. The intermediate skin combines the changes of age of the thick and thin skin.

The male skin is by 8.8—18.2 % thicker than female skin; the same difference holds for the epidermis, reticular layer, and depth of the hair follicles, sweat and sebaceous glands. Both the thin and intermediate female skin have thicker papillary layer and epidermal-papillary portion (by 4.2—23.6 %) than the male skin. The papillary layer of the thick female skin does not differ from that of the male skin ($p > 0.05$), whereas the epidermal papillary portion is by 3.8 % thinner.

Apparently, the considerable variability of the skin structure does not allow us do determine the proper graft thickness on the basis of one parameter only. There is no statistical correlation either between the total thickness of the skin and that of its epidermal-papillary portion ($r = 0.57$), or between the total thickness and the depth of its adnexal structures ($r = 0.75$). Thus, the thickness of the graft consisting of the epidermal-papillary portion and a part of the reticular layer without adnexal structures, cannot be determined from the total skin thickness only. Consequently, it is reasonable to use the whole complex of parameters, i. e., the total thickness of the donor skin, thickness of its epidermal-papillary portion and the minimum depth of the hair follicles, sweat and sebaceous glands.

We have elaborated 3 surgical operative levels for cutting the grafts: the optimum, minimum and maximum acceptable level. They are based on the determination of the confident intervals ($M + mt$) of the epidermal-papillary portion thickness and of the minimum depth of the adnexal structures, which enables us to calculate the variability of all parameters with a high probability ($p = 0.99$).

The minimum acceptable level is determined by the necessity to include the epidermal-papillary portion of the skin into the graft. The optimum level requires also the inclusion of the reticular layer and full preservation of the adnexal structures. In the maximum acceptable skin grafts a considerable part of the reticular layer is included and nearly all adnexal structures are left at the donor site. The levels are summarized in the table "Surgical operative levels of the dermatome grafts cutting". According to our results these levels vary in relation to the localization of the donor site, sex and age of the patient in accordance with the variability of the skin structure.

Histological examinations have demonstrated that grafts of the minimum acceptable level consists of the epidermal-papillary portion and in 25—50 % also of a part of the reticular layer forming about ¼ of the graft thickness.

The skin grafts of optimum level consist of the epidermis and papillary layer and of a part of the reticular layer, forming about ⅓ of the graft thickness, and contain excretory ducts of the skin glands. The grafts of maximum acceptable level consist of the epidermal-papillary portion and of the included reticular layer which forms more than ½ of the graft thickness; in 66.7—75 % there are also the most superficially located hair follicles, sweat and sebaceous glands. Thus, the requirement to preserve the adnexal structures of the donor site to a maximum level is not observed rigorously.

When the minimum acceptable level is exceeded, a part of the reticular layer is always present in the graft. In 35—53.3 % of the grafts cut at more than optimal level preservation of the adnexal structures is submaximum. When the maximum acceptable level is exceeded, the frequency of this undesirable consequence increases to 83—100 %.

We have observed that skin grafts of all levels, irrespective of their real thickness, of the donor site and the patients age and sex, do not differ significantly in the relative parameters. Thus, the use of surgical operative levels enables us to unify the structure of the grafts. We have established that the reepithelization of the donor site depends on the level of cutting of the graft. With grafts taken from regions of a thin skin the increase of the dermatome adjustment by 0.05—0.1 mm above the optimum level prolongs reepithelization by 2.5 days ($p < 0.05$). With the intermediately thick skin the reepithelization of the optimum level graft bed takes by 1.2 day longer time ($p < 0,05$) than with the minimum level grafts. If the dermatome adjustment exceeds by 0.10 to 0.20 mm the optimum level, the reepithelization is longer by 0.9 day ($p < 0.05$). Consequently, if the optimum level is exceeded, a prolonged reepithelization of the donor site results.

The influence of the patient's age on the reepithelization was followed in male patients. It was found, that the donor bed of the acceptable level grafts reepithelized within 14.8 ± 0.4 day at the age of 22—35 years, within 14.9 ± 0.4 day at the age of 36—45 years, within 14.2 ± 0.5 day at the age 46—50 years and within 16.0 ± 0.6 days in more advanced age. The difference between the 1st and 2nd groups is insignificant; the reepithelization is prolonged only in persons older than 60 years (by 1.6 day), which does not support the generally accepted view that healing decelerates at the age of 45—50 years.

Thus, morphological features of the human skin vary in relation to the age, sex and donor site localization and it is difficult to select the proper thickness of the graft. Therefore, from the surgical operative point of view it is reasonable to define the optimum as well as the minimum and maximum acceptable levels of thickness of skin grafts, changing in relation to the morphology of the skin. Each level is characterized by means of relative parameters of the graft structure. If the maximum acceptable and even the optimum levels are exceeded, the adnexal structures of the donor bed are damaged and its reepithelization prolonged. Thus, the use of the surgical operative levels, based on the knowledge of variability of the skin morphology, is helpful in selecting a proper thickness of the graft.

M. D.

SUMMARY

Based on the study of differences in the structure of the human skin at donor sites commonly used for obtaining skin grafts, as well as on the differences related to the sex and age of the patient, the optimum and acceptable surgical operative levels of the graft cutting were defined and summarised. It was found that the grafts of each level can be characterized by means of relative parameters. Exceeding the optimum level of the graft thickness results in prolonged reepithelization of the donor bed. Effectiveness of the individual selection of the skin graft thickness according to the donor site skin structure was proved by clinical experience.

RESUME

Le choix de l'épaisseur des autogreffes dermiques en conséquence de la morphologie du derme dans la région de prélèvement

Ostrovskiĭ, N. V.

On a observé et apprécié l'influence de l'age, du sex et de la localisation sur la morphologie de la peau humaine dans les localités les plus souvent utilisées pour prélever des greffes dermiques. Les résultats ont permis déterminer la profondeur optimale ou profondeur maximale de la section de prélèvement des greffons dermiques.

On a constaté que les greffons dermiques de tous les niveaux peuvent être charactérisés par des paramètres morphologiques relatifs units. Le dépassement du niveau optimal de la profondeur de section apporte comme conséquence une guérison prolongée au lieu du prélèvement. L'efficacité de cette méthode de prélèvement, qui consiste en profondeur des greffons dermiques, individuellement choisie selon la morphologie du derme au lieu de prélèvement, a été confirmé par l'observation clinique.

ZUSAMMENFASSUNG

Die Wahl der Stärke von Dermatomautotransplantaten in Abhängigkeit von der Morphologie der Haut an der Entnahmestelle

Ostrowskij, N. V.

Der Einfluss des Alters, des Geschlechts und der Lokalisierung auf die Morphologie der menschlichen Haut an den Stellen, die am häufigsten zur Entnahme von Der-

matompfropfen dienen, wurde beobachtet und eingeschätzt. Auf Grund der Ergebnisse wurden die optimalen und noch möglichen Grenzen der Schnittiefe der Dermatomtransplantate festgelegt.

Es wurde festgestellt, man die Dermatomtransplantate jeder Ebene durch einheitliche relative morphologische Parameter charakterisieren kann. Das Überschreiten der optimalen Ebene der Schnittiefe hat eine Verlängerung des Heilens der Entnahmestelle zur Folge. Die Effektivität einer individuellen Wahl der Stärke der Dermatomtransplantate mit Rücksicht auf die Morphologie der Haut der Entnahmestelle wurde durch klinische Beobachtungen bestätigt.

RESUMEN

Selección del espesor de los autotransplantes dérmicos en dependencia de la morfología de la dermis en la zona de la toma

Ostrovski, N. V.

Se examinó y evaluó la influencia de la edad, el sexo y la localización sobre la morfología de la piel humana en los lugares utilizados con más frecuencia para la toma de injertos dérmicos. A base de los resultados fueron estipulados los niveles óptimos y los extremos todavía soportables de la profundidad del corte en caso de los transplantes dérmicos.

Se detectó que los transplantes dérmicos de todos los niveles pueden ser caracterizados por parámetros normalizados relativos morfológicos. Al excederse el nivel óptimo de la profundidad del corte como resultado tarda más en cicatrizarse el lugar de la toma. Por controles clínicos se pudo comprobar lo eficaz de una selección individual del espesor de los transplantes dérmicos en vinculación con la morfología de la piel en lugar de la toma.

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CRANIOCARPOTARSAL DYSTROPHY — TWO CASE REPORTS

E. GEORGIEV, M. TZANTCHEVA

INTRODUCTION

In 1938, Freeman and Sheldon described, for the first time, two children with very unusual craniocarpotarsal changes identifying them as parts of a syndrome and naming it "craniocarpotarsal dystrophy". Otto (1953) and Kultz (1961) described similar cases, and in 1963, Burian published another four cases with the same clinical features. Due to the peculiar form of the facial grimace with lips as in whistling he called it the "whistling-face syndrome". Because of its rarity, only 25 cases of this syndrome have so far been reported in medical literature.

In the following report, two cases of the whistling-face syndrome are presented. They are of interest in that they are the first such cases ever described in Bulgaria.

CLINICAL OBSERVATIONS

Case 1

P. Tz. V., a boy, was admitted in the Clinic of Plastic Surgery, Sofia at 2 years and 3 months (in 1979) because his unusually small mouth hindered the child's feeding (Fig. 1). Since then, the boy has had repeated operations for pes equinovarus at an orthopedic clinic. He was born of a second normal pregnancy. The first pregnancy ended in the birth of a healthy boy.

The face shows characteristic dysmorphism. It is flat with outstanding zygomatic bones and prominent supracilliary ridges. The forehead is high, the frontal tubers are well prominent and grown together. The eyes are deep set with epicanthus and blepharophimosis in antimongoloid position. There is slight convergent strabism.

The nose is small with a short columella and the alae nasi curved upward in the middle resulting in apparent coloboma. High upper lip. The philtral ridges are well marked, the philtrum is large. The mouth is so small — 20 mm — that it hardly lets the smallest spoon in. This complicates inspection of the teeth, particularly, the palate. The upper and lower lips are set as in whistling.

The impression is reinforced by the deep set nasolabial depression (sulci). The sagital depression is separated at the side by two vertical sulci, the mentolabial sulcus is set high. The mandible is obviously undersized. Some of the teeth are out of alignment as if the mandible were shrunken. The ears are small and rotated backwards.

Fig. 1a, b, c, d — P. T. V. at 2 years, 3 months

The neck is short. The chest is deformed with a pit in the distal part of the breast bone.

The fingers of the hands are flexed, with ulnar deviation. The thumbs are in adduction. After two years of treatment with massage, the flextion contracture is diminished, and the boy can exercise gripping action because of the opposing function of the thumb. The skin on the flexion surface of the palms looks macerated. The arms muscles are hypoplastic. The passing from pronation to supination is limited. The lower limbs are X-shaped, also with hypoplastic muscles, mainly in the crural region. The foot is hypoplastic. After six surgical operations, the boy is able to walk with the aid of orthopedic shoes.

The mental condition corresponds to the age.

A clinical examination showed the microstomy and the pouted lips to be due to contracture of the orbicularis oris muscle. That determined the surgical approach to myotomy at the two corners of the mouth.

A genealogical investigation of the mother's and father's family history revealed no pathological factors. Nor were there the slightest signs of the whistling-face syndrome in the grandparents' history. A cytogenetic examination of the child showed normal male karyotype.

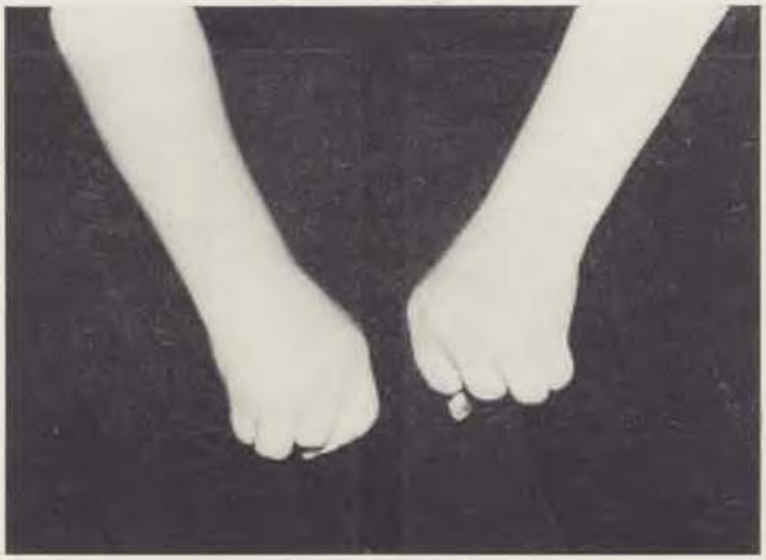

Fig. 1c.

Fig. 1d.

Case 2

M. D. N. (Fig. 2), now 19 months old, was first examined at a medical genetics consulting centre with a view to determining the risk of his mother's having a second child. He was born of the first normal pregnancy, weighing 3,100 g, body length 51 cm. The baby's peculiar face of deformities of the limbs were noted already at the time of delivery.

Even a cursory inspection reveals much facial dysmorphism: the alae nasi are curved upward in the middle resembling nasal coloboma, the relatively small mouth is rigid in opening, the pouting upper lip features a wide philtrum and thin vermilion. The nasolabial sulcus is slightly expressed. Two

Fig. 1e.

Fig. 1f.

Fig. 1e, f, g, h — The same patient 2 years later

vertical sulci separate the medial column reaching a deep mentolabial sulcus in high localization. The corners of the mouth are dropped. The neck is short. The fingers are in a flexion contracture with ulnar deviation, mainly in the metacarpophalangeal joints, less so in the interphalangeal joints of the second and third fingers. The toes have a slightly expressed tibial deviation,

especially in the interphalangeal joints. A genealogical investigation revealed no family history of a similar pathological condition. The mother (Fig. 3) had a pit under the lower lip vermilion, but not other pathological signs. The father had nothing exceptional about him.

Fig. 1g.

Fig. 1h.

DISCUSSION

The two children observed at our department represent a well developed clinical picture of the Freeman-Sheldon syndrome, albeit of different rate of expression. In case No. 1 the signs are more strongly expressed with microstomia of such an extent that it hinders feeding and requires surgical operation. The face is mask-like.

Case No. 2 presents a different mode of deformed face and extremities, but to a far smaller extent. It is especially the cranial signs that are less conspicuous — microstomy is moderately expressed, the lips are slightly pouted but without forming a tube as in whistling. The arthrogryposis of the hands is moderately expressed. The legs are less deformed with the function more or less unimpaired.

Fig. 2 — M. D. N. at 1 year, 7 months

Fig. 3 — The mother of M. D. N.: the pit can be seen under the lower lip vermilion

Our observations compared with those reported so far underline, once again, the great variability of the clinical signs and their expression. The most frequently occurring signs are as follows: flat face, deep-set eyes accentuated by prominent orbital arches, high palate, long philtrum, ulnar deviation and flexional contracture of the fingers, kyphoscoliosis of various extent, and leg deformities — mainly of the feet. Other features were observed, too — epicanthus, antimongoloidly set eyes, small nose, nasal wings curved upwards resembling coloboma, short neck, thumb contracture in adduction. Microstomia and the peculiar shape of the lips as in whistling show considerable variety, too.

In case No. 1 the microstomia is considerable to a point where it impairs the function of the mouth, while in case No. 2 feeding is virtually unimpaired. In the former case the red lip line resembles that in labium duplex, while in the latter case that line is very thin. In all cases, depending on the accuracy of the authors' description, there is a reference to a double furrow from the chin up to the lower lip. Wettstein et al. (1980) regard the furrow as pathognomic for the syndrome because they were able to see it in a case of their own with the other traits of the syndrome only slightly expressed. That particular feature was not present in the healthy members of the family. In case No. 2, the mother had a small pit under the lower lip vermilion, like the one where the columella reaches the lip in cases of developed symptomatology. It is difficult to say if this is a case of pathological gene inheritance from the mother, albeing is slightly expressed, because the child is the only one in the family. The symptom, if confirmed, may be of great importance to families where it is necessary to decide whether this is a new mutation oor a pathological gene with incomplete penetrability.

The genealogical tree described by Wettstein and containing 7 cases within three generations, of whom six are female and one a deceased boy, points to the hypothesis of a dominant type of heredity with lethal effect on the male offspring. A review of literature seems to prove the contrary: out of 27 persons with that syndrome, the sex is known in 20 of them — 10 women and 10 men. This points to no connection between sex and the extent of the syndrome expression. There is no doubt that the syndrome is an autosomal dominant trait as it is known to be transmitted from mother to daughter (Gross-Kieselstein and Abrahamov 1971, Pfeiffer and Ammermann 1972), from father to son (Fraser et al. 1970), from grandmother to father and daughter (Walker 1960), or from grandmother to mother, daughter and son (Wettstein et al 1980).

The sporadic cases of the syndrome (1, 6, 8, 11 and our own case No. 1) could be accounted to new mutation. As far as our case No. 2 is concerned, it is hard to say whether it should be seen as an inherited condition or newly developed mutation.

It seems essential to become sufficiently well acquainted with the syndrome and to establish the correct diagnosis — not so much for the purpose of therapeutical methods — as for prognosis concerning the other children in the family.

J. H.

SUMMARY

In their communication the authors report on two cases of the whistling-face syndrome, the first ones ever observed in Bulgaria.

RESUME

Dystrophie cranio-carpo-tarsale. A propos de deux cas

Georgiiev, E., Tsantcheva, M.

Le rapport présente deux cas des «visages sifflants», remarqués en Bulgarie.

ZUSAMMENFASSUNG

Kranio-karpo-tarsal-Dystrophie. Beschreibung zweier Fälle

Georgiew, E., Tzantschewa, M.

In der Mitteilung werden zwei Fälle „pfeifender Gesichter" dargestellt, die in Bulgarien beobachtet wurden.

RESUMEN

Oistrofia craneo-carpo-tarsal. Descripción de dos casos

Georgiev, E., Tsantcheva, M.

En la información se presentan dos casos de "las caras silbantes", observados en Bulgaria.

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SURGERY OF SECONDARY NASAL DEFORMITIES IN UNILATERAL CLEFTS

J, Měšťák

Nasal deformities and asymmetry belong among the major problems of surgery for facial clefts. While primary deformities are conditional upon the type of cleft, secondary deformities result from a complex interrelationship involving the degree of the cleft defect, surgical operation and the patient's own development.

The best time for a definitive reconstruction of the nose in clefts continues to be a moot point. Advocates of what is known as primary reconstruction at the time of the primary suture of the lip (Berkeley, 1959, Brown and McDowell, 1941, Reynolds and Horton, 1965, and others) have their adversaries among surgeons who prefer to delay the definitive correction of the nostril until older age or even until adulthood (Veau, 1931, Gillies and Kilner, 1932, Marcks et al., 1964, Matthews, 1968, Converse et al., 1977, etc.). At present, increasingly more surgeons seem to favour the more conservative approach, even those who formerly used to be noted for their radicalism (McIndoe and Rees, 1959). According to general knowledge, the cartilaginous structures of the nose are so delicate in the first months of life that not even meticulous care in their isolation can prevent major damage and, added to this, the result of the correction is unlikely to last long (Converse et al., 1977).

Taking a comprehensive view, secondary nasal deformities in facial clefts can be characterized by aberrations of the tip of the nose (wing and skin septum), piriform aperture of the maxilla and septum (Converse et al., 1977). Collapse and downward shift of the whole wing on the cleft-affected side are the dominant secondary deformation of the nose in unilateral clefts. Although many attempts have been made to correct this nasal deformity already at primary operation, the correction of the above component does not seem to keep up with the correction of the lip (McIndoe and Rees, 1959). For that reason, most plastic surgeons delay the deformed nostril correction until some post-operative date (Uchida, 1971, Fujimori and Harita, 1982, Millard, 1982, Isshiki et al., 1980, Converse et al., 1977, etc.). All of them aim at making the shape of the collapsed and fallen nostril as like the unaffected side as possible.

At the Prague Department of Plastic Surgery, too, secondary deformity of the nose belongs among the daily problems of surgical treatment for facial

clefts. To correct the tip of the nose, use is made of well-tried surgical techniques by foreign authors (Brown and McDowell, 1941, Musgrave, 1961, Millard, 1976) as well as of the department's own method (Hrivnáková and Fára, 1975). In 1981, we proposed and introduced into practical use one of the possible surgical corrections of deformed nostril in unilateral clefs.

MATERIAL AND METHODS

To verify the suitability of the proposed surgical strategy we proceeded from an extensive clinical assessment of secondary nasal deformities and asymmetry in a group of 120 patients with facial clefts (Měšťák and Šmahel, in press). Added to this were the results of postmortem analyses of the noses of 12 still-born cleft-affected foetuses. The anatomical and histological findings thus accumulated were compared with other authors' data (Novoselov, 1979, Huffman and Lierle, 1949, Stenström and Oberg, 1961). In agreement with those authors we reached conclusions which served as a basis for the proposed surgical operation.

The cause of the most typical deformation of the tip of the nose — the drop and flattening of the ala nasi on the cleft-affected side with the asymmetric prominence of the tip on the unaffected side — should be sought in the caudal and forward shift of the whole alar cartilage, in a greater angle between the two crura of the greater alar cartilage, and in the collapse of its lateral crus. In addition to that, this lateral crus shows a concave deformity in its centre, an anomaly found immediately after birth (Fig. 1, Fig. 2) as well as later in life (Stenström and Oberg, 1961).

Consequently, looking for the right kind of deformed nostril correction we were taking into account not only the need to correct the collapsed edge

Fig. 1. Postmortem preparation with primary deformation of the greater alar cartilage in a total unilateral cleft

of the nostril on the cleft side but also the need to construct a smooth convex rounding of the collapsed lateral crus of the greater alar cartilage.

Using a paramarginal incision in the centre of the vestibule, a follow-up to the columellar incision, we expose and bluntly dissect the anterior prominent margin of the medial and lateral crura of the greater alar cartilage

Fig. 2. Concave deformity of the greater alar cartilage lateral crus on the cleft side — a histological view

After having mobilized the lateral crus from the skin throughout its extent as well as from the anterior two thirds of the vestibular lining (leaving the posterior third united with the mucosa) we excise the collapsed margin of the whole alar cartilage (including the medial crus) up to the level of the unaffected side (Fig. 3A). Then we place a single fine unremovable mattress suture on the greater alar cartilage lateral crus a few millimetres from the middle of the concave deformity, and by pulling and knotting it underneath the vestibular lining we give the cartilage the required round shape on the outside (Fig. 3B, Fig. 3C). Then we remove the typical fold on the ala in the vestibule using sagittally conducted excision of the outstanding outer edge of the lateral crus of the greater alar cartilage. The excess mucosal lining will then permit the planned medial shift at the time of the cartilage reposition.

A few fine perpendicular incisions of the adequately excised skin edge of the nasal wing will result in its prolongation. Sometimes it will be necessary to remove the swollen interstitial subcutaneous tissue of the original margin to make the thickness of the reconstructed edge match the other side. With the alar cartilage reposed in the direction of the tip of the nose and following the suture of the edge of the wing we fix the cartilage in its new position with two transcolumellar stitches (Fig. 3D).

RESULTS

Out of the 21 cases of secondary nostril deformity operated on using this method the best results were achieved in those patients who — at the time of the primary operation or later on — went without any attempted correction of the collapsed nasal wing on the cleft-affected side (Fig. 4a, b, c, d).

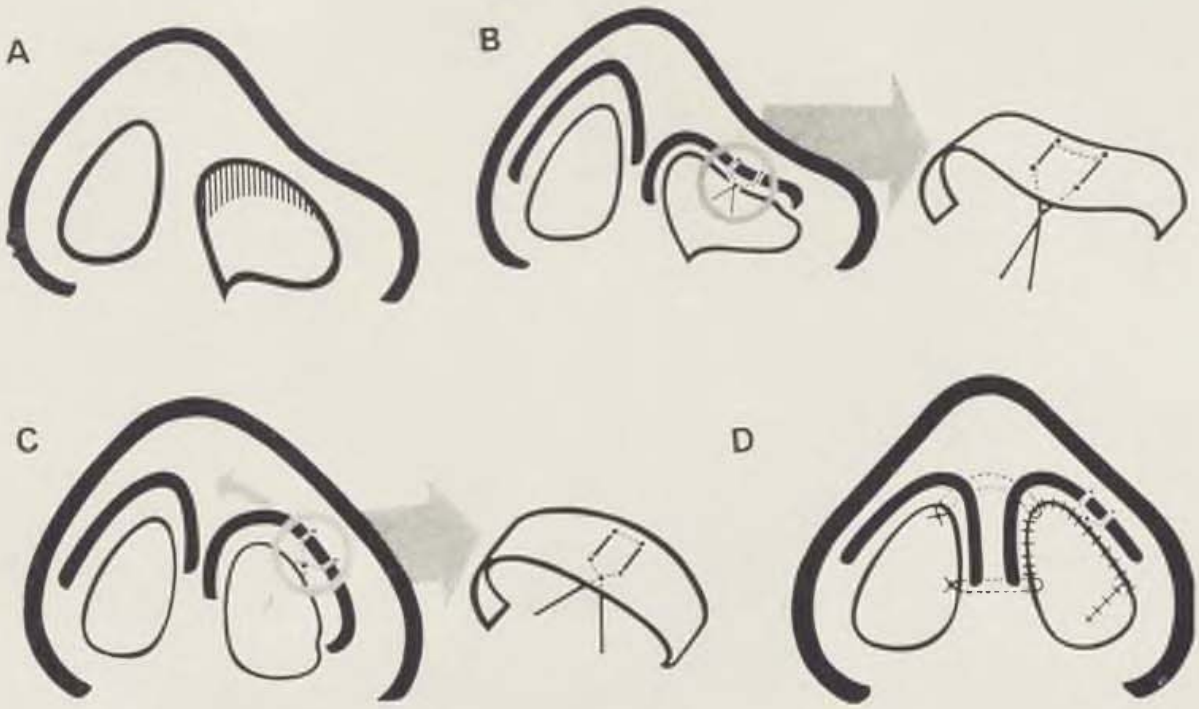

Fig. 3 A, B, C, D. Surgical procedure diagram

In the severest nasal deformities where not only the tip of the nose and the ala nasi are affected but where the whole half of the nose on the cleft-affected side is collapsed and fallen, mobilization of all of the alar cartilage and its separation from the mucosa throughout its extent proved an effective option. Once again, after a modellation mattress suture has been placed in the centre of the concavity of the lateral crus and after the extirpation of the whole of the medial crus and marginal excision of the lateral crus, the alar cartilage is held in a symmetrical position with the other side by means of an adequate excision of the skin surplus from the margin, and by means of transcolumellar mattress sutures (Fig. 5a, b, c, d).

DISCUSSION AND CONCLUSIONS

Despite the plastic surgeons' unrelating effort to give the nose its natural shape in facial clefts already at the time of the primary suture of the lip, the results obtained are not always fully satisfactory. For that reason, most of

Fig.4a.

Fig.4b.

Fig.4c.

Fig.4d.

Fig. 4 a, b, c, d. State before and after operation using the technique described

Fig.5a.

Fig.5b.

Fig.5c.

Fig. 5d

Fig. 5 a, b, c, d. State before and after operation using the modified technique described

them aim at obtaining optimum results secondarily while correcting the nasal asymmetries and deformities.

Collapsed and fallen ala nasi on the cleft side is one of the most conspicuous secondary nasal deformities in unilateral clefts. Meyer and Poulenas (1977), Hoyt de Kleine (1955), Brown and McDowell (1941) and others prefer to excise the collapsed cartilage and the skin of the alar margin to obtain symmetry with the other side. For the same purpose, McIndoe and Rees (1959), Stenström (1965), Reynolds and Horton (1965) move the whole alar cartilage upwards to fix it with sutures in its new position. Rees et al. (1966), in the form of sagittally directed small incisions of the alar cartilage, or Fujimori and Harita (1982), Millard (1982), Uchida (1971), and others using unremovable mattress sutures, try to restore the anatomical angle between the two alar cartilage crura on the affected side. This restoration is achieved by means of previous mobilization and fixation of the alar cartilage to the contralateral side. Gorney (1973) and Matthews (1968) restitute the collapsed wing convexity by implanting cartilage from the external ear.

Opinion varies as to the most suitable timing of secondary correction for nasal deformity and asymmetry in unilateral clefts. For instance, Millard (1982) puts it from soon after the primary operation of the lip up to adulthood. Meyer and Poulenas (1977), Massei et al. (1982) recommend surgical correction for nasal deformity to take place in the pre-school age, Nishimura (1977), Hrivnáková and Fára (1975) not until adulthood.

Considering the great variability of secondary nasal deformities in unilateral clefts none of the surgical strategies can be absolutized. Prior to the planned corrective operation, very much will depend on the particular surgeon's experience and professional skills to make a good assessment of the defect and to determine the surgical technique suitable for its correction. The purpose of our report was to make a contribution to the solution to the most frequent secondary deformity of the nose in unilateral clefts, i. e. to the surgical correction of the collapsed and drooping ala nasi on the cleft-affected side.

J. H.

SUMMARY

The author reports on a well tried surgical technique used for the correction of the drooping and collapsed ala nasi on the cleft-affected side as the most frequent nasal deformity in unilateral clefts. The best results were achieved in those patients who had had no previous correction of the deformed nostril performed on the cleft side.

RESUME

Contribution à la chirurgie de difformités du nez chez la division unilatérale

Měšťák, J.

L'auteur allègue un procédé opératoire bien éprouvé, destiné à la correction de l'aile du nez abaissée et défaillie du côté de la division. Cela présente la difformité

du nez la plus fréquente des divisions unilatérales. Les meilleurs résultats ont été obtenus chez les malades qui n'avaient subi aucune opération antérieure, de façon corrective, de l'aile du nez difformée du côté de la division.

ZUSAMMENFASSUNG

Ein Beitrag zur Chirurgie sekundärer Naseldeformationen bei einseitigen Spaltbildungen

Měšťák, J.

In seiner Arbeit führt der Autor eine bewahrte Operationsmethode an, die er bei der Korrektion eines absinkenden und kollabierenden Nasenflügels an der Seite der Spaltbildung als am häufigsten auftretende Nasendeformation bei einseitigen Spaltbildungen anwendete. Die besten Ergebnisse erzielte er bei Patienten, bei denen in der vorhergehenden Periode keine Korrektion des deformierten Nasenflügels an der Seite der Spaltbildung ausgeführt worden war.

RESUMEN

Contribución a la cirugía de las deformidades secundarias en escisiones unilaterales

Měšťák, J.

El autor en su trabajo describe un procedimiento operativo verificado utilizado para la corrección de la ptótica ala nasal del lado de la escisión, como deformación que con más frecuencia acompaña las escisiones unilaterales. Los mejores resultados, el autor los pudo conseguir en pacientes que en el período precedente no se habían sometido a la corrección de la fosa nasal deformada del lado de la escisión.

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TUBED FLAPS FOR RECONSTRUCTION OF THE MIDDLE FACE AND NOSE AFTER EN BLOC PERFORMED RESECTIONS

S. D. SIDOROV

In widespread malignant tumours of the external nose extending to the cheeks and upper lip it is necessary to perform radical surgical intervention, resulting in combined defects of the middle face including total defects of the nose, defects of the apertura piriformis, partial defects of the cheeks, upper lip and even of the eyelids.

Naturally, reconstruction of so many composite structures is impossible without using tissues from distant body regions. Khitrov (1954) has used two tubed flaps to cover similar facial defects originating from fire-arm wounds.

We have treated 4 patients (aged 45—56 years; 3 males and 1 female) suffering from complicated combined defects of the face consisting of the loss of the nose, margins of the apertura piriformis, parts of the cheeks, upper lip (2) or eyelids (2) in consequence to radical surgical interventions due to malignant tumours of the external nose.

The defects were covered using 2 tubed flaps. The material of the first flap, after its accomodation to defect borders, served for reconstruction of the cheeks, margins of the apertura piriformis, upper lip and orbit. The second flap was used to reconstruct the nose (Fig. 1).

The flaps were formed at the abdomen and transferred to the forearm and later to the radix nasi (the flap for reconstruction of the nose) and to the buccal margins of the defect (the flap for reconstruction of the cheeks, upper lip and apertura piriformis). Successively, the second pedicle of the flap for cheeks and lip was implanted to the opposite margin of the defect and the flap reconstruction of the nose was left in a vertical position.

In the next stage of the plasty the flap for cheeks and lip was divided lengthwise into the upper and lower part. Later on, the upper part of the flap was halved by a transversal transsection. From each half two adipo-cutaneous strips were formed and used for reconstruction of the cheeks and apertura piriformis margins. The lower part of the flap provided material for reconstruction of the upper lip with remaining vermilion. The flap designed for reconstruction of the nose was spread into cutaneous strip which was bent by 180° so that its inner surfaces were apposed, forming thus a cutaneous flap corresponding to the length of the nose. The apron-like duplicated skin flap was left in a vertical position.

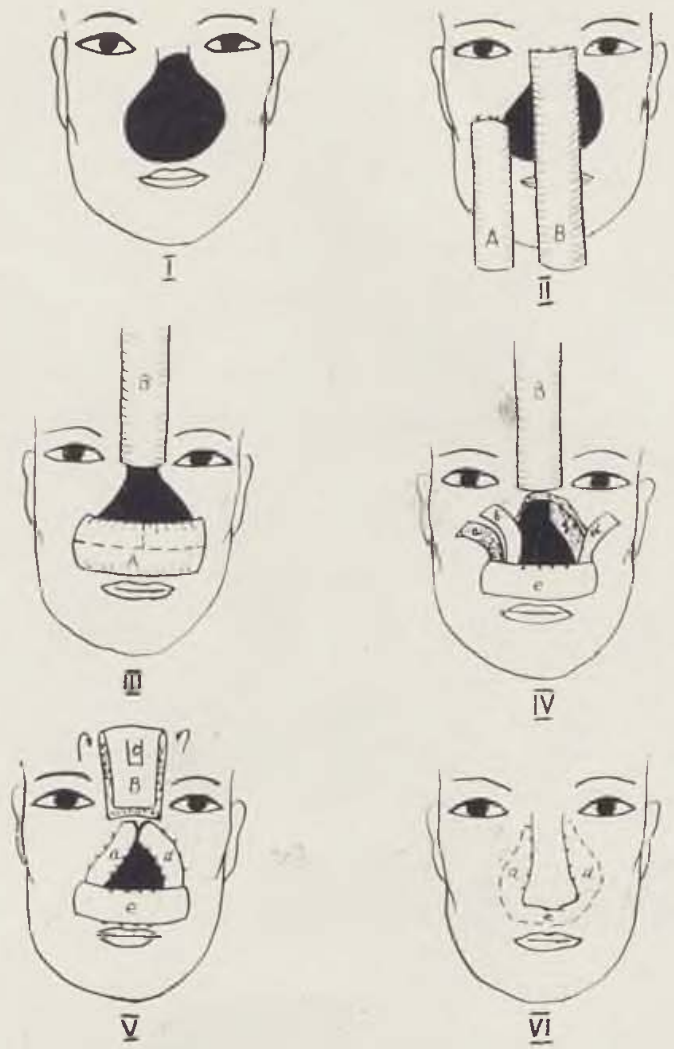

Fig. 1. The scheme of reconstruction of the nose and middle face using 2 tubed flaps
I — postoperative defect of the face;
II. — pedicles of the flaps accomodated to the defect's margins; A — the flap for the upper lip, cheeks and margins of the apertura piriformis, B — the flap for the nose;
III — the flap for the cheeks (A) implanted to the opposite margin of the defect. Dashed lines show incisions used to form adipo-cutaneous flaps in the next operative stage. The flap for the nose (B) is left in a vertical position;
IV — formation and transfer of the adipo-cutaneous flaps and reconstruction of the cheeks and margins of the apertura piriformis;
a, b, and g, d — adipo-cutaneous strips form the upper part of the flap for cheeks,
a, b — parted adipo-cutaneous strips,
g — adipo-cutaneous strip apposed and sutured by the skin surface to the lining of the antrum nasi and Highmori,
d — adipo-cutaneous strip shifted laterally,
e — the lower half of the flap for the upper lip;
V — the duplicated apron-like cutaneous flap (B), contours of the folding flap (C) used in the next stage for reconstruction of the septum nasi,
a, d — the reconstructed parts of the cheeks and margins of the apertura piriformis,
e — the upper lip;
VI — the reconstructed nose and middle part of the face.

In the final stage of the reconstruction, the skin of reconstructed cheeks and upper lip was incised to form furrows along the margins of the lateral walls, wings and septum of the nose. The nasal septum was formed from the full thickness narrow strip cut out the central part of the apron-like flap. The

Fig. 2a.

Fig. 2b.

Fig. 2. Patient G. (also in the following figures). A widespread cancer of the external nose

strip, with its base at the margin of the flap, was turned by 90—100° to the exposed surface of the nose base at the upper lip. The donor defect of the apron-like flap was sutured. The curved duplicated skin flap with modeled columnela, wings, lateral walls, apex and septum was sutured to the incised furrows at the surface of the cheeks and upper lip.

Fig. 3a.

Fig. 3b.

Fig. 3. Postoperative combined defect of the nose and middle part of the face

Performed plastic operations resulted in reconstruction of the face and secured speech and nasal breathing. The patients were again able to work and to enjoy their family life.

Fig. 4. The flaps implanted to margins of the defect

Previous observations have revealed that later postoperatively (i. e., within 6—8 years) changes in contours of newly formed cheeks and upper lip could occur. Therefore, instead of one-stage rhinoplasty according to F. M. Khitrov, we are using a plasty with an intermediate operative step consisting of formation of cutaneous duplicated apron-like flap. The delayed rhinoplasty provides time for biological accomodation of tissues of the reconstructed cheeks, upper lip and cutaneous duplicated flap, and, in this way, it predetermines successful cosmetic results of the final stage of the plasty.

Three of four our patients have been followed for 4, 8 and 15 years after the surgery. The forth patient died because of continuing malignant growth in the orbital and cribriform region.

Our surgical approach will be demonstrated by the following case history:

Patient G., aged 48, admitted on March 14, 1979 for treatment of a spread cancer of the external nose and upper lip (Fig. 2). On March 21, 1979, the middle part of the face was resected en bloc under endotracheal anesthesia. The resulting combined defect consisted of the total absence of the nose, partial loss of the cheeks, margins of the apertura piriformis, and of the upper lip, from which there remained vermilion in the form of a cross-piece between the cheeks (Fig. 3).

Two tubed flaps, formed at the abdomen on December 7, 1979, were transferred to the forearm on January 17, 1980 and to the radix nasi and the right margin of the cheek on March 18, 1980 (Fig. 4). On April 25, 1980, the flaps

were separated from the forearm. The flap for the cheeks and lip was implanted to the opposite buccal margin of the defect, the flap implanted to the radix nasi was left in a vertical position (Fig. 5). On May 20, 1980, the flap for cheeks and lip was divided longitudinally into lower and upper parts. The upper part

Fig. 5. The flap for the cheeks implanted to the opposite margin of the defect. The flap for the nose left in a vertical position

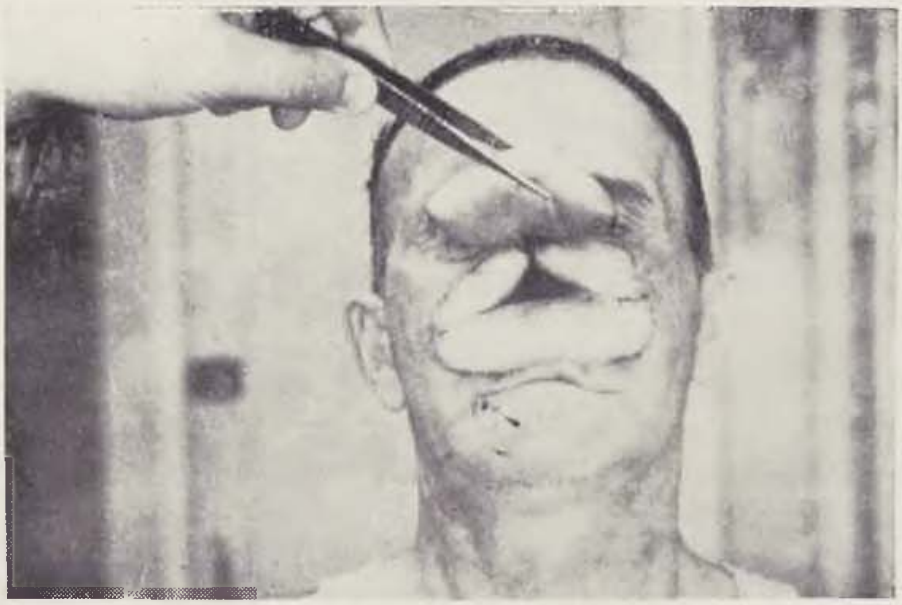

Fig. 6. Formation of the cheeks and margins of the apertura piriformis. The lower half of the flap for the cheeks is sutured to the vermilion of the upper lip. The nasal flap was used to form the apron-like cutaneous duplicated flap

was halved transversally, and from each half and outer and inner longitudinal adipo-cutaneous strips were cut. These strips were turned upwards by 90° to the defects of the cheeks and apertura piriformis and sutured to the lining of the antrum nasi and Highmori, to skin of the cheeks and to each other.

Fig. 7. State after operation.

Thus, the margins of the apertura piriformis, cheeks and the base of the future nose were reconstructed (Fig. 6).

The lower part of the flap was shaped regarding the size and form of the upper lip. The flap was incised along its lower margin, and after removing a superfluos fat sutured to the vermilion (Fig. 6). The upper (nasal) flap was spread into cutaneous strip and bent by 180° to form a duplicated apron-like cutaneous plate, corresponding in size to the nose (Fig. 6).

The final stage, i. e. rhinoplasty, was performed on July 13, 1980. Surfaces of the reconstructed parts of the cheeks and upper lip were incised to make furrows along the margins of the lateral walls, wings and septum nasi. From the middle part of the duplicated cutaneous flap, a full-thickness flap on laterally positioned pedicle was cut out. The end of this strip-like flap, designed to form the septum nasi, was shifted to the base of the septum at the upper lip. Donor site of the strip-like flap was sutured. The duplicated apron-like flap was shaped according to the size and form of the nose and sutured into exposed surfaces of the reconstructed cheeks and upper lip (Fig. 7).

Having achieved satisfactory anatomical and functional results we feel justified to remove widespread malignant tumours of the external nose by en bloc resections followed by reconstruction of the lost parts of the cheeks, margins of the apertura piriformis and upper lip using two tubed flaps.

M. D.

SUMMARY

The authors have performed in 4 patients reconstruction of the middle face and nose using two tubed flaps. Satisfactory anatomical and functional results permit the conclusion, that widespread malignant tumours of the external nose can be resected en bloc with subsequent reconstruction of the lost parts of the cheeks, margins of the apertura piriformis and upper lip using two tubed flaps.

RESUME

Lobe tubulé utilisé pour une reconstruction de l'étage moyen du visage et du nez aux opérations en bloc

Sidorov, S. D.

Dans le travail, on décrit des méthodes de reconstruction de l'étage moyen du visage et du nez qui sont basées sur l'application de deux lobes tubulés lors d'opérations en bloc. De cette manière, on a traité 4 malades. Des résultats satisfaisants permettent choisir l'opération en bloc pour le traitement de vastes lésions tumorales du nez externe ce qui est suivi, en deuxième plan, d'une reconstruction du nez, des parties faciales ôtées, des bords d'«apertura piriformis» et de la lèvre supérieure.

ZUSAMMENFASSUNG

Die Verwendung tubulierter Lappen bei der Rekonstruktion des mittleren Teils des Gesichts und der Nase bei Blockoperationen

Sidorow, S. D.

In der Arbeit wird die Methodik beschreiben, die zwei tubulierte Lappen bei der Rekonstruktion des mittleren Teils des Gesichts und der Nase bei Blockoperationen verwendet, die an 4 Patienten ausgeführt wurden. Die zufriedenstellenden anatomisch-funktionellen Ergebnisse berechtigen dazu, bei ausgedehnten Tumoren der äusseren Nase eine Blockoperation auszuführen mit darauffolgender Rekonstruktion der Nase, der beseitigten Teile des Gesichts, der Ränder der apertura piriformis und der Oberlippe.

RESUMEN

Implementación del lóbulo tubulado para la reconstrucción de la parte media de la cara y la nariz en operaciones de bloque

Sidorov, S. D.

El trabajo describe la metodología que utiliza dos lóbulos tubulados para la reconstrucción de la parte media de la cara y la nariz en operaciones de bloque realizadas en 4 pacientes. Buenos resultados de función anatómica justifican la utilización de una operación de bloque en afecciones tumorales de la nariz exterior, con reconstrucción subsiguiente de la nariz, de las partes eliminadas de mejillas, de las márgenes de la apertura piriformis y el labio superior.

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GLUTEUS MAXIMUS MUSCULOCUTANEOUS ISLAND FLAPS AND THEIR USE IN SACRAL DECUBITUS ULCERS

D. Stockarová, J. Pilnáček, J. Rubín

The gluteus maximus muscle is often used for the surgical closure of decubitus ulcers. There are multiple uses for it. It can be used as a turn-over flap (Stallings et al., 1974), for muscle transposition (Ger, 1971, Ger and Samuel, 1976), or as a true myocutaneous flap (Minami et al., 1977).

The purpose of the present communication is to show that the gluteous maximus muscle can be used as a musculocutaneous island flap for the closure of sacral decubitus ulcers.

Beginning in May 1983, we have made successful use of this type of flap in six cases.

ANATOMICAL REMARKS

The gluteus maximus muscle is a thick, broad muscle taking its origin at the linea glutealis ossis ilei and on the dorsal surface of the sacrum and coccyx. Its insertions are to the greater trochanter and the iliotibial tract. It is supplied with blood from the internal iliac artery branches, in particular: the superior gluteal artery for its upper half, and the inferior gluteal artery for its lower half. The superior gluteal artery enters the proximal half of the muscle close above the piriform muscle while the inferior gluteal artery emerges from underneath the piriform muscle medial to the ischiadic nerve to pass into the distal half of the gluteus maximus.

Innervation is provided by the inferior gluteal nerve which runs parallel to the inferior gluteal vessels.

The skin and subcutaneous tissue over the m. gluteus maximus is supplied by the perforating arteries passing through the muscle and fascia.

SURGICAL TECHNIQUE

The patient is placed on the operating table in prone position. The decubitus ulcer is excised and the sacrum is chiseled to a smooth surface. Then a skin flap is marked on the upper or lower half of the muscle to match the size of the skin defect resulting from the decubitus ulcer excision. After the

skin incision of the island thus marked we penetrate the subcutis and the fascia interrupting the required length of the muscle insertion and lifting it from the lateral towards the medial edge. After the muscle has been eased away

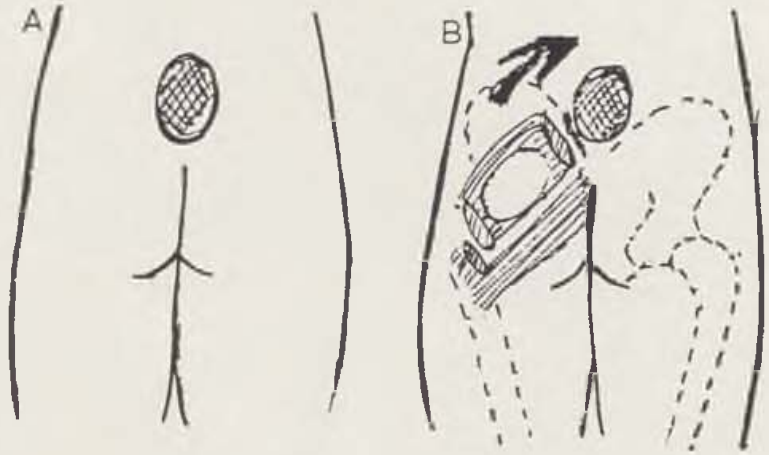

Fig. 1. Schematic representation of the rotation of an MC island flap of the m. gluteus maximus proximal segment; A — sacral decubitus ulcer, B — marking a skin island in the superior half of the gluteus maximus (arrow indicating sense of rotation)

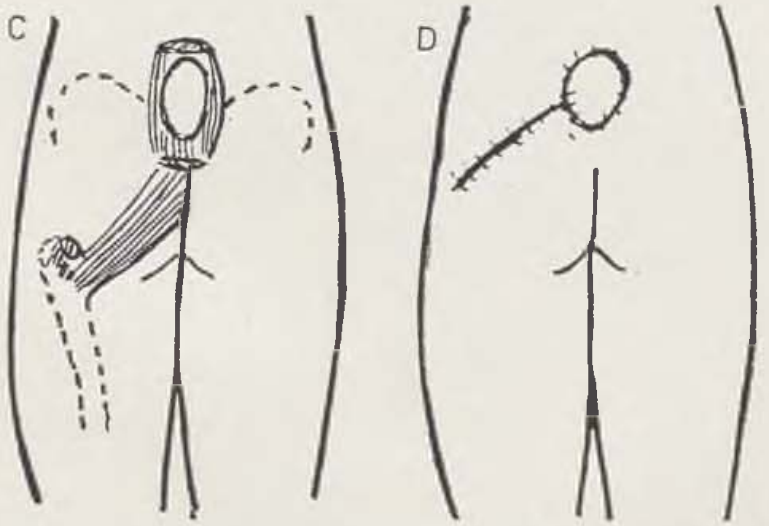

Fig. 1. C — the inferior half of the muscle remains intact. The superior segment of the muscle is mobilized so as to allow a greater arch of rotation while preserving the upper vascularpedicle, D — MC flap transposition to close a sacral decubital ulcer

medialward the gluteal vessels are clearly exposed to view on its lower surface. Identification of and a sparing approach to the superior gluteal vessels are particularly important in lifting an island MC flap with the upper half of the gluteal muscle for this is a method of choice in the surgical closure of deep sacral decubitus ulcers.

To obtain a sufficiently large arch of rotation for covering the defects in the medial part of the sacrum the origin of the muscle has to be transsected, too, to permit a reliable, tension-free sacrum coverage with the muscle.

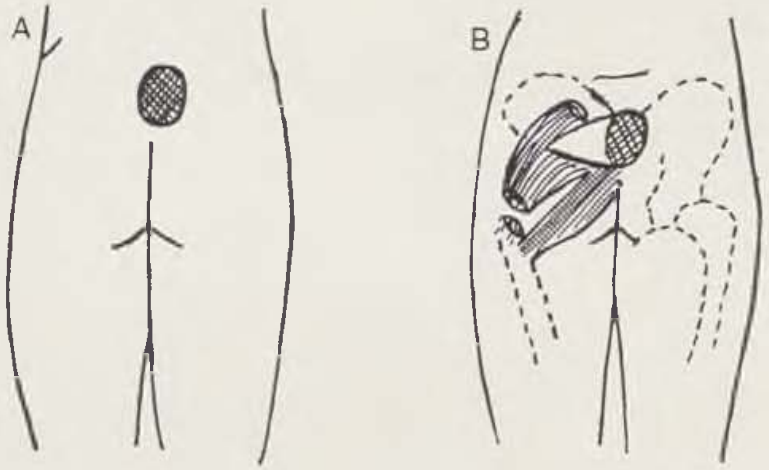

Fig. 2. Schematic representation of an MC island flap of the proximal half of the gluteus maximus muscle in the V-Y mode; A — sacral decubitus ulcer, B — marking a proximal skin island on the gluteus maximus

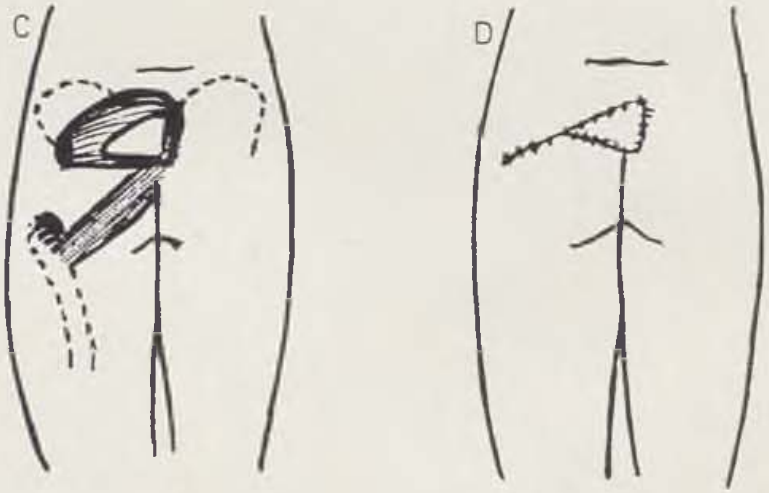

Fig. 2. C — inferior half of the gluteus maximus remains intact, and the origin of part of the upper half on the sacrum also remains preserved, D — sacral defect closed by MC flap transposition in the V-Y mode

While planning a gluteus maximum MC island flap we have to bear in mind that this particular muscle does not belong to the dispensable muscles, and the use of the whole of it in ambulant patients might lead to major functional impairment. One half of it, however, can be elevated and put to use without the risk of functional impairment.

The MC island flap can be either transposed into the defect (Fig. 1) or used as a V-Y flap (Fig. 2). For large defects, bilateral MC flaps are employed. After suction drains have been inserted, the donor site is closed with a primary direct suture.

CLINICAL EXPERIENCE

In the past year, we used the MC island flap with the upper half of the gluteus maximus in 3 patients, and with the whole of the gluteus maximus in 1 patient with paraplegia. In two patients, island flaps from both sides had

Fig. 3a.

Fig. 3b.

Fig. 3. Patient L. Š. a — before operation, b — after operation

to be used for the great extent of the defect. In all cases, however, the donor site defect was closed per primam with a direct suture, and throughout the period of healing all the flaps went without the least signs of vascular supply impairment, and were subsequently healed by first intention.

Patient L. Š., 64 years, after total hip joint replacement and after cerebrovascular emergency in the post-operative period with an unhealing sacral bedsore, 10 by 12 cm in size. Following radical excision of the decubitus ulcer, the defect was covered up using a bilateral MC island flap of the upper half of the m. gluteus maximus. Post-operative course was free from complications, healing p. p. i. (Fig. 3a, b).

Patient B. J., a 73-year old woman, with a two-year history of persistent, painful decubital ulcer in the sacral region. A skin defect 5 by 4 cm in size with undermining as far as 12 cm from the skin defect edges. With the patient

Fig. 4a.

Fig. 4b.

Fig. 4. Patient B. J. a — before operation, b — after operation

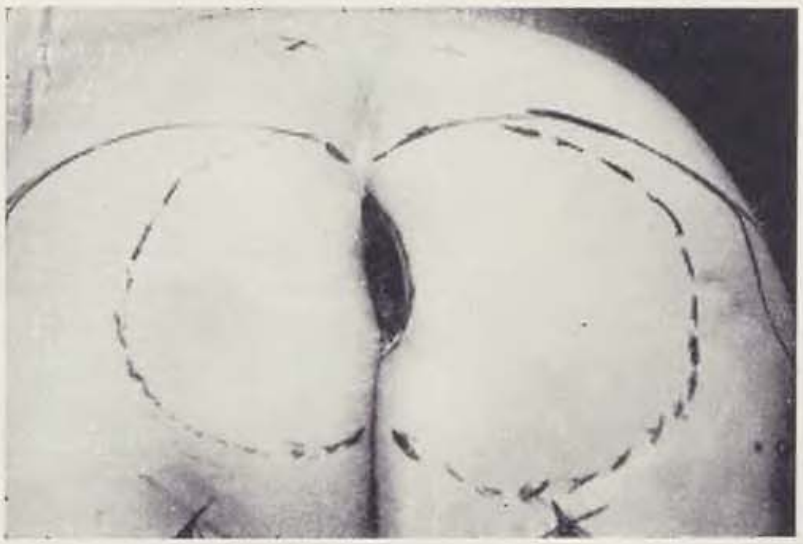

Fig 5a.
Patient F. H.
before operation

Fig. 5b.
after operation

Fig. 5c.
after haling

in general anaesthesia, following the excision of the whole decubitus ulcer and the ablation of a bony prominence on the sacral surface, the defect was covered with an MC island flap using the upper segment of the gluteus maximus. The donor site defect was closed per primam. The flap, well supplied, was healed by first intention (Fig. 4a, b).

Patient F. H., 45 years, with paraplegia following spinal cord injury 8 years ago. About one year old deep bedsore in the sacrococcygeal region with extensive subcutaneous defects in both gluteal regions extending as far as the ischial tuberosities. The necrotic tissues from those cavities were evacuated by way of skin defects, 4 by 7 cm in size, localized in the vicinity of the intergluteal furrow at the origin of the gluteal prominences. Following exsicion of the decubitus ulcer, ablation of bony prominences, an extirpation was made of the walls of the two cavities made up of chronic granulation tissue with large incrustations in the neighbourhood. This gave rise to sizeable suprafascial cavities — 20 by 17 cm on the right, 15 by 15 cm on the left. These were subsequently filled with an MC island flap using the gluteus maximus muscle with the skin islands closing the skin defects bilaterally (Fig. 5a, b, c). Both island flaps were well supplied and healed by first intention with any secretion. 4 months postoperatively, the patient shows no signs of relapse.

DISCUSSION

Sacral decubital ulcers are most likely to develop in patients with cervical spine diseases or injuries resulting in quadruplegia. They tend to be less frequent in paraplegics. Occasionally, they may arise as complications in comatose patients or in elderly bed-ridden patients. Many of those ulcers will close spontaneously soon after the victim has coped with the underlying disease. Superficial defects free from bone denudation in patients with preserved sensitivity can be closed with the aid of simple transposition flaps or skin transplants.

Sacral pressure sores in combination with neurological involvement tend to be large and associated with extensive surrounding tissues undermining. In such cases, large flaps have to be used. The most suitable for the purpose are variations of diverse muscle flaps, using, in particular, the greatest gluteal muscle. Primary vascular supply enters the muscle on its medial side by way of the superior and inferior gluteal arteries. This double vascular supply can be made use of for flaps taken from either the upper or the lower half of the muscle. Although either half of the m. gluteus maximus can reach the sacrum, it is advisable to keep its lower half in paraplegic patients for any possible future use for the treatment of ischial decubitus ulcers.

Minami et al (1977) described a technique for using the gluteus maximus in sacral pressure sores as an MC rotation flat. However, there are limits to the mobility of this type of flap, and a skin transplant usually has to be used for closing the donor site. Ger and Samuel (1976) described the use of the m. gluteus maximus as a transposition flap. This type of flap has the same disadvantages — limited mobility and the need to cover the secondary defect with a skin transplant.

We were able to see that the gluteus maximus muscle used as an MC island flap in the manner described by Maruyama et al. (1978, 1980) offered undeniable advantages over other variants. It has a far greater arch of rotation and can reach further than the turn-over flap or the MC rotation flap. The donor site can be closed by first intention using a direct suture. For larger defects whose coverage would require a skin island larger than 8 cm in diameter, the bilateral island flap is a better option. The p. p. i. closure of the secondary defect using direct suture facilitates post-operative treatment as well as rehabilitation.

CONCLUSION

MC island flaps of the gluteus maximus muscle have been found useful for the surgical closure of soft tissue defects in chronic pressure sores in the sacral region. Their advantages include excellent blood supply permitting the isolated use of the upper or the lower segment of the muscle, a large arch of MC flap rotation, and scope for donor site closure by direct suture.

J. H.

SUMMARY

The use of MC island flaps of the gluteus maximus is described in decubitus ulcers in the sacral region. The authors used this technique for covering defects following the radical removal of the pressure sores in 6 cases. The method proved its worth as a safe and greatly advantageous approach.

RESUME

L'utilisation des lobes musculocutanés du fessier, en forme d'ilôt, appliqués sur des ulceres décubitaux dans la région sacrale

Stockarová, D., Pilnáček, J., Rubín, J.

On décrit l'application d'un lobe musculocutané en forme d'ilôt, contenant le muscle fessier, sur l'ulcération décubitale dans la région sacrale. Cette façon de recouvrement des défauts, après l'ablation radicale des ulcères décubitaux, a été appliqué dans 6 cas. On a attesté ses multiples avantages et sa sureté.

ZUSAMMENFASSUNG

Die Verwendung von Muskelkutanlappeninseln mit grossem Gesässmuskel bei Sakraldekubita

Stockarová, D., Pilnáček, J., Rubín, J.

Es wird die Verwendung einer Muskelkutanlappeninsel mit grossem Gesässmuskel bei Dekubitalgeschwüren in der Sakralgegend beschreiben. Diese Art eines Deckens von Defekten nach radikaler Beseitigung der Dekubita wendeten die Autoren in 6 Fällen an. Sie hat sich als gefahrlos und vielseitig vorteilhaft erwiesen.

RESUMEN

Utilización de lóbulos musculocutáneos insulares con el músculo grande de nalga en casos de decúbitos sacrales

Stockarová, D., Pilnáček, J., Rubín, J.

Se describe la implementación del lóbulo MC insular con el músculo grande de nalga en las úlceras decubitales en la zona sacral. Esta forma de cubrir defectos después de erradicación radical de los decúbitos fue utilizada por los autores en 6 casos. Dió resultados de gran seguridad con ventajas múltiples.

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MUSCLE AND MYOCUTANEOUS FLAPS IN THE TREATMENT OF PRESSURE SORES IN PARAPLEGICS

H. Uszynski, J. Jethon, E. Towpik

Treatment for pressure sores is nearly always a difficult and complex clinical task, even more so in paraplegic patients. Lack of sensation and inability to change position frequently enough cause these patients to develop early recurrences and prove the traditional forms of treatment (split-skin grafts and local skin flaps) to be mostly unaffective.

Recent advances in the clinical application of muscle and myocutaneous flaps provide us with some new and promising scope, and deserve to be fully recognized.

CLINICAL MATERIAL

5 paraplegic patients with a total of 10 decubitus ulcers were treated at our Department over the past 2 and a half years. They were referred to us after 3 to 4 years from the initial spinal cord injury, all with the history of previous insuccessful attempts at closure with split-skin grafts or local skin flaps.

A thorough general and local preparation usually took about 2 weeks preoperatively. We did not operate on patients with hemoglobin levels below 12 mg%, or protein levels below 6 g%. Wound dressings were changed two or three times daily to keep the bacteria index below 10^5 g. A suitable antibiotic was given intravenously starting from the day before surgery.

The usual prophylactic care was provided postoperatively, suction drains removed after two weeks, and sutures removed after three weeks.

The localization of the decubitus ulcers in those patients as well as the methods of closure are shown in the Table.

More detailed data are presented on two of our patients:

Patient No. 1, male, 33 yrs, with a Th_{10} spinal cord injury. Two years after the injury, he developed sacral, left ischial, right trochanteric and left anterior iliac spine pressure sores. The sacral sore was treated with a split-skin graft with good results. Two subsequent attempts to close the ischial ulcer with local skin flaps failed, and the patient was then referred to our unit. At the first operation, the left ischial sore was closed with a gracilis muscle flap covered with a local skin flap while the left anterior iliac spine ulcer

Table 1

Case	Age years	History years	Site	Method of closure	Complications	Time of healing
1	33	2	left ischium	gracilis muscle flap + local skin flap	none	3 weeks
			left anterior iliac spine	sartorius myocutaneous island flap	oedema	3 weeks
			right trochanter	rectus femoris myocutaneous flap	none	3 weeks
			right anterior iliac spine	sartorius m. flap + local skin flap	haematoma	3 weeks
2	28	2.5	left ischium	gracilis myocutaneous flap	partial necrosis	6 weeks
3	28	3	right ischium	biceps femoris myocutaneous flap	fistula under the flap	6 weeks
4	41	2.5	left trochanter	biceps femoris myocutaneous flap	partial necrosis	6 weeks
			right trochanter	biseps femoris myocutaneous flap	partial necrosis	6 weeks
5	30		left ischium	gracilis myocutaneous flap	partial necrosis	6 weeks
			right ischium	biceps femoris myocutaneous flap	recurrence in 3 months	2 weeks

was closed with a sartorius myocutaneous island flap. Temporary postoperative oedema of the island flap disappeared in a few days.

The patient's forced prone position in the early postoperative period resulted in the forming of a new pressure sore in the right anterior iliac spine region. This, as well as the right trochanteric sore, were both treated during the second operation, 6 weeks later. The right trochanteric ulcer was closed with a rectus femoris myocutaneous flap, and the right iliac spine decubitus ulcer with a sartorius muscle flap covered with a local skin flap. A haematoma which developed in the iliac spine region during the early postoperative period was successfully evacuated.

No recurrences were observed throughout the 2-year follow-up. The patient continued his professional training in a rehabilitation centre, spending most of the day in the sitting position on a wheelchair.

Patient No. 2, a 41-year old male, developed pressure soores in both trochanteric regions a year after he had suffered spinal cord injury at the Th_{10-11} level. He was referred to our Department in a septic state after two unsuccessful attempts at closing the defects with local skin flaps. He also had another, nearly developed decubitus ulcer in the sacral region. At the first operation, the left trochanteric sore was closed with a biceps femoris myocutaneous

island flap, and the sacral sore with a split-skin graft. The right trochanteric sore was widely excised and covered with moist dressing. The dressings later had to be changed twice daily owing to the rapid effect of granulation. The sepsis disappeared soon after operation. Part of the skin island of the biceps

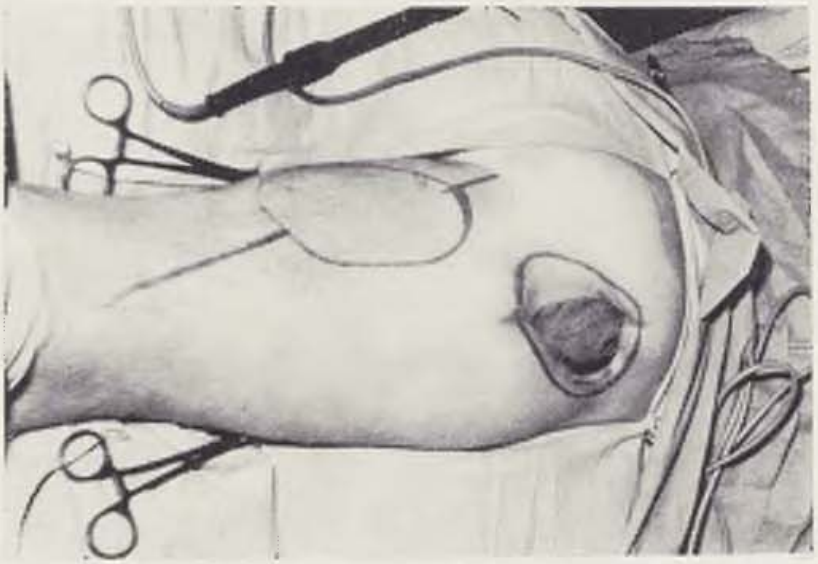

Fig. 1. — Recurrent trochanteric pressure sore. Outlining the incision

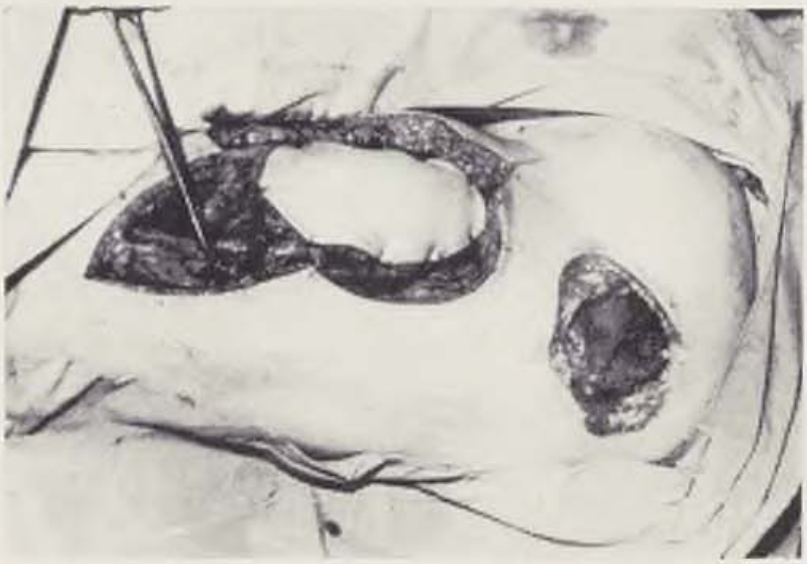

Fig. 2. — A biceps femoris myocutaneous flap. This flap was designed as an island

flap became necrotized in the early-operative period. The necrotic tissues were excised, and a split-skin graft applied to a well vascularized muscle beneath.

At the second operation, 8 weeks later, the granulating tissues in the right trochanteric region were excised again, and the defect was closed with a bi-

ceps femoris myocutaneous island flap. Again, we observed partial necrosis in the skin island, but this was successfully treated with excision and split-skin grafting. The subsequent course was uneventful, and the patient could soon be referred to the rehabilitation centre.

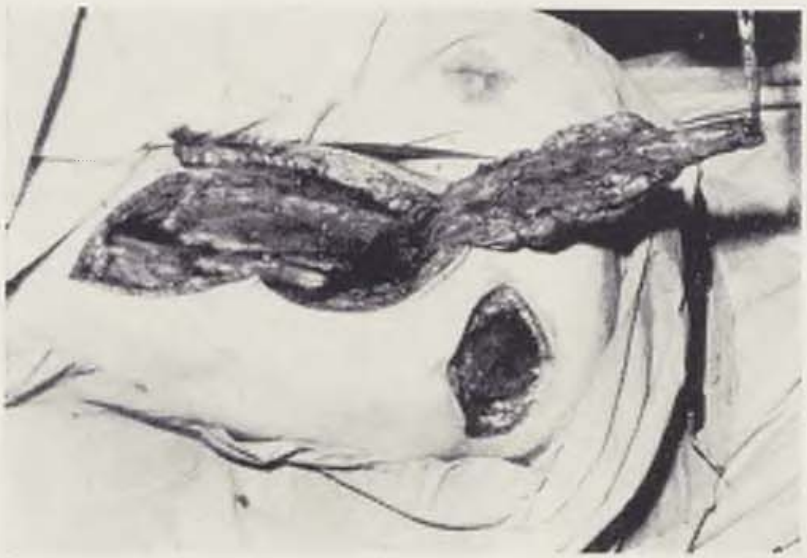

Fig. 3. — The flap was raised along with the fascia leaving the underlying muscle tissue intact

Fig. 4. — The donor site was closed per primam, and the transposed flap was used to close the trochanteric defcts (case No. 2)

DISCUSSION

Muscle and myocutaneous flaps were successfully used in the treatment of ischial, trochanteric and anterior iliac spine decubitus ulcers. The variety

of flaps available in this particular region is wide as there is no problem of static dysfunction in paraplegic patients even after the use of several flaps in the same patient. The operative technique is simple, and the flaps can be transferred to the usual pressure sore sites with no or minimal tension.

Early wound healing complications do not influence late results, which in most cases are good. We observed one case of recurrence, 3 months after the initial operation, but this was successfully treated with excision and direct suture. The frequent complication of haematoma can probably be put down to inadequate post-operative suction drainage.

We observed a few cases of partial necrosis of the skin and subcutaneous tissue when using myocutaneous island flaps. This was probably due to over-extrusion of the size of the skin island. This complication can be successfully treated by means of excision and split skin grafting as the underlying muscle is nearly always well vascularized. We regard the muscle covered with a skin graft as a good solution with no recurrences in the late follow-up period.

Atraumatic technique as well as wide excision of the decubitus ulcer complete with the underlying bony prominence are certainly essential.

Muscle and myocutaneous flaps can supply a large amount of thick, well vascularized tissue as well as full scope for filling deep defects at a very low recurrence rate. They can be recommended as an important contribution to the treatment of pressure sores in paraplegic patients.

J. H.

SUMMARY

The results of the treatment of 10 decubital ulcers in 5 paraplegic patients using muscle and myocutaneous flaps are presented. Early complications in wound healing have no effect on late results which are considered to be good with only 1 recurrence in the late follow-up period. Scope for closing large and deep defects with large quantities of well vascularized tissue represents important progress in the treatment of pressure sores in paraplegic patients.

RESUME

Lobes musculaires et lobes myocutanés au traitement des ulcères décubitaux chez les paraplégiques

Uszynski, H., Jethon, J., Towpik, E.

On présente des résultats du traitement de 10 ulcères décubitaux chez 5 malades paraplégiques, en utilisant de lobes musculaires et myocutanés. De promptes complications de la guérison des plaies n'influençaient pas les résultats finals qui peuvent être considérés comme bons, à l'égard d'une seule récurrences au cours du traitement postérieur. La possibilité du recouvrement de vastes et profonds défauts, en profitant du tissu bien vascularisé en qualité abondante, est évaluée comme un progres bien considérable pour le traitement des ulcérations de pression chez les paraplégiques.

ZUSAMMENFASSUNG

Muskel- und Myokutanlappen bei der Behandlung von Dekubita bei Patienten mit Paraplegie

Uszynski, H., Jethon, J., Towpik, E.

Es werden die Ergebnisse der Behandlung von 10 Dekubita unter Anwendung von Muskel- und Myokutanlappen bei 5 Patienten mit Paraplegie beschreiben. Früh auftretende Komplikationen beim Heilen der Wunden hatten keinen Einfluss auf die Ergebnisse, die man im Hinblick auf eine einzige Wiederholung beim späteren Verlauf als gut betrachten kann. Die Möglichkeit eines Abdeckens ausgedehnter und tiefer Defekte unter Verwendung einer grossen Menge gut vaskularisierter Gewebe wird als ein erheblicher Fortschritt in der Behandlung durch Druck entstandener Dekubita bei Patienten mit Paraplegie eingeschätzt.

RESUMEN

Lóbulos musculares y miocutáneos en la cura de magulladuras en los parapléjicos

Uszynski, H., Jethon, J., Towpik, E.

Se presentan los resultados del tratamiento de 10 magulladuras de guardar cama al uso de lóbulos musculares y miocutáneos en 5 pacientes parapléjicos. Las complicaciones tempranas en la cura de las llagas no influyeron sobre los resultados finales que se pueden considerar buenos dada una sola recurrencia durante el proceso posterior. La posibilidad de cubrir defectos amplios y profundos utilizándose una gran cantidad de tejidos bien vascularizados, se aprecia como considerable progreso en el tratamiento de magulladuras o sea contusiones en los parapléjicos.

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The "Harelip and Cleft Palate Treatment" Symposium Polanica Zdrój, Poland, October 5, 1984

On October 5, 1984, the Polish spa town of Polanica Zdrój played host to a scientific symposium of the Polish Surgical Society Section for Plastic and Reconstructive Surgery devoted to treatment for harelip and cleft palate. The event took place under the auspices of Prof. Leszek Kryst, Polish Deputy Minister of Health and Social Welfare. Besides Polish experts, an active share in the symposium proceedings was taken by participants from Czechoslovakia, the German Democratic Republic, Austria and Sweden. There were four independent sections to deal with the following themes:

1. Primary treatment for clefts and new methods of surgical operation for the anomalies
2. Long-term results of treatment for clefts
3. Orthodontic and phoniatric treatment of clefts
4. Correctic surgery for craniofacial anomalies

The symposium benefited greatly from the presentation of comprehensive programmes of care of patients with facial clefts introduced by the following authors: K. Hollmann et al., Vienna; G. Mühler, Thallwitz; B. Johanson, Goteborg; J. Kruk, Lódź; D. Schumann et al., Jena. Many papers were devoted to some of the more narrowly defined problems: L. Bařinka, Brno — suture of the lip; H. Anderl, Innsbruck — primary correction of the nose, operations for bilateral clefts of the lip; K. Kobus, Polanica Zdrój — extended vomerine flap. The following papers dealt with the growth of the jaws and with orthodontic assessment of the state of dentition: A. Pisulska-Otremba et al., Zabrze; V. Šimeček, Brno; speech development after operations for clefts was taken up by I. Lyżyczka et al., Zabrze. Corrective operations in adulthood were reported on by J. Kozák et al., Prague; A. Němec, Brno; craniofacial operations were discussed by C. Lauritzen, Göteborg; J. Lilja, Göteborg. Clinical studies were suitably complemented by papers from the sphere of medical genetics: M. Tolarová, Prague; J. Procházková, Prague. The scientific programme was wound up by showing two instructional films on subjects of cleft defect orthodontics prepared under the supervision of I. Szczepańska. For the meticulous organization of the scientific part of the symposium we owe our thanks to As. Prof. Kobus and his co-workers.

It is also only appropriate to stress the social part of the event, beginning with the opening cocktail party and ending with the farewell party. Meetings at the social events of the symposium permitted personal contacts between cleft problem specialists from a variety of clinical and research units. The informal discussions there brought a wealth of stimulating information, small perhaps as regards volume but highly relevant. All the participants in the symposium were grateful to As. Prof. Kobus for the high standard of organization and for the fruitful working atmosphere which he was able to create at this gathering of specialists in comprehensive cleft victim care. The symposium at Polanica Zdrój will remain a permanent asset in the field of comprehensive harelip and cleft palate care as well as a fine memory for all those attending it.

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BOOK REVIEW

Team of authors: **Progress in Transplantation**

The book appeared in 1984 in the Churchill Livingstone Publishing House, it has 228 pages and is intended as the first part of a multivolume publication. It gives a survey of the latest knowledge in transplantation craft from the point of view of a number of disciplines – surgery, internal medicine, hematology, immunology, pathology, virology and bacteriology. The constituent chapters were supplied by authors from the US, Canada and Great Britain dealingwith kidney, heart, liver and pancreas transplant operations.

C. R. Stiller and P. A. Koewn review immunosuppression with cyclosporine A, the site and mechanism of its action and its pharmacokinetic, analyzing its effects, toxicity in different transplanted organs.

R. Storb deals with bone marrow transplantation in the treatment of malignancies in terms of donor choice, therapy indications, and results. Special attention is devoted to the "graft disease" syndrome.

In the chapter on the therapeutic uses of monoclonal anti-T-lymphocytic antibodies, C, B, Carpenter proceeds from the determination of subtypes of T-lymphocytes responsible for the phenomena of rejection and production of antibodies against them in animal experiments.

The problems of infection, in particular those caused by cytomegaloviruses, in transplant patients, as prepared by R. H. Rubin, covers a wide range of points from the virus characteristics, broadly conceived clinical picture, epidemiology up to the overall strategy of cytomegalovirus infection treatment.

B. D. Kahan gives a detailed account of the likely immunological mechanisms of one as yet not entirely explicated phenomenon — longer graft survival after preoperative administration of specific blood transfusions.

The results of clinical, histological, immunological, virological and cytogenetic studies in immunosuppressed patients with lymphoproliferative conditions are the subject of a chapter supplied by Hanto and Simonsen. Their attention is focussed mainly on the Ebstein-Barr virus with its inducing effect on B-lymphocyte proliferation in connection with the production of lymphoma.

In the closing chapter, P. MacMaster discussed the question of why there should be so few transplantation organs such as the heart, liver or pancreas considering the relatively large numbers of kidney donors. He also gives a description of preoperative premedication, and the strategy and technique of multiple withdrawals.

The whole book is noteworthy particularly for its high concentration of new knowledge of the given specialty. Although this volume treats the problem of transplantation mainly from the immunological point of view, the work — thanks to its clarity, brevity and very good didactic arrangement of publications, — is bound to attract attention and appreciation from all those taking a share in the art of transplantation.

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CONTENTS

STOP FOR A MOMENT AND CONSIDER YOUR HEALTH

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

CZECHOSLOVAK SPAS — OASES OF HEALTH, QUIET AND INSPIRATION

KARLOVY VARY — FRANTIŠKOVY LÁZNĚ — MARIÁNSKÉ LÁZNĚ — JÁCHYMOV — TEPLICE V CECHÁCH — PODEBRADY — JANSKÉ LÁZNE — TŘEBOŇ — JESENÍK LUHAČOVICE — TEPLICE NAD BEČVOU

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