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ANTHROPOLOGICAL RECORD FOR CONGENITAL DEVELOPMENTAL DEFECTS OF THE FACE (ESPECIALLY CLEFTS)

K. HAJNIŠ, L. G. FARKAŠ

The anthropological record for congenital developmental defects of the face, worked out in a form shown below, is meant, first of all, for registration of measurements in the faces of patients with cheiloschisis, gnathoschisis and palatoschisis, and also in rate transversal clefts of the mouth aperture. Its summary in code is an indispensable part of the coded surgical case history for cleft lip and palate which was worked out at the Laboratory of Plastic Surgery at the Czechoslovak Academy of Sciences in Prague (Farkaš, Hajniš, Kliment, 1967).

We have used the anthropometric record since 1963 and it served at the Department of plastic surgery in Prague in examination of about 400 patients with different types of clefts. It is necessary to compare the ascertained data about the dimension and form pecularities of the afflicted face, be it before or after operation, with the norm valid for individuals of the same age in the population. In the past ten years there has been an increased endeavour after objective registration of various morphological changes of the face, and its individual parts, of the involvement of soft tissues of splanchnocranium in cleft defects (Ortiz-Monasterio et al., 1959, Skotnický 1963, Gonzales-Ulloa 1964, Coccaro and Pruzansky 1965, Scrimshaw 1965, Adamson, Horton, Crawford 1965, Orticochea 1966, Pinkerton, Olin, Meredith 1966, and others). A number of physicians arrived at the opinion that utmost accuracy in ascertainment of morphological changes of the face was indispensable not only in the interest of the complete pathological picture of a certain congenital developmental defect of the face, but it also enabled a more objective evaluation of the surgical results.

Case History No.: Date and place of birth:

Name: Date of surgery:

Clinical diagnosis: Surgeon:

	Before srugery	10 days after operation	1 month after operation	6 months after operation	1 year after operation	2 years after operation	etc.
1. g — op							
2. eu — eu							
3. t — t							
4. ft — ft							
5. zy — zy							
6. go — go							
7. en — en							
8. ex — ex							
9. m — ex dx							
10. m* — ex sin							
11. al — al							
12. m — al dx							
13. m — al sin							
14. sbal — dx — more backwards							
14. sbal — dx — lower							
14. sbal — sin — more backwards							
14. sbal — sin — lower							
15. nose ridge — dx							
15. nose ridge — sin							
16. position of columela — dx							
16. position of columela — sin							
17. ch — ch							
18. m — ch dx							
19. m — ch sin							
20. t — sn — t							
21. t — sn dx							
22. t — sn sin							
23. t — gn — t							
24. deviation prn — dx							
24. deviation prn — sin							
25. n — gn							
26. n — sto							
27. n — sn							
28. sto — gn							
29. sto — li							
30. height of the lip red in upper lid dx							
31. height of the lip red in upper lid sin							
32. height of prolabium							
33. width of prolabium							
34. width of lip cleft — up — dx							
34. width of lip cleft — up — sin							
34. width of lip cleft — down — dx							
34. width of lip cleft — down — sin							

	Before srugery	10 days after operation	1 month after operation	6 months after operation	1 year after operation	2 years after operation	etc.
35. height of lip cleft							
36. width of cleft in processus alveolaris maxillae — up — dx							
36. width of cleft in processus alveolaris maxillae — up — sin							
36. width of cleft in processus alveolaris maxillae — down — dx							
36. width of cleft in processus alveolaris maxillae — down — sin							
37. width of philtrum — up							
37. width of philtrum — down							
38. height of philtrum — up							
38. height of philtrum — down							
39. width of palate at the level of $m_2 - M_1$							
40. width of palate cleft at the level of $m_2 - M_1$							
41. width of the right palate plate at the level of $m_2 - M_1$							
42. width of the left palate plate at the level of $m_2 - M_1$							
43. cleft palate index**							
44. angle of declivity of the hard palate plates***							
45. sa — sba dx							
46. pra — pa dx							
47. sa — sba sin							
48. pra — pa sin							
49. distance from foramen incisivum to the posterior pharyngeal wall							
50. length of palate (hard and soft) measured from foramen incisivum							
51. width of pharynx							

Notes:

* m = median plane of the face (n — gn)

** cleft palate index $= \frac{\text{sum of widths of palate plates}}{\text{total width of hard palate}}$

*** angle of declivity of hard palate plates measured on the cast

THE RECORD

At present 51 measured data are beeing registered in the anthropological record, viz. all current cefalometric marks of the face, and, besides, the greatest length of neurocranium [g-op, (1-mark of the record), its maximal width [eu-eu, (2)], the smallest width of the forehead [ft-ft, (4)] and the width of the skull base [t-t, (3)]. Out of the usual dimensions of the face the following are being examined: 5. the greatest width of the face (zy-zy); 6. the maximal width of the mandible (go-go); 7. the distance between the internal eye angles (en-en); 8. the distance between the external eye angles (ex-ex); 11. the breadth of the nose (al-al); 17. the width of the oral slot (ch-ch); 20.

the t-sn-t arch; 23. the t-gn-t arch; 24. deviation of nose apex (the pronasal point -prn) to the left or right; 25. the morphological height of the face (n-gn); 26. the height of the upper face (n-sto); 27. the length of the nose (n-sn); 28. the height of the lower part of the face (sto-gn). All these data are given in milimeters or degrees, respectively.

We also tried to ascertain the right-left differences in the following organs: the distance of both external angles of the eyes from the median plane [m-ex dx (9) and m-ex sin (10)], and the size of the left and right subnasal half-arch [t-sn dx (21) and t-sn sin (22)], but especially the different breadth of both nasal wings [m-al dx (12) and m-al sin (13)] and the different size of the right and left part of rima oris [m-ch dx (18) and m-ch sin (19)]. As dividing plane between the right and left part of the face we have been using, since 1963, the line joining nasion (n) and gnathion (gn).

Some special measurements were introduced also, such as registration of different joining of both nasal wings (subalare points — sbal) to the cheek in the antero-posterior direction (apparent from vertical norm) and vertically (apparent from facial norm), measurements of the height of the transition zone of both lips (lip red) and deviation of the nose ridge (the line joining points n-prn) and columela (16) from the medial plane. The height of the transition zone on the lower lip was measured on the line joining n-gn, mentioned above, between points sto-li (29), on the upper lip it was measured on the right and left side (of the cleft) in the highest place [labium superius dx (30), labium superius sinistra (31)].

Prolabium was measured in two places (Hajniš, Farkaš 1965). Further, the width and height of the hare-lip was measured and the width of the cleft in processus alveolaris maxillae (34—36) (Hajniš, Farkaš 1965). If possible, attention was given also to the width (37) and height (38) of the philtrum. The height of philtrum is actually given by the distance between points sn-ls, but in subjects with cheiloschisis it is never possible to measure it between these points as the cleft follows the ridge of the philtrum. In unilateral clefts we measured, therefore, the length of the preserved philtrum [ridge] (38), though being fully aware that it is somewhat shorter than the actual distance between sn-ls.

The width of the cleft fissure in the palate (40) was measured immediately before operation with a palatometer constructed at the Laboratory of plastic surgery at the Czechoslovak Academy of Sciences in Prague (M. Tolarová, in press). It was ascertained at the level of m_2-M_1, which may quite easily be estimated, even in cases where m_2 did not yet cut through (Hajniš, Farkaš 1965). In the same place, and under the same conditions, it was possible to measure also the entire width of the palate (39) and the width of the right (41) and left (42) palate plate.

The index of cleft palate was calculated in the way described in the paper "Coded surgical case history for cleft lip and cleft palate" (Farkaš, Hajniš, Kliment 1967).

In a plaster cast it is possible to carry out a cut in the area m_2-M_1 perpendicual to the hard palate and to notice and measure the declivity of both palate plates in relation to the horizontal plane [44, (Hajniš, Farkaš 1965)].

In all anthropologically studied patients we noticed two fundamental dimension data on both external ears, viz. their height and width (45—48). Besides we took into consideration the general form of the external ear and of its individual parts. Hands were also examined and microforms of cleft defects of the face searched for (Tolarová, Havlová, Růžičková 1967).

The difference of mutual position of points sbal (Hajniš, Farkaš, Hajnišová 1967) in the facial norm in relation to the horizontal plane was registered with a sliding caliper in such a way that two imaginary, parallel, horizontal straight lines were led through both points sbal (perpendicularly to the line joining n-gn, or along the lip suture towards n-sto); the distance between them showed by how many milimeters lower one nostril was joined compared with the other one.

In ascertaining differences in the antero-posterior position of the left and right sbal imaginary parallels were led perpendicularly to the medial plane of the head in the vertical norm and the distance between them showed by how much one the points (i.e. joining of the nostrils) was shifted more backwards than the other. To enable a more accurate registration of the position of points sbal a new measuring apparatus was constructed called faciometer. The paper dealing with it is about to be published (Hajniš, Farkaš).

The dimensions appearing in our record under 1—6 were measured with cephalometer. The arches 20—23 were measured with a medical tape meter and all other dimensions, with the exception of the angle of diclivity of the palate plate (40), deviation of the nose ridge (15) and position of columela (16), respectively, were measured with a sliding caliper. The dimension 15 and 16 was measured with an adapted protractor the same as dimension 40 which, however, was measured on the plaster cast. Data 39—42 and 49 and 50 were measured with the palatometer, mentioned above.

The anthropological record was used for general evaluation of the shape and size deviations from the normal in faces of patients with cleft defects. As a certain routine is indispensable in these measurings, it is appropriate that they be carried out by an anthropologist.

For surgical use only the most important data from the anthropological record were transferred to the coded surgical case history (Farkaš, Hajniš, Kliment 1967).

For clinical use it is advisable that the anthropological examination be carried out precisely as indicated in the chart. The patient is followed up until development of his face is finished. Anthropometric examination is, of course, repeated before any further surgery. The number of studied features is sufficient for good morphological and metric characteristics both of the face and of the cleft. In repeated check-ups it yields a good survey of compensation, persistence or increase of different deviations of the shape and dimension of

deformities which involved the face, the alveolar process of maxilla and the palate, and which were caused not only by growth but by various surgical methods, or else.

SUMMARY

Authors present the anthropological record for objective diagnosis of various morphological changes of the face and its individual parts. They use this record for evaluation of the shape and size of the face and oral cavity. It served in examination of about 400 patients with different types of clefts treated on the Department of plastic Surgery, Charles University in Prague.

The authors describe the used cephalometric system and the way of registration. All these data are an indispensable part of the coded surgical case history for cleft lip and palate.

RESUMÉ

Une carte de documentation anthropologique concernant les malformations de la face, surtout celles en fente

K. Hajniš, L. G. Farkaš

Les auteurs présentent une carte de documentation anthropologique servant à l'identification objective des malformations morphologiques de la face et de ces parties respectives. Elle est surtout employée dans l'identification du degrès des malformations concernant la forme de la face et de la cavité orale. Jusqu'alors elle a été employée che 400 des malades souffrant de la fente de la lèvre, de la mâchoire et du palais, ayant été traités par la clinique de la chirurgie plastique de Prague.

Dans le travail le système céphalométrique est décrit et la manière de sa classification est présentée. Les auteurs soulignent les données cliniques formant partie inséparable de la carte de documentation fondamentale des becs-de-lièvres de même que des fentes de la mâchoire et du palais.

ZUSAMMENFASSUNG

Anthropologisches Vermerkblatt für angeborene Gesichtsentwicklungsdefekte (besonders des Spaltentypus)

K. Hajniš, L. G. Farkaš

Die Autoren unterbreiten ein anthropologisches Vermerkblatt, das zur objektiven Beurteilung der morphologischen Abweichungen des Gesichtes und der einzelnen Partien desselben dienen soll. Es wird benutzt bei der Ermittlung des Grades der Deformierung des Gesichtes und der Mundhöhle. Bisher wurde das Blatt bei ungefähr 400 Kranken mit Lippen-, Kiefer- und Gaumenspalten angewandt, die an der Klinik für plastische Chirurgie der Karl-Universität in Prag behandelt worden sind.

In der Arbeit wird das angewandte kephalometrische System angeführt und die Auswertungsmethode vorgeschlagen. Es werden Merkmäle betont, die zum unbedingten Teil der aufschlüsselnden chirurgischen Krankengeschichte für Lippen-, Kiefer- und Gaumenspalten werden müssen.

RESUMEN

Lista antropológica de anotaciones para los defectos congénitos del desarrollo de la cara (sobre todo los de la grieta)

K. Hajniš, L. G. Farkaš

Los autores presentan la lista antropológica de anotaciones, la que sirve para la opinión objetiva de las desviaciones morfológicas de la cara y de sus partes particulares. Se utiliza en la comprobación del grado de la desfiguración de forma de la cara y de la cavidad bucal. Éste se aplicó hasta hoy en unos 400 pacientes con la grieta del labio, de la mandíbula y del paladar, tratados en la clínica de la anaplastia de la Universidad de Carlos en Praga.

En la obra se menciona el sistema cefalométrico usado y se propone el modo de la valorización. Se acentuan los rasgos característicos, los que tienen que formar parte integrante de la anamnesia quirúrgica clave para las grietas del labio, de la mandíbula y del paladar.

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A CASE OF STRUCTURAL CHROMOSOMAL ANOMALY IN D (13—15) GROUP

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The discovery of several partial autosomal monosomy or trisomy conditions with multiple phenotypic anomalies has added another category of chromosomal aberrations which allows for viable but malformed offspring. The purpose of the present report is to describe a boy with gross mental retardation, myoclonic seizures and multiple malformations who was found to have an unusual structural anomaly in his karyotype.

CASE REPORT

Personal and family history

A. G., 2-year-old male infant, was admitted to the Department of Pediatric Neurology because of serial myoclonic seizures observed by the mother since the 8th month of his life. There was no family history of mental illness, mental retardation, epilepsy or congenital malformations. Both parents were healthy, of average intellectual level. At the time of delivery, the mother was 25, and the father 31. They have two children, a 4-year-old girl, and 5-year-old boy, both normal.

Our patient was a product of a normal full-term pregnancy and uncomplicated delivery. There was no history of a known teratogenic agent to which the child had been exposed during embryonic life. The birth weight was 3050 g. One episode of cyanosis was observed in the second minute after birth. In the neonatal period, he appeared to be a normal baby and the valgus position of both feet was the only one anomaly recorded. According to his mother's statement the boy showed developmental retardation and demonstrated little spontaneous activity. First two incissors erupted in the 14th month of his life.

Clinical findings

When examined on admission at the age of 2 years, he was 83 cm in height and 9800 g in weight what corresponds to the age of 12 months. He could not sit unsupported nor follow objects with his eyes, had poor head control and

slept most of the day. At that time, he appeared to be functioning at about 3—4 month level.

Neurological examination revealed muscular hypotonia and poor reflexes from the lower limbs. Both abdominal and the right cremasteric reflex were present.

Physical examination revealed (Fig. 1 and 2): rather small head with narrowed frontal region. Head circumference was 46 cm (lower margin of nor-

Fig. 1

Fig. 2

mality for age) but it was merely due to the excessive enlargement of the posterior cranial cavity. The angle between occipital prominence and cervical spine was 90 degrees. Neck slightly webbed. Asymmetrical palpebral fissures, mild hypotelorism, root of the nose slightly depressed. Four teeth present, two lower incissors devoid of enamel. Low-set ears with minor deformities of auricles. Barrel chest with widely spaced nipples. No abnormalities were found on examination of the heart and lungs as well as of abdominal organs. The spinal column did not show physiologic curvatures. Clinodactyly of minor degree, retroflexible thumbs. Neither of the palms had simian crease. Skin dimples were detected over the acromial processes and on both ankles. Overlapping of the second toe over the third one was more prominent in the right foot. Both feet in calcaneo-valgus position (Fig. 3). External genitals evidenced underdeveloped scrotum. Testes could be felt in the inguinal canals.

Laboratory findings

The child is O Rh negative. Wasserman test and tests for Toxoplasmosis negative (also in his mother). Flat fasting curve following intravenous glucose administration. Total serum protein 6.4%, albumin 62.6, alpha-1 globulin 4.0, alpha-2 globulin 12.1, beta globulin 11.7 and gamma globulin 9.7. The high ratio (1.81) of albumin to globulin. Moderate anemia resistant to treatment with iron. Other laboratory values fell within normal range: cholesterol, calcium and

Fig. 3

phosphorus blood levels, alcaline phosphatase, urinalysis and amino-acid pattern in 24 h specimen of urine.

Roentgenograms:

Of the head — enlarged cranium in the region of posterior fossa (Fig. 4). Irregular structure of the posterior part of parietal bone on the right side.

Of extremities — atrophy with a few lines of transitory calcifications (Fig. 5).

Electroencephalogram — abnormal tracings consisted of paroxysmal slow waves theta and delta as well as moderate and high voltage spike discharges.

Comments

Clinical picture and the results of some laboratory tests had directed our attention to the possibility of some autosomal aberrations as we have observed in our patient: failure to thrive, gross mental retardation, cranial defects, minor motor seizures which may be due to defective central nervous system function as confirmed by EEG, minor characteristic anomalies of the face, ears, external genitals, fingers and toes. On the other hand, the pattern of multiple malformations was not complete to fit into one of known trisomy syndromes. The boy was not found to be affected with any of the following anomalies: ventricular septal defect or other congenital heart disease, microphthalmia, cleft lip or palate, abnormal palmar creases, polydactylia.

Cytogenetic study (Fig. 6)

Chromosome counts of cells revealed a modal number of 46. The chromosomes appeared normal except one of the D group. The abnormal chromosome was supposed to belong to the 14th pair. Its long arms were twice their normal length in all 50 cells from the blood culture which had been studied in detail. This picture corresponds to: 46, XY, Dq+, according to the new nomenclature

Fig. 4

(Chicago Conference, 1966). Analysis of the karyotypes of parents and siblings revealed no abnormalities of any kind.

DISCUSSION

Partial trisomies and partial monosomies due to translocation have been reported for some of the group B, D, E and G chromosome (Insley, 1967; LeJeune et al., 1964; Rohde and Catz, 1964; Zetterquist et al., 1965). Most of the structural variants observed are considered to be the results of a reciprocal translocation between non-homologous chromosomes. The well-known 21/13—15 translocations often associated with mongolism are the most commonly found examples. In most cases, there is an unbalanced heterozygous translocation with a "duplication-deficiency" (Dill et al., 1966). Polani et al. (1960) described a girl with congenital malformations, mental retardation and seizures. Her karyotype evidenced double reciprocal translocation. Both parents were found to have normal karyotypes.

The segregation of an apparently balanced 5—13 translocation was studied in 3 generations by LeJeune et al. (1965). The two types of anomaly was observed: a girl affected with the "Cri du Chat" disease, monosomic for approximately half of chromosome 5. Another patient in this family represented inverse condition — one of acrocentrics (13—15) had an excess of length of

the long arms. Short arms of chromosome 5 were of normal length. This child was affected with deep mental retardation, short statute and over-riding toes.

The somewhat similar chromosomal anomaly was recently reported by De Toni et al. (1967). A one-year-old girl with mental retardation, spastic tetraparesis and hydrocephalus as well as her apparently normal brother had karyotype revealing excess genetic material on the long arms of chromosome 15 in

Fig. 5

a certain number of examined cells. The origin of the anomaly remained unsolved.

The chromosomal aberration in our patient appears similar, the clinical features, however, do not fit closely with those described in the above reports.

According to Miller and Dill (1965), structural aberrations arise from breakage in the chromosome arms and subsequent anomalous reunion of broken ends. The genetic accident resulting in this abnormality might have occurred during either of the parental reduction divisions as the gamete may contain either, neither or both products of the reciprocal translocation, one chromosome with deficiency, another with duplication of its fragments. It should be remembered that in cogenesis only one abnormal type of gamete is produced because one of abnormal cells is lost as a polar body. After fertilization, a gamete with partial trisomy results in an individual like our patient, whereas a gamete with partial monosomy (deficiency) is lost. The genetic imbalance could also

arise in the first cleavage division of the zygote or later, and if the effect on cell function is severe this clone may not survive.

Abnormal sperm is not considered in the discussion as none of the contributory factors could be elicited in respect to the father's health nor occupation.

Finally, it must be pointed out that failure to observe a karyotype anomaly in the somatic cells of the parents does not exclude the possibility that the anomaly arose in one of the parental germ cells (Dill et al., 1966).

Other considerations

Only talipes calcaneo-valgus were observed on the first days of the child's life though most anomalies were recognizable at birth. As far as minor defects are concerned, they are neither of medical nor of cosmetic consequence but

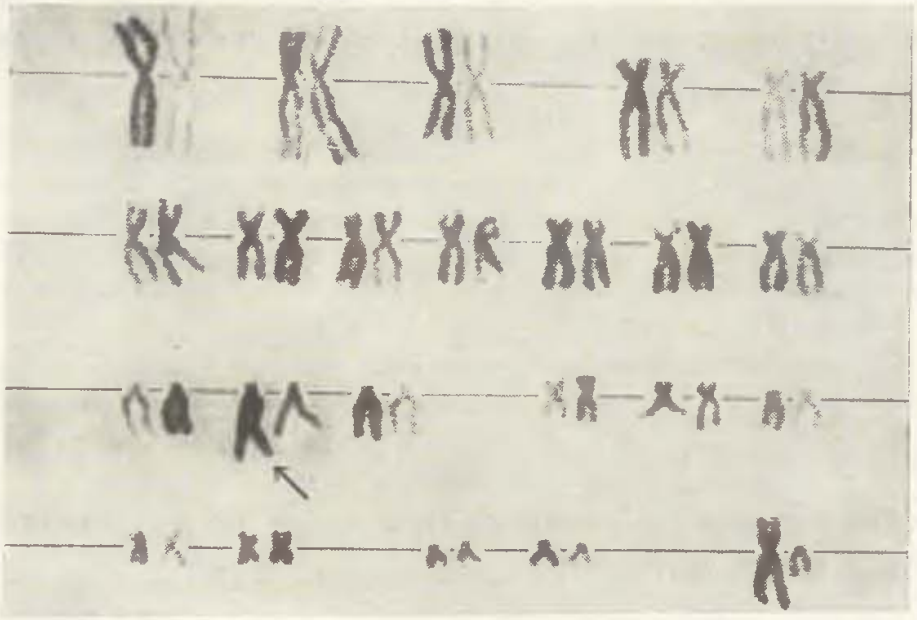

Fig. 6

may represent a valuable clue to altered embryological development and should alert the physician to the existence of other malformations of a more severe nature, especially concerned with central nervous system. (Marden et al., 1964.)

The authors would like to thank ass. prof. Przemyslaw Czerski, M. D. for his consultation of the cytogenetic problems.

SUMMARY

The 2-year-old boy with gross mental retardation, myoclonic seizures and multiple congenital anomalies is reported. His karyotype evidenced unbalanced translocation. The long arms of one chromosome of D group was found to be twice their usual length. A few hypotheses were discussed but no definitive answer can be made as to how this structural aberration arose.

The authors emphasize the diagnostic and prognostic value of minor anomalies in the neonatal period.

RÉSUMÉ

Un cas de l'anomalie de la structure des chromosomes de la grouppe D (13—15)

M. Jaworska, R. Michalowicz, A. Stolarska, B. Wiszczor-Adamczyk

Les auteurs présentent un garçon souffrant de rétardation psychique très exprimée, accompagnée des crises myocloniques et des anomalies congénitales multiples. Son cariotype montrait une translocation mal corrigée. Les branches longues d'un des chromosomes de la grouppe D étaient dédoublées en comparaison avec celles normales. On a présenté quelques-unes des hypothèses, et pourtant une explication définitive de cette abération de structure n'a pas été fixée.

Les auters soulignent l'importance diagnostique en tant que prognostique des microanomalies dans la période néonatale.

ZUSAMMENFASSUNG

Ein Fall der strukturellen Chromosomenanomalie der Gruppe D (13—15)

M. Jaworska, R. Michalowicz, A. Stolarska, B. Wiszczor-Adamczyk

Es wurde ein zweijähriger Knabe mit grosser Geistesentwicklungsverspätung, myoklonischen Anfällen und multiplen kongenitalen Anomalien beschrieben. Sein Kariotyp wies eine unausgeglichene Translokation auf. Die langen Arme eines Chromosomes der Gruppe D waren zweimal so lang als üblich. Es wurden mehrere Hypothesen erwogen, es kann aber keine definitive Erörterung vorgelegt werden, wie diese strukturelle Aberration entstanden ist.

Die Autoren unterstreichen die diagnostische und prognostische Bedeutung der geringen Anomalien in der neonatalen Zeitperiode.

RESUMEN

Caso de la anomalía estructural de cromosomas del grupo D (13—15)

M. Yaworska, R. Michalowich, A. Stolarska, B. Wischor-Adamchik

Se describió un muchacho de dos años con gran retardación mental, con accesos mioclonicos y con cuantiosas anomalías congénitas. Su cariotipo probada una translocalización descompensada. Las espalditas largas de un cromosoma del grupo D tuvieron la longitud dos veces mayor que por regla general. Se reflexionaba sobre algunas hipótesis, pero no es posible presentar una explicación definitiva, de qué manera apareció esta aberración estructural.

Los autores acentuan la importancia diagnóstica y prognóstica de las anomalías menudas en el primer período después del nacimiento.

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METHOD OF REPAIR OF UPPER LIP DEFECTS WITH A WEDGE-SHAPED FLAP TAKEN FROM THE LOWER LIP

G. V. KRUTCHINSKYI

Out of the many known methods of reconstruction of the upper lip the best results are obtained by plasty with the lower lip tissue. The reason for this is the adequate structure and amount of the used plastic material which contains skin, muscle, as well as mucosa with the lip red. The tissues of the lower lip guarantee also excelent cosmetic and functional results which is not always the case with any other method.

Takahashi et al. published recently some very interesting results of research on the degree of motor function as well as on changes of skin temperature and the function of the salivary glands in the flaps Abbé's operation. These functions became normal in nine months after operation. This confirms beyond any doubt the full adequacy of the lip reconstructed by the above method. The only drawback of this method is the inevitable scar on the healthy lip.

The two-stage operation for the repair of the defect of the upper lip with a flap on a nutritive pedicle, presented by Abbé 100 years ago, is generally known and described in all textbooks of reconstructive surgery.

It has been performed by many surgeons (Rauer, Michaelson 1954; Cannon, Murray 1953; Thompson, Pollard 1961; McGregor 1963; Peterson et al. 1966; etc.).

Abbé's classical method has changed during the time but in few respects. Burian (1967), Cannon (1942) and Cardosso (1958) formed a two-tip flap instead of the usual wedge in the lower regions of the flap. The flap on the lower lip formed by Johanson (1961) and Smith (1961) had an almost rectangular shape. Millard (1964) covered smaller defects of the red of the upper lip with a free transplant from the lower lip.

It is necessary to point out that Abbé's operation in its classical form as well as in the above modifications guarantees the increase of the upper lip only in the transverse direction, i.e. in its width.

However, in clinical practice, especially in patients with repeated surgery for congenital clefts of the upper lip and palate, the lip is often extremely

sunken, diminished not only in the transversal direction but conspicuously shortened as well; the remains of the lip red use to be drawn upwards, towards the base of the septum. Moreover, the shortening of the upper lip is often accompanied by narrowing of the nostril on the side of the former cleft.

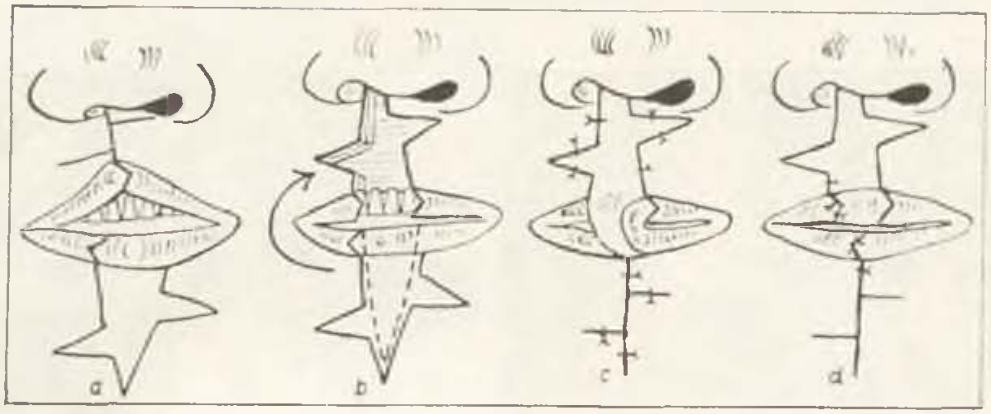

Fig. 1. Scheme of operation for the reconstruction of a defect of the upper lip with a wedge-shaped flap from the lower lip, containing 3 wedge-shaped tips. — a - The heavy line shows the course of incisions on the upper lip by means of which the preserved parts of the lip are shifted into proper position. The contours of the wedge-shaped flap on the lower lip are marked. — b - The appearence of the upper lip after incisions. The complicated shape of the penetrating defect of the lip is visible. — c - Wedge-shaped flap is sutured into the defect of the upper lip. Sutured wound on the lower lip, the lines of lateral incisions are not opposite. — d - Condition after removal of the nutritive pedicle and finishing the plasty

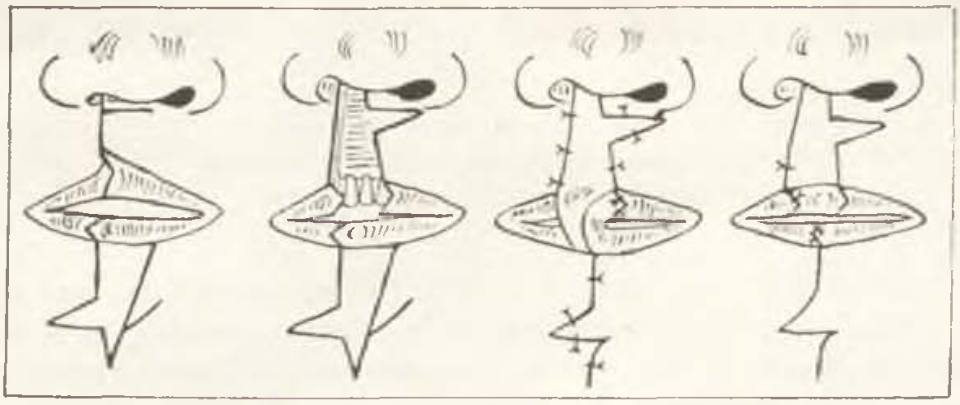

Fig. 2. Scheme of the stages of covering the defects of the upper lip, with prolongation of the lip on one side only

Repair of such a complicated deformation combined with a defect of the upper lip tissue is very difficult. Abbé's operation proves to be little effective in such cases and does not lead to repair of the whole complex of defects. For such cases we recommended a new method.

To make possible a simultaneous enlargement of the upper lip in both the transversal and longitudinal direction it was proposed to cut out, from the

medial part of the lower lip, instead of the usual wedge-shaped flap, a wedge-shaped flap of skin, muscle and mucosa which had three oposite, transversally oriented tips (Fig. 1a).

Transplantation of such a flap resulted in the enlargement of the lip not only in the transversal direction but, due to summation of the lateral additional

Fig. 3. Patient V., a 14 years old girl. Defect of the upper lip and deformation of the nose after monolateral cleft of the lip and palate. Remnants of the upper lip are drawn up to the septum, the lip is sunken, the nostril is narrowed. — a, b - Condition after operation, frontal and side view

wedges, it was also prolonged in the vertical direction. Besides, by cutting out a longer medial tip it was possible, in cases where necessary, to widen at the same time the nostril, so that better cosmetic and functional results were obtained by a single operation.

The principal difference was the formation of the formation of the opposite wedges on the flap from the lower lip which widened the possibilities of the new operation as compared with the previousnes.

Before cutting the flap it was necessary to measure accurately the size of the defect of the upper lip in the transversal direction and to estimate by how much, and from which side, it was necessary to prolong the upper lip and to decide on the advisability of the plasty of the nostril. Besides, considering the location of old scars, it was decided, and marked with a colour, where and at which level it would be advisable to place the tips of the wedge-shaped flap.

From the cosmetic point of view, it was advisable to preserve the philtrum in such a way that the tip directed towards the medial line was placed beneath the septum and the lateral tip nearer to the lip red. Further, it was estimated on which side it would be more appropriate to preserve the nutritive pedicle of the flap.

Fig. 3c. Wedge-shaped flap on nutritive pedicle is sutured into the upper lip

The size and shape of the flap were marked in colour on the lower lip, its position on the upper lip after advancement was previsaged and incision of the flap started (Fig. 1b).

The basic mass of the flap was cut out in its entire thickness together with the mucosa, the lateral wedges comprised the skin and partially the muscle of the lower lip. The wedges on both sides of the basic flaps were cut at different levels according to a premeditated plan: one nearer to the lip red, one nearer to the chin (Fig. 1b).

The edges of the wound on the lower lip were mobilized, the wound was sutured in layers. Due to the different level of the transversal incisions on the lower lip, they did not correspond with the medial line and thus good adaptation of the edges of the wound was secured and the scar was less conspicuous (Fig. 1c). The wedge-shaped flap from the lower lip was rotated by 180^0 and the upper lip was cut in its entire thickness along the old scar in such a way that the incision corresponded with the shape and location of the wedges of the flap. Besides, two horizontal non-penetrating incisions were carried out on both halves of the lip corresponding with the length and level distribution of

the additional skin wedges on the wedge-shaped flap. Thanks to this the preserved parts of the upper lip diverged and descended into normal position (Fig. 1b).

It is necessary to point out some details concerning the incision of the wedge-shaped flap in the red of the lip. Observations confirmed that wound

Fig. 3d, e. The patient one year after operation

across the red was later on replaced by a scar pulling inward. It was usually possible to avoid this pull if the incision line in the red was broken. Therefore it was necessary, before starting the incision of the wedge-shaped flap, to study carefully the lines of old scars and to decide how, with minimal loss of tissue, to form corresponding wedges and incisions on the red of the upper lip and the wedge-shaped flap in order to avoid a transversal scar in the red (Fig. 1b).

The wedge-shaped flap was cut from the lower lip, placed in the defect of the upper lip, and the mucosa, muscle and finally the skin wound was sutured one after other. Special attention was given to the adaptation of the edges and to the meeting of the rims of the lip red (Fig. 1c).

The postoperation stage was usually without any complications, the patients usually put up with relative ease with the period of compulsory joining of the lips.

After 10—12 days the nutritive pedicle was cut off and the plasty of both lips was finished (Fig. 1d).

There are sometimes cases in which it is necessary to prolong only one side of the upper lip, whichever it be, the second half of the lip being in normal position. In such cases the incised wedge-shaped flap from the lower lip had only one additional wedge (Fig. 2).

The skin defect at the site of the excised lateral wedge was covered by means of a smaller flap cut out from the other side, as shown in the illustrations.

The medial tip of the wedge-shaped flap was usually placed in the area of the base of the nostril on the side of the former cleft. If the nose vestibule was narrowed, the nostril was cut through and, in order to form the nose vestibule, the flap was cut a little longer in the area of the chin. The remaining stages were carried out as shown previously (Fig. 2b, c, d). The wedge-shaped flap for covering serious defects of the upper lip after congenital clefts was used at this clinic in 15 patients and always with success.

The results are illustrated with photographs of the patient V., a 14 years old girl, with conspicuously flattened and shortened upper lip combined with narrowing of the nose vestibule after operation of a cleft on the left side. A wedge-shaped flap from the lower lip was formed according to the described method. Photograph 3 shows her condition before operation and one year after end of treatment.

SUMMARY

The paper dealth with a new method of repair of complicated defects of the upper lip. This method was recommended for prolongation and enlargement of the upper lip simultaneously with the enlargement of the nose vestibule by means of a wedge-shaped flap taken from the lower lip in its entire thickness. The flap consisted, besides the basic wedge, of two transversal wedges of skin and muscle. The medial tip served for plasty of the base of the nose vestibule.

To obtain good cosmetic results on the border of the lip red it was recommended to form mutually corresponding wedges and incisions according to the method of Z plasty.

RÉSUMÉ

La méthode de couvrir les défauts de la lèvre supérieurex à l'aide du lambeau trianguleux de la lèvre inférieure

G. V. Krutchinskyi

L'article présente une nouvelle méthode de corriger les défauts composés de la lèvre supérieure. Cette méthode est récommendable à l'égard de la prolongation et l'agrandissement de la lèvre supérieure réalisé en un temps de même qu'en face d'élargissement de la narine à l'aide du lambeau triangulair provenant de la lèvre inférieure en toute largeur, contenant outre le lambeau triangulaire basal encore deux lambeaux cutanés et musculaire orientés en diagonale, la partie moyenne étant réservée pour la plastie du fond de la base de l'entrée nasale.

Pour gagner des résultats favorables sur le champs des limites de la lèvre l'auteur récommende de former des triangles successif par la méthodes de la plastie en Z.

ZUSAMMENFASSUNG

Eine Methode zur Deckung der Oberlippendefekte mit einem keilförmigen Lappen aus der Unterlippe

G. V. Krutschinskiy

Im Artikel wird ein neues Verfahren zur Deckung der kombinierten Oberlippendefekte beschrieben. Diese Methode empfehlen wir mit Rücksicht auf die einmalige Verlängerung und Vergrösserung der Oberlippe und Erweiterung der Nasenflügel mittels eines keilförmigen Lappens aus der Unterlippe in gesamter Dicke, der ausser des Grundlappens noch zwei quer orientierte Keile aus der Haut und aus dem Muskelgewebe enthält. Der mittlere Ausläufer ist für die Plastik des Naseneingangsbodens bestimmt.

Zur Erzielung guter kosmetischer Ergebnisse in den Partien der Rotgrenze empfehlen wir ineinanderfallende Läppchen und Einschnitte mittels des Z-Plastikverfahrens zu bilden.

RESUMEN

Método de la cobertura de los defectos del labio superior por el lóbulo cuneiforme del labio inferior

G. V. Krutschinskiy

En el artículo se menciona un nuevo modo de la cobertura de los defectos combinados del labio superior. Este modo recomendamos en consideración del alargamiento y aumento aislado del labio superior y también de la amplificación de las ventanas de la nariz por medio de un lóbulo cuneiforme del labio inferior en todo su espesor, contenido además de la traba fundamental dos trabitas orientadas transversalmente de la piel y de la musculatura. El saledizo central es establecido para la plástica del fondo de la entrada de nariz.

Para ser posible de adquirir buenos resultados cosméticos en las partes del límite de rojo, recomendamos formar las trabitas y las incisiones engranadas uno a otro por el método Z de plástica.

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SURGICAL TREATMENT OF DEFORMATIONS OF THE UPPER LIP AND NOSE AFTER PLASTY OF THE LIP IN ADULTS WITH UNILATERAL HARE LIP

I. A. KOZIN

Repair of deformations of the upper lip and nose in adults after plastic surgery of the lip is one of the immediate problems of surgical therapy of congenital unilateral clefts of the upper lip. In these procedures it is not only necessary to reform the proper shape of the upper lip and nose and, at the same, time, to restore the function of these parts but care must be taken also that the postoperative scars show as little as possible.

The aim of the latest perfectioning of the operation methods and of early orthodontic therapy in patients with unilateral congenital clefts of the upper lip is apparently the minimal development of secondary deformations of maxilla, lip and nose in adults. But, nowadays, plastic surgeons often have to repair serious deformations of the upper lip, maxilla and nose in patients who were operated on for this congenital defect 15 to 20 years ago. It is well known that in the Forties and Fifties the most popular procedure was the lip plasty by simple suturing, based on the principle of Mirault (1844). To obtain the normal fullnes of the lip with these methods, a great quantity of tissues was removed, the deformation of the nose was insufficiently corrected and, finally, a deformation of the maxilla developed. Even if the edges of the flap were freshened sparingly there was not left enough of the height of the upper lip so that, cosenquently, the Cupid arc on the afflicted side was drawn upward by the postoperative scar, the philtrum was flattened and shortened and coloboma appeared at the lower edge of the lip.

In opperations of congenital unilateral cleft lip it is necessary to foresee precisely the degree, form and localization of the greatest congenital lack of tissues. Different authors explained differently this problem. The followers of the method of lip plasty in which advancement of shifted wedge-shaped flaps is used in the lower third of the lip incline towards the opinion of Brown and McDowell (1950) who take into account that in unilateral congenital lip clefts the defect has the shape of a triangle the base of which is placed on

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the lower edge of the lip and its tip is directed towards the nose vestibule. The same principle is applied in the cheiloplasty method of Tennison (1952) and of Obukhova (1955) as well as in their numerous modifications in which a great quantity of tissues from the upper lip is preserved, the normal height of the lip is restored, the Cupid arc is well formed, but the nostril base is insufficiently reshaped on the involved side. The triangular wedge cut from the lateral fragment of the lip and sutured into the lower part of the philtrum spoils its natural shape, and the sinuous scar is very conspicuous and difficult

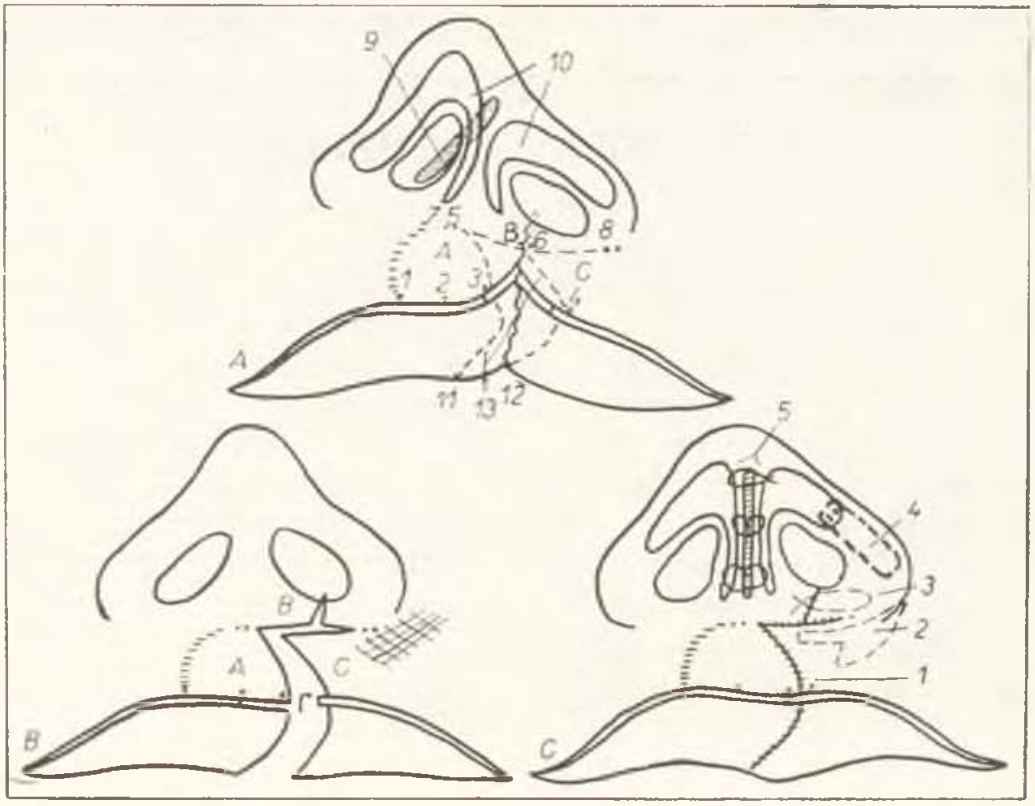

Fig. 1a. Scheme of the following incisions on the upper lip according to Millard's method and projection of the allar cartilages (10) and of the distal part of the nasal septum (9). 1—2 = 2—3, 7—1 = 5—3 = 6—4, 5—6 = 6—8, 3—11 and 4—12 — modified Mirault wedges, forming the medial hills of the lip and allowing correct formation of both parts of Cupid's arc. 13 — "scar" wedge of skin and lip red, which may be removed or used for plasty of the mucosa of the floor of nose vestibule.

Fig. 1b. Scheme of wedges on the lip before suture of the wound. "A" — medial wedge, "B" lateral wedge, "C" — wedge covering the floor of nose vestibule; "E" — wedge restituting the skin-mucosa line.

Fig. 1c. Scheme of the position of scars and projection of the position of nasal cartilage after reconstruction of the lip and nose with the author's method. 1. Postoperation scar, covered on the edge of the lip philtrum and on the nose floor. 2. Step-shaped cartilage homotransplant. 3. The low (submerged) kapron suture. 4. Homotransplant plate of allar cartilage, supporting the lateral protuberance of the damaged allar cartilage. 5. Support of the allar cartilages and of the distal part of septum with kapron sutures.

to correct, if reoperation proves to be necessary. In the past years the Obukhova-Limberg method became very popular in this country in which the correction of the upper lip according to the Obukhova method was supplemented by the correction of the position of the nostril base by means of the shifted triangular wedge in the area of the nasal vestibule. However, Limberg's triangular flap sutured into the incision of the nasal septum pushes the turned part of the nostril base into the nasal cavity and, consequently, the defect of the nostril base is conspicuous on the involved side.

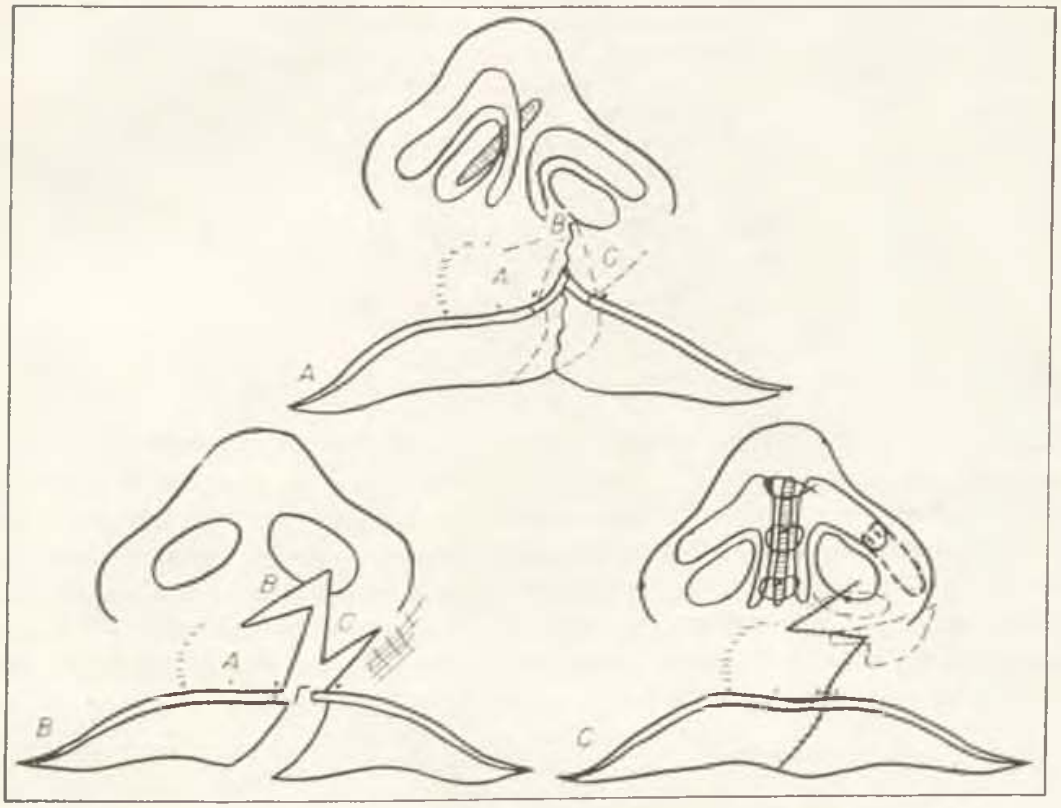

Fig. 2a — b — c. Scheme of lip plasty by means of opposite triangular wedges in the upper third of the lip and rhinoplasty by the author's method.

Great attention should be given to the research of Millard (1957, 1958, 1964) and Cosman and Crikelair (1965) who proved beyond doubt that in this deformity the absolute defect of the tissues had the shape of a triagle, or trapezium, the base of which is located at the nose base and its upper part is directed towards the lip red on the cleft side. The authors also proved that the total amount of red sections of the cleft side of the lip equaled, or slightly surpassed, the length of red on the healthy half of the lip. Consequently, many contemporary surgeons (Millard 1957, 1964, Borde et al. 1963, Kawrakirov 1964, Wynn 1966, Jalambos 1965) admit the appropriateness of such methods of lip plasty in which advancement of triangular wedges of tissues into the area of maximal lack of tissues is used, i.e. to the upper third of the lip on the cleft side.

The modified Millard (1964), or Kawrakirov (1964) method has been used in the Surgical Department of the Moscow Research Institute of Cosmetology in the past years for surgical treatment of consecutive deformations of the upper lip and nostril base caused by unilateral clefts of the upper lip in relation to the degree of deformity and lack of tissues.

The principle of the Millard operation is as follows (Fig. 1a, b, c): Three asymetrical triangular wedges A, B, C are cut by means an arcuate incision on the medial part of the lip which goes symmetrically with the column of the philtrum on the healthy half of the lip, and by means of an angular incision

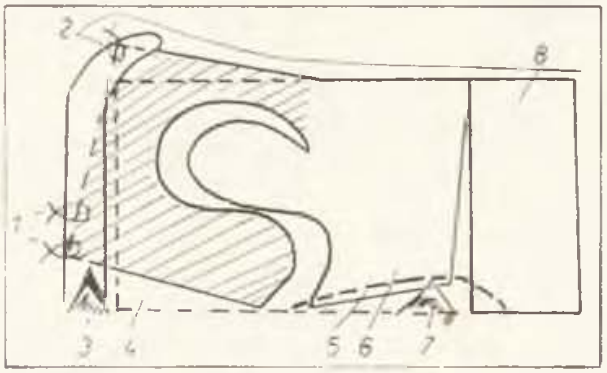

Fig. 3. Scheme of the lifting of the distal part of septum forwards and upwards (dotted area) by means of an "S"-shaped incision. 1,2 — kapron sutures, supporting the distal part of the septum cartilage between the medial protuberances and the arcs of the allar cartilages; 3 — spina nasalis anterior, 4 — the position of the cartilage septum in a patient with cleft lip on the left side; 5 — incision in the mucosa carried out from the side of the healthy nose cavity; 6 — dorso-caudal part of the septum cartilage shifted behind the medial palatinal suture (7) and wedged into the incision in the mucosa (5); 8 — osseous part of septum from which the dorso-caudal part of septum cartilage is dissected

on the lateral part of the lip the tip of which is placed at the nose vestibule. The advancement of the medial wedge A downwards and of the lateral wedge B medially into the defect above the base of the skin part of the nasal septum is decisive for the formation of the Cupid arc, of the base of the involved nostril and of the nasal septum. The normal height of the upper lip is thus obtained and the postoperation scar in the nasolabial furrow and on the edge of the philtrum is little conspicuous and may be easily removed, in case re-operation be necessary. It is not possible to use the Millard method in those cases were there is a large defect of the lateral part of the lip in vertical as well as horizontal direction, that means where there is very little tissue between the base of the involved nostril and the rim of the cleft (or of the postoperation scar), and the distance between the base of the nose vestibule and the tip of the Cupid arc is shorter than on the healthy side. In such cases it is most appropriate to use plasty according to the Kawrakirov method (Fig. 2a, b, c) in which, in relation to the degree of lack of tissue, two opposite triangular wedges with angles of 60^0, or 45^0 and of 70^0 respectively are cut from

Fig. 4a and 4b. Patient K. before and after operation (cheiloplasty according to Millard's method)

the base of the skin part of the nasal septum and from the involved nostril. Advancing the lateral flap, the base of which is directed towards the afflicted nostril, upwards and medially the base of the nostril on the involved side is simultaneously shifted inside and upwards. By turning the inner triangular flap downwards and out on the other side the Cupid arc sinks and the tension of the medial part of the lip is relieved. In this way, the same as in Millard's method, it is possible to carry out successfully effective Z-plasty of the upper lip with the help of simple calculations which enables, in most cases, to obtain normal height of the lip, the base of the nose vestibule becomes narrower and higher, and the position is improved of the base of the skin part of the nasal septum and of the nostril on the involved side. Besides, the undamaged Cupid arc and two lower thirds of the philtrum are preserved and the post-operation scar, which is in the upper part of the lip and on the base of the nasal cavity, is not much visible.

In our opinion the shortcomings of these methods have the following causes: plasty is not carried out of the insufficiently developed piriform aperture and of the alveolar process of the maxilla; no deep suture is placed between the base of the nostril and of the skin part of the nasal septum; the muscle is not constructed which comes from the skin part of the nasal septum; the central hill of the red margin is not formed. If reconstruction of the upper lid is performed according to the Millard or Kawrakirov type of operation, we endeavour to supplement the following, from our standpoint essential, points of lip plasty.

Fig. 5a and 5b. Patient K. T. before and after operation (cheiloplasty according to Kawrakirov's method).

METHOD OF CHEILOPLASTY

After sparing removal of the postoperation scar and incision of the triangular wedges, as described above, the circular muscle of the lip is cut as far as the mucosa, its edges are mobilized, and the base of the nostril and the skin part of the nasal septum are separated in layers from the maxilla. A cartilage homotransplant is then placed into this "tunnel" formed above the insufficiently developed piriform aperture and the alveolar process of the maxilla. This inlay has the shape of a cut half-cone the anterior and lower surface of which must correspond with the surface of the adjacent maxilla; most frequently it has a step-shaped knotch (Fig. 1b and 2a). The thickness of the inlay should not exceed the width of the nostril base, and its maximal height must be in the place of the maximal defect in the maxilla, i.e. in the place where the alveolar process meets the anterior edge of the piriform aperture, and it should measure, on average, 0.8—0.9 cm. By such a shape of the inlay exagerated mobility is held in check and a sufficient support is formed for the flattened nostril. To prevent infection of the wound and of the cartilage homotransplant periodic moistening of the tissues is carried out with tampons soaked in 0.2% solution of furacilin. On the red part of the lip wedges are formed according to the modified Mirov method: to be able better to shape parts of the Cupid arc an incision is carried out from the border between the skin and the mucosa vertically downwards for 3 mm. and in an arc in the direction of the centre of the lip forming thus a tongue-shaped wedge on the

lateral part of the red which is then sutured into the wedge-shaped incision on the medial lip fragment. Formation of the central hill of red is finished by plasty of the lower, posterior surface of the lip with opposite, asymmetrical triangular wedges, as recommended by Kyandskyi (1958). To obtain perfect borders between the skin and mucosa a "lock" is formed from a milimeter flap "d" on a white cylinder, as proposed by Millard (1964).

Suturing of the rims of the wound is started with kapron suture between the base of the involved nostril and the skin part of the nasal septum. In knotting the stitches of this suture over the cartilage homotransplant it is necessary to observe that the base of both nostrils by symmetrical and on one level. The tip of the lateral muscle wedge is sutured with the soft tissues beneath the base of the skin part of the septum thus covering the transplant and substituting the muscle coming from the septum. Then a preliminary suture is layed with horsehair in the area of the white ridge and, after formation of both parts of the Cupid arc, muscles are sutured with catgut and the skin and red margin with horsehair.

A correctly performed cheiloplasty, with simultaneous repair of the base of the involved nostril and chondroplasty of the insufficiently developed edge of the piriform aperture, is the main principle of successfull rhinoplasty.

According to the opinion of many authors (Butikova 1955, Dmitryieva 1956, Burian 1959, Farrior 1962, Berndorfer 1954, Millard 1964 and others) surgical therapy of accompanying deformations of the nose is the most difficult part of plastic surgery for congenital unilateral clefts of the upper lip. This has been proved by the multitude of rhinoplasty methods for this defect which have been proposed during the past 15 years. Studying this problem in our and foreign literature we were not able to find any method which would count with formation of a firm base of cartilage homotransplant for the flattened nostril and with the proper correction of the nasal septum.

On the principle of the more rational elements of rhinoplasty, as carried out by various authors, and supplemented by our suggestions, we worked out the following surgical repair of nose deformities in monolateral congenital cleft-lips in adults.

METHOD OF RHINOPLASTY

The modified Pauer incision in the shape of a "bird" is carried out along the free edge of both nostrils which joins in the upper third of the skin part of the nasal septum. Skin is mobilized in the area of the nose tip and ridge. The lateral protuberance and the arc of the allar cartilage of the flattened nostril are then completely separated from the mucosa and skin. If the rectangular cartilage is much arched triangular cartilages are cut out along the medial line and the supracartilagineous parts of the nasal septum are set free. According to indication osteotomy is carried out of the nasal bone. To prevent any relapse of deformation of the rectangular cartilage in its central part an "S" shaped incision is carried out by means of which it is possible to lift the ventrocaudal part of the septum cartilage forwards and upwards and secure it with kapron sutures between the medial protuberance and arcs of the allar

cartilages (Fig. 3). The dorsocaudal part of the rectangular cartilage is partially cut from the osseous part of the septum, advanced behind the process of the maxilla, and the lower part of the cartilage is cut from the healthy side on the mucosa of the base of the nasal cavity. The triangular cartilages are stitched with two knotted kapron sutures to the rectangular cartilage. The anterior and posterior parts of the cartilage septum are thus reliably fixated along the medial line and the nose tip is firmly supported. Besides, the function of the nose in breathing is markedly improved.

The lateral protuberance of the involved allar cartilage is in most cases insufficiently developed and cannot sustain the elastic tension of the nasal mucosa and skin. Therefore an elastic strip of homotransplant from the allar cartilage is sutured to the lateral protuberance and is inserted into the tunnel between the skin layers of the base of the involved nostril. Such an arc, made of cartilage homotransplant, keeps the flattened nostril in proper position (Fig. 1a and b). The skin wound is stitched with horsehair sutures, the mobilized nose tissue is fixated with collodion bandage and the nose is tamponaded. Tampons, soaked in sintomycine emulsion, are changed after 72 hours and removed after a week, the collodion bandage is removed after 9—10 days. Into the nostril on the involved side a prosthesis of fast-hardening plastic is inserted which is recommended to wear for 2—3 months.

In the described way 121 patients were operated on with different degrees of deformations of the upper lip and nose, due to unilateral congenital cleft of the upper lip. All patients were older than 15 years and underwent, before operation, inevitable orthopaedic and orthodontic treatment. In the majority of patients the results were good (Fig. 4 and 5) and satisfactory from the cosmetic as well as functional viewpoint.

Based on the above it may be concluded that the methods of cheiloplasty, adapted to the demands of the present time, offer, in our opinion, the possibility to perform plasty by means of triangular wedges in the upper third of the lip and to carry out simultaneously chondroplasty of the insufficiently developed rim of the nostril and of the alveolar process of maxilla. Construction of an arc with cartilage homotransplant for the flattened nostril and correction of the cartilage part of the nasal septum according to our method leads in adults, in the majority of cases, to lasting cosmetic and functional results.

SUMMARY

The author described his method of correction of the upper lip, nose and septum in patients after operation of unilateral congenital cleft of the upper lip.

Correction of the upper lip is based on the principles of the Millard and Kawrakirov method, in which advancement is carried out of triangular wedges in the upper third of the lip, and it is supplemented by the author.

Rhinoplasty according to the author's method comprises complete mobilization of the deformed allar cartilage from the skin and mucosa, and construction of an arc with cartilage homotransplant for the flattened nostril. Correction of the cartilagineous part of the nasal septum is carried out by means of

a supracartilagineous mobilization of the septum from both sides and by lifting of its dorsocaudal part forwards. This part is fixated with kapron sutures between the medial protuberances and arcs of the allar cartilages.

RÉSUMÉ

Le traitement chirurgical des déformations de la lèvre supérieure et du nez en suite de la plastie de la lèvre chez les adultes souffrant du bec-de-livre unilatéral inné

I. A. Kosin

L'auteur décrit sa propre méthode de la correction de la lèvre supérieure et du nez chez les malades en suite d'opération du bec-de-lièvre unilatéral.

La correction de la lèvre supérieure se base sur les principes de l'opération de Millard et de Kawrakirov, qui font une Z plastique dans le tiers supérieur de la lèvre accomplie par certaines modifications de l'auteur.

La rhinoplastie d'après la méthode de l'auteur comporte une mobilisation complète du cartillage déformé du nez de la peau et de la mucose et, ensuite, l'aile du nez applatie est renouvelée à l'aide d'homotransplant cartillagineux. La correction de la partie cartillagineuse du septum est réalisée par la mobilisation du septum des deux côtés par dessus le cartillage lui-même tout en soulevant la partie dorso-basale en avant. Cette partie se fixe par la sutture en capron située entre les processus médials et les arcs des ailes cartillagineuses.

ZUSAMMENFASSUNG

Chirurgische Behandlung der Oberlippen- und Nasendeformationen nach Lippenplastik bei Erwachsenen mit einseitiger angeborener Lippenspalte

I. A. Kosin

Der Autor beschreibt sein eigenes Verfahren zur Wiederherstellung der Oberlippe, Nase und des Septum nach der Operation der einseitigen angeborenen Oberlippenspalte.

Die Wiederherstellung der Oberlippe beruht auf den Prinzipien der Methode von Millard und Kawrakirov, bei welcher dreieckige Keile im Raum des oberen Lippendrittels, mit einigen Ergänzungen des Autors, verlegt werden.

Die Rhinoplastik nach dem Verfahren des Autors umfasst vollständige Mobilisierung des deformierten Nasenflügelknorpels von der Haut und Schleimhaut und Bildung eines Bogens aus dem Knorpelhomotransplantat für das abgeflachte Nasenflügel. Bei der Wiederherstellung des Knorpelteiles des Nasenseptum wird der über dem Knorpel liegende Teil des Septum von beiden Seiten mobilisiert und sein dorsokaudaler Teil nach oben gehoben. Dieser Teil wird zwischen den medialen Fortsätzen und den Bogen der Flügelknorpel mit Kapronnähten befestigt.

RESUMEN

Tratamiento quirúrgico de los desfiguramientos del labio superior y de la nariz después de la plástica del labio en los adultos con la grieta del labio de un solo lado ingénita

I. A. Kozin

El autor describe el modo propio de la corrección del labio superior, el de la nariz y el de tabique en los enfermos después de la operación de la grieta de un solo lado ingénita del labio superior.

La corrección del labio superior se basa en los principios del método de Millard y de Kawrakirov, en los que se practica el traslado de las cuña triangulares en la tercera parte superior del labio, con algunos complementos del autor.

La rinoplastía según el método del autor incluye una movilización completa del cartílago aliforme desfigurado de la piel y de la mucosa y la formación del arco del homotrasplante del cartílago para la ala chata de la nariz. La corrección de la parte cartilaginosa del tabique de la nariz se practica por la manera de la movilización sobrecartilaginosa del tabique de ambas partes y por la elevación de su parte dorsocaudal en adelante. Esta parte se fija por las puntadas de caprón entre las estribaciones mediales y los arcos de los cartílagos aliformes.

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ON THE PROBLEM OF FAVOURABLE AGE AND THE MOST FAVOURABLE METHOD FOR PALATINAL SURGERY IN BILATERAL TOTAL CLEFTS

W. BETHMANN, J. DYRNA

It is well known from clinical observations as well as from systematic studies that the method of surgery and the age at operation of the patient with total cleft may be decisive for the further development of the maxilla. Eventually there may occur conspicuous dysgnathias, compressions and transversal narrowing of the mamaxilla. Many factors were considered as responsible for these disturbances, which are most pronounced in total clefts and may lead to defective mastication, speech, and disturbed esthetic functions: a) diminished growth tendency of the maxila in cleft patients; b) scars after operation which impair the growth of the mid-facial bones, especially the maxilla, either as scars on the bone surface, or by pulling on the soft tissues. The scars cause certainly a mechanical compression of the maxilla and may, moreover, impair the osteogenous cambium layer of the periostum (mucosa and periostum has to be lifted from the bone during operation).

There is a recurring question whether the age at operation and the method of surgery may have any effect on these processes. It is quite easy to imagine that the various surgical methods (bridge-flap plasty according to Axhausen, or the pedicle graft according the Rosenthal) exert a different noxious effect on the bone development as the blood supply of mucosa and periostum will be different with different surgical methods. The age at which surgery is undertaken may affect the growth of the bone as there may be some difference at what stage of bone development the surgical injury takes place. These considerations formed the main problems for the present study.

Out of 7,000 cleft patients of the Thallwitz Clinic 694 patients with bilateral total cleft were selected operated on up to December 31, 1963. Only those patients were followed up who were 12 years old, or older, at the time of examination. This limination was necessary as the development of the jaws had to be estimated. Out of this preselected group 70 pat. came for later check-ups. Wax moulds of the upper and lower jaw and of the bite were taken in all patients. Remote lateral X-ray pictures of the skull were taken. On the plaster cast of the teeth the width of the four lower incisors was measured and the sum of these widths

was calculated for the four upper incisors according to the Tonn method; this was necessary for, in patients with bilateral clefts, the lateral upper incisors and sometimes even one of the medial incisors are lacking. Then a transversal measurement was carried out on the plaster cast of maxilla between 4+ : +4 and 6+ : +6 (measuring from the middle of the fissure of these teeth). The measured values were compared with the expected values as stated by the Pont index. The remote lateral X-ray pictures were evaluated according to Schwarz. The following distances and angles were measured:

1. The size of the anterior skull base measured as a distance between the bony nasion and the middle of the entrance of the sella turcica.

2. The size of the base of maxilla measured as the distance between the point A projected on the spine-line and the area of the posterior nasal spine.

3. The length of the horizontal part of mandible measured as a distance between pogonion projected on the tangent of the mandible body and the point of intersection of this tangent with the tangent of the ascendant part of mandible.

4. The length of the ascendant part of mandible measured as a distance between the intersection point of both tangents in the gonion and the intersection point between the tangen of the ascendant part of mandible and the H line.

Distances measured in this way were the actual values, the expected values were calculated from the anterior base of the skull and the formula given by Schwarz. Besides these measures the angles were also ascertained which are important for the position of the jaw to the skull:

1. The facial angle; it is on the average 85^0.
2. The inclination angle; on the average 85^0.
3. The gonion angle; in an average face it is 65^0.
4. The gnathion angle; normal average value is 65^0.
5. The angle formed by nasion perpendicular and the H line is on the average 90^0.

With all distances and angles the difference was calculated between the actual and expected value and these were grouped according to the age and method of surgery. Then the statistical significance was calculated. This yielded the following results:

1. Transversal compression of maxilla in the 4+ : +4 and 6+ : +6 span occurs always after palate operation in patients with bilateral total cleft.

2. A significant relationship could not be found between the degree of deformation of maxilla and the age or method of surgery.

3. According to the simple arithmetic mean the smallest deformation of the 4+ : +4 span was in patients operated on at the age of 4 years, while the smallest deformation of the 6+ : +6 span was in patients operated on at the age of 3 years. This points to the advisability of early surgery of the palate (at the age of 3—4 years).

4. A prolongation of the maxilla base in lateral remote X-ray pictures occurs in all patients with bilateral total cleft, with the exception of those operated on at the age of 8 years.

5. Patients operated on at the age of 8 years had a too small maxilla base.

6. The most favourable ratio of the sagital diameter of the maxilla base to the expected value was in patients operated on at the age of 3 years. There were significant differences between this group and the patients operated on at the age of 6 years. This is also a point for early operation on the palate.

7. The length measurements of the horizontal part of mandible in patients operated on for total bilateral cleft yielded variable results. Hypertrophies and hypotrophies occurred in the individual groups so that no significant dependence could be found on the age at operation or the method of palate surgery.

8. The measurements of the ascendant part of mandible showed hypertrophy in all examined groups. There was a significant relationship between the length, the method of palate surgery and the age at operation; patients operated on at the age of 4 years differed significantly from those operated on at the age of 5, 6 and 7 years respectively. The most favourable proportions were found in patients operated on at the age of 5 years.

9. Evaluation of the profile from angle measurements on lateral remote X-ray pictures showed in all studied groups a diminishing of the facial angle, of the inclination angle, of the gnathion angle and of the angle formed by Frankfort horizontal and the nasion perpendicular.

10. In all groups the gonion angle was greater than normal.

These measurements showed that in all patients the face was slanting backwards ("nach hinten schiefes Rückgesicht" in Schwarz's and Brückl's nomenclature) and there was high position of the mandibular joint.

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REPAIR AFTER VULVECTOMY FOR GIANT CONDYLOMATA ACUMINATA

L. ČEČUK, I. PRPIĆ

Buschke and Loewenstein (1) have described a special form of condyloma acuminatum with clinical but not histologic appearance of carcinoma. In an ordinary condylomata acuminata the strata are histologically well-differentiated, and the epithelial proliferation never goes beyond a certain depth. This growth into the deeper tissue layers is by expansion and not by infiltration (2). Davies (3) stresses that the characteristic histological pattern of giant condylomata consists of broad processes composed of prickle cells associated with little keratinization. Malignant condylomas show, in comparison, loss of prickle cell preponderance, increased basal cell activity and frequent keratinization, or it may present itself as a solid papillary epithelioma forming broad sheets of uniform cells with numerous mitoses. Several years may elapse before the malignant nature of the lesion becomes manifest, hence such condylomas ought to be removed at the very beginning.

We would like to present a case of giant condylomata acuminata of the vulva, with the aim to point, on one hand, to the inefficiency of conservative and palliative therapy, and, on the other, to the reparative procedure applied by us.

CASE REPORT

A girl 26 years of age, noticed in her 11th year of life tiny, tassel-formed growths on the labia majora. At the time she allegedly noticed no secretion from the vagina, nor intestinal parasites. With the time passing these growths grew in extent and spread throughout the anogenital region. For this reason in a period of 14 years (1946—1960) electro-cauterization and excochleation of these growths was performed, the former 6, the latter 4 times. Each procedure, however, was followed by a recurrence, while the condylomas grew larger and larger. Vaginal fluor was copious, itching grew in intensity. In 1960 this patient was admitted to the Surgical Department of the Medical Faculty, Zagreb.

Local Finding: In the anogenital region were visible numerous growths in the form of light-rose couloured nodes of a fine-grained surface. They were in the size of a raspberry, strawberry, some of them reaching up to the size of a child's fist. All of them resembled the cauliflower. These growths surrounded wreath-like the vulva, mons veneris and anal orifice (Fig. 1). The vaginal introitus was in order, the hymen intact. A bacterial smear of the vagina

resulted in Trichomonas vaginalis. An extensive biopsy performed in several places as well as a patho-histologic analysis of the preparation showed the presence of condylomata acuminata with marked proliferation of the epithelium. Because the condylomas were rather extensive, and also because of noceasing recurrences and inefficiency of palliative therapy, a radical surgical intervention was decided upon.

Fig. 1

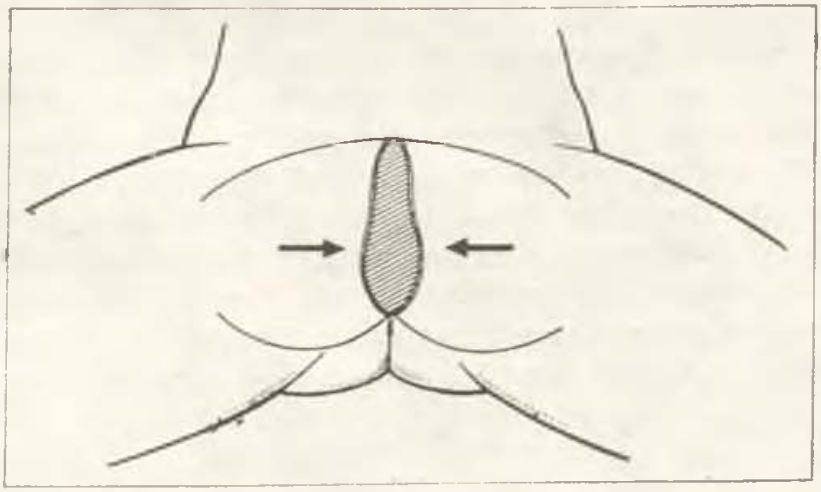

Fig. 2

The operation consisted in removing the peri-anal and vulva skin, the labia and clitoris, but not so deeply as at radical vulvectomy. The defect was covered up with two rotation skin flaps taken from the inner side of the leg. These flaps were raised and rotated inwards, their inner edgess were sutured to the vaginal and anal mucosa (Fig. 2). After skin mobilization it was possible to close the secondary defect by direct suture. Suction drainage was laid on and the wound dressed. Into the bladder we introduced an indwelling catheter, and

into the rectum a rubber drain. The legs of the patient were immobilized by a Plaster of Paris dressing in slight abduction. During 10 days she received Terramycin, and during 5 days Tct. Opii and liquid food.

On the sixth post-operative day dressings were changed for the first time. The skin flaps were well supplied, there was no secretion, so the suction

Fig. 3

drainage was removed, likewise the drain from the rectum. After which the patient received an enema. On the tenth day were removed the sutures from the wound, likewise the catheter from the urinary bladder. The skin flaps were quite well supplied, without any signs of either cyanosis or necrosis. Where-upon we introduced Marbadal into the vagina for the purpose of treating the vaginal flora. One month after the surgery the patient was discharged. Check-ups were performed at 6-month intervals. Now after a seven-year postoperative period no signs of a recurrence are noticeable, while the local finding is quite in order. The patient has neither vaginal nor anal stenosis (Fig. 3).

DISCUSSION

We agree with Dawson (4) that extensive condylomas acuminata may exhibit a malignant clinical appearance or become frankly malignant while remaining benign histologically. In our patients the condylomas were evidently agressive and prone to recurrences. In the histological picture could be noticed that the epithelial proliferation penetrated the deep layers. Why some condylomas become aggressive and steadily recur is not clear. Since they have a viral origin, maybe a greater virulence of the virus is one factor, and the inclination of the host, along with chronic iritation because of physiological and pathological secretions, another, additional factor. Also our patient has a very copious va ginal fluor.

The following are applied in the treatment of condylomas acuminata: trichlor-acetic acid, podophylin, galvanocauterization, electrocoagulation, removal by freezing with the use of chlorethyl and sharp spoon, X-ray therapy and surgery. Neither conservative nor palliative therapy had any response in our patient, so we do not agree with Grobev (5) et al. that electrodessiccation and curettage are adequate procedures. Dawson (4) et al. and Litvak (6) et al. state that these tumours do not respond well to conservative treatment. Podophylin is not efficient (5), and it may well provoke unwished systemic reactions (7). For the mentioned reasons and because there always looms the possibility of malignant alteration (3), we advocate early, radical yet preserving surgery, implying removal of all involved skin into normal tissue, even where multiple biopsies point to a benign lesion. Robinson (8) stresses the fact that simple vulvectomy for leukoplakia with direct suture has resulted in partial breakdown, secondary infection, slow healing and scar formation with vaginal and anal stenosis. In our patient extensive local vulvectomy and bilateral rotation flap were successful. The defect in this case is more superficial than in patients with malignant conditions.

SUMMARY

A case of giant condylomas acuminata of the vulva in a young woman is presented. Extensive local vulvectomy and radical removal of all diseased tissue as far as the normal structures and a primary plastic procedure using a bilateral rotation flap resulted in a cure.

RÉSUMÉ

La plastie en suites de vulvectomie faute des condyllomas accuminates énormes

L. Čečuk, I. Prpić

Une jeune femme souffrant des énormes condylomas de la vulve est présentée. Le guérison a été réalisée à l'aide de la vulvectomie locale, l'ablation radicale de touts les tissus jusq'aux structures intacts et la plastie primaire tout en se servant du lambeau triangulair détourné.

ZUSAMMENFASSUNG

Plastik nach Vulvektomie wegen riesiger spitzer Kondylome

L. Čečuk, I. Prpić

Die Autoren beschreiben einen Fall von riesigen spitzen Kondylomen an der Vulva bei einer jungen Frau. Die Genesung erfolgte durch umfangreiche lokale Vulvektomie, radikale Entfernung des gesamten kranken Gewebes bis zu den intakten Strukturen und durch primäre Plastik mit Anwendung eines beiderseitigen umgedrehten Lappens.

RESUMEN

Plástica después de la vulvectomia por causa de condilomas acuminatos gigantescos

L. Čečuk, I. Prpić

Se describió un caso de condilomas acuminatos gigantescos de la vulva en una mujer joven. La curación se obtuvo por una vulvectomia local extensa, por la eliminación radical de todo el tejido enfermo hasta las estructuras sanas y por la plástica primaria con la aplicación del lóbulo bilateral volteado.

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POSSIBILITIES OF THE RECONSTRUCTION OF THE THUMB INJURE-LOSS-ACCIDENT

A. KIPIKAŠA

The gripping power of the hand can be compared to pincers with four fingers as one arm, and the thumb as the other. But in contrast to pincers very complicated actions can be carried out by the hand. This is due, on the one hand, to the various receptive organs in the skin of the hand and on the other hand, to the great mobility in space of both "arms" resulting from the longitudinal and transverse division of the two arms of the pincer. Thereby, gross grasping ability (prehension grossière by French authors or Grobgriff by

Fig. 1. A, No 5158, S. V. a repairman of agricultural machines, of 19 years. In 27th September 1962 he suffered from electric burn of his left hand with the loss of the thumb in the distal third of the first metacarpal bone, the loss of the half of the distal phalanges of the third and fourth finger together with the lesion of the nerves for these fingers. In 18th February in 1963, the pollicization of the intact index-finger was carried out. In this case the third and the fourth finger were not transferred for an evident damage of inervation of these fingers after the burn injury even though both these fingers have been shorted in consequence of the accident. — B: The control two months after the operation. The patient works already in his previous profession. The strenght of the hand is weakered only a little and the gross grasping ability is very good

German authors) as well as subtle gripping with the hand are possible (pincement, Spitzgriff) by taking the object between the finger tips. The fingers show, above all, mobility of the phalanges, whereas the metacarpale bone of the thumb is its most mobile portion. Thus, the thumb as an equal member suffers as frequently as the all four fingers together.

The loss of the thumb is appraised up to 75 percent of disability of the hand.

The surgeon has to solve the problem of how to reduce this incapacity to a minimum in the shortest time. The following are the first consideration in the solution of this problem: the range of the loss or injury of the thumb and the

Fig. 1. C, D: The grasping of the smaller objects and the gripping into the tip are very good too. The flexion and the extension are without restraint, the opposition and the abduction are limited up to 50 percent for the damage of the thenar muscules by the accident, which does not worry the patient very much. He is very content with the result of the operation, except the appearence of his hand which attracts attention of other people

other parts of the hand, the age, sex and occupation of the patient, also the degree of technical knowledge and experience of the surgeon as well as his temperament.

In partial and complete loss of the thumb, it is possible to proceed to its reconstruction in the following way:

1. The tissue of the injuried hand is used for the reconstruction of the thumb.

2. Tissue for the reconstruction is moved from distant part of the body.

The most important considerations in the reconstruction of the thumb are that it should be adequately in relation to the other fingers, sufficiently strong and mobile enough for opposition to the fingers. The immobile thumb must be fixed in the opposition, also its skin cover should be sensitive and resist the

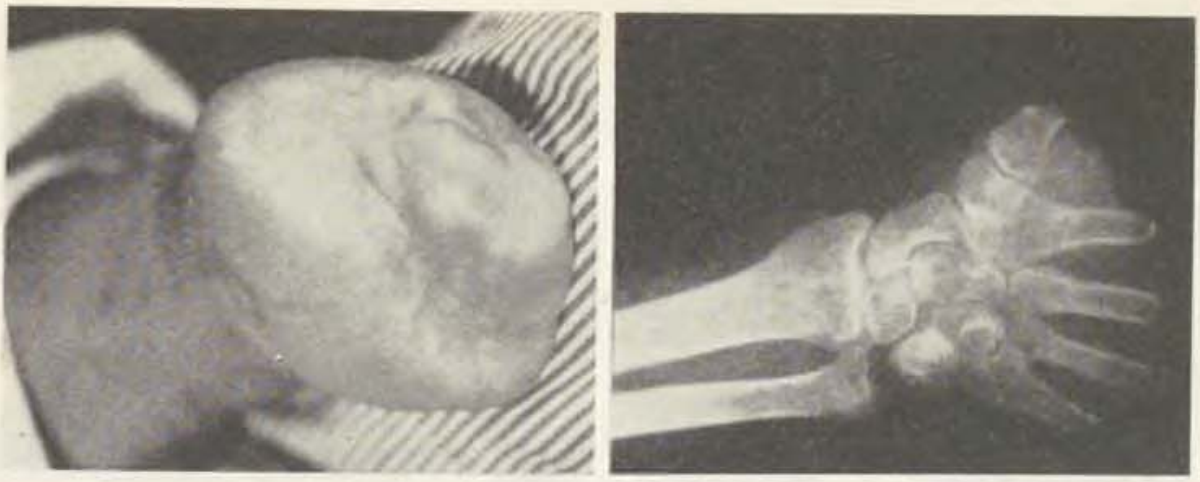

Fig. 2. N. A: No 5416, G. F., carpenter of 51 years, who lost all his fingers and the thumb by the circula saw. The stump of his thumb keeps the ability of abduction and opposition. — A 1: X ray shows the level of the thumb amputation i.e. the half of the metacarpal bone and the fingers are lost in the level of the metacarpal heads

harmful influence of pressure and the changes in temperature. The thumb must also be as little disturbing as possible from the aesthetic aspect.

Considering various methods of reconstruction with respect to the criteria mentioned above, we find that none of them is able to reconstruct an ideal thumb. Therefore often in practice, we have to be satisfied only with functional reconstruction.

In our departement almost all known operations for reconstruction of the thumb have been performed. The following part of this paper, submits the critical review of some operative methods.

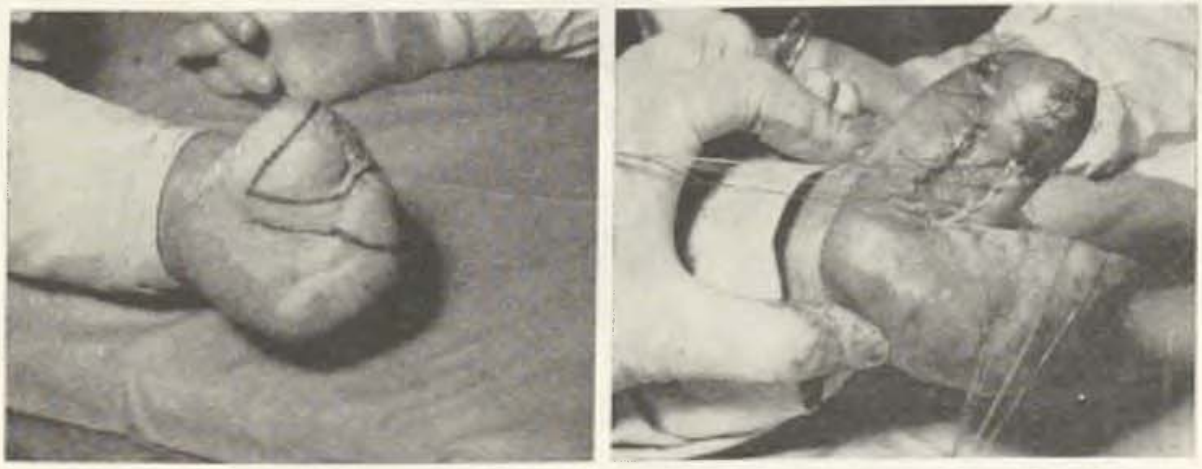

Fig. 2. B: The operation accorded with incisions marked on the figure. A. The stump of the second metacarpal bone was utilized for the prolongation of the stump of the short first metacarpal bone with the adjacent skin and digital nerves. The deepened space between the first metacarpal bone and the third one is covered partly with the advancement, flap and partly with the thick split skin graft

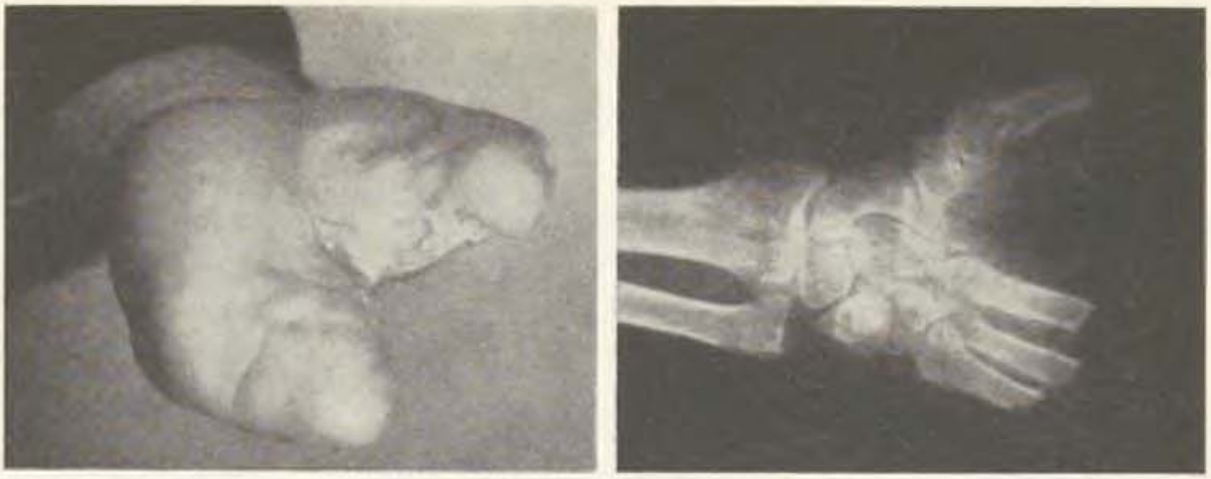

Fig. 2. C: The state two months later. The patient can well move the reconstructed "thumb" from the other branch of the "grip" which is formed by the stumps of the third to the fifth metacarpal bone. — C1: X-ray in comparison with the state before the operation (A1)

Beyond dispute method we consider the transposition of a finger of the injuried hand keeping the neurovascular bundle together with its tendons intact as the most succesful. We suppose the fourth finger to be most suitable for the transposition, or any other finger which has been shortened by the accident or which is more damaged then the fourth finger. Under certain circumstances, we may carry out pollicisation of the index-finger, just as well

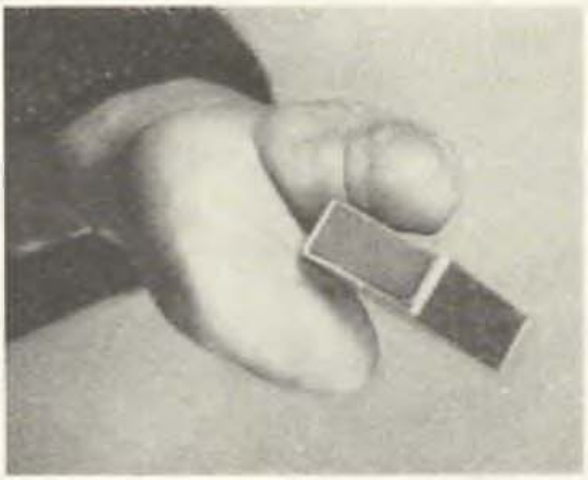

Fig. 2. D: The patient grasps by his "splitted" hand even lighter and finer objects

(Fig. 1). As the result of the transposition and pollicisation, we get a thumb with completely preserved sensitivity, motion and strength so that it may be considered a valuable compensation for the lost thumb. The next advantage of this operation is the fact that it is finished in one stage and therefore, the period of the hospitalisation and diability is short. Its disadvantage is usually an obvious disfiguring of the hand which often makes the patient to dissent

with operation. The complete loss of the thumb is the main indication for the transposition. The transposition is not carried out in those cases where only two fingers or fingers with damaged innervation are left then in cases with a loss of the thumb, which can be repaired in a loss complicated way. Other reconstructive operations should be chosen for patients whose professions require all fingers, one should never use the pollicisation in too old or too young patients.

Fig. 3. The design of the incisions for the splitting of the hand by Kreuz. It is a "S" incision which is curved across the first inter-phalangeal space so that two flaps in opposite direction are formed on both surfaces of the hand, on the volar as well as on the dorsal one. The splitted space is covered with these flaps, the first metacarpal bone is covered with the volar flap and its direction is roughly corresponding with the linea vitae and the second metacarpal bone is covered with the dorsal flap, the ulnar edge of which follows the ulnar edge of the first metacarpal bone (the interrupted line). We have to cut across musculus adductor pollicis in its distal half of protecting carefully arteries and nerves

A strinking deformity we find after a complete loss of all fingers. The patient can use such a stump only for pressing and pushing. The gripping function can be reconstructed only in minor degree but surprising is the skill achieved by some patients in gripping various objects into the stump reconstructed by the following operative manners:

1. When the loss of the thumb insolves half or 1/3 of the first metacarpal bone, we carry out the splitting of the hand by prolongating the stump of the first metacarpal bone using the second metacarpal so that the primitive grip is formed (Fig. 2). We can accomplish still this operation by releasing the fifth metacarpal bone so that the grip is performed by means of three branches leaving the middle one immobile. When only the thumb and index are amputated while the other fingers are intact — in contrast to Hilgenfeldt — we do not prolong the first metacarpal bone at the cost of the second one to avoid the

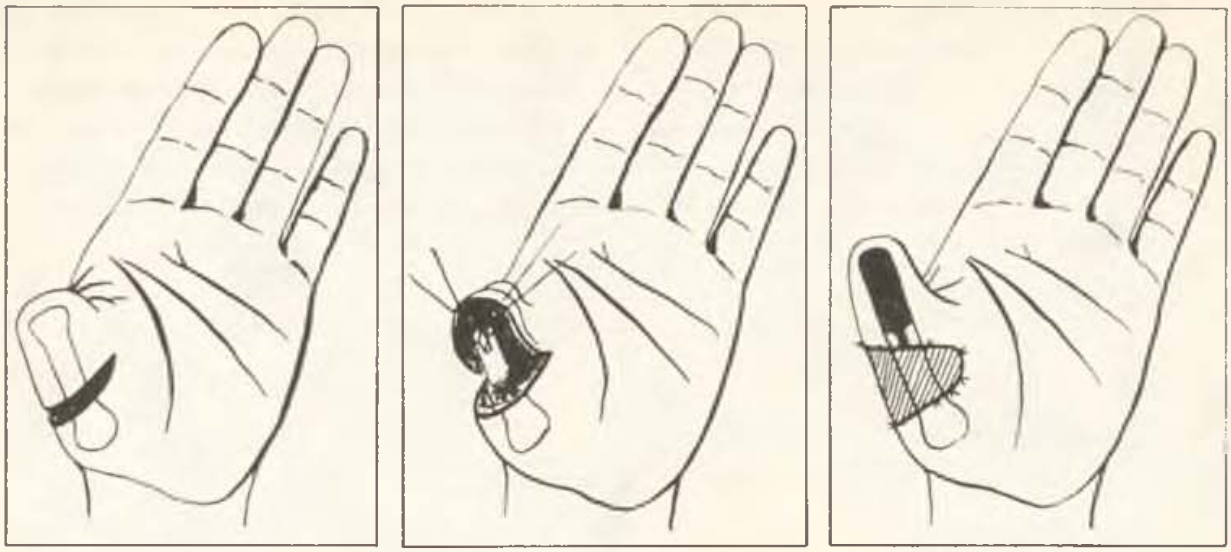

Fig. 4. The design of the operation called "cocked hat" by Gillies. — A: The tranversal cut is led along the radial aspect of the first metacarpal bone, 5 cm proximally from the end of the stump, 5 cm on the volar aspect one, 5 cm on the dorsal one. — B: The skin is mobilised, the stump of the metacarpal bone is denuded and prepared for the inserting of the bone graft. — C: The state after the operation: The mobilised skin was stiffened with the bone graft, the donor area was covered with the thick split skin graft (the interrupted line)

unfavourable cross-narrowing of the palm of the hand. In such cases, it is advantageous to use the operation suggested by Gillies and called "cocked hat".

2. If the first metacarpal bone is intact after the amputation of all fingers, we carry out the splitting of the hand (Spalthandbildung) without the prolon-

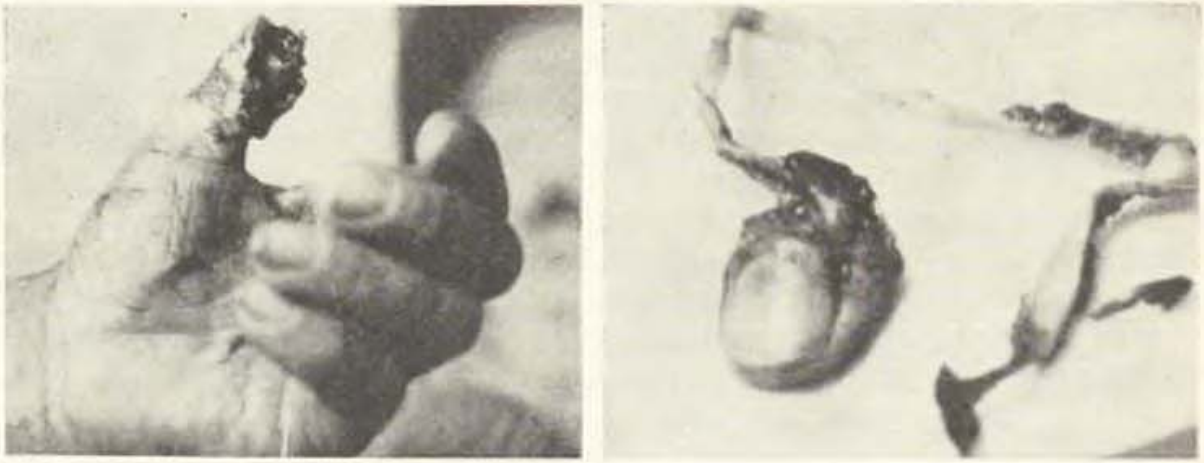

Fig. 5. A: No 5479, K. J., the pensioner of 50 years. The 9th July in 1963 he was involved in an accident. He sustained an avulsion of the second phalange of his thumb on the left hand together with the loss of the tendon of the long flexor of the thumb. The damage on the volar and ulnar aspect of the thumb is reaching to the inter-phalangeal spate. The first phalang of the thumb is denuded from the volar aspect. — A1: The torn off distal phalange of the thumb with the tendon of the long flexor which the patient brought envelopped in his handherchief

gation of the metacarpal bones — described by Kreuz (Fig. 3). We can complete this operation by releasing the fifth metacarpal bone.

The operations mentioned above as well as the following one utilize the skin of the same hand with sensibility preserved on a functionally important place.

An advantageous but seldom used method is the operation proposed by Gillies, which has been called "cocked hat". This operation, moves the skin on

Fig. 5. B: We take the bone from the torn off distal phalange of the thumb and we fixed it with a wire-loop to the proximal phalange of the thumb and the whole defect (with the transplanted bone) is placed into the "acute" tube-pedicle flap on the right lower-abdomen

the radial site of the metacarpal bone by a transversal incision. This skin covers the implanted bone-graft which is inserted in the stump of the thumb. The secondary defect is graffted by split skin graft. Thus, we get the prolongation of the thumb (to 3—4 cm), which has completely sensitive skin on functionally important place (Fig. 4).

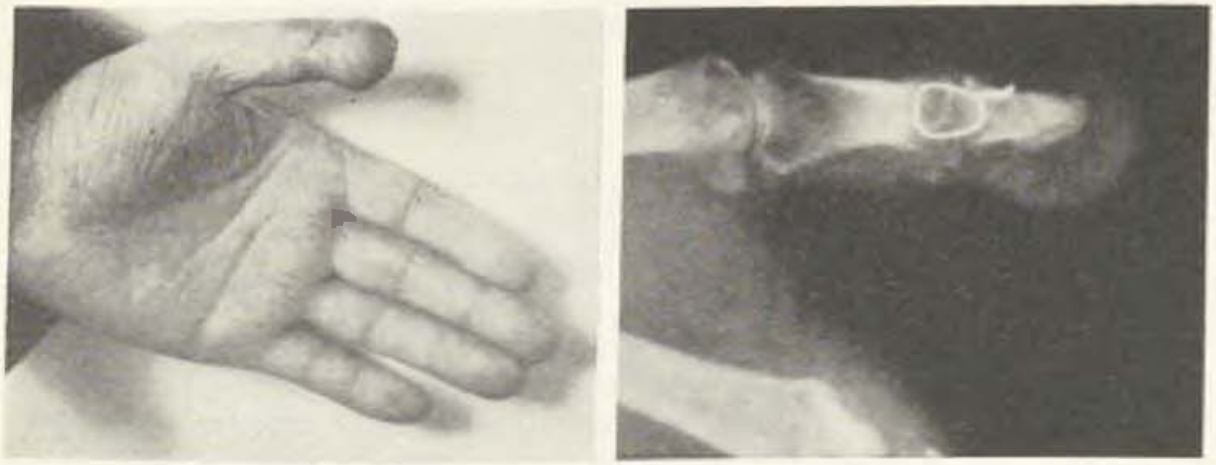

Fig. 5 C: The state after half a year: the mobility of the thumb sustained minimum. — C_1: X-ray shows the total healing of the bone transplantation

The reconstruction by means of Gillies tube-pedicle flap, is considered to possess one principal advantage. It makes use of a well differentiated tissue without any specialized function which can be taken in a considerate amount in places covered with clothes. This advantage is however prevailed by following disadvanteges of this method: above all the time consuming treatment divided in several stages, forming the tube, transferring the proximal and distal pedicle from the donor area to the thumb inserting the bone or cartilage graft.

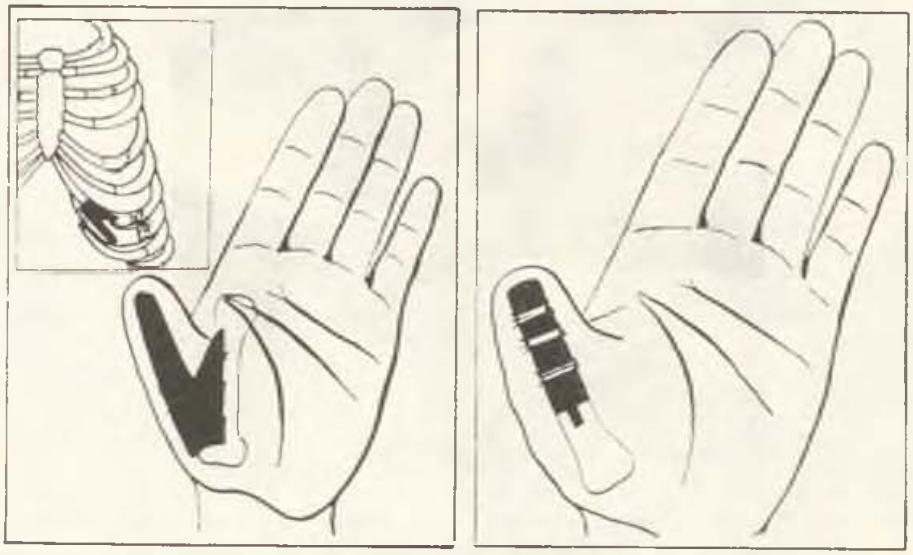

Fig. 6. The design of the utilization of the "V" cartilage for the stiffening of the tube-pedicle flap by Karfík. The cartilage is obtained from the 7th and 8th rib, it is fixed to the second metacarpal bone so that its second branch (a little longer) by which the flap has been stiffened, is in the opposition against the other fingers. (Karfík has carried out this method originally and proposed it for the cases of the hypoplastic thumb of the hand.) — Fig. 7. The design of the fixation of the bone graft into the bed by Vejvalka-Vrabec. Before inserting it into the stump, the bone graft is bored with the hand-boring on 3 to 4 spots. After having inserted the graft into the bone stump, we shift the fatty tissue of the tube-pedicle flap with thin monofil nylon stitches. Up to present time, this mehod secures the rest of the graft in the best way. The blood supply of the soft tissues is safe. The space around the bone graft is diminished the threat of a hematoma and of unnecessary granulation is reduced according to the words and experience of the authors

Every stage of the reconstruction is threatened with complications (infection, necrosis), dissolving of the bone graft. As a result of this long treatment we get a little sensitive thumb which does not resist very well to the unfavourable influence of the temperature, cold and pressure, as well as it is not desirable from the esthetical point of view. For these reasons, we have restricted the indication for this kind of reconstruction. After having introduced the transposition and pollicisation into the repertoire of the reconstructive operations, we consider the tube pedicle flap applicable to the scalpation of the thumb with intact bone, further to the stump of the thumb in the half of the proximal phalange, mainly in those cases where the other fingers are not injuried.

Further more the extensive devastations of the hand were one or two fingers are preserved partially or completely. Then we reconstruct the thumb in a stable oposition towards the remaining fingers if they are mobile.

Many authors have suggested various methods — which used properly — would make us less pessimistic about this method of reconstruction. Some of them, therefore, deserve our attention: For example so called „V" cartilage to strenthen the tube pedicle flap (Fig. 6), transferring the bone graft in connection with tube pedicle flap from the area of iliac crist or clavicle, inserting the bone graft into the bed by transosseal fixation (Fig. 7) etc. In some cases we try to improve its insufficient sensitivity using an island flap on the neurovascular bundle moved from a functionally "empty" place to the ulnar half of the distal third of the thumb. Under favourable conditions we can form a rotation flap or shift the undamaged skin from the neighbourhood area. These operations are carried out as the final stage in the procedure of reconstruction.

The transplantation of the big toe to the hand was carried out in one case only in 1954. The complicated procedure and unexpectedly bad result contributed to our opinion correspondent to many other authors that this method might be applied in exceptional case only.

We draw conclusion and we emphasize the importance of treating all loss injuries and serious damages of the hand in highly specialized institutions dealing with this problem. Thus already the primary treatment has to be considered in view of the following procedures, occasionally, even the primary reconstruction of the thumb may be performed under favourable conditions.

SUMMARY

The ideal method for reconstruction of the thumb available at present time is considered to be the transposition of the fourth finger, or of any other finger which has been damaged by the accident more than the fourth finger. Under special conditions "pollicisation" of the intact index finger is indicated. After amputation of all fingers splitting of the hand (Spalthandbildung) is indicated, either by means of prolongation of the short first metacarpal, or by the operation suggested by Kreuz, if the first metacarpal has been sufficiently preserved. Both these operations may be completed by the liberation of the fifth metacarpal for improving the grasping capacity of the reconstructed stump. In indicated cases Gillies "cocked hat" operation is advantagenous. Reconstruction by means of a tube-pedicle flap is indicated mainly in a partial loss of the thumb and in degloving injuries also in an extensive hand devastation. Mention is made of some modifications and improvements — the use of a "V" cartilage after Karfík, adjustment of sensitivity by means of an island flap and so on. Nicoladonni's transfer of the big toe to the hand is justified only under exceptional circumstances. Hand injuries should be treated at highly specialized centres concentrated on this type of surgery.

RÉSUMÉ

Des possibilités du remplacement du pouce endommagé par le traumatisme à perte

A. Kipikaša

La méthode de la réconstruction du pouce la plus éficace de nos jours est — à l'avis des auteurs — celle de la transposition d'annulaire ou bien encore d'un autre doigt plus endommagé par le traumatisme. Sous des conditions spéciales la transposition d'index lui même est aussi indiqués. Dans des cas de la perte de tous les doigts la scission de la main — Spalthandbildung — est indiquée, accompagnée par la prolongation du premier métacarpe court, ou bien encore on peut réaliser l'intervention de Kreuz quand le premier métacarpe est assez long. Dans les deux cas on peut en surplus réaliser encore la délibération du cinquième métacarpe, ce que nous offre l'ammélioration du possibilité du saisissement du tronçon en réconstruction. Dans des cas bien indiqués on peut de même se servir de l'opération de Gillies connue comme «cocked hat». Quand à la réconstruction à l'aide du lambeau à pédicule, elle est indiquée surtout dans des pertes partielles du pouce est dans des cas de son scalpement ou bien encore dans des cas d'une dévastation étendue de la main. Les auteurs mentionnent même quelques — unes des interventions de choix — p. ex. celle d'emploie du cartillage en «V» d'après Karfík de même que celui de l'ammélioration de la sensibilité par le lambeau Ostrovski. L'intervention de Nicoladonni — la transposition du pouce du pied à la main ne doit être réalisée que dans des cas bien indiqués. En somne, tous les traumatismes de la main doivent être soignés dans de instituts spécialisés dont la main présente leur spécialisation.

ZUSAMMENFASSUNG

Möglichkeiten der Rekonstruktion des durch Verlustverletzung geschädigten Daumens

A. Kipikaša

Als vollkommenstes Verfahren für die Wiederherstellung des Daumens wird in der Gegenwart die Transposition des vierten Fingers, angesehen, oder eines anderen, der durch den Unfall mehr geschädigt wurde, als der vierte. Unter besonderen Umständen ist die Policisation des intakten Zeigefingers gleichfalls angebracht. Nach Amputierung aller Finger ist die Spalthandbildung angebracht, entweder mit Verlängerung des kurzen vierten Metakarpalknochens, oder mit Operation nach der Technik von Kreuz, wenn der erste Metakarpalknochen ausreichend erhalten ist. Zu den beiden Operationen kann auch die Freilegung des fünften Metakarpalknochens beigefügt werden, wodurch die Griffmöglichkeiten des rekonstruierten Stumpfes verbessert werden. In angebrachten Fällen ist das Operationsverfahren nach Gillies „cocked hat" von Vorteil. Wiederherstellung mit einem Rundstiellappen ist angebracht hauptsächlich beim Teilverlust des Daumens und bei Daumenskalpierungen, ebenso bei umfangreichen Devastationen der Hand. Erwähnt werden hier einige verbesserte Verfahren — die Anwendung des „V" Knorpels nach der Technik von Karfík, Erhöhung der Empfindlichkeit des Lappens nach Ostrovski, und andere mehr. Die Übertragung der grossen Zehe auf die Hand nach Nicoladonni ist nur in Ausnahmsfällen begründet. Handunfälle gehören auf hochspezialisierte Arbeitsstätten, welche auf die Chirurgie der Hand orientiert sind.

RESUMEN

Posibilidades de la reconstrucción del pulgar damnificado con una herida de pérdida

A. Kipikacha

La transposición del dedo cuarto o de otro dedo más damnificado con el accidente que el cuarto, tenémos por el más perfecto método de reconstrucción del pulgar en nuestro tiempo. En las circunstancias extraordinarias es también indicada la transplantación del índice intacto. Después de la amputación de todos dedos es indicada la grieta de la mano — Spalthandbildung — o con el alargamiento del primer metacarpo corto, o con la operación según Kreuz, si el primer metacarpo se bastante conservado. A las dos operaciones es posible agregar también la liberación del quinto metacarpo, con la cual se mejoran las posibilidades de tomar del muñón reconstruido. En los casos indicados es ventajoso practicar la operación de Gillies „cocked hat". La reconstrucción por medio del lóbulo tubulado es indicada ante todo en las pérdidas parciales del pulgar y en el pulgar escalpado, también en las devastaciones extensas de la mano. Se indican algunos procedimientos mejorados — la aplicación del cartílago „V" según Karfík, el arreglo de la sensibilidad por medio del lóbulo de Ostrovský etc. La transplantación del pulgar del pie en la mano según Nicoladonni tiene su motivación solamente en casos excepcionales. Los accidentes de la mano pertenecen a los lugares de trabajo muy especializados, que se ocupan de la cirugía de la mano.

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SOME METHODS OF PLASTIC RECONSTRUCTION OF TENDONS OF THE FINGER FLEXORS

S. D. DEGTYAREVA

One of the most important problemas of reconstruction of tendons of the finger flexors in the late post-traumatic stage is the choice of plastic material for filling up the defect.

Using autoplasty and homoplasty, some simpler and easier methods for reconstruction of tendons could be devised based on anatomical changes which take place in the late post-traumatic stage.

One of these is the existence of the "regenerate" — regenerated tissue at the end of the damaged tendon. The presence of a "fibrous callus" between the ends of the tendon was described by several authors in this country and abroad (Bunnel 1965, Dubrov 1952, Iselin 1964).

In the material of this department we succeded in many cases in complete repair of the tendon with the use of the "regenerate". More often the "regenerate" does not fill out entirely the defect of the damaged tendon but appears instead on one or both ends.

After having studied the morphological structure of the "regenerate" it was possible to recognise it as a tendon-like tissue with sufficient elasticity from the viewpoint of plastic material and to use it to fill up the tendon defect using several modifications of a plasty procedure. On the whole, with this method we carried out 41 operations in 36 patients. 38 tendons of the flexors and 3 tendons of the extensors were reconstructed in this way. The majority of the operations was performed on the index and fifth finger (24 tendons), usually on the basal phalanges of the finger and in the palm. In 7 cases, when the "regenerate" was present at both ends of the tendon, side to side suture was carried out. In this way the tendon defect was filled up with a duplicature of the "regenerate" (Fig. 1, 3). In 16 cases the "regenerate" from one end of the tendon was sutured to its other end.

In 18 cases the tendon fascicle of the deep flexor was not interrupted thanks to the "regenerate" between its ends. In 17 cases the strip after the performed tenolysis was too long and, therefore, it had to be shortened in the area of the "regenerate" by various means. In 10 cases by dissection and formation of a duplicature, in 7 cases by ruffling the "regenerate" with wire or nylon suture which made the thickness of the "regenerate" the same as that of the tendon. (Fig. 2.)

In the first case only tenolysis of the tendon ends and of the "regenerate" which joined them was carried out, the finger remained afterward slightly bent

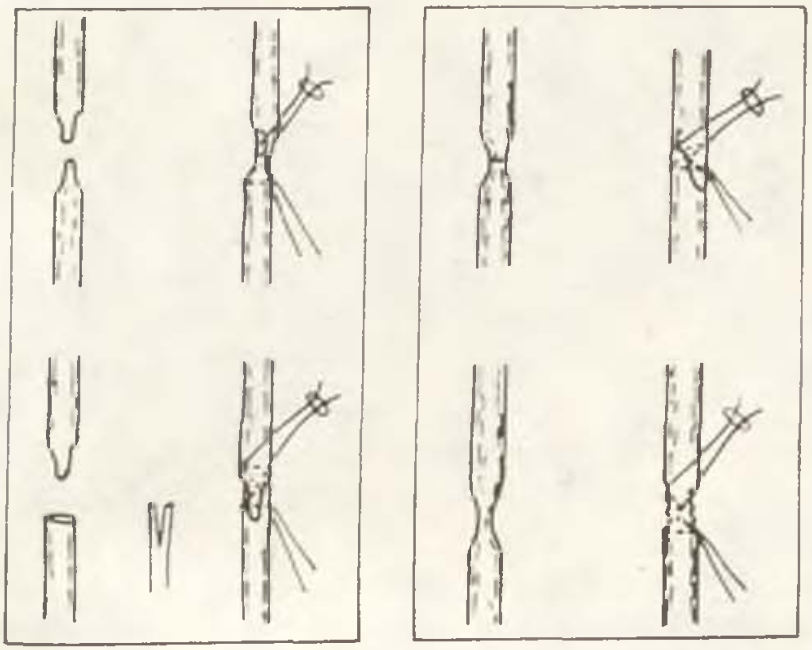

Fig. 1. Tendon plasty with formation of the "regenerate" tissue, method 1 and 2. — Fig. 2. Method of shortening of the "regenerate"

which had a favourable effect on the later restitution of the function and strength of the finger flexor. Tenolysis surgery according to the above method of reconstruction of the tendon was similarly indicated as when using other methods of plasty; it was carried out in 13 cases and with good results. Late results of tendon plasty by means of the "regenerate" tissue were followed up in 15 cases from 1 to 4½ years. The results were excellent in 4 cases, bad in 2 cases.

Another anatomical peculiarity consists of the central ends of the superficial and deep flexor, or their peripheral end, or both, being often joined together in considerable length. This became the principal factor in developing the method of tendon plasty on the stalk by turning one end of the superficial flexor, either the central or the peripheral one, and using it as a transplant.

With this method, in various modifications, 40 operations were carried out mostly in the palm or at the basal phalange of the fingers.

After broad tenolysis and setting free the tendon defect from the connection with the central and peripheral end, the stump of the superficial flexor was removed in a part corresponding in size with the defect or, more frequently, smaller in size than the defect. The tendon of the superficial flexor was cut transversally and separated from the central end of the deep flexor about 0.7—0.5 cm. from their insertion. The separated stump was turned in distal direction and sutured with the peripheral end of the deep flexor (Fig. 4). 20 patients were operated on with this method. In a similar way, in 10 cases turning of the peripheral end of the superficial flexor was carried out and it

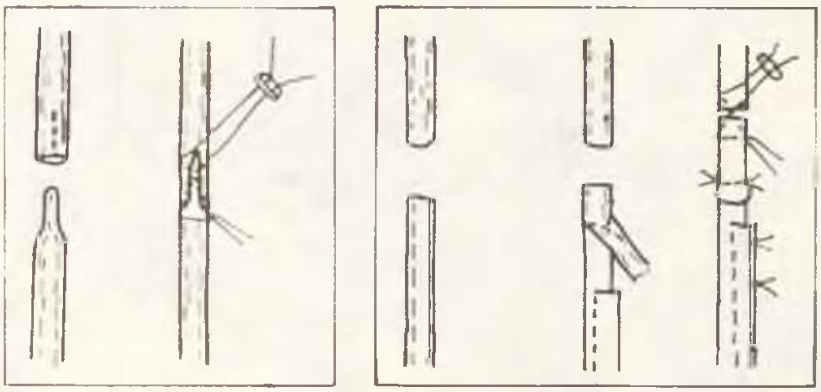

Fig. 3. Method of fixation of the "regenerate" to the end of the tendon. — Fig. 4. Plasty with turning of the central end of the superificial flexor

was sutured to the central end of the deep flexor or with the ends of both flexors. In one case the defect was so extensive that the mutual joining of both the peripheral and central ends of the flexors was carried out and the defect was covered with two oposite transplants on stalks (Fig. 5).

It is necessary to point out some important details in the application of the above plasty method.

1. If, while separating the transplant from the central end of the superficial flexor and turning it, the central part of this tendon (above the area of dissection) remained insufficiently joined with the tendon of the deep flexor, it was necessary to suture it with fine nylon in order to safeguard the reconstruction of the tendon of both flexors. It is advisable to do this in the palm or on the forearm but, obviously, not at the level of the channel of the tendon sheath on the finger.

2. By turning the transplant in the area of its fold we get a duplicature. In order to diminish the thickness of the tendon at this level it was necessary to form a bed in the tendon of the deep flexor (by means of partial transversal discision) and submerge a part of the turned transplant and suture the stump of the severed tendon of the deep flexor over it. It was possible to diminish the discision of the tendon strip at the site of the duplicature also by any other plastic method.

In this method the transplant may be more conveniently fixated by a blocking wire suture led through the duplicate and through the whole transplant and the peripheral end of the tendon of the deep flexor.

After tendon plasty with the stalk transplant tenolysis was carried out in 14 cases in the period of 2 to 10 months.

Late results of treatment with this plasty method were studied in 19 cases after 9 months to 4 years. Excellent results were obtained in 2 cases, good in 11, satisfactory in 4 and bad (no restitution of the function) in 2 cases.

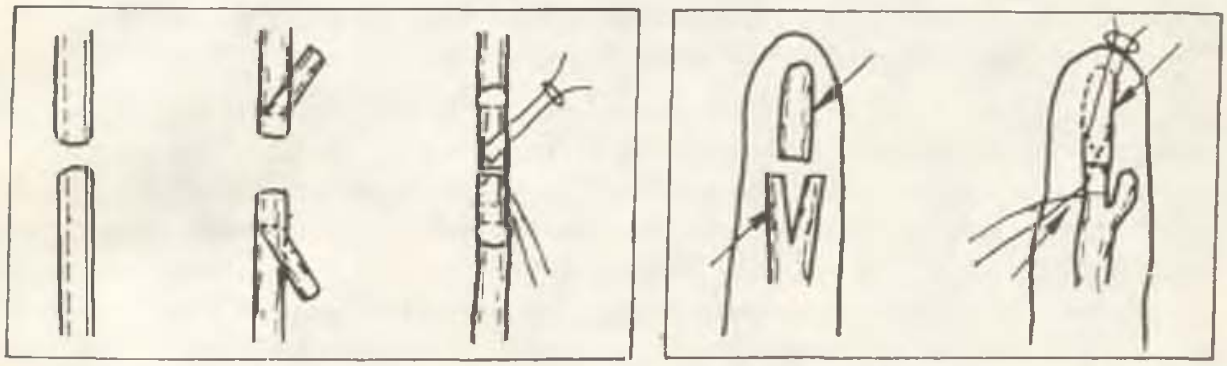

Fig. 5. Turning of both ends of the tendon of the superficial flexor. — Fig. 6. Operation for stabilization of the nail phalange of the finger in isolated damage to the tendon of the deep flexor

Patients with isolated injury to the tendon of the deep flexor of the finger comprised a special group and as the treatment of this injury was not yet sufficiently worked out, this group was divided according to the used surgical method.

If the tendon of the superficial flexor was intact, e.g. if the active flexion in the first interphalangeal joint was preserved, the typical autoplasty had a very relative indication and there was some danger of impairing the function of the superficial flexor. For this reason some surgeons operate the arthrosis of the second interphalangeal joint of the finger (Vaynshtein, Nikiforova, Iselin et all.), while other authors recommend tenodesis in the same session (Moberg, Smoloinsky, Müller etc.).

In this way an attempt was made at limiting the area of intervention, at eliminating from it the channel of the tendon sheath, especially in the area of the insertion of the tendon of the superficial flexor. These operations are considered to be absolutely perfect and they have been used according to their indications. Erdelyi's operation consisting of reconstruction of the deep flexor with the aid of the dissected deep flexor of the neighbouring finger is worth great attention but we have no experience with its use.

Besides the methods described above, we sometimes use other procedures based on several anatomical changes we were able to study. It is interesting that in a high percentage of cases the peripheral end of the severed tendon of the deep flexor is not quite free in the surrounding tissue but may be connected with one stalk of the superficial flexor or with a strip of its tendon.

Connecting bands were found coming either from the end of the deep flexor or from the "regenerate" issuing from it. In such cases folowing methods of reconstructive surgery were used:

1. If the peripheral end of the tendon of the deep flexor was connected with one of the stalks of the superficial flexor after tenolysis, this stalk was severed from its site of insertion. This operation was carried out in 2 cases. In both the nail phalange of the finger was in a functionally favourable semiflex position. From the functional standpoint this operation proved as advisable, the nail phalange of the finger had active flexion in the range of 20^0 to 30^0. The active flexion in the first interphalangeal joint was quite preserved. e.g. the function of the tendon of the superficial flexor was not impaired.

2. If the peripheral end of the deep flexor was free, an operation aimed at stabilization of the nail phalange of the finger was indicated. The operation consisted in suturing of this end with one of the stalks of the superficial flexor, preliminarily severed from its site of insertion, or with the basic strip of the superficial flexor at the proximal level of its insertion. This operation was most simply carried out in those cases where the peripheral end of the tendon of the deep flexor, or its "regenerate", were situated in the area of insertion of the tendon of the superficial flexor or somewhat proximally. If the end of the deep flexor was very short, this operation was not feasible, as a great, functionally undesirable angle of flexion of the nail phalange of the finger took place. The ends of the tendons were sutured, in this method, with a blocking wire or lavsane suture (Fig. 6). Suturing of the peripheral end of the deep flexor to a strip of the superficial flexor may be carried out in any kind of damage to the tendon of the deep flexor. This operation was performed in 9 cases. In 7 cases the deep flexor was sutured to the dissected stalk of the superficial flexor and in 2 cases to the basal strip of the superficial flexor.

3. In 5 cases where the peripheral end of the tendon of the deep flexor was connected with the intact tendon of the superficial flexor the following operation was successfully carried out: First, a preliminary tenolysis was made and this was followed by dissection of the superficial flexor from its site of insertion; in this way there appeared an uninterrupted strip of the tendon of the deep flexor. This procedure was especially suitable in cases showing, until operation, a limitation or absence of flexion in the first interphalangeal joint due to growing of the tendon of the superficial flexor together with the surrounding tissue. In all 5 cases good functional results were obtained with good active flexion in the first interphalangeal joint.

CONCLUSIONS

1. Anatomical peculiarities in the late post-traumatic stage were used to work out methods of reconstructive surgery of the tendons of finger flexors with the use of the surrounding tissue.

2. Tendinous regenerating tissue, the "regenerate", appearing at one or both ends of the severed tendon may be used as plastic material to fill up the tendon defect.

3. Growing together of the central and peripheral ends of the tendons of the deep or superficial flexors may be used for plasty with turning of one end of the tendon.

4. In isolated damage to the tendon of the deep flexor a procedure was proposed for stabilization of the nail phalange of the finger by suturing the peripheral end of the deep flexor with one of the stalks of the superficial flexor, preliminarily dissected from its site of insertion. In this way stabilization of the nail phalange was secured as well as its active flexion and the function of the tendon of the superficial flexor was preserved.

5. The described methods of reconstruction of the tendons of the flexors were rather sparing, easy to perform and especially indicated in multiple injuries, permitting to use the most rational method for each finger.

SUMMARY

Besides the classical methods of tendon autoplasty with free grafts and homoplasty, new methods of tendon plasty with locally available tissues have been worked out. These methods are based on the anatomical changes taking place in the tendons after injury.

The "regenerate" — regenerating tissue forming at the ends of the damaged tendons and sometimes joining the severed ends may be used as plasty material for the filling up of the tendon defect. Growing together of the central and peripheral ends of the tendons of the superficial flexors with the deep ones allowed turning of one of the ends of the superficial flexor on the stalk.

In isolated damage to the tendon of the deep flexor an operation was recommended for the stabilization of the nail phalange of the finger. The peripheral end of the tendon was connected with one of the stalks of the superficial flexor or with its tendon, or the peripheral end of the deep flexor was sutured to one of the stalks of the superficial flexor preliminarily dissected from its site of insertion. If the peripheral end of the damaged tendon of the deep flexor became grown together with the intact superficial flexor, the deep flexor could be reconstructed by severing the superficial flexor from its site of insertion.

The described methods of tendon plasty are very sparing, easy to perform and especially indicated in cases with tendon injuries on several fingers, allowing the choice of the most appropriate method for each finger.

RESUMÉ

Quelques-unes des méthodes de la réconstruction des tendons des fléchisseurs des doigts de la main

S. D. Degtyareva

Dans la phase contemporaine des résultats favorables des autoplasties des tendons à l'aide des greffes libres et des homoplasties des nouvelles méthodes surgissent, se basant sur la plastie à l'aide des tissus locaux. Ces méthodes utilisent les changements anatomiques en suite du traumatisme dans les tendons respectifs.

En tant que matériel plastique pour couvrir le défaut du tendon en question on peut se servir du tissu du soit dit «régénérat»„ lequel aparait sur les deux bouts des tendons endommagés, ayant pour but l'union des moignons tendineux centrals et ceux de périphérie des fléchisseurs superficiels avec les fléchisseurs profonds, dans laquelle situations nous pouvons réaliser la rotation pédiculé d'un des moignons du fléchisseur superficiel.

En face d'endommagement isolé du tendon du fléchisseur profond l'auteur recommande l'intervention immobilisant la dernière phalange. C'est pourquoi on fait l'union du moignon périphérique du tendon du fléchisseur respectif avec le tendon du fléchisseur superficiel ou, bien encore, on réalise la sutture du moignon périphérique du fléchisseur profond à l'un des pédicules du fléchisseur superficiel, ayant été résequé de sa place d'avance. En face de soudure du moignon périphérique du tendon du fléchisseur profond avec celui superficiel intact on peut bien souvent réaliser la réconstruction du fléchisseur profond à l'aide de la résection du fléchisseur superficiel de sa place.

Les méthodes de la plastie de tendons traumatisent au minimum, elles sont faciles quand à la réalisation et leur indication trouve place surtout dans des cas d'endommagement contemporain des tendons de plusieurs doigts, offrant la possibilité de choisir, dans ce cas, l'intervention la plus éfficace pour chaque doigt respectif.

ZUSAMMENFASSUNG

Einige Methoden der plastischen Wiederherstellung der Sehnen von Fingerbeugemuskeln

S. D. Degtjareva

Gemeinsam mit den sehr überzeugenden Methoden der Sehnenautoplastik mittels loser Transplantate bringt auch die Homoplastik in der Gegenwart neue Verfahren für die Sehnenplastik mit lokalen Geweben. Diese Verfahren beruhen auf anatomischen Veränderungen in den Sehnen, die nach dem Unfall entstehen.

Als plastisches Material zur Ausfüllung des Sehnendefektes kann das Gewebe des „Regenerates“ angewandt werden, das an den Enden der geschädigten Sehnen entsteht, da diese Enden die Verwachsung der zentralen oder peripheren Sehnenenden der oberflächlich liegenden Beugemuskeln mit den tief liegenden Beugemuskeln verbinden — in solcher Situation wird die Umdrehung eines der Enden des Oberflächenbeugemuskels am Stengel durchgeführt.

Bei isolierter Schädigung der Sehne des tiefliegenden Beugemuskels empfehlen wir eine Operation, die den Nagelfingerknochen stabilisieren wird. Deshalb verbinden wir das periphere Sehnenende mit einem der Stengel des Oberflächenbeugemuskels oder mit seiner Sehne; oder nähen wir das periphere Ende des tief liegenden Beugemuskels zu einem der Stengel des Oberflächenbeugemuskels, der von der Ansatzstelle vorher abgeschnitten wurde. Wenn eine Verwachsung des peripheren Endes der geschädigten Sehne des tief liegenden Beugemuskels mit intaktem Oberflächenbeugemuskel vorhanden ist, kann in einer Reihe von Fällen der tief liegende Beugemuskel durch Resektion des Oberflächenbeugemuskels von der Ansatzstelle wiederhergestellt werden.

Die beschriebenen Methoden der Sehnenplastik haben einen minimalen traumatisierenden Effekt, sind leichtausführbar und besonders in denjenigen Fällen angezeigt, wo es sich um eine gleichzeitige Sehnenschädigung an mehreren Fingern handelt; bei diesem Unfalltyp muss für jeden Finger das rationellste Operationsverfahren gewählt werden.

RESUMEN

Algunos métodos de la reconstrucción plástica de los tendones de los flexores de los dedos de la mano

S. D. Degtiareva

Al mismo tiempo con los métodos muy convincentes de la autoplástica de tendón por los trasplantes libres y también de la homoplástica, en este tiempo llevan nuevos métodos las plásticas de los tendones por los tejidos locales. Estos métodos se estriban en las transformaciones anatómicas en los tendones, las que se forman después de los accidentes.

Como material plástico para llenar el defecto del tendón puede usarse el tejido regenerado, él que se forma en los extremos de los tendones damnificados, o él que junta estos extremos, la concrescencia de los extremos centrales o periféricos de los tendones de los flexores superficiales con los profundos — en tal situación practicamos la revolución de uno de los extremos del flexor superficial en el pedúnculo.

En una damnificación aislada del tendón del flexor profundo recomendamos la operación para aumentar la estabilidad de la falange de uña. Por eso juntamos el extremo periférico del tendón con uno de los pedúnculos del flexor superficial o con su tendón, o realizamos la sutura del extremo periférico del flexor profundo a uno de los pedúnculos del flexor superficial, recortado previamente del lugar de la fijación. Si está presente la concrescencia del extremo periférico del tendón damnificado del flexor profundo con un flexor superficial intacto, es posible en una serie de los casos reconstruir el flexor de tendón profundo por medio de la recortadura del flexor superficial del lugar de la fijación.

Los métodos presentados de la plástica de tendón ocasionan el traumatismo mínimo, pueden realizarse fácilmente y son especialmente indicados en los casos de la damnificación de los tendones en algunos dedos a la vez; en este tipo del accidente es necesario para cada dedo elegir el más racional modo de la operación.

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LESIONS OF FINGER APONEUROSIS AT THE LEVEL OF THE DISTAL INTERPHALANGEAL JOINT

MATEV, Y. STOYCHEVA

Rupture of the aponeurosis at the level of the distal interphalangeal joint of the fingers causes mallet of the terminal phalanx. The typical deformity is called "dropping finger". Most frequently, the lesion is closed and the rupture is usually due to preceding degenerative changes in the tendon. The aponeurosis may rupture at the level of the distal interphalangeal joint or be torn out of its insertion into the terminal phalanx, usually together with a small bone fragment. Complete as well as partial lesions have been observed. In partial lesions, the terminal phalanx is slightly flexed, no more than 30 to 40°, and active extension is possible to a limited extent. As a rule, closed lesions of the aponeurosis are caused by contusion of the dorsal aspect of the stretched terminal phalanx. Sometimes, the trauma is so slight that the patient does not take notice of it and only becomes aware of the subsequent deformity. In such a case, one may speak of a pathological rupture in an aponeurosis with severe degenerative changes. The opinions as to the treatment of this deformity greatly differ in the various authors, and this is the reason why the methods of treatment, conservative as well and particularly surgical, are so variform

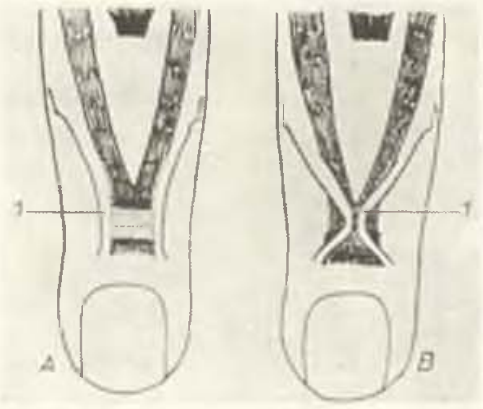

Fig. 1. Diagram of reinsertion of the middle portion of the scar combined with displacement and suture of the lateral fibers of the aponeurosis including part of the ligamenta retinacularia. The dotted line marks the incisions.

CLINICAL MATERIAL

Our study comprises 93 patients, aged between 9 and 60 years, with almost equal sex (49 male and 44 female) and side (49 on the right and 44 on the left hand) distribution. The middle and ring finger were affected most frequently; in 68 out of 93 patients. The thumb was injured only once and in this case due to scission. Out of the total number of cases, 63 were closed injuries. In the history of six patients, no indication of a contusion or any other trauma to the finger could be detected. In 15 patients with closed injuries to the aponeurosis, it was found that the tendon was torn out at its insertion into the terminal phalanx together with a small bone fragment. Complete rupture was found more frequently than partial. Most patients with open injuries came to us after they had been treated elsewhere.

METHODS OF TREATMENT

A. Conservative: For this, we used either a plaster bandage or a plaster splint or a splint of plastic material. We immobilized both interphalangeal joints in the Smillie position, at 50 to 60^0 flexion of the proximal and full extension or slight hyperextension of the distal joint. Immobilization lasted for one month, but in most cases continued over night for another 15 to 20 days. In cases, in which we started treatment later, for instance 10 to 15 days after injury, immobilization was prolonged up to 40 days.

B. Surgical: The methods used were the following:
Primary or secondary suture of the aponeurosis,
duplication of the scar according to Rozov,
re-insertion of the proximal stump into the terminal phalanx according to Bunnel or Lorthioir,
tenoplasty according to Iselin,
reinsertion of the middle part of the scar to the end phalanx together with plastic lengthening of one of the aponeurotic bands to the expense of the other,
reinsertion of the middle part of the scar together with displacement of the lateral fibers of the aponeurosis and suturing them to each other (fig. 1)

Postoperative immobilization was effected by a plaster slab for the duration of three to four weeks and in the same position as described for the conservative treatment. In some cases, mostly in children, we used additional, "internal splinting" of the distal interphalangeal joint by inserting or a thin Kirschner wire (7, 8).

RESULTS

We succeeded in making a check-up in 53 patients after six months to eight years; the mean time was three years and two months. Twenty one patients had been treated conservatively, 23 surgically and the remaining nine had not submitted to any treatment at all or had removed the splint themselves two or three days after application.

1. Complete recovery was registered in 13 patients, i. e. in 29.5%, ten of whom had been treated by conservative methods and only three had been operated on. The conservative treatment of four patients had started immediately, while in the remaining six 10 to 20 days after injury. In the three surgically treated patients, the following operations had been carried out: In one — primary suture, in a second — reinsertion of the scar together with plastic lengthening of one of the aponeurotic bands to the expense of the other and in the third — reinsertion of the middle part of the scar together with displacement of the two lateral fibers and suturing them to each other.

2. Incomplete recovery was also found in 13 patients, i. e. in 29.5%. In this group, we included the cases in which there was a lack of full extension in the distal interphalangeal joint up to 20^0. Nine of these patients

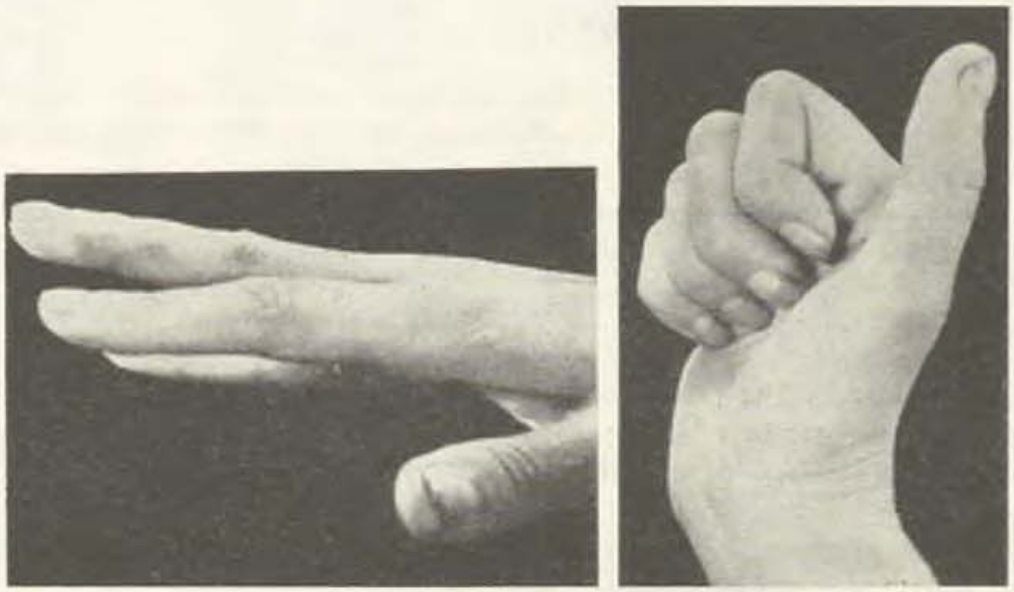

Fig 2a and b. Results of conservative treatment of a cut aponeurosis at the level of the distal interphalangeal joint. The treatment started 20 days after injury and immobilization lasted for 30 days. The injured digit was the middle finger.

had undergone the following operations: secondary suture, reinsertion of the tendon according to Bunnell or Lorthioir, tenoplasty according to Iselin, reinsertion of the scar together with lengthening of one of the lateral bands. Only four out of those 13 patients had been treated by conservative methods, whereby the injured finger had been immobilized relatively late, i. e. 7 to 20 days and even later after the injury.

3. Slight improvement or unchanged condition was observed in 18 patients, i. e. in 70.9%, in whom there was a lack of full extension at the distal interphalangeal joint of 20 to 45^0. Eleven patients had been operated on: reinsertion or secondary suture of the aponeurosis had been carried out.

These cases included also those in which a complication had developed after tenoplasty of the aponeurosis. Seven patients of this group had been treat-

ed conservatively whereby the finger had been immobilized one to four weeks after the injury. In half the number of these patients, a slight contracture in hyperextension of the proximal interphalangeal joint was found, but they did not complain about this additional deformity.

4. Untreated patients who, for this or that reason, had not undergone any treatment, but nine of whom appeared for check-up examination, showed the following conditions: Three had a slight flexion contracture of the distal interphalangeal joint up to 20°, i. e. their condition was similar to that of the second group. In the remaining six patients, we registered slight improvement or no change at all, i. e. a condition corresponding to that of the third group.

DISCUSSION

The observations in our patients have shown that, in both closed and open injuries of the aponeurosis at the level of the distal interphalangeal joint, conservative treatment has the best chance of success, provided it has been applied immediately after the injury. Complete recovery took place in all patients whose fingers had been immobilized on the day of the accident

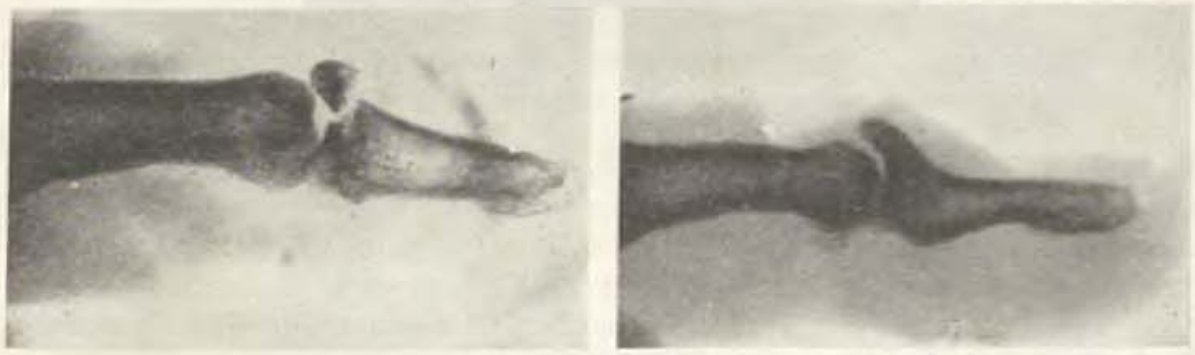

Fig. 3a. Extensor tendon torn out of its insertion into the terminal phalanx together with a bone fragment. The fragment includes no less than one third of the articular surface. The patient was treated conservatively. — Fig. 3b. Condition six years after treatment Extension is almost normal which can be seen from the picture; flexion is full. The patient has no complaints.

However, good results may also be achieved in cases in which immobilization is applied later, seven to 15 and even 20 to 30 days after injury (fig. 2a and 2b).

In one third of the patients who had had a splint applied one to three weeks after the accident, full recovery had taken place. For immobilization, 30 days are considered sufficient in patients who come for treatment immediately and in children even one week after the injury. It seems expedient to continue immobilization for another 15 to 20 days but only over night. We think it appropriate to immobilize both interphalangeal joints with the proximal flexed no more than 60° and the distal stretched or slightly hyperextended. This kind of immobilization is considered necessary in all cases of complete rupture of the aponeurosis. In our opinion, the aponeurosis should be relaxed over the entire extent of the ligamenta retinacularia lig. Landsmeer)

We prefer a splint to a circular plaster bandage, because it gives us the chance of checking up on the condition of the skin, if necessary of carrying out wound toilet, and, from time to time after the twentieth day of treatment, of conducting movement exercises of the proximal interphalangeal joint.

A large number of lesions is but partial, whereby one portion of the lateral bands has usually remained intact. Incomplete rupture indicates a tendency towards spontaneous healing and, in fact, full recovery takes place after ap-

Fig. 4a. Woman aged 43: Three months previously, she knocked the tip of her middle finger against a machine with the terminal phalanx in full extension.

plication of a splint for a shorter period than recommended above. Avulsion of the aponeurosis together with a bone fragment from its insertion into the terminal phalanx can be successfully treated by conservative methods. Stark, Boyes and Wilson are of the opinion that large fragments, involving one third of the articular surface, should immediately by reduced by operation. However, even in these cases, conservative treatment may be successful (fig. 3a and 3b). Late reconstructive surgery faces great difficulties and usually cannot be performed without stripping the entire bone fragment. In these cases, and if the patient complains of pain, it will be best to carry out arthrodesis of the joint.

The anatomy of the dorsal aspect of the distal interphalangeal joint is characterized by the presence of very fine tissue structures and the absence of intertissue spaces. The skin is only slightly movable and lies close to the aponeurosis which, at this site, is as thin as parchment and adheres to the fine joint capsule. Space, therefore, is limited, so that it becomes difficult to introduce additional tissue. The terminal end of the aponeurosis is only movable to the extent of a few millimeters which limits a pulling distally. The anatomical peculiarities of this region brought about the unsatisfactory results of the many surgical methods of treatment aimed at reconstruction of the terminal part of the dorsal aponeurosis of fingers.

Reconstructive treatment must cope with two essential requirements: a) stable suture which will maintain the distal interphalangeal joint in full

extension and cause a minimum of adhesions in the surrounding tissues, b) avoiding introduction of additional tissues into the narrow intertissue spaces.

From this point of view, reconstructive measures using tendon transplants do not seem rational, when compared with the operation in which no additional tendon tissue is introduction to the site of the lesion (1, 2, 9, 11). Isolated scar duplication has not proved fully satisfactory. Better results were achieved by reinsertion of the middle portion of the scar combined with suture of the lateral

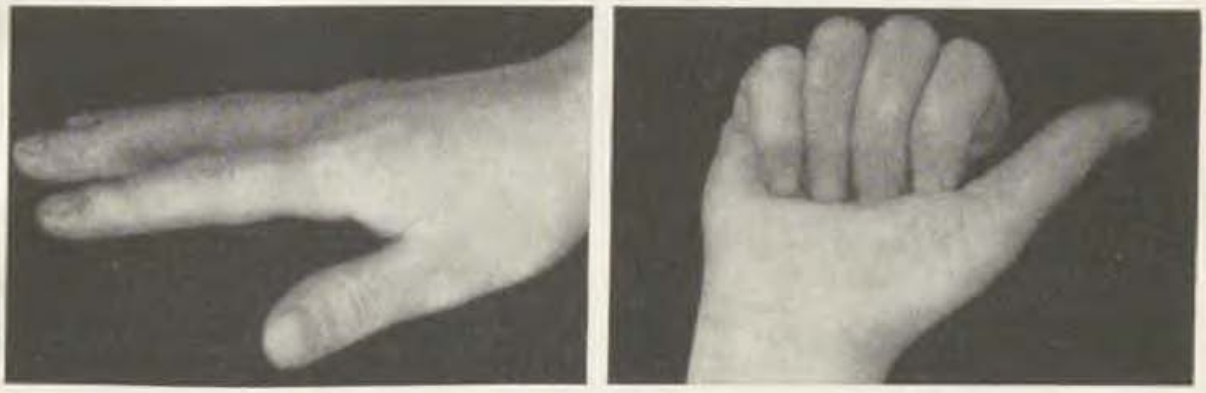

Fig. 4b and c. Condition five years after operation: reinsertion of the middle portion of the scar combined with displacement and suture of the lateral fibers of the aponeurosis, was carried out.

fibers of the aponeurosis including part of the ligameneta retinacularia (fig. 4a, b and c). In cases in which these fibers are rather thin, the reinsertion may be combined with plastic lenghtening of one of the bands to the expense of the other which is mobilized almost to the level of the proximal interphalangeal joint and excised fromthere.

The worst results are achieved from operations on the litle finger. The cause of this essentially lies in the structure of the aponeurosis at this part of the finger. Here, the tendon is particularly thin and the ulnar bundle is, as a rule, hardly discernible. Functional recovery after operation on the aponeurosis of the little finger proved to become so uncertain that we have abandoned such surgical methods altogether and, if the patient complains of pain, rather carry out arthrodesis of the distal interphalangeal joint in functional position.

Internal splinting of the interphalangeal joint, both distal and proximal, with Kirschner wires is dangerous. We have seen swelling and rigidity of the joint after intraarticular introduction of such bodies. In children, in whom one always has some difficulties in providing and maintaining immobilization of a finger, we frequently take a chance at interal fixation but only of the distal joint and with a fine needle introduced along the volar surface of the articular capsule, avoiding to enter the joint space at all.

SUMMARY

Observations in 53 patients with a mean check-up period of 38 months have shown that conservative treatment has the best chance of success both in open and closed lesions, provided it has been started immediately after the accident.

However, it also proved effective in cases in which it had been initiated later, even 30 days after injury. Indications for surgical treatment are relative and must carefully be determined. Preferable are reconstructive operations in which no additional tendon material is introduced into the narrow intertissue spaces on the dorsal aspect of the distal interphalangeal joint. Good results have been achieved with reinsertion of the middle portion of the scar combined with suture of the lateral fibers of the aponeurosis including part of the Landsmeer ligaments. The operation of choice for the little finger in the presence of complaints by the patient is arthrodesis of the distal inerphalangeal joint in functional position.

RÉSUMÉ

Le lésion de l'aponeurose des doigst au niveau de l'articulation interphalangéale distale

I. Matev, Y. Stoycheva

Les contrôles de 53 des malades à la période moyenne de trois ans et deux mois ont montré qu'il n'y a que le traitement conservatif en tant que méthode de succès dans le traumatisme de l'aponeurose dorsale des doigts au niveau de l'articulation inter phalangique distale soit sous forme de lésion fermé de même qu'ouverte, tout en supposant que le traitement a eu lieu immédiatement après le traumatisme. Les auteurs ont observé de bons résultats même après une certaine période de délais, une même comptant 30 jours après le traumatisme. Les indications de l'intervention chirurgicale sont relatives et elles doivent être jugées très sévérement. Les interventions les plus éfficaces sont celles qui n'introduisent aucun matériel plastique dans les espaces étroits interstissueux de la partie dorsale de l'articulation interphalangique distale. Les auteurs ont obtenu de bonnes résultats à l'aide de la reinsertion de la partie médiale de tendon suivi de sutture des parties laterales des tendons. Si la lésion attaque le petit doigt et le malade se plaint de douleur, l'arthrodèse de l'articulation interphalangique distale dans la position de fonction présente la méthode de choix.

ZUSAMMENFASSUNG

Läsion der Aponeurose der Finger auf der Ebene des distalen Zwischengliedgelenkes

I. Matev, Y. Stoycheva

Beobachtungen an 53 Kranken mit durchschnittlicher Kontrolluntersuchungszeit von drei Jahren und zwei Monaten haben gezeigt, dass bei der Läsion der dorsalen Aponeurose der Finger auf der Ebene des distalen Zwischengliedgelenkes ein Erfolg bloss von der konservativen Behandlung zu erwarten ist, un zwar sowohl bei offenen als auch geschlossenen Läsionen, vorausgesetzt, dass die Behandlung unmittelbar nach der Verletzung begonnen worden ist. Erfolgreich war die Behandlung jedoch auch in Fällen, wo sie später begonnen wurde, sogar auch bis 30 Tage nach der Verletzung. Die Indikationen für den chirurgischen Eingriff sind relativ und müssen sehr vorsichtig erwogen werden. Von bestem Vorteil sind Operationen, bei welchen in die engen Zwischengewebsräume auf der dorsalen Seite des distalen Zwischengelenkes kein weiteres Sehnenmaterial eingeführt wird. Gute Ergebnisse erreichten wir mit Reinsertion der Narbe gemeinsam mit der Naht der lateralen Sehnenbündel. Bei ähnlicher Läsion am kleinen Finger und in Fällen, wo der Kranke über Beschwerden klagt, ist Arthrodese des distalen Zwischengliedgelenkes in Funktionsstellung die Behandlung der Wahl.

RESUMEN

Lesión de aponeurosis de los dedos de la mano en el nivel de la articulación distalis interfalangeal

I. Matev, Y. Stoycheva

Las observaciones en 53 enfermos con medio tiempo de examen de tres años y dos meses indicaron, que solamente el tratamiento conservador de la lesión de aponeurosis dorsal de los dedos de la mano en el nivel de la articulación distalis interfalangeal tiene probabilidades de éxito, y es decir, el de las lesiones tanto abiertas como cerradas, suponiendo que fue comenzado inmediatamente después de la lesión. Pero fue lleno de éxito también en los casos, cuando fue comenzado más tarde, incluso 30 días después de la lesión. Las indicaciones para la intervención quirúrgica son relativas y tienen que considerarse con gran precaución. Las más ventajosas son las operaciones, en las que no se lleva ningún otro material plástico en los espacios estrechos entre los tejidos en la parte dorsal de la articulación distalis interfalangeal. Buenos resultados obtuvimos con la reinsertion de la media parte del ligamento, realizada junto con y la costura de las gavillas laterales de aponeurosis. En la lesión analoga en el dedo auricular y en caso de que el enfermo se queje del dolor, es la artrodesis de la articulación distalis interfalangeal en la posición de función el tratamiento de la elección.

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EXPERIENCES WITH THE SURGICAL TREATMENT OF ELEPHANTIASIS

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The problems concerning aetiology and pathogenesis of elephantiasis cannot yet be considered as solved. The radical treatment of this disease has only been carried out recently and it is still subject to improvement.

The most important factor in the development of the cutaneous and subcutaneous oedema which constitutes an early sign of elephantiasis are functional and morphological changes of the lymphatic system in the affected organs. However, these changes may arise from different causes. In some cases, they have the character of primary changes, in others they are secondary. In the study of pathogenesis of lymphoedema, therefore, it is necessary not only to proceed from the best demonstrated changes in the lymphatic system but also take into account disorders of metabolism, hormone activity and immunological reactions.

Observations have shown that irrespective of the difference in the character of the primary aetiological and pathological factors, in the later stages of elephantiasis both the clinical picture and the morphological basis of the disease are quite similar in every case, and thus require the same method of treatment.

Attention should be given to the fact that, apart from lymphostasis, in the developed stage of the disease increased formation of collagen accompanied by disorganization of connective tissue is of prime importance and is followed by hyalinization and sclerosis. These changes are not always to be considered as in direct connexion with the disorder of the lymphatic criculation: they themselves (especially in the early forms of elephantiasis) may well produce secondary disorders of the lymphatic outflow, and the ensuing pathological processes.

Most elephantiasis classifications are based on that proposed by Allen (1941) which distinguishes between two forms of this disease — inflamatory and non-inflammatory. The first is secondary in most cases and appears as consequence of acute or chronic processes.

Among the primary non-inflammatory forms the most important is a congenital defect of lymphatic vessels, usually joined by changes typical for the inflammatory forms.

Different forms of lymphoedema are mos frequently caused by erysipelas which is the aetiological factor in many cases. In case histories of our patients erysipelas was registered in 75% of cases.

In order to study aetiopathogenesis and to further improve the treatment of lymphoedema at this clinic, pathohistological, histochemical and biochemical

Fig. 1. Incision through skin and subcutaneous connective tissue on the medial side of the involved limb. (This is connected with a marginal incision on the dorsum of the foot)

Fig. 2. Flap containing tissues showing fibrous changes, taken down to healthy tissue

examinations were carried out of the tissues afflicted with lymphoedema. Glucoproteins were ascertained in tissue extracts and in serum. Also electrophoresis of protein fractions was carried out in serum both before and after operation (Troshkov, Levanyuk, Melnik).

The results of these examinations showed that the primary process in this disease (especially in secondary inflammatory forms) was due to accumulation of globulins in the layer of subcutaneous connective tissue which penetrated herein from blood capillaries; collagen fibres were imbibed with proteins from the plasma and thickened. The mutual reaction between these proteins and polysaccharides of the basic substance changed the physical and chemical structure of proteins — it caused precipitation, fixation in interstitium with consequent arrangement into fibrous structures which had a pathological character. Simultaneously it was possible to notice disorganization of the existing, or newly-formed, connective tissue in the form of mucoid swelling and fibrinoid degeneration followed by hyalinization and sclerosis. The involved tissue was full of perivascular and focal round-cell infiltration with a remarkable number of plasmatic cells. Development of sclerosis called forth pressure and

Fig. 3. Preparation of the flap by means of Kolokolcev's dermatome

deformation of both the normal and primarily changed lymphatic capillaries and vessels which went hand in hand with increase of lymphostasis and further accumulation of plasma proteins in the tissues.

These factors proved to be almost identical with those described in collagen disease of infectious-allergic origin.

This conformity was proved also in changes of tissue and blood serum biochemistry.

Examination revealed that in elephantiasis there was almost twice as much soluble protein of collagen type in skin and the content of mucopolysaccharides was significantly increased. In blood serum concentration of glucoproteins was increased. Skin afflicted with lymphoedema showed greater tendency to swelling. Protease activity was diminished.

The proteins of blood serum showed a decrease of albumines, of beta globulin and a simultaneous increase of alfa 1, alfa 2 and gama globulins. The

results of our experiments allowed to consider elephantiasis (in advanced stages) as a non-systemic collagen disease the pathogenesis of which, apparently, is influenced by immunopathological (and at the same time autoimmunological) factors.

Fig. 4. Removal of the pathologically changed tissues which remained after preparation of the skin flap with the involved subcutaneous connective tissue

Fig. 5. Thinned-out skin flap (after preparation with a dermatome). It is applied to healthy fascia

The aim of radical operation with the use of autotransplants, during which all pathologically changed tissue is removed, is to create conditions for decreasing autosensitization of the organism by tissue allergens and, at the same time, to bring the lymph circulation into normal condition.

In the treatment of early stages of elephantiasis (lymphoedema) and in advanced forms before operation we recommend desensitizing medicaments (dimentrol, pipolfen, chymotrypsin) and corticosteroids (prednison, hydrocortisone). The results were favourable.

The present opinion is that the most effective treatment is surgery which removes all pathologically changed tissues of the involved organs. The ensuing defect is covered by skin plasty. This method was worked out by many surgeons abroad and in this country (Pratt, Servelle, Gergenreder, Chromley and Overton, Blocker, Karavanov and Troshkov, Arnulf, Farina, Pierer, Shumilkina, Retvinskij, Medvedev, Sheynis, Gorshkov and others).

Fig. 6. The operated limb with finished suture

In the years 1960—1968 207 patients with elephantiasis were treated and operated on at this Clinic (Department of plastic surgery). Out of them 10 patients had lymphoedema of the upper extremities, 183 patients lymphoedema of the lower limbs, 14 of the genitals. They formed the following age groups: up to 5 years — 6 patients, from 6 to 15—16 patients, from 16 to 25 years — 64 patients, from 26 to 35 years — 55 patients, from 36 to 45 years — 49 patients, from 46 to 55 years — 14 patients, older than 55 years — 3 patients.

Primary elephantiasis was found in 94 patients (45% of cases), secondary in 113 patients (55% of cases). Some of these observations were analyzed in Troshkov's Doctor Dissertation (1963) who also described the present method of surgical treatment.

Before operation patients with elephantiasis went through a general check-up. First of all, in all patients contrasting phlebography was carried out of the involved extremity (to eliminate non-patency of deep veins due to previous thrombophlebitis or other factors).

Eventual inflammatory processes, scarring or other skin diseases were treated in co-operation with the dermatologists.

All operations of lymphoedema were carried out in intratracheal narcosis. Ether, ftorotan, nitrous oxyde and their combinations were used in anaesthesia.

During surgery, often accompanied by profuse haemorrhage, blood transfusions were given in greater quantity, plasma and substitute solutions were administred.

In operations on the limbs a tourniquet was applied first. Operation proceeded as follows:

An incision through the entire thickness of pathologically changed skin and subcutaneous tissue was carried out along the posterior or medial side of the involved limb and this was joined with a marginal incision on the dorsum of the foot (Fig. 1). A great flap, consisting of skin and subcutaneous tissue showing fibrous changes was taken down in the direction of the base of the limb along the whole part of the limb afflicted with lympheodema (Fig. 2).

The flap was further prepared: the tissue showing fibrous changes was removed and the skin graft was thinned down to 0.6—0.8 mm. If the superficial skin layers were in good shape this preparation was carried out without cutting off the flap from its stem, which brought better cosmetic results. If there were pathological changes even in the skin (verrucous growths, fissures, dermatitides, lymphangiomas etc.), the flap was cut off, stripped of the involved skin, and the remaining part was made thinner and a graft was formed thus for autoplasty.

To prepare the graft took a long time. It is possible to do it faster by means of a special apparatus — "electrolipotom" — constructed by Troshkov, and with the u se of Kolokolcev's dermatome according to Vichriev's method (Fig. 3).

The rests of the subcutaneous tissue showing fibrous changes, which remained after lifting the flap, were removed with a scalpel, or with a dermatome knife (Fig. 4). If there were no changes in the deep fascia it was left; on the other hand, in case of visible changes fascia was removed as well.

After removing the tourniquet and stopping haemorrhage the thinned and perforated skin graft was applied to the fascia (or muscules). Suture was carried out partly by means of continuous, partly by means of knotted catgut stitches so that the graft equally covered the entire surface of the wound under light pressure (Fig. 5, 6).

In case of lack of healthy skin, taken from the involved limb, free skin grafts were used, taken with electrodermatome from other parts of the patient's body.

After bandaging the limb was immobilized in plaster cast for 3 weeks.

The first dressing was carried out 2—3 days after operation. The skin graft was minutely controlled to detect haematomas under the transplant which could hinder its nutrition. Ascertained haematomas were drained by small incisions.

Small necrotic areas often appeared on the graft in the post-operation course, they were removed and additional transplantation was performed. Con-

served remains of skin from the initial operation were used, as well as fresh transplants.

Some patients (about 10% of all operated on) developed circumscribed hypertrophic scars and keloids. It was necessary to remove these by excision and continue in repeated skin plasty.

Recently, after we started to apply, after operation, damp bandages with 30% solution of dimethylsulfoxyde (DMSO) on the skin grafts the number of above mentioned complications diminished considerably. Our observations point to the considerable ability of this preparation to prevent necrosis and formation of hypertrophic scars. The antiinflammatory effect of DMSO and its ability to preserve the vitality of different tissues and organs in long-term conservation was described in the literature during the past years (Ashwood-Smith 1961, Rosenbaum and Jacob 1964, Berggren and Lehr 1965, Leake 1966, Turkevitch 1966, Kassirskij and Kiselev 1966, Rachmanov et al. 1967, Banshtchikov et al. 1967 etc.).

As demonstrated by our laboratory experiments DMSO has a significant antiproteolytic activity which is the base of its antiinflammatory and conservation effect.

There were no lethal complications after surgical treatment with the described method.

The patients were usually satisfied with long-term results of treatment as evident from their letters from all over the USSR.

It is, however, necessary to continue the research of the pathogenesis of elephantiasis and to search for new improvements of the therapeutical methods, especially for the early stages of beginning lymphostasis (Kamayev, Troshkov 1964, Kamayev et al. 1965, Kamayev 1965, 1968).

SUMMARY

207 patients were operated on for elephantiasis. Out of these 10 patients for lymphoedema of upper extremities, 183 for lymphoedema of lower limbs, 14 for lymphoedema of the genitals. The prevailing age was between 26 and 45 years. The primary form of elephantiasis was observed in 94 patients (45% of cases), the secondary form in 113 patients (55% of cases).

The method of surgical treatment consisted of radical removal of all tissues showing fibrous changes, followed by skin autotransplantation. Operations were carried out in endotracheal narcosis and after application of tourniquet to the limb. In postoperation course hypertrophic scars and keloids appeared in 10% of patients and demanded repeated additional transplantations.

A favourable effect (on profylaxis of local necroses and prevention of hypertrophic scars) was observed after application of damp bandages with 30% solution of DMSO, which were applied on the skin graft immediately after operation.

There were no lethal complications after surgical treatment. Long-term results were favourable.

RÉSUMÉ

Les expériences avec le traitement chirurgical de la pachydermie

M. F. Kamayev

207 des malades ont été opérés faute de la pachydermie. De ce nombre 10 malades souffraient du lyphoedeme des membres supérieurs, 183 des membres inférieurs, 14 des malades du lyphoedeme des organs génitals.

L'âge principal des malades était celui de 26—45 ans. La forme primaire de la pachydermie a été observée chez 94 des malades (45% en somme), celle secondaire chez 113 des malades (55% en somme). Le mode d'intervention était celui d'exstirpation radicale des tissus aux changements fibrineux suivit d'autotransplantation. Les interventions ont été performées dans la narcose endotrachéale et en aide de turniquet. Dans les séquelles post-opératoires on voyait des cicatrices hypertrophiques et même les chéloides ce que supposait les transplantations corectives.

Les expériences de l'auteur favorisent l'effect des compresses humides avec la solution DMSO en concentration de 30% employées immédiatement l'operation finie sur l'autotransplant, en ce que concerne la prophylaxie des nécroses locales et la formation des cicatrices hypertrophiques.

Les complications mortelles en suite de l'intervention n'ont pas été observées. Les résultats sont favorables.

ZUSAMMENFASSUNG

Erfahrungen mit der chirurgischen Behandlung der Elephantiasis

M. F. Kamajev

Wegen Elephantiasis wurden 207 Kranke operiert. Davon wegen eines Lymphödems der oberen Gliedmasse 10 Kranke, wegen eines Lymphödems der unteren Gliedmassen 183 Kranke, und mit den Geschlechtsorganen 14 Kranke.

Die überwiegende Altersgruppe der Kranken war 26 bis 45 Jahre. Die primäre Form der Elephantiasis ist bei 94 Kranken (45 % der Fälle) beobachtet worden, die sekundäre Form erschien bei 113 Kranken (55 % der Fälle). Die Methodik der Operationseingriffe beruhte auf radikaler Entfernung der gesamten fibrös veränderten Gewebe mit nachfolgender Autotransplantation der Haut. Die Operationen erfolgten unter endotrachealer Narkose und bei Blutlosigkeit. In der postoperativen Zeitperiode kam es bei 10 % der Kranken zur Bildung von hypertrophischen Narben und Keloiden, die den Einsatz von ergänzenden Transplationen erfordern.

Die Beobachtungen des Autors bezeugen den günstigen Effekt (im Sinne der Prophylaxe der lokalen Nekrosen und der Bildung von hypertrophischen Narben) der feuchten Umschläge mit 30%-er DMSO-Lösung, welche unmittelbar nach der Operation auf das Hauttransplantat angelegt wurden.

Tödliche Komplikationen sind nach den chirurgischen Eingriffen nicht beobachtet worden. Die späten Ergebnisse sind günstig.

RESUMEN

Experiencias con el tratamiento quirúrgico de la elefantíasis

M. F. Camayev

Por causa de elefantíasis se operaron 207 enfermos. Por linfedema de la extremidad superior se operaron 10 pacientes de este número, de las extremidades inferiores 183 pacientes, de los órganos sexuales 14 pacientes.

La edad prevaleciente de los enfermos era 26 hasta 45 años. La forma primaria de elefantíasis fue contemplada en 94 pacientes (45% de los casos), la forma secundaria en 113 enfermos (55% de los casos). El método de las intervenciones operatorias estribó en la eliminación radical de todos tejidos fibrosamente transformados y en la autotransplantación de la piel siguiente. Las operaciones se practicaban en la narcosis endotraqueal y sin circulación de la sangre. En el período postoperatorio en 10% de los enfermos se formaban los costurones hipertróficos y esto supone una transplantación nueva complementaria.

La observación del autor habla sobre un efecto favorable (en el sentido de la profilaxis de las necrosis locales y de la formación de los costurones hipertróficos) de la aplicación de las compresas húmedas con la solución DMSO de 30%, las que se aplician inmediatamente después de la operación al transplante de la piel.

No tuvimos complicaciones mortales después de la intervención quirúrgica. Los resultados tardíos son favorables.

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