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CLINICAL PICTURE OF TWO NEWBORNS WITH TRISOMY D

M. JAWORSKA, T. MAJLERT, A. STOLARSKA

Trisomy D is still considered a rare condition though its true incidence may be higher than has been calculated from the number of cases reported so far in the literature (5). Minor anomalies of significant diagnostic value may easily escape detection in the neonatal period as many clinicians are not yet acquainted with this syndrome and the early death of most affected infants prevents long-term controlled investigations (3).

Within a period of two months, two newborn infants were refered for surgery because of serious congenital malformations. Close inspection of patients revealed a constellation of abnormalities which are specific enough to suggest diagnosis of Patau's syndrome.

Patient 1. A. K., a newborn male (Fig. 1, 2, 3) was transfered from maternity ward on the second day of his life because of anal atresia with symptoms of intestinal obstruction. He was a product of the normal full-term pregnancy after five years since the birth of previous child. The father and mother, 31 and 40 years old respectively, as well as their two elder daughters

Fig. 1. Patient A. K. representing the classical phenotype of Patau's syndrome. Note multiple anomalies of hands and feet. Supernumerary finger is hardly visible on the ulnar side of the left hand.

Fig. 2. Patient A. K. Microcephaly, microphtalmos (left eye), absence of nasal septum, premaxilla and prolabium, median cleft, short neck. — Fig. 3. Patient A. K. Defect of the scalp, trigonocephaly.

were healthy and well developed. On the day of admission, the child weighed 2620 gm and measured 50 cm. He was immediately operated out (coecostomy) and died five days later.

Patient 2. K. J. (Fig. 4, 5, 6), a female newborn delivered at term was admitted on the second day after birth with suspicion of encephalocele. She

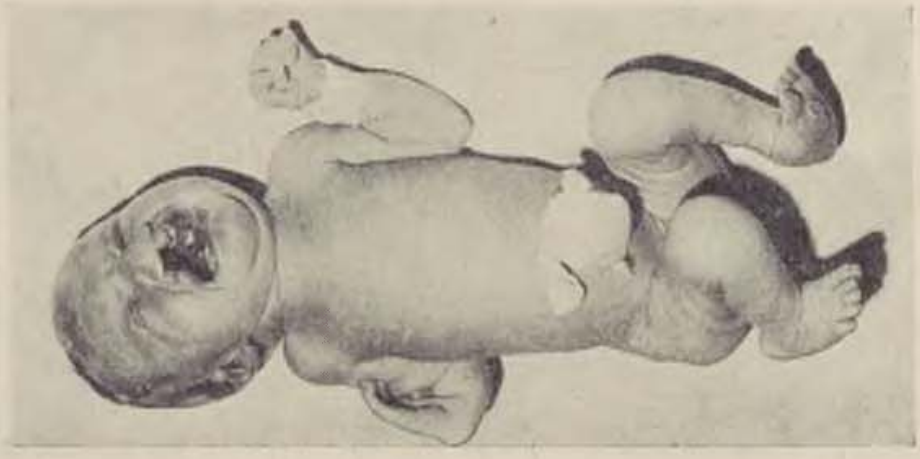

Fig. 4. Patient K. J. Note low set malformed ear and multiple anomalies of hands and feet.

weighed 2179 gm and was 46 cm tall. The parents, both 34 years old, were healthy and not affected with congenital disorders. At the time of conception of this child they had been married over 8 years and during that period the mother had never been pregnant. The father has been working ten years as a welder in environmental temperature of about 50 ^{0}C. Diagnosis of encephalocele was not confirmed. The child died after 8 days of hospitalization.

Table 1. Developmental disorders observed in Patau's syndrome and discovered in present cases

	Patient A. K.	Patient K. J.
Low birth weight	+	+
Microcephaly	+	+
Trigonocephaly	+	+
Defect of scalp and skull	+	+
Short neck	+	+
Hypotelorism	+	—
Microphthalmos	+	+
Coloboma of iris	—	+
Aplasia or hypoplasia of nasal bones	+	+
Median or lateral clefts	+	+
Low set malformed ears	+	+
Haemangioma	+	—
Congenital heart disease	+	+
Hypoplastic external male genitalia	+	
Flexion deformities of fingers	+	+
Polydactyly and poikilodactyly	+	+
Retroflexible thumbs	+	+
Hyperconvex fingernails	+	+
Single palmar crease	+	+
Plano-valgus feet	—	+
Karyotype	47, XY, D+	47, XX, D+

Both infants were affected with multiple congenital malformations (listed on the Table) which were found to be similar to those described in other publications (1, 4). Some of them required specialistic examinations: ophthalmologic, cardiologic and rentgenograms of the face, skull and limbs.

Cytogenetic evaluation of metaphase preparations from leukocytes revealed a modal number of 47 chromosomes with one additional autosome in the group D (Fig. 7, 8).

Apart of anomalies regularly described in trisomy D, our patients had some others not previously reported. The boy was affected with anal atresia, the girl with agenesia of the radial bone and hypoplasia of the ulnar bone of the right forearm with valgus deformation of the hand. She was also found to have hypoplastic anal sphincter which very likely was due to some clinically undetectable congenital lesion of spinal cord in lumbosacral region.

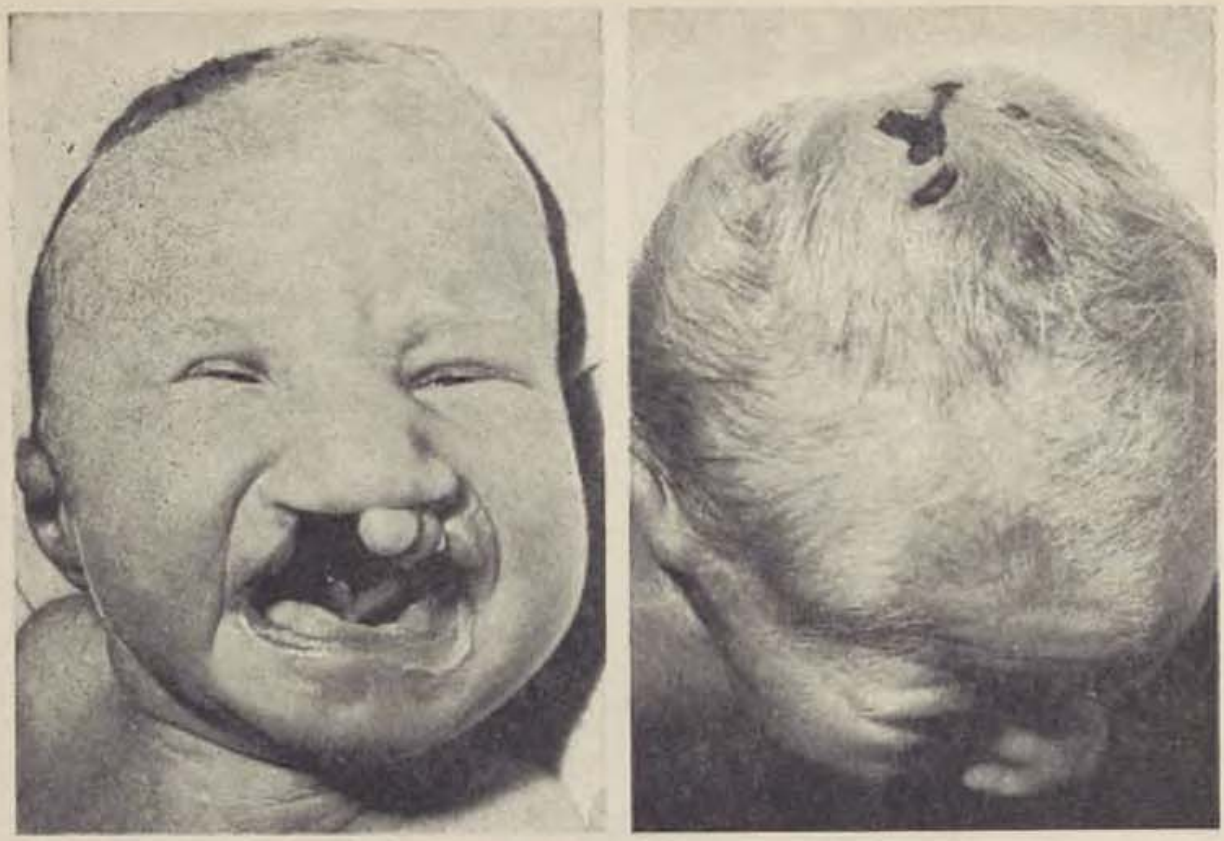

Fig. 5. Patient K. J. Microcephalia, microphthalmos, hypoplasia of nasal bones, bilateral cleft of primary and secondary palate, short neck. — Fig. 6. Patient K. J. Defect of the scalp, trigonocephaly.

Post mortem examination conformed clinical findings and disclosed several other malformations:

Patient 1 — Ventricular septal defect. Superficially normal brain was not examined in detail because of advanced process of maceration.

Patient 2 — Ventricular and atrial septal defects, wide patency of ductus arteriosus. Deformities of the frontal and occipital bones of the skull. Internal hydrocephalus of minor degree. Spina bifida occulta. Bicornuate uterus and persistent urachus.

DISCUSSION

We add our two cases to the collection of trisomic infants as the clinical analysis of constant features as well as the degree of variability in the phenotype of Patau's syndrome require still further studies.

Although trisomy D and E are distinct clinical entities, several anomalies are common for both syndromes and may be misleading in their proper interpretation. According to Kempen (2), the following findings are consistent with phenotypic characteristics of trisomy D: microcephaly, trigonocephaly, defects of the scalp and skull, ocular anomalies, particularly hipotelorism and colobomas, haemangioma, polydactylia.

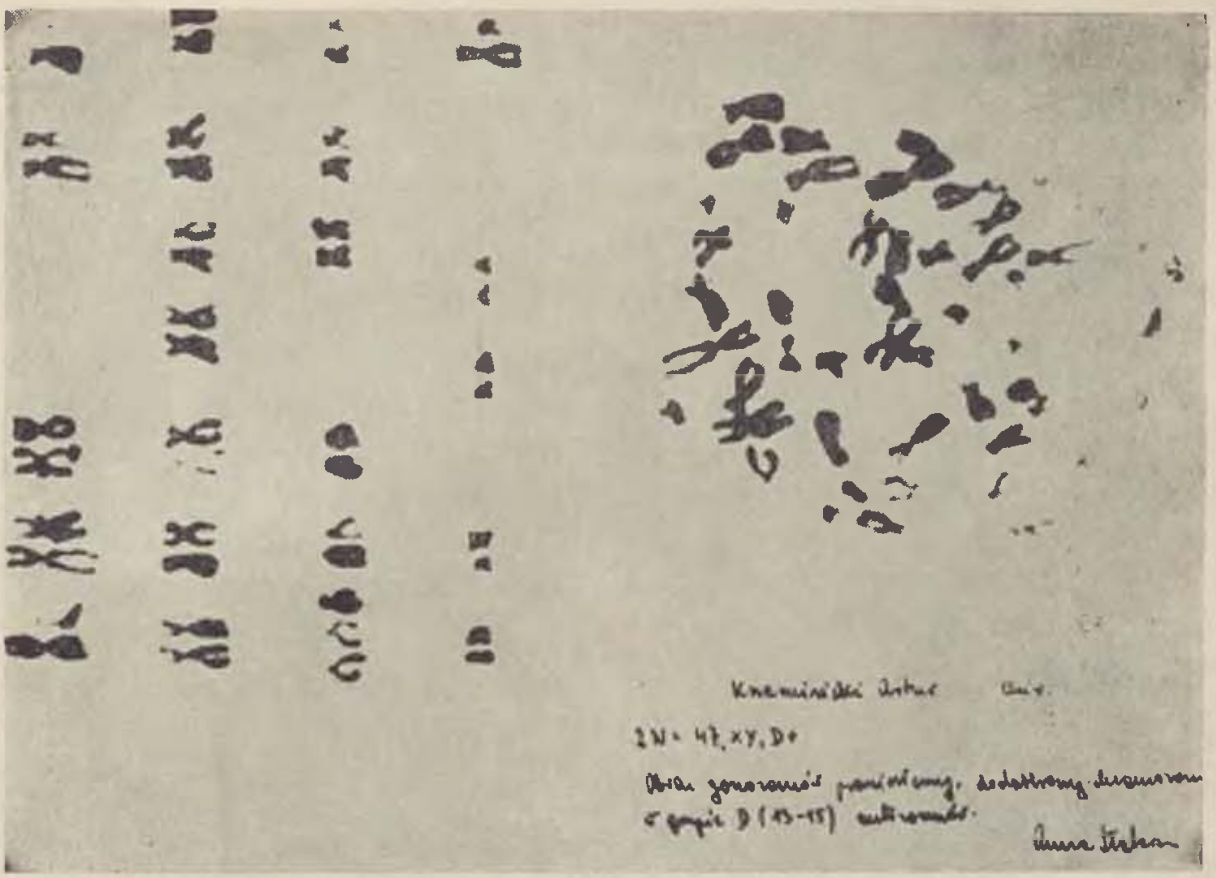

Fig. 7. Patient A. K. Metaphase plate and karyotype.

Fig. 8. Patient K. J. Metaphase plate and karyotype.

Early diagnosis of Patau's syndrome may be of practical value. The patients who survive the immediate postnatal period are often refered to a plastic surgeon for repair of facial clefts and other congenital conditions. It should be rememebered that these trisomic infants have no potential for development or survival and conservative approach is indicated unless surgery is to be performed as an emergency.

SUMMARY

Trisomy D (Patau's syndrome) was diagnosed in two newborn infants with multiple congenital anomalies. Qualification to cytologic study was based on the clinical analysis of their phenotype.

RÉSUMÉ

L'image clinique chez deux nouveau-nés souffrant de trisomie D

M. Jaworska, T. Majlert, A. Stolarska

La trisomie D (le syndrôme de Patau) a été trouvée chez deux nouveau-nés jointe à d'autres multiples malformations congénitales. Des recherches cytologiques ont été indiquées à la base d'analyse clinique de leur phénotype.

ZUSAMMENFASSUNG

Das klinische Bild bei zwei Neugeborenen mit Trisomie D

M. Jaworska, T. Majlert, A. Stolarska

Trisomie D (Patausches Syndrom) wurde bei zwei Neugeborenen mit vielfachen angeborenen Malformationen diagnostiziert. Die zytologische Untersuchung wurde auf Grund der klinischen Analyse ihres Phenotyps angezeigt.

RESUMEN

Cuadro clínico en dos recién nacidos con trisomia D

M. Jaworska, T. Majlert, A. Stolarska

Trisomia D (sindroma de Patau) fue diagnosticada en dos recién nacidos con muchas deformaciones congénitas. El examen citológico fue indicado sobre la base del análisis clínico de su fenotipo.

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CHONDROPLASTY OF PIRIFORM-APERTURE MARGIN AND CORRECTION OF ALA-NASI BASE AND NOSTRIL THRESHOLD IN RESIDUAL DEFORMATION AFTER UNILATERAL CLEFT-LIP-AND-PALATE MALFORMATION

I. A. KOZIN

Among modern surgeons, opinion is unanimous that repair of secondary deformations of the upper lip and nose resulting from congenital cleft lip remains a difficult and still topical problem.

In recent years, original methods have been elaborated for the reconstruction of upper-lip and nose deformities resulting from unilateral cleft-lip-and-palate malformation, but efficacy of these operations greatly depends on how much of soft tissue is available in the region of the lip and nose, and also on the degree of hypoplasia and deformation of the maxilla on the side of the cleft.

Graber (1948), Berdiuk (1962), Davydov (1967) and others have shown that, in unilateral cleft, the maxilla is underdeveloped in antero-posterior, vertical and horizontal directions.

Timely orthopaedic and orthodontic treatment can prevent development of severe deformations of the jaw and teeth. However, the congenital bone defect in the region of the piriform-aperture margin and hypoplasia of soft tissue in the upper third of the lip and nasal floor give rise to disfigurement of these parts on the side of the cleft. Reconstructive operations in these patients can never be successful without supplementing for the deficiency in the hypoplastic maxilla.

The aim of this report is to give a detailed description of the surgical procedure in correcting the margin of the piriform aperture, the base of the ala nasi and the nasal floor underdeveloped as a result of unilateral cleft lip, because this part of the operation is considered indispensible for the success of cheilorhinoplasty.

In order to achieve symmetry of the ala-nasi bases and the nasal floor, Soviet and other authors recommend various plastic material for supplementing for the lack of tissues in the region of the piriform aperture.

So Lexer (1931), Padgett et Stephenson (1948) and Trauer et Wirth (1958) advised to insert a piece of homologous cartilage under the flattened ala nasi, while Ragnell (1952), Fomon (1956), Longacre et al. (1966) and others used advised to insert a piece of homologous cartilage under the flattened ala nasi, a bone chip or part of a rip for the purpose. Farrior (1962) transplanted a piece of nasal-septum cartilage under the flattened ala.

Alla A. Limberg (1958) and A. A. Limberg (1968) employed minced cartilage which they injected under the ala nasi using a revolving syringe.

Sorokin (1962) and Agroskina (1966) used plastmass (Kapron or Ftoroplast) as plastic material.

Berdiuk (1962) transplanted the inferior nasal concha under the ala nasi, and Kosachev (1967), for the same purpose, used a flap of scar tissue from the upper lip.

Each of these methods of piriform-aperture-margin plasty has its advantages and shortcomings.

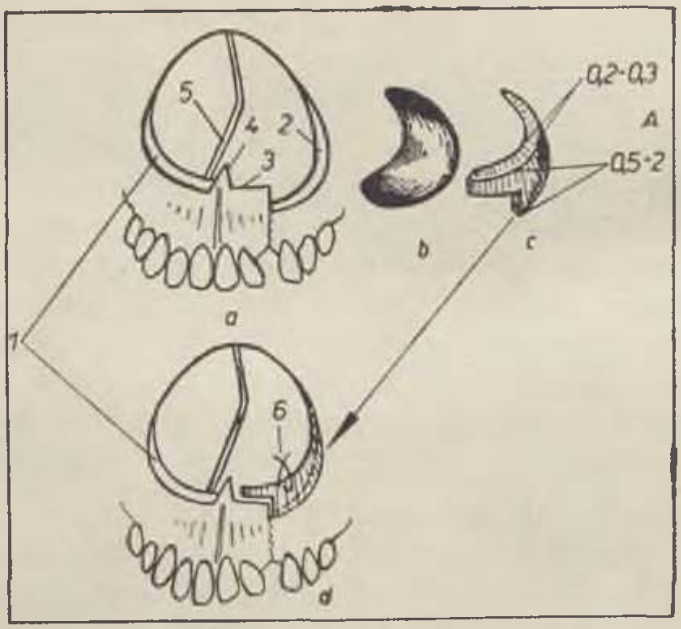

Fig. 1. Diagram of chondroplasty in hypoplastic maxillar margin of piriform aperture resulting from unilateral cleft-lip-and-palate malformation. — a = Diagram of shape of piriform-aperture margin in cleft lip and palate on left side, b = Cartilage graft the shape of a crescent does not correspond to shape of piriform aperture, c = Cartilage graft the shape of a bent triangle with notch at its base and its apex facing backwards does correspond to hypoplastic margin of piriform aperture, d = Diagram of maxilla and piriform aperture after chondroplasty of aperture margin and alveolar process. — 1. Maxillar margin of piriform aperture on healthy side. — 2. Hypoplastic margin of piriform aperture on side of cleft. — 3. Alveolar process showing step-like deformation at anterior margin of piriform aperture. — 4. Anterior nasal spine. — 5. Cartilaginous part of nasal septum. — 6. Catgut suture fixing graft to lining of floor of nasal vestibule

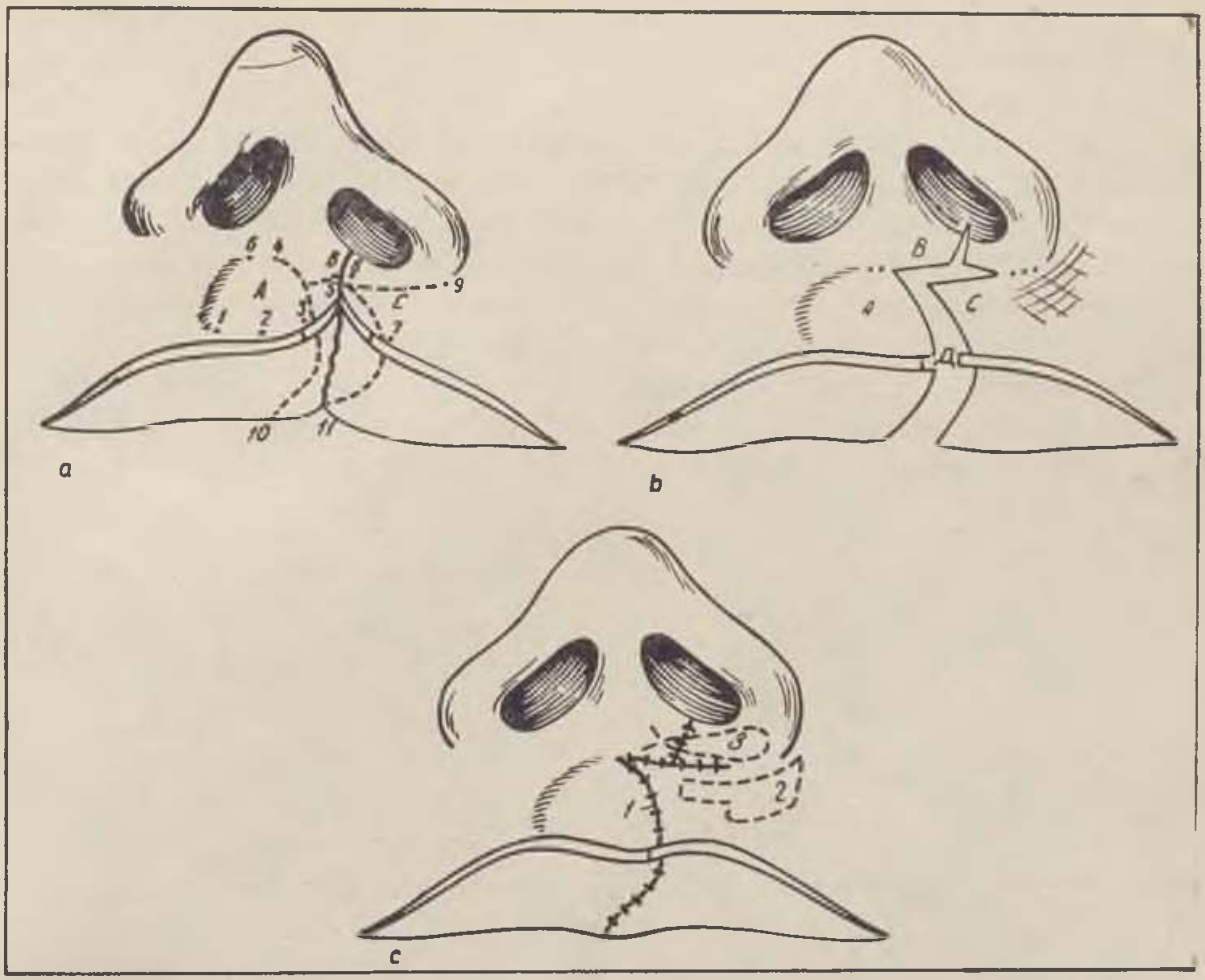

Fig. 2. Diagram of surgical correction of residual deformity after unilateral cleft lip according to author's method. — a = Marked lines of incisions in upper lip: 1 2 3 7 (1—2 = 2—3) — points of orientation on borderline between skin and lip vermilion, 6 4 5 8 9 — points of orientation at bases of columella and ala nasi, 4———3 = = 8———7 = 6———1 — lines of incisions, 3——10 7——11 — lines of modified Miro flaps in vermilion, b = Flaps in upper lip prior to suture. Flap A including philtrum and part of Cupid's bow is swung downwards into normal position. Flap C is marked to fill skin defect under base of columella, Flap B is swung upwards to form part of floor of nasal vestibule. Minute flap D is to form "lock" in region of skin-vermilion border, c = 1 — survey of postoperative scars, 2 — outline of inlay of homologous cartilage under base of deformed ala nasi, 3 — submerged Kapron stitch

So, for instance, costal bone is difficult to model into proper shape during operation. Minced cartilage or Ftoroplast is introduced after the wound has been closed and a circular Kapron suture has been laid through the periosteum of the anterior nasal spine and the base of the ala nasi; tying of this suture approximates the ala to the hypoplastic maxilla to a varying degree. Transplantation of the inferior nasal concha makes operation very complicated and prolongs performance. Formation of a flap of scar tissue from the full thickness of the upper lip may lead to its shortening in a horizontal direction and to descent of the nostril.

In recent years, most Soviet surgeons have used an inlay of homologous cartilage shaped into a crescent (Oskolkova, 1963; Kruchinsky, 1964 and others) (Fig. 1 b).

Experience has shown that the implant of crescent shape often proves unstable and mobile, because it does not correspond to the size of the defect in and the relief of the maxilla. This is why the implant frequently undergoes lateral displacement (together with the base of the ala nasi) and cannot give sufficient support to the flattened ala. This shortcoming induced the author of this report to modify the shape of the cartilage implant so that it corresponded to the margin of the piriform aperture on the healthy side (Fig 1 a and d).

Since 1965, the modification of Millard or a Z-plasty has been used at the surgical department of the Moscow Scientific Research Institute of Cosmetology

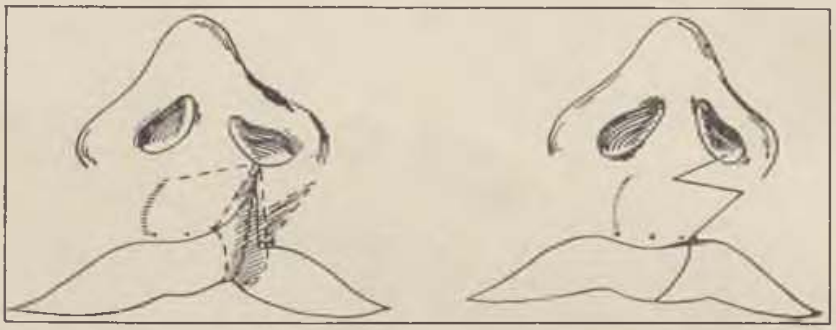

Fig. 3. Diagram of Z-plasty with opposing asymmetrical triangular flaps in upper third of upper lip

for correction of the residual deformity in the upper lip after linear cheiloplasty (Fig. 2 and 3).

A detailed description of the method of cheiloplasty (Fig. 2) was given earlier (Kozin, 1968 and 1969), and, therefore, this report will deal in more detail merely with the plastic reconstruction of the piriform-aperture margin with a cartilage implant.

After formation of the skin flaps in the upper lip by either of the methods mentioned above, the orbicularis oris is divided along the postoperative scar and its upper-outer part is dissected free of the maxilla and partly also of the mucous membrane. In order to prevent necrosis, the lining of the floor of the nasal vestibule is dissected close to the periosteum and, in the region of the septal base, close to the perichondrium of the quadrangular cartilage. Mobilization of the base of the flattened ala nasi from its attachment to the maxilla forms a tunnel into which the cartilage graft is to be inserted. Care must be taken not to perforate the mucous membrane of the nasal vestibule and to preserve most of the vessels supplying blood to the vestibular lining. If mobilization is adequate, the ala nasi can be shifted without tension to the level of the nasal floor on the healthy side. When examining the maxillar visually and by palpation, a step-like deformation can usually be ascertained at the site where the alveolar process meets the margin of the piriform aperture,

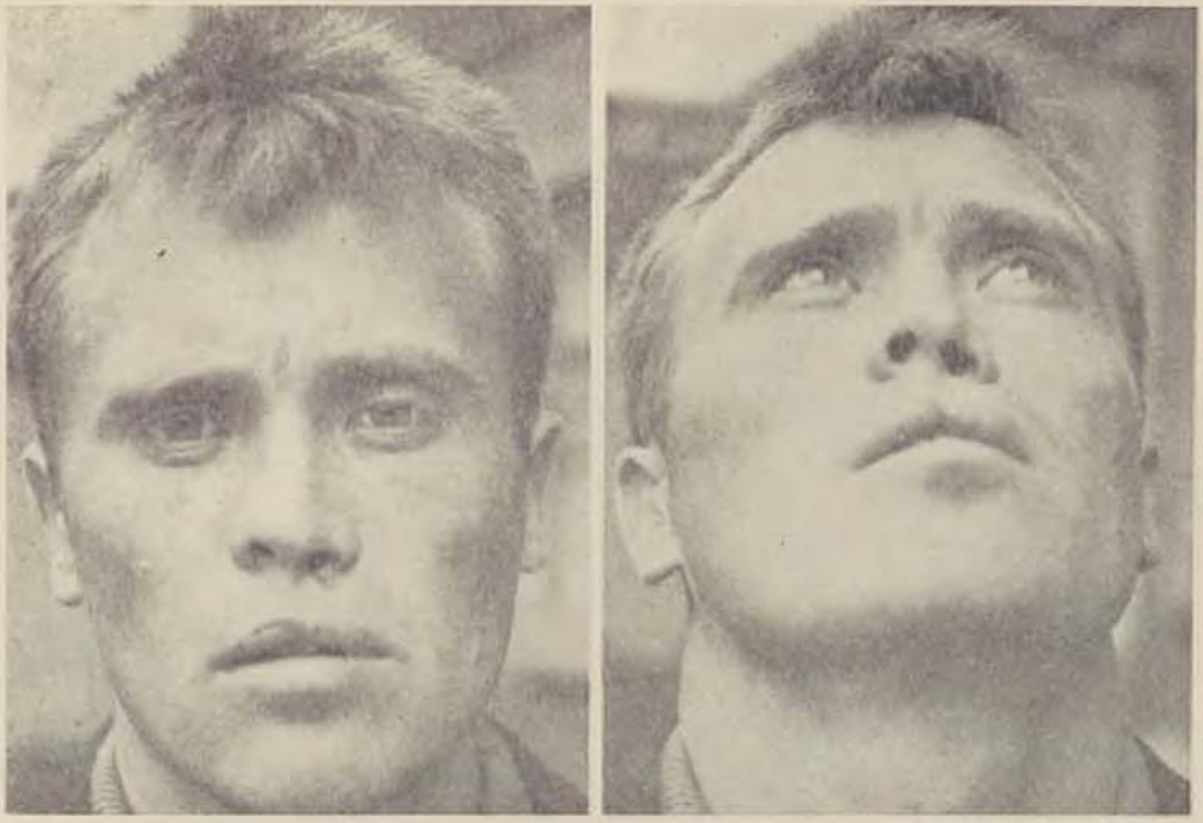

Fig. 4. a, b — Patient I. with deformation of upper lip and nose after sided cleft malformation of upper lip

which tallies with the data referred to in the literature (Kryklax, 1965) (Fig. 1 a). This is the reason why the cartilage graft must be modelled into the shape of a bent and narrow triangle with a notch at its base facing forward and its apex facing backwards (Fig. 1 c and d). The thickness of the graft should not exceed the width of the ala-nasi base, i.e., should average 0.2 to 0.3 cm. The width of the graft at the base of the triangle depends on the dimensions of the defect and may amount from 0.5 to 2.0 cm.

After adjustment, the transplant should be little mobile, not project beyond the base of the ala nasi and give the latter a good support. For better fixation of the implant, a thin catgut suture may be laid through the middle of the graft and the lining of the vestibular floor (Fig. 1 d) and tied.

The wound is closed by layers; between the base of the mobilized ala nasi and the tissues in the region of the anterior nasal spine, a Kapron stitch is submerged for achieving symmetry of the ala-nasi bases and the nasal floor. The mobilized muscle flap of the orbicularis oris is laid over the implant and fixed to the base of the septum and ala nasi, then the two halves of the muscle are joined by suture so that both sides of the Cupid's bow are exactly symmetrical. If the orbicularis oris has been properly transposed and exactly sutured, the depression in the region of the nostril threshold and the philtrum is brought up to level. The skin flaps and the wound in the lip vermilion are

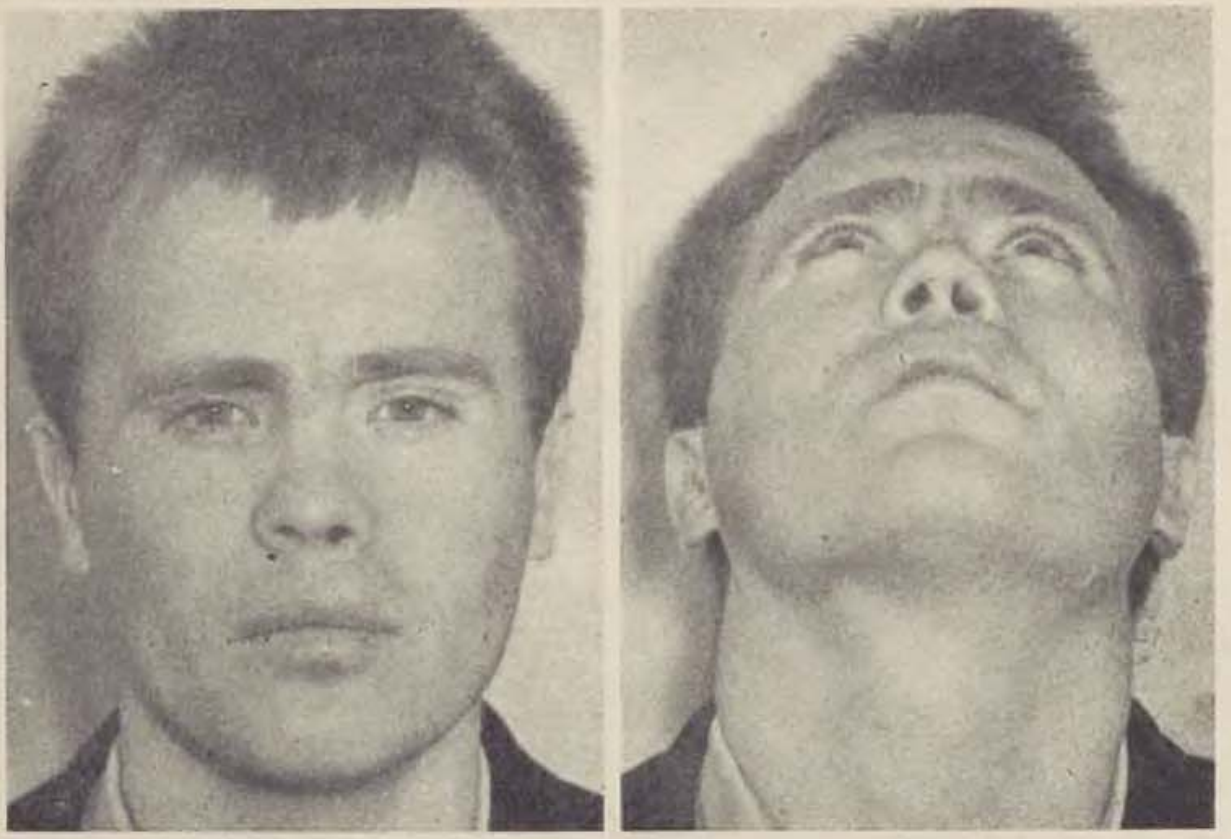

Fig. 4. c, d — 2 years after reconstruction of upper lip together with one-staged chondroplasty of piriform-aperture margin and correction of nose

sutured by interrupted horse hair stitches starting at the borderline between skin and mucous membrane.

If the base of the columella has been insufficiently mobilized, a flap of seemingly surplus lining of the vestibular floor is formed after tying the submerged Kapron suture in the region of the nasal floor. Resection of this "surplus" is considered a gross error, because it leads to considerable narrowing of the nostril. In order to evenly lay out and suture the flaps which are to form the nasal floor, the skin of the broadened half of the columellar base must be far mobilized as well as the mucous lining of the vestibular floor together with the perichondrium of the quadrangular cartilage. The mobilized mucous lining is sutured to the skin flaps with horse hair interrupted stitches, and during this operation, the skin of the columellar base is shifted upwards towards the tip of the nose until it has reached a normal level.

In order to prevent maceration of the wound in the nasal vestibule, tampons soaked in a 2% furacillin solution are changed daily. The stitches are taken out of the lower third of the lip six to seven days and of the nasal floor nine days after the operation.

The method described above permits to reconstruct almost all details of the upper lip, level the depression at the threshold of the nostril and repair the base of the ala nasi on the side of the cleft.

Provided the flattening of the ala and tip of the nose is not very conspicuous, symmetry of both halves of the nose may be achieved together with the repair of the lip in one session. If, however, flattening of these parts is considerable, it seems expedient to carry out rhinoplasty in a second session, four to six months after cheiloplasty.

At a later phase, the curvature at the base of the ala nasi may be pulled outwards by scar formation. The deformity can easily be repaired at the second stage of rhinoplasty by re-mobilization of the base and re-suturing it with a submerged Kapron stitch.

A total of 115 patients with similar deformities aged between 15 and 40 years have been operated on in the last five years. The results are as follows: 70 % good, 29 % satisfactory and 1 % poor.

In fig. 4, patient I. is shown prior to and two years after operation. The result can surely be classified as good.

SUMMARY

A modification of chondroplasty in hypoplastic maxillar margin of the piriform aperture resulting from unilateral cleft-lip-and-palate malformation, has been described.

It has been pointed out that the homologous-cartilage implant must be modelled with regard to the size of the defect in and the relief of the maxilla on the side of the cleft.

The implant should have the shape of a narrow and bent triangle with a notch at its base facing forward and downward and its apex facing backward.

The author's method permits to provide a good support to the flattened ala nasi, level out the depression in the upper third of the lip and repair the base of the ala nasi and the floor of the nasal vestibule.

RÉSUMÉ

Les curiosités de la chondroplastie de l'apertura piriformis et de la correction des ailes et de la base du nez en suite de bec-de-lièvre unilatéral inné et de la fente du palais

I. A. Kozin

L'auteur présente la déscription de la modification de la chondroplastie chez les adultes en suite de bec-de-lièvre unilatéral inné et de la fente du palais ayant en surplus une malformation de l'apertura piriformis.

L'auteur souligne la nécessité de la modellation du homotransplant cartillagineux selon le défaut de même que selon l aspect du maxillaire en question du côté du bec-de-lièvre.

Le transplant le plus souvent forme un triangulaire prolongé en courbe à la base déscendante en avant et en bas, la pointe en arrière. Cette méthode permet de réaliser

un appui assez fort pour l'aile du nez applati de même que de faire disparaitre la malformation du tiers supériur de la lèvre de même que d'amméliorer l'insertion de l'aile et la base de la nostrille.

ZUSAMMENFASSUNG

Eigentümlichkeiten der Chondroplastik der Ränder der apertura piriformis und Korrektion des Nasenflügels und -Bodens bei einseitiger angeborener Oberlippen- und Gaumenspalte

I. A. Kozin

Der Autor beschreibt eine Modifikation der Chondroplastik bei Erwachsenen bei unentwickeltem Rand der apertura piriformis nach einseitiger angeborener Oberlippen- und Gaumenspalte.

Es wird auf die Notwendigkeit hingewiesen das Homotransplantat des Knorpels nach dem Defekt und Relief der Maxilla and der Seite der Spalte zu modellieren.

In der Regel hat der Pfropfen die Form eines gebogenen, länglichen Dreiecks mit nach vorne und hinunter zielender Base und rückwärts zielender Spitze.

Diese Methode ermöglicht es, eine feste Stütze für den abgeflachten Nasenflügel zu bilden, die Einfallstelle im oberen Lippendrittel zu beseitigen und die Insertion des Flügels und die Nasenlochschwelle zu korrigieren.

RESUMEN

Particularidades de la condraplastía de los bordes de apertura piriformis y la corrección del ala y la del fondo de la nariz después de la grieta unidireccional congénita del labio superior y del paladar

I. A. Kozin

Fue descrita la modificación de la condraplastía en los adultos en el borde no desarrollado de apertura piriformis después de la grieta unindireccional congénita del labio superior y del paladar.

Se advirtió de la necesidad del modelado del homoinjerto del cartílago en conformidad con el defecto y el relieve de la maxilla en la parte de la grieta.

Por regla general la grieta tiene la forma del triángulo alargado adunco con la base dirigiendose hacia adelante y abajo y con la punta dirigiendose atrás.

Este método permite formar un apoyo firme para el ala de nariz aplastada, apartar la parte sumida en el tercio superior del labio y arreglar la inserción del ala y el umbral de la ventana de la nariz.

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DELAYED EXPOSED GRAFTING FOLLOWING RECONSTRUCTIVE PROCEDURES IN HEAD AND NECK CANCER

I. T. JACKSON

The current trend in surgical management of head and neck cancer is towards primary reconstruction of the post-excisional defect. Among the standard methods of reconstruction probably those most frequently employed use the delto-pectoral flap (1) and the temporal flap (2) either separately or together (3). In both instances the secondary defect left to be split-skin grafted is a sizeable one and graft application and suture with or without a tie-over bolus dressing is a quite considerable surgical chore. In ordinary circumstances the application of a split-skin graft is admittedly not usually regarded as a major surgical procedure but in relation to a major head and neck excision with subsequent reconstruction the situation is slightly different. If both aspects are being handled by the one surgical team, a concentration of effort with undoubted advantages, the surgeon with excision complete, probably in continuity with a neck dissection, has then to raise and transfer one or more flaps depending on the primary defect. At the end of this long procedure he still has to graft the secondary defect or defects. This latter manoeuvre adds at least 40 minutes to the procedure which even in the fastest surgical hands is scarcely a short one, especially if the surgery is properly radical.

Delayed exposed grafting, introduced simultaneously in many centres in Europe and America, was brought into the formal literature by Calnan and Innes (1957) (4). Initially it tended to be employed specifically in sites where shearing strains were unavoidable using the usual tie-over bolus technique, as for example following radical vulvectomy (5). Gradually as its virtues have become more widely recognised it has come more directly into competition with conventional methods of graft application using pressure methods. Now it is used routinely in many situations where pressure dressings would have been regarded as obligatory and indeed often the decision whether to graft exposed or with pressure dressings is a matter of personal choice since either method would work perfectly satisfactorily.

Fig. 1. A 60 year old woman with a large buccal carcinoma, excised down to the deep surface of skin with full thickness removal of the angle of the mouth. Reconstruction was by temporal flap and Z-plasty closure of cheek. — [a] One week after surgery, note granulations almost flush with the surrounding skin; split skin graft was applied to the temporal region two days later. — [b] Two weeks after surgery, pedicle of temporal flap has not been grafted. — [c] Six months post-operatively.

When two techniques can be used successfully in a given situation the factors determining which is appropriate take on a different character. If we consider in detail each method, in relation to the present context, the advantages and disadvantages become apparent.

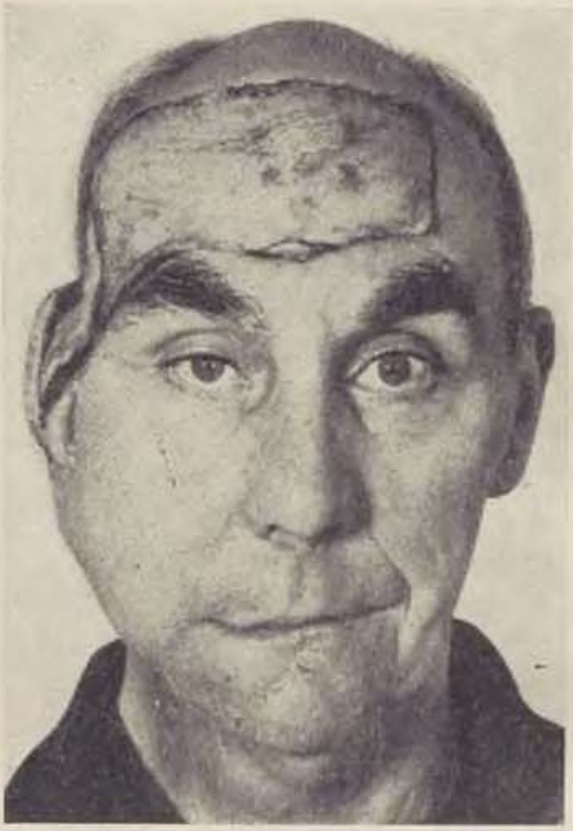

Fig. 2. A 61 year old man with an extensive carcinoma of the right lower alveolus which was excised together with most of the right hemimandible and simultaneous neck dissection. The intra-oral defect was reconstructed with a temporal flap. The forehead donor area was grafted in 48 hours. Photograph taken nine days post surgery.

The Pressure Dressing. With the delto-pectoral or temporal flap raised haemostasis must be assured and particularly in the frontal and temporal defect this can be quite difficult and time consuming expecially as the final raising of the blood pressure to normal, if a degree of hypotension has been used, will coincide with the application and suturing of the graft. The graft ideally should cover the whole defect in a single sheet, simple enough to achieve in the temporal defect but not quite so easy in the case of that left by the delto-pectoral flap which is so much larger. If the graft is being sutured to the defect with the usual minor overlap and the defect needs more than a single sheet of skin the nuisance of the "patch-work quilt" becomes inevitable. The bolus, if used, is secured with tie-over dressings; an overall pressure dressing is then applied, with a crepe bandage on the temple, on the chest with broad Elastoplast. In either case care is needed to avoid encroaching on the pedicle

with resulting ischaemia; on the forehead also, too much pressure will produce bare bone. In both situations of course graft take is generally good, but to achieve this calls for a degree of carefulness at each stage of grafting at a time when surgical fatigue is a definite factor.

One might add that in the case of the delto-pectoral flap the achieving and maintaining of adequate pressure can be quite difficult.

Exposed Grafting. The fact that the graft is not being applied straightaway to the defect left by raising the flap means that haemostasis need not be quite so absolute since any minor bleeding will be absorbed by the dressings. All that need be done at the time of operation is to cut the skin for storage in the usual way while a bland dressing — tulle gras or xeroform — is applied to the defect. Subsequently, and the precise time is not critical, the graft can be laid on the raw surface with the patient in bed in his room, awake and co-operative.

Fig. 3. A 60 year old female having carcinoma of the lower lip requiring total excision of the lip and reconstruction using cheek flaps. The left cervical lymph nodes became involved and a subsequent radical neck dissection performed, followed by a full tumour dose of radiotherapy. Six months later a mass developed in the symphyseal region — this was excised in continuity with a portion of underlying symphysis, overlying skin and a right sided radical neck dissection. The symphyseal region was resurfaced with a delto-pectoral flap.

Fig. 3. (a) Donor site of the delto-pectoral flap 48 hours post-operatively.

POINTS OF TECHNIQUE

The method does not differ in essence from the practice of exposed grafting in other circumstances, though the care needed in preparation of the granulations may vary a little. It can be divided into the various stages:

Preparation of Site. A bland dressing is applied to the area, e.g. tulle gras or xeroform gauze overlaid with a saline dressing. The use of a saline dressing on the chest site is less essential since the muscle in the bed is more tolerant and does well with almost any dressing. The forehead has to be handled

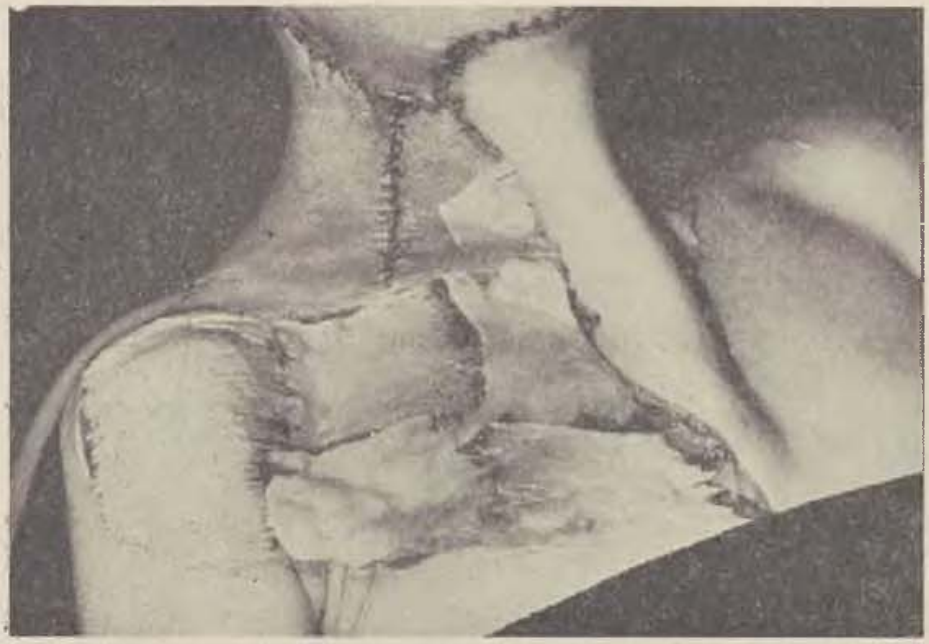

Fig. 3. (b) Exposed grafted at 48 hours.

with greater care since the flap usually incorporates frontalis and leaves only a thin sheet of pericranium overlying the bone. Allowed to dry out at operation or subsequently, or with undue pressure applied on the dressing, it can necrose leaving bare bone with its attendant problems.

The removal of the dressing in preparation for grafting appears in any case to be less painful if the overlying gauze has been moistened with saline. It has been found that to change the dressing within hours post-operatively is also less painful than if it is left longer. Following this dressings are changed daily until grafting is performed.

Timing of the Grafting. We have grafted successfully at intervals varying from hours to days post-operatively, i.e. with and without waiting for granulations to develop. Though it has been suggested that it is preferable to wait until the area is at least beginning to form granulations it seems doubtful whether this is really so. Of more importance probably is whether the area has any slough or is quite "clean". Indeed to graft quickly rather than wait will prevent any secondary infection of the area developing.

It has also been postulated especially on the forehead that one should wait until granulations have developed and filled the defect to the level of the surrounding skin. Again this is probably not very significant since the graft in any case gradually becomes flush with the surroundings whether it is depressed initially or not.

Application of Graft. Backing the graft with tulle gras or xeroform eases application but it is not essential. A single sheet of skin is used on the forehead; more than one may be needed on the chest because of its comparatively large area.

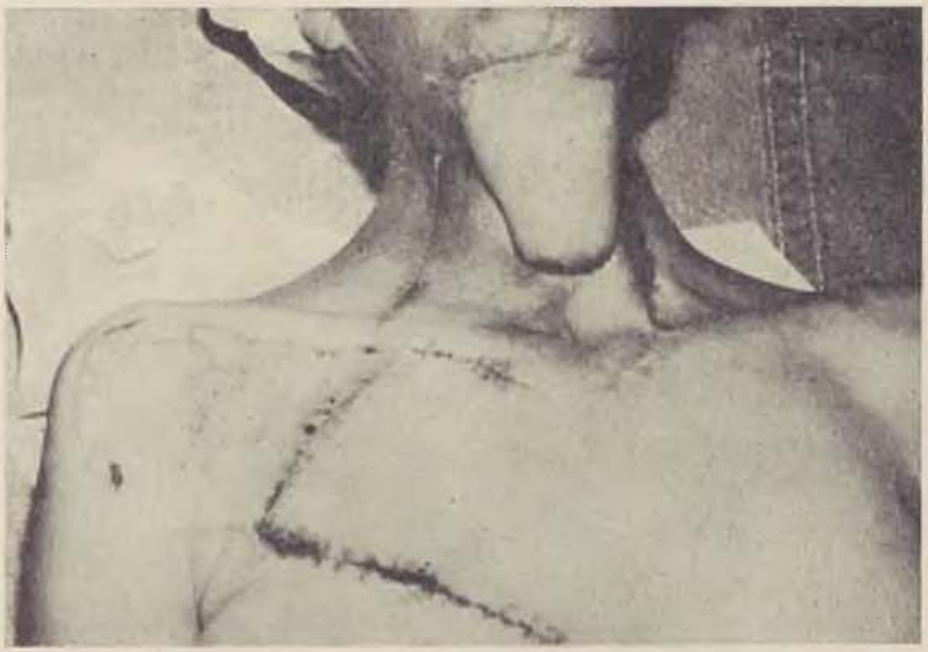

Fig. 3. (c) Four weeks post-operatively, the flap was divided at three weeks, the portion on the chin is to be de-epithelialised and turned in to reconstruct the symphysis.

A fairly thin graft is preferable since it vascularises more readily. There is no doubt that if the graft adheres firmly straightaway in such circumstances then graft take is assured and vascularisation is rapid and apparent.

Most important is to press out any air bubbles under the graft and it should be made to slightly overlap the raw surface.

Bleeding is seldom a problem and collections of serum are very rare. If either occurs it can be evacuated by snipping the graft.

The Size of the Graft. The amount of the raw surface covered by the temporary graft is a matter of personal choice. The forehead and temple are best covered completely because of the thin layer of pericranium and the possibility of damaging it if it is left uncovered.

The chest is slightly different. The area is a big one and has been handled in two ways, either covering the whole area with skin, or grafting only the approximate area to be permanently left with a graft when the bridge segment of the flap is returned to the chest. When the whole area is grafted healing is certainly complete and all potential infection eliminated but at returning of the bridge segment a large part of the fresh graft has to be excised and thrown away. No skin is wasted when only part is grafted but a raw area is left which

has to be dressed pending return of the bridge segment. A plastic surgeon ought to be able to cope with such a comparatively small raw surface without difficulty and so this should scarcely be a hazard.

Whether part or all of the surface is grafted will doubtless be a personal choice and even one which will vary from patient to patient.

A f t e r c a r e. The graft applied in this way is remarkably tolerant of minor movement and only need be protected against gross shearing. It fixes very quickly and obviously and by three to four days is well anchored. Thereafter its care is as with any graft.

Examples of cases treated in this way are shown in figs. 1—4.

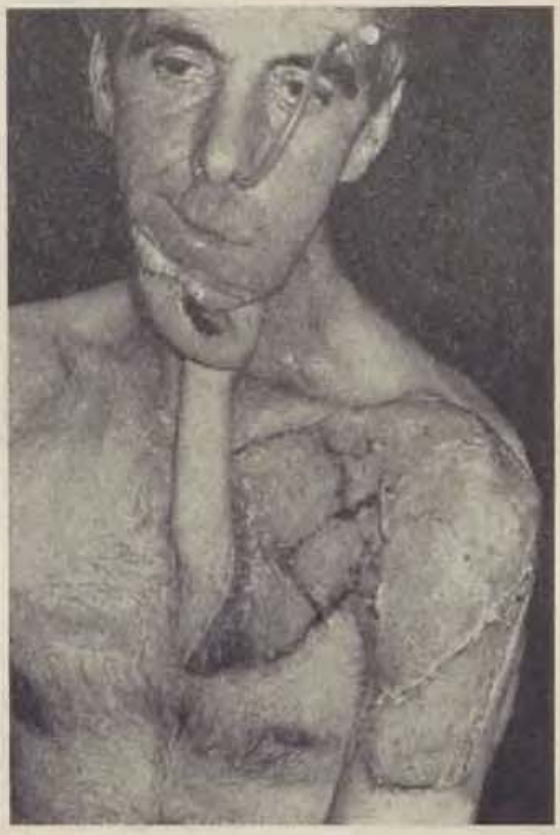

Fig. 4. A 42 year old man who presented with a carcinoma of lower alveolus extending from angle to angle, with destruction of the symphysis and ulceration through the overlying skin. Treatment was by total mandibulectomy with full thickness excision at the symphyseal region and bilateral neck dissection in continuity. Reconstruction was by total temporal flap for inner lining and a deltopectoral flap for skin cover at the symphysis. Delayed exposed grafting was performed at that time. One year afterwards it was decided to further reconstruct his chin using a delto-pectoral flap with an extension down the arm; this latter portion was folded under the outer end of the delto-pectoral flap to form a „sandwich" available for immediate full thickness reconstruction. Split skin grafts were applied 48 hours post-operatively. Ten days later the flap was swung up as shown in photograph, split skin grafts were again applied at 48 hours. The photograph shows grafts on the arm which are two weeks old and those on the chest which are one week old.

DISCUSSION

The main benefits resulting from this technique are undoubtedly the saving in time during operation and the fact that the technique is less demanding. This latter factor is the more significant occurring as it does when even the most resolute surgeon is becoming a little fatigued both mentally and physically. The time saved can also be utilised in bringing the blood pressure up gradually and achieving absolute haemostasis in the neck.

There is no doubt that if the granulations are allowed to become flush with the surrounding skin prior to grafting the early post-operative result is very good (fig. 1). Ultimately however the result obtained from early grafting is comparable. Early grafting also obviates the need for a period of daily dressings. It is also psychologically better for the patient in that grafting within 48—72 hours post-operatively allows all dressings to be dispensed with; the patient achieves a feeling of greater freedom associated with a sense of progress in his treatment. The whole approach in fact is very much in line with current general management of head and neck cancer resulting from the advent of suction drainage and the consequent discarding of dressings. It is certainly one's clinical impression that the complication of graft failure with its attendant problems, especially on the forehand, has been much rarer since the adoption of this simpler method and this alone is a considerable recommendation.

SUMMARY

The use of delayed exposed grafting to resurface defects resulting from reconstructive procedures following resection in cancer of the head and neck is described. The technique and its advantages are discussed.

RÉSUMÉ

Le transplant successif à la méthode à l'air ouvert en tant que suite des interventions réconstructives dans des cas du cancer de la tête et du con

J. T. Jackson

L'auteur décrive l'emploie du transplant successif à la méthode à l'air ouvert pour couvrir les défauts en tant que suite des interventions réconstructives, surtout après la résection suivant le cancer de la tête et du cou. On discute la technique employée et ses avantages.

ZUSAMMENFASSUNG

Verlegter Pfropfen mittels der offenen Methode nach Wiederherstellungseingriffen bei Kopf- und Halskrebs

I. T. Jackson

Wir beschrieben die Anwendung des verlegten Pfropfens mittels der offenen Methode zur Deckung von Defekten, welche bei Wiederherstellungseingriffen nach Resektion bei Kopf- und Halskrebs entstanden sind. Die Technik und ihre Vorteile werden diskutiert.

RESUMEN

Grieta exposita por el método abierto después de las intervenciones de reconstrucción en el cáncer de la cabeza y del cuello

I. T. Jackson

Describimos la aplicación de la grieta exposita por el método abierto para cubrir los defectos aparecidos en las intervenciones de reconstrucción después de la resección en el cáncer de la cabeza y del cuello. La técnica y sus ventajas se discuten.

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CORRECTION OF THE SADDLE DEFORMATION OF THE NOSE BY MEANS OF THE LATERAL PART OF THE TIP CARTILAGE

J. PĚNKAVA

Saddle deformation of the nose is quite a frequent defect in the series of post-accidental malformations, or the sequel of unspecific (festering complications after resection of nasal septum) and also specific diseases of the nasal septum (8). It is not even rare in form of an inborn anomaly. The anatomic nasal substrate, composed of a firm bone pyramid and softer and more fragile cartilage is predisposed for impression of the skeleton just in this more fragile cartilage part, which is sometimes even connected with a dropping of the tip.

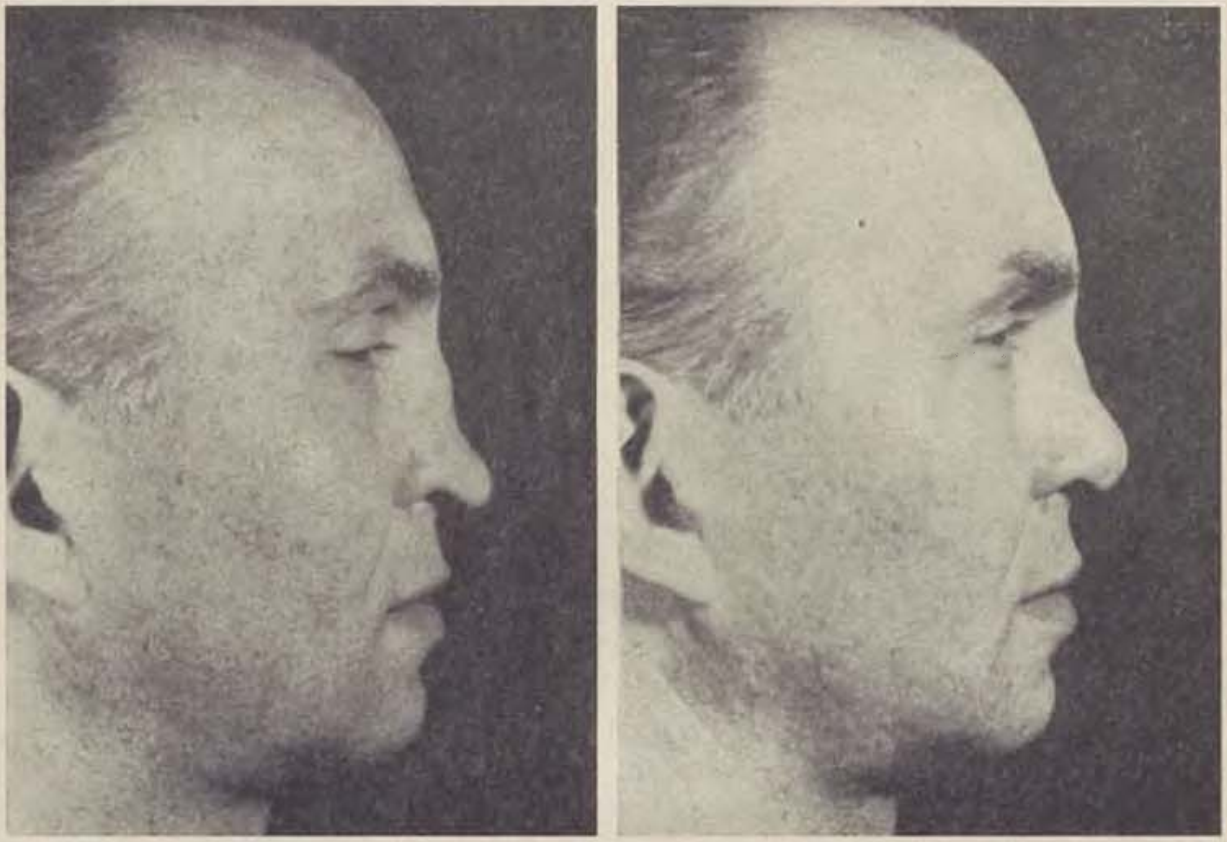
Just as in the correction of other organs, in the nasal saddle deformation too, a variety of material such as gold, silver, platinum, aluminum, tantalum, vitalium, parafin, ivory and different plastic material (plexiglass, plaston, acrylate, silicons etc.) (1, 2, 4, 6, 8) has been applied.

In a series of implantates, preserved cartilage, human bone (3) and finally the patient's own cartilage and bone were applied. Prothetic solution (7) requires a complicated plastic preparation, is not hygienical and the patient requires much treatment.

Corrections of luetic saddle deformations of the nose remain a problem. Even in serum-negative patients, in spite of high doses of peniciline, the implanted human cartilage is often eliminated. The endeavour of surgeons to avoid further scars during correction (by removal of tissues) led to the application of local material. As long as these tissues obtained in the place of correction suffice, they afford excellent biologic material, which may be left on the nutritional pedicle. This nutrition guarantees good take and decreases to minimum the danger of resorption of the implanted material.

Maliniac recommended in 1932 (2, 5) to fill up the defect by shifting the triangular cartilage above the septum. Further modifications of the method were contributed by Streith, Woolf and co-workers (5). They introduced six years ago the almost forgotten Streith's method. They freed both triangular

cartilages through incisions between the triangular and tip cartilage. They left however, medial connection with the nasal septum. They considered the defect and cut a triangular segment from the triangular cartilage, leaving the top of the segment turned to the nasal bones. They turn the back parts of the triangular parts of the cartilages which remained connected with the nasal septum, towards each other and suture them. The authors apply this method even in combination with other rhinoplastics.



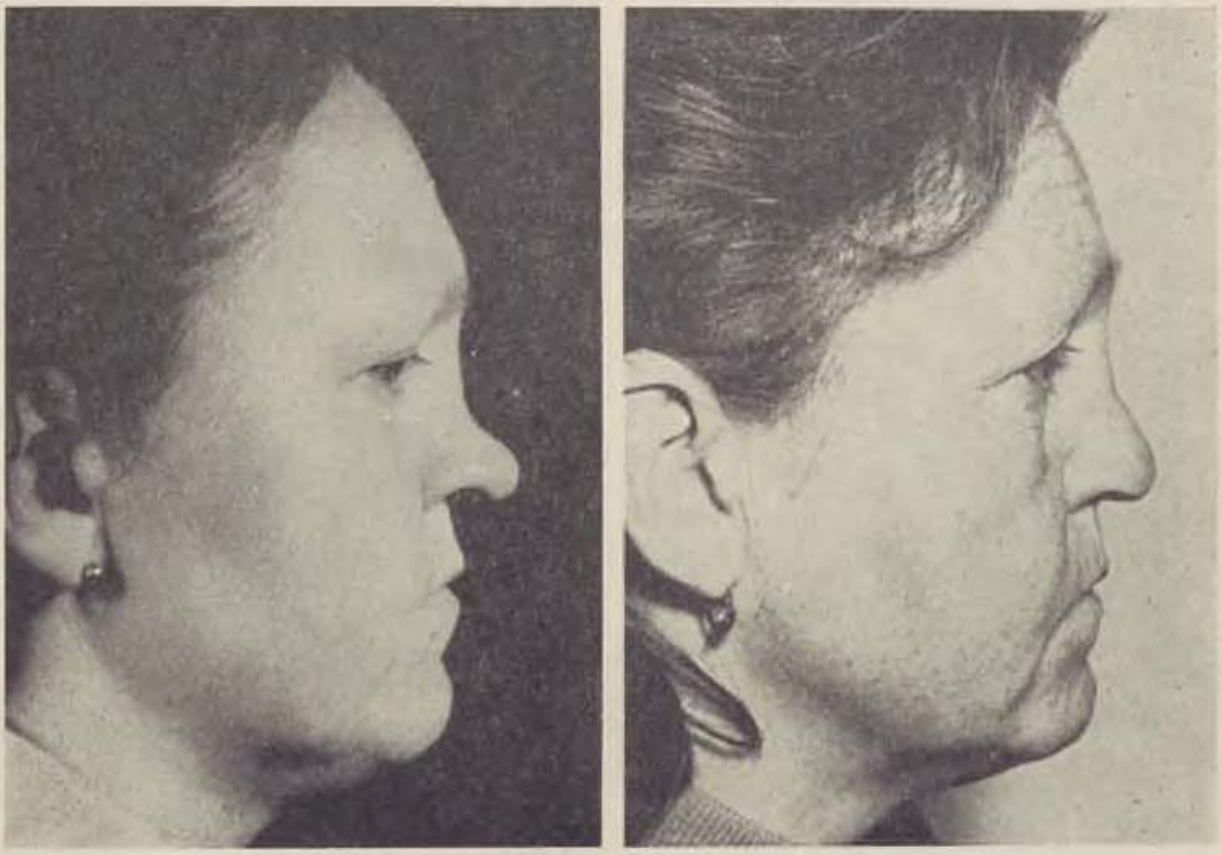
1a) Saddle deformation of the nasal bridge after sequestration of septum. — 1b) The same patient after correction by turning the lower nasal cartilages.

A similar conception (application of local material on pedicle) was introduced by J. L. Kostecki (2). He used a nasal bone hump and cut it by leaving its lower end connected with the original place by the connective tissue. By means of a hook he turned the thus formed bone graft by 180^0 into the saddle of the nasal roof.

At our Clinic we applied — in some suitable cases — the lateral crura of the tip cartilage as filling material. In the initial stage the tip cartilage completely luxated from its bed, served as filling material into the nasal saddle. Both tip cartilages sutured into a roof shape (outside the field of operation), were placed as riders on the septum in the place of the defect.

Because we found, when controlling our patients, partial resorption of the implanted material, in further patients we left the lateral crura connected

with their medial part, according to Kazanjian's (4) suggestion in 1959. The operation is performed either under local or under general anaesthesia. General hypotensive anaesthesia is appreciated owing to reduced bleeding in the field of operation and when modelling the cartilages of the defect, because in local anaesthesia it is obscured by the infiltrated anaesthetic. Through typical incisions exposing the tip cartilages we separate with scissors the lateral crura from skin and mucosa. We cut their lateral ends into

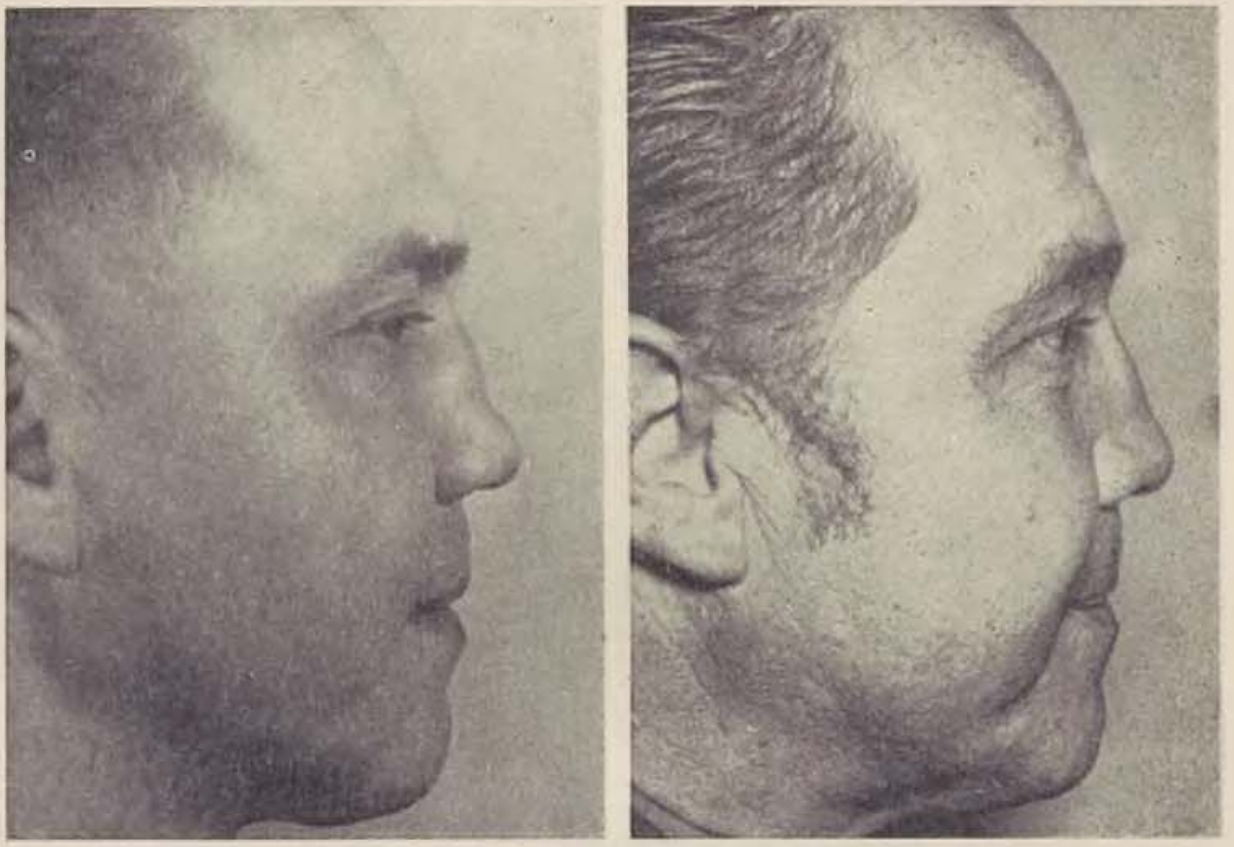


2a) Saddle deformation as a complication after resection of the deviated nasal septum.
2b) Condition 10 years after correction by means of lower nasal cartilages.

suitable shape. We wind both cartilages around their connection with the septal part and suture them above the septum (6a, b). We suture the lower edges of the lateral crura, thus gaining height of the filling material for the saddle deformation. The advantage of preserving the connection with the medial crus lies also in sufficient fixing of the cartilage in the defect. It is therefore unnecessary to fix it by percutaneous suture or pin. After suture of the wound by catgut stitches we tampone the nasal passages lightly by means of mull and nasal paste or fatty tulle. The external fixing bandage is pressed to the nasal surface by an aluminum jacket. The thus constructed fixation is secured by several adhesive tapes. We remove the tamponade on the second or third day, leaving the external fixation for approximately one week.

Cases:

Š. A., born 7. 1. 1922, Nr. 19867. — Saddle deformation following a nasal septum cartilage sequestration — a complication of an Antrum Highmori operation on the right side at the age of 21 (1a). Besides the saddle deformation there is also a dropping nasal tip. At the age of 36 the deformation was corrected under local anaesthesia. The lateral crus was luxated through the

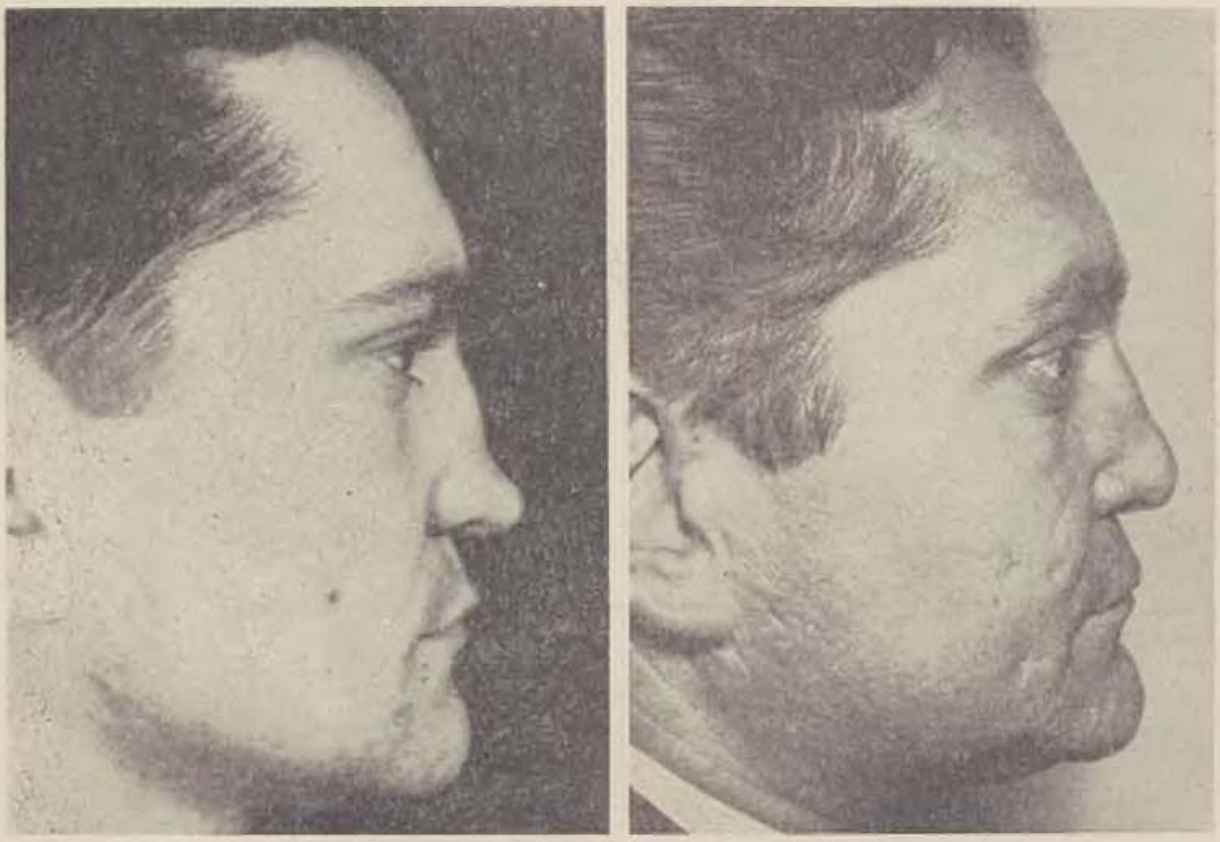


3a, b) Saddle deformation of nose after accident.
Condition 7 years after correction (narrowing of the nasal skeleton and correction of the saddle deformation by means of lower nasal cartilages.

usual incision and left medially connected with its septal part. The free ends were turned over in direction above septum, sutured and fixated by percutaneous silon stitch in the place of deformation (Fig. 1b) — condition 10 years after operation.

B. M., born 21. 6. 1925, Nr. 19674. — Twenty years ago a resection of the deviated nasal septum was performed in the female patient at the E.N.T. Department. After the operation the nasal bridge collapsed (2a). The deformation was corrected in 1958 under local anaesthesia. The lateral crura of the lower nasal cartilages were luxated, the medial crura were left in their position connected with the lateral crura. The lateral crura were reversed, their free ends stitched and percutaneously sutured into saddle form (2b) — condition after 10 years.

O. B. born 14. 9. 1923, Nr. 25670. — Sadle deformation and a wide nasal pyramid after an accident and surgical treatment (at the age of 15) (3a). In 1961 an operation under local anaesthesia narrowed the nasal structure, the saddle deformation was filled up by lower nasal cartilage completely luxated from the bed and sutured into small cartilage block. Fig 3b — condition after 7 years.

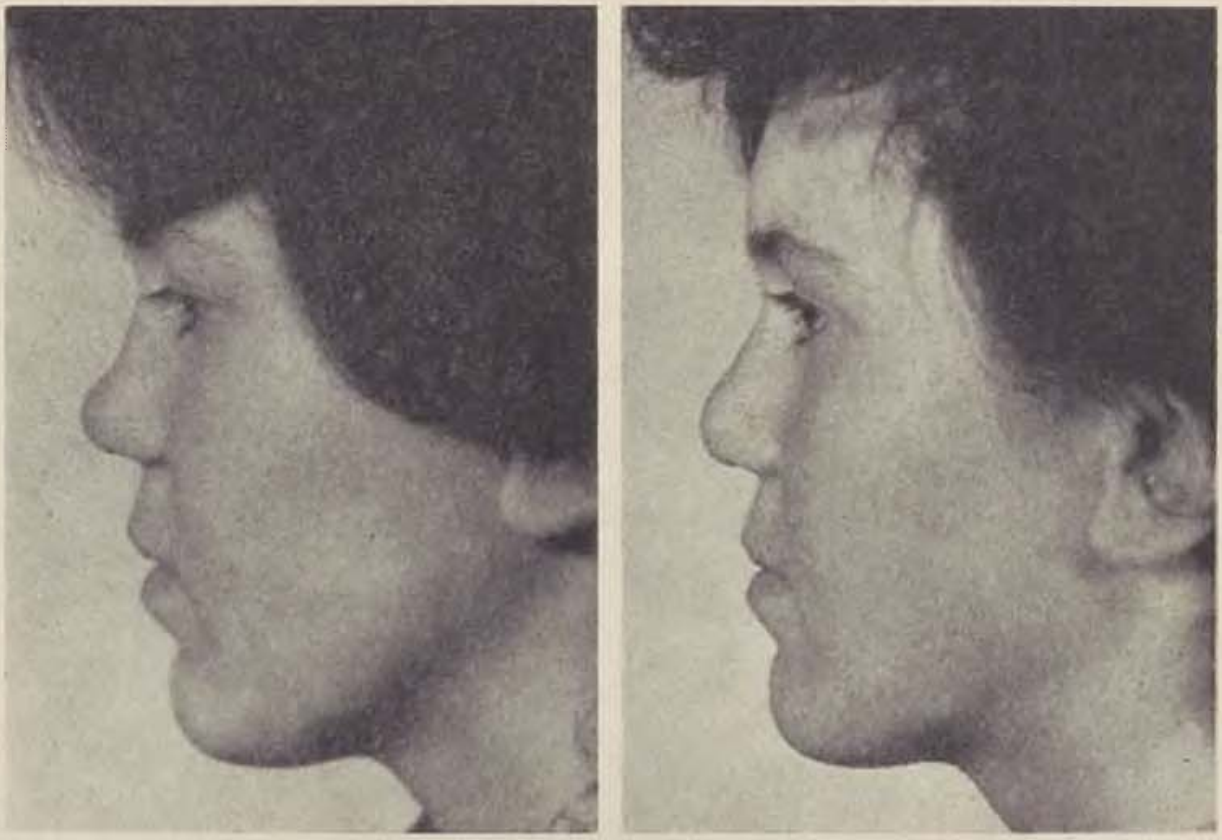


4a) Saddle deformation after resection, septum deviated in an accident.
4b) Condition at control 11 years after correction by means of turned lower nasal cartilages.

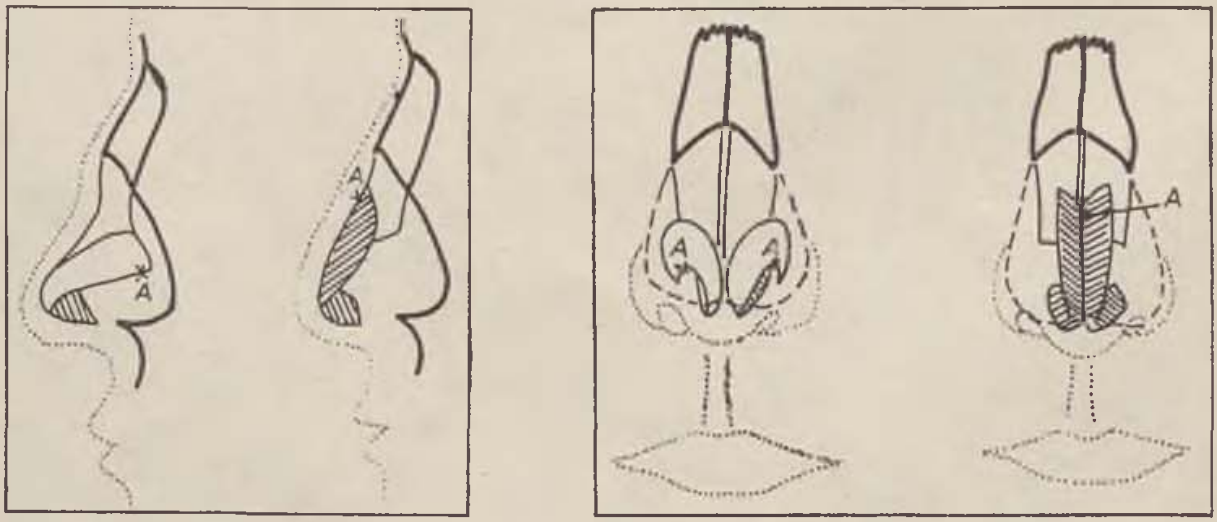
B. S. born 8. 3. 1934, Nr. 17334. — Saddle deformation after resection of a deviated septum after accident (Fig. 4a).

At the age of 23 the lateral parts of the lower nasal cartilage were mobilised under local anaesthesia, connection with the medial parts was left intact, the cartilages were turned above the septum and sutured. Fixation in the saddle by percutaneous suture. Fig. 4b —condition 11 years after operation.

V. L. born 8. 8. 1946, Nr. 28029. — Condition after parturition trauma. Small saddle deformation with ball-form nasal tip (Fig. 5a). Operation was carried out at the age of 17 under local anaesthesia. Firstly, a cartilage graft gained from a resected nasal septum was implanted into the saddle-form impression, secondly, the lateral parts of the tip cartilage left connected with the medial crura were turned here. Fig. 5b — condition after 5 years.



5a) Saddle deformation and ball-form nose after parturitional trauma. — 5c, d) Correction by means of cartilage graft from septum and turning of lower nasal cartilages. Condition after 5 years.



6a, b) Schematic demonstration of the turning of lateral crura into saddle defect of nasal bridge.

CONCLUSION

Aplication of local material in reconstructive surgery is one of the most frequently used methods. When correcting saddle deformations we used the modified Kazanjian method — the turning of the lateral crura of the tip cartilage. This process has proved satisfactory in small and medium size deformations.

We see the advantage in the good fixation and the unchangig volume of the cartilages and in the possibility to lift the nasal tip.

SUMMARY

The brief survey discusses the etiology of the saddle deformation of the nose and the filling material used in the correction. Of local tissues, application of the triangular cartilage according to the method of Maliniac and of the tip cartilage according to the method by Kazanjian are mentioned. The method modified by us affords filling material for small and medium saddle deformations. The method may be applied in combination with the correction of other nose deformities.

RÉSUMÉ

La correction de la déformation du nez en forme de la selle à l'aide des parties latérales des cartillages de la pointe du nez

J. Pěnkava

L'auteur commémore dans une courte notice l'étiologie de la déformation du nez en forme de la selle de même que le matériel employé comme matériel du remplissage. Des tissus des allentours il y a le cartillage triangulaire dont on se sert dans la méthode de Maliniac, et celui de la pointe du nez, employé par Kazanjian. La méthode modifiée par l'auteur présente le matériel de remplissage pour les déformations en forme de la selle du premier et du deuxième degrès. La méthode peut être employée en combination avec la correction des autres déformations du nez.

ZUSAMMENFASSUNG

Korrektion der sattelförmigen Nasendeformation mit lateralen Partien der Spitzenknorpel

J. Pěnkava

In einer kurzen Übersicht wird die Ätiologie der sattelförmigen Nasendeformation und das bei der Korrektion benutzte Ausfüllmaterial besprochen. Von den lokalen Geweben wird der trianguläre Knorpel unter Anwendung der Maliniac-Methode und der Spitzenknorpel nach dem Verfahren von Kazanjian angegeben. Die von uns modifizierte Methode bietet Ausfüllmaterial für kleine und mittelschwere Satteldeformationen. Die Methode kann parallel in Kombination mit der Korrektion weiterer Nasedeformationen benutzt werden.

RESUMEN

Corrección de la deformación de silla de la nariz por medio de las partes laterales de los cartílagos de punta

J. Pěnkava

En un corto informe se trata de la etiología de la deformación de silla de la nariz y del material de llenar usado en la corrección. De los tejidos locales es mencionado el cartílago triangular en la aplicación del método de Maliniac y el de punta según el método de Kazanjian. El método de nosotros modificado ofrece el material de llenar para pequenas y mediamente graves deformaciones de silla. El método puede aplicarse al mismo tiempo en la combinación con la correción de otras deformaciones de la nariz.

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REGENERATION OF CRANIAL BONES AFTER IMPLANTATION OF CONSERVED HOMOLOGOUS BONE SHAVINGS

V. I. KANTOROVA, K. D. TIMASHKEVICH

Bone of the cranial vault of adult mammals, including man, does not regenerate. This is why defects in the skull are usually covered by transplants of homologous bone or cartilage or by various alloplastic material (Tantol, Plasmass, etc.).

Polezhaev (1957) laid the theoretical foundation for the method of covering a defect in the skull with regenerating bone, the so-called "destruction method". Matveyeva (1962) and Kantorova (1968), elaborating this method, showed that implantation of shavings of fresh or under laboratory conditions lyophilized bone (auto-, homo- or heterologous) — comminuted by means of a hand drill — into a defect in the skull induced regeneration of cranial bone with typical structure over the entire area of the defect (10—12 cm^2) within two to four months. The bone shavings themselves, however, do not replace bone tissue which has been removed from the cranium. They undergo rapid absorption, thus inducing formation of new bone from the young connective tissue surrounding them.

The method rosed the interest both of research workers and neurosurgeons (Strabkov, 1966; Kovalevsky, 1968; Volkov, 1968 and others). However, for the further elaboration of this subject, additional investigations were required.

The task of the present study was to find out what influence had the quality of the implanted material on regeneration of cranial bones, particularly, whether or not the capacity to induce bone regeneration was preserved in bone shavings after conservation by freezing at —78 ^0C or lyophilization carried out by industrial procedures, what was the effect of the addition of 25 % fresh shavings prepared from recipient bone to the lyophilized bone shavings on this capacity of the latter, and whether or not this capacity was preserved when the bone shavings were produced by a mechanized procedure.

The experiments were carried out in dogs of either sex and of an age between two and five years. In these animals, a piece of parietal bone, about 10 cm^2 in size, was removed, careful not to injure the dura mater. In series of 26 dogs, the defect was then filled with shavings obtained under aseptic conditions from bone of middle-aged dogs (1.5 to 4 years), processed in a device

Fig. 1. Control: Defect in skull filled with scar tissue four months after removal of part of parietal bone. Stained with haematoxylin-eosin. Magnification: ocular 7×, objective 10×

specially constructed for comminution of bone tissue at the Central Institute of Traumatology and Orthopaedics. The shavings were prepared from cortical and partly also cancellous bone of meta- and diaphyses of long bones or from bones of the skull immediately after the dogs had been sacrifized. The shavings contained a slight admixture of red bone marrow. Then the shavings were

Fig. 2. Series I of experiment: Defect in skull filled with regenerated bone tissue after implantation of frozen homologous bone shavings. Rich vascularization of osteogenic tissue surrounding bone shavings in process of absorption. Stained with haematoxylin-eosin. Magnification: ocular 7×, objective 20×

cooled in a mixture of carbone dioxide snow and 96° alcohol at —78 °C. There were four series of experiments which differed in the methods of tissue conservation, preparation of the shavings and application.

In the first series of experiments, bone shavings were used which, after deep freezing, had been stored in carbon dioxide snow for one month and then, for another six weeks, at —45 °C. In the second, third and fourth series, the bone shavings were, following deep freezing, lyophilized by the industrial device of the firm Yuzifrua in a vacuum (with a residual pressure of 1 μ) over a period of 42 to 45 hours. In the second and fourth series, lyophilization was carried out immediately after deep-freezing at —78 °C, while in the third series

Fig. 3. Series I of experiment: Fibrous bone. Stained with azan according to Heidenhain. Magnification: ocular 7×, objective 40×

the shavings were, after deep-freezing, first stored for eight days at temperatures between —78° and —5 °C and then lyophilized. In the second and third series of experiments, the initial temperature of the cassette for lyophilization was about —15° and —20 °C respectively, and in the fourth series —46 °C.

In all cases, the lyophilized material was stored at room temperature in vacuum with a residual pressure of 80 μ in special, hermetically closed test tubes or sealed phials. For implantation either only lyophilized material (2nd and 3rd series), or lyophilized material with an admixture of 25 % fresh bone shavings prepared from parietal bone of the recipient (4th series), were used. Prior to implantation, the frozen or lyophilized shavings were soaked in a mixture of penicillin and recipient blood.

In the control series (5 dogs), the defect in the skull was not filled with bone shavings.

The tissue specimens were investigated in histological sections.

In the controls, the defect in the cranial bone appeared filled with a thin layer of fibrous connective tissue adherent to muscle and dura mater two to six months after the operation (Fig. 1). At the edge of the bone defect, new bone plates had formed which sealed the marrow spaces opened during operation.

In the first experimental series (implantation of frozen bone shavings), regeneration of bone tissue was observed in all parts of the defect (5 dogs).

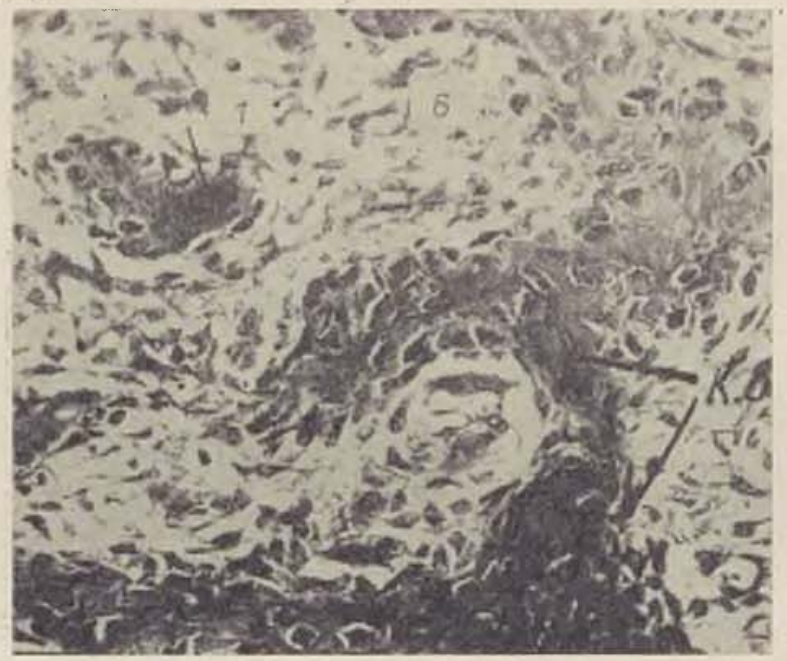

Fig. 4. Series I of experiment: Cancellous bone one month after operation. Stained with haematoxylin-eosin. Magnification: ocular 7×, objective 40×

One month after implantation, the defect was filled with young connective tissue, bone shavings in the process of absorption and islets of osteogenic tissue. The area occupied by connective tissue greatly exceeded that of osteogenic islets. By that time, the smaller bone shavings had already either been absorbed completely or were represented by heaps of basophilic structureless substance. The larger shavings had still preserved the structure of bone, but their osteocytes had decayed everywhere (Fig. 2). Absorption of bone shavings took place in the presence of increased vascularization of the connective tissue envelbping them (Fig. 2). In many places, osteoclasts could be seen invading the bone shavings, forming lacunae in them. The osteogenic islets had formed around the bone shavings which were in the process of being absorbed. These islets were of different sizes and at different stages of osteogenesis. In some areas, the newly formed bone showed coarse fibrous structure (Fig. 3). The thin collagenous fibres of the bone matrix lay in between the osteogenic cells and were oriented in a definite direction.

In other areas of the defect, osteogenesis of a later stage could be seen with new bone of cancellous structure (Fig. 4), the cancelli being covered with osteoblasts. The fibres of the cancelli, gathered in bundles, ran parallel to each other. The osteoblasts lying between the fibres were embedded in matrix between the cancelli. Enclosed within the bone cancelli were the remnants and in the process of being transformed into young osteocytes. Parallel with the formation of bone cancelli, marrow spaces filled with little differentiated

Fig. 5. Series I of experiment: Compact bone lamella three months after operation. Stained with haematoxylin-eosin. Magnification: ocular 7×, objective 10×

connective tissue of mesenchymal character and with blood vessels, appeared of bone shavings which had induced osteogenesis.

Ten to twelve weeks after implantation, the area of the defect was occupied by newly formed bone tissue which filled the entire space between the periosteum and the dura mater. However, the regenerated bone was considerably thinner than the original and consisted of islets separated from each other by layers of young connective tissue. In some places, this tissue also separated the original from the newly formed bone. The regenerated bone showed a lamellar structure (Fig. 5). The newly formed haversian canals were wider but had a thinner wall than in the original bone. The marrow spaces were filled with red bone marrow. Where new bone had further developed, peripheral and central concentric bone lamellae had formed at these sites.

After the lapse of 6.5 to 7.5 months, the entire area of the defect appeared filled with bone of typical structure (Fig. 6), with well developed haversian systems of peripheral and central concentric lamellae. The new bone did not

exceed in thickness two-thirds of that of the original bone. In the second series (9 dogs), where lyophilized bone shavings had been implanted, the process of regeneration proceeded much more slowly than in the first series.

Six to eight weeks after implantation of bone shavings, the defect was essentially filled with connective tissue; along the blood vessels running within it and in the vicinity of not yet absorbed bone shavings, small islets of newly formed bone could be seen which mainly showed a structure of cancellous bone or cortical-bone lamellae. Small signs of regeneration could be observed near the edges of the defect, where, from the injured margin of the original bone, small bone trabeculae had formed which sealed the marrow spaces opened at the time of trephination. Absorption of the lyophilized bone shavings was not everywhere accompanied by the formation of new bone, which evidently was connected with the reduction in inductive capacity of the implants, effected by lyophilization. Due to this, the bone shavings which were in the process of being absorbed, were, in many parts, surrounded not by osteogenic but by fibrous connective tissue (Fig. 7). After absorption of these shavings, a residual cavity had formed which was filled with detritus.

Fig. 6. Series I of experiment: Compact bone lamella seven months after operation. Stained with haematoxylin-eosin. Magnification: 3×

After 2.5 to 3.5 months, the defect was partly filled with fibrous connective tissue, partly with islets of newly formed bone. The size of the area of new bone differed in the various experimental animals, but never exceeded half the area of the defect. Apart from this, the various islets of induced bone formation appeared at different stages of development even in one and the same animal; in some parts, only the initial stage of osteogenesis could be distinguished, in others the newly formed bone had the structure of cancellous bone or cortical-bone lamellae. Formation of new bone started, here as in other series of the experiment, around the shavings which were being absorbed and proceeded centrifugally (Fig. 8); the most mature bone tissue was in the centre of the islet, while the youngest in its periphery. Neighbouring islets tended to unite along bands of osteogenic tissue. The same tissue was formed between the edges of the original and the newly formed bone. The islets of the new bone which had formed on the side of the periosteum, showed a less advanced structure than those near the dura mater. Within the fibrous tissue filling the defects, cavities could be seen which had formed at sites where the implanted bone shavings had been absorbed, i.e., whose capacity for inducing osteogenesis had evidently been inadequate.

In the third series of experiments (5 dogs), bone shavings were used which had been conserved by deep freezing and then, up to lyophilization, exposed to changing temperatures for eight days. The inducing activity of the shavings proved almost completely suppressed. Absorption of the shavings was considerably retarded; even two months after implantation, many of them were still present. They appeared embedded in tissues consisting of coarse fibres with wide blood vessels. At the sites where shavings had been absorbed,

Fig. 7. Series II of experiment: Absorption of lyophilized bone shavings without formation of new bone two months after homoplasty. Stained with haematoxylin-eosin. Magnification: ocular 7×, objective 40×

not bone tissue but cavities had formed which were filled with detritus. Only around a few shavings in the process of being absorbed had islets of osteogenesis formed which could already be found two to four weeks after operation. Two to four months after operation, occasional islets of coarse fibrous bone appeared in the fibrous connective tissue which filled the defect and which contained a large amount of not yet absorbed bone shavings and widened blood vessels. Such islets were usually found in the centre of the defect and near the dura mater. Very little signs of bone regeneration could be seen near the edges of the bone defect. There formation of new bone trabeculae had taken place in the marrow spaces opened by trephination of the skull (Fig. 9). On the whole, osteogenesis was very poor in this series of experiments even four months after implantation of the bone shavings.

In the fourth series (implantation of lyophilized bone shavings with an admixture of 25 % fresh chips prepared from recipient bone), regeneration of completely normal bone took place (7 dogs).

After 2.5 to 3.5 months, bone which had the structure of cortical-bone lamellae and contained well formed spaces filled with red marrow, had formed

almost all over the defect. The regeneration bone consisted of detached islets linked to each other by bands of osteogenic tissue. The same tissue was found in some places between the edges of the original and the newly formed bone. The bone which had formed from the dura mater and muscles appeared separated by layers of fibrous connective tissue containing cavities filled with detritus or disintegrated bone shavings. In these parts, almost no osteogenesis could be observed. Such cavities filled with detritus were also found within the regenerated bone tissue. This made the impression as though most of the implanted bone shavings had been absorbed without inducing osteogenesis. The remaining number of bone shavings had been absorbed rapidly and had induced formation of new bone in areas where inactive bone shavings were also present.

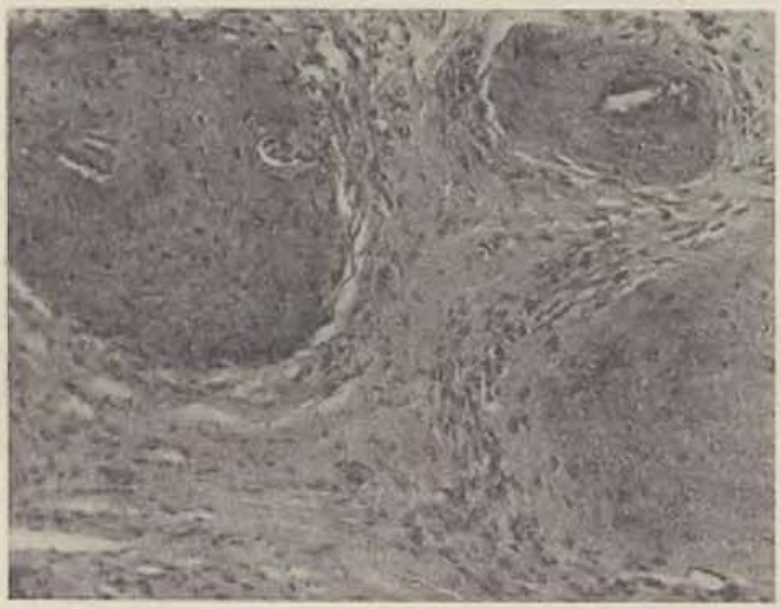

Fig. 8. Series II of experiment: Islets of newly formed bone three months after implantation of lyophilized homologous bone shavings. Stained with haematoxylin-eosin. Magnification: ocular 7×, objective 20×

After 4.5 to 5.5 months, most of the defect was covered with a sufficiently thick layer of bone of lamellar structure showing a well developed system of peripheral and central concentric lamellae. In some sectors, new bone occupied the entire space between the periosteum and dura mater, in others a thin layer of fibrous connective tissue could be found between the periosteum and the newly formed bone. This layer contained remnants of incompletely absorbed bone shavings which had induced no osteogenesis. A similar tissue layer was found in some sectors lying between the newly formed and original bone. In places, the new bone formed a compact layer, in others it was composed of two to three islets (Fig. 10).

Six months after implantation, the entire area of the defect was occupied by a compact layer of new bone with typical structure and, together with the

original bone, it presented a complete and uninterrupted entity of the cranial vault, although the layer of new bone was still somewhat thinner than that of the original bone.

CONCLUSION

Analysis of the above results permits to conclude that comminution of bone by mechanized procedures does not inactivate bone shavings. Shavings prepared by an industrial mode of production preserve a great deal of their

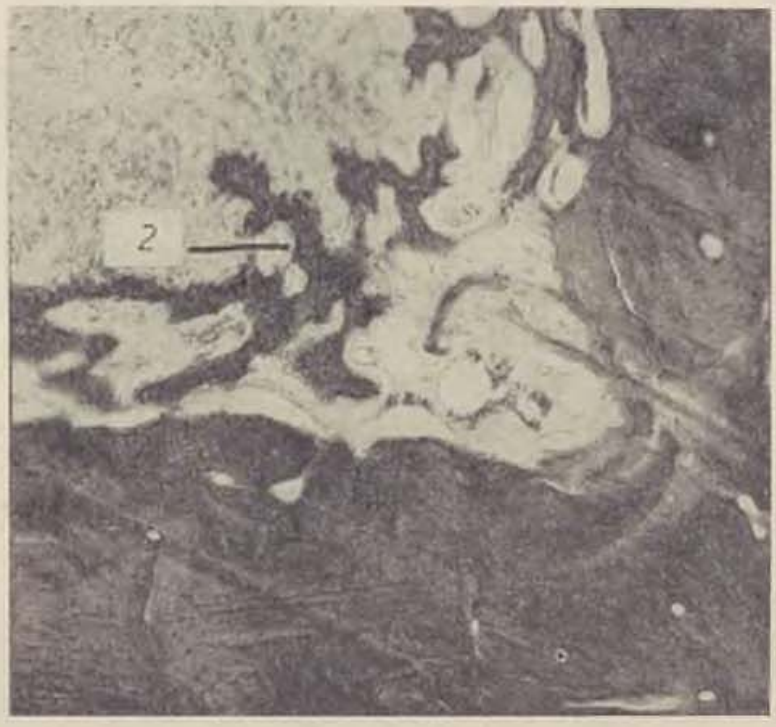

Fig. 9. Series III of experiment: Formation of bone trabeculae from recipient bone edge two weeks after implantation of lyophilized homologous bone shavings. Stained with azan according to Heidenhain. Magnification: ocular 7×, objective 10×

capacity for inducing osteogenesis, which is borne out by the results of experiments with implantation of shavings conserved by deep freezing. Failures in the employment of bone shavings prepared by mechanized procedures were not due to the method of comminution, but depended on the quality of the material used (e.g. admixture of fatty bone marrow — Kantorova, 1968) or the method of its further processing.

Important to preservation of the capacity of bone shavings for inducing osteogenesis seems observation of definite conditions for their conservation by deep freezing and lyophilization, which becomes evident from comparison of the results in the second and third series of experiments. The shavings possessed adequate inductive capacity when they had been frozen in a mixture of carbon dioxide snow and alcohol at —78 °C immediately after the mechanical preparation, and afterwards had been stored in a frozen condition at —45 °C

or lyophilized at an initial temperature not higher than —20 to —30 °C. After deep freezing, a changing storage temperature led to considerable inactivation of bone shavings, which was observed in the third series of experiments. Loss of inducing capacity in bone tissue after thawing followed by re-freezing was reported in the literature (Urist et al., 1967).

On the basis of the results obtained from experiments as described above, it may be stated that employment of conserved bone shavings for the induction of bone regeneration is expedient, but the efficacy of the procedure varies with

Fig. 10. Series IV of experiment: Defect filled with regenerated lamellar bone five months after implantation of lyophilized homologous bone shavings and fresh chips from bone of resipient. Stained with haematoxylin-eosin. Magnification: 3×
1 = bone shavings — 2 = new bone — 3 = original bone — 4 = osteoblast — 5 = osteocyst — 6 = bone marrow cavity

the method of conservation used. In experiments, the best results were achieved with bone shavings conserved by deep freezing. New bone had formed in all instances, whereby a defect of 10 to 12 cm^2 in size had almost completely been covered by a thin layer of bone within 10 weeks after implantation of the shavings. Seven-and-a-half months after operation, the newly formed bone differed but little both in structure and thickness of layer from bone away from the defect. These results bear witness of the fact that employment of the "destruction method" as described above is superior to any other method of bridging a defect in the cranial vault (Titiner, 1966; Zaychenko, 1966 and others).

When comparing the above data with those of Matveyeva (1962), it can be noticed that frozen bone shavings are absorbed approximately two weeks later than fresh bone chips, and this is why they are slower in inducing osteogenesis. Still slower absorption of whole pieces of frozen bone as compared to grafts of fresh bone was reported in the literature (Leybzon, Imamaliev et Vyaltsev, 1967; Pavlova et Vyaltsev, 1968).

The results of the above experiments with the employment of lyophilized bone shavings have shown that lyophilization retards absorption and suppresses the inductive capacity of these shavings much more than does deep-freezing. This, of course, leads to considerable retardation of the process of regeneration. However, when using lyophilized bone shavings, osteogenesis in the cranial bones is really induced in most instances, although the process is slowed down a great deal. That lyophilized bone does possess the capacity for inducing osteogenesis after implantation is borne out by the papers of Urist et al., published in 1967 and 1968.

If 20 % to 25 % of fresh shavings prepared from bone of the recipient are added to lyophilized homologous bone shavings, the process of bone regenera-

tion is accelerated considerably. In all seven cases of the fourth series of experiments, formation of new bone proceeded almost as well as with the employment of only fresh or frozen material. Ten weeks after implantation, the defect was filled with bone tissue thinly interspaced with young connective tissue. Six months after operation, the entire defect was bridged by bone of typical structure. However, it is most probable that, in these cases, new bone had mainly been formed on account of the bone shavings obtained from recipient bone. According to Chaklin (1968), addition of a small graft of autologous bone in homotransplantation speeds up regeneration.

It should be noted that absorption of conserved bone shavings was mainly effected by the action of osteoclasts and by the increase in vascularization of the tissues surrounding the shavings. This type of bone absorption is called cellular, according to the classification recommended by Sipovsky (1967). According to Novachenko (1946), intensive vascularization not only leads to absorption of old bone, but also to the formation of osteogenic tissue. Novachenko as well as many other authors assume that cells of the adventitia and endothelium can be transformed into elements of osteogenic tissue.

The results of the above experiments have shown that regeneration of bone tissue in a defect of the cranial vault not only requires bone shavings with an evident capacity for inducing osteogenesis, but also young connective tissue which is rich in different kinds of cells and well vascularized. However, if inactive bone shavings are implanted, the granulation tissue surrounding them soon changes into connective tissue of coarse fibres, in which no osteogenesis can be observed. The inactivated shavings become encapsulated and undergo slow absorption without the formation of new bone.

If, however, bone shavings are implanted which possess an adequate capacity for inducing osteogenesis, they, on absorption, become the foci of bone regeneration. In the further course of the process, many islets of osteogenesis develop which show a centrifugal progress of forming and maturing of bone tissue. First, the islets are separated from each other by interspaced young connective tissue, but fuse with further development into larger areas of newly formed bone. At still later stages, sometimes six to seven months after operation, the entire defect appears filled with a compact layer of regenerated bone which has united with the bone of the recipient along the edges of the defect.

Thus bone shavings prepared and conserved under industrial conditions can preserve their capacity for inducing osteogenesis. In homotransplantation, intensity of osteogenesis greatly depends on the type and method of conservation of these bone shavings.

SUMMARY

The bones of the cranial vault of dogs do not regenerate under ordinary condition, but they do regenerate by the activity of bone shavings implanted into the defect. These shavings are not the material which is incorporated into

the area of the defect. They are absorbed, and, in this process, induce formation of new bone in the connective tissue surrounding them. The present paper demonstrates the possibility of employing conserved bone shavings obtained by a mechanized process of comminution. Of the two studied methods of conservation, the best results were achieved by deep-freezing at —78 °C. When homologous bone shavings were implanted into the defect (10 to 12 cm^2 in size), it became filled with a thin layer of new lamellar bone after ten weeks. Six to seven-and-a-half months after operation, the new bone resembled normal bone not only by its structure but also by the thickness of its layer. Conservation of bone shavings by lyophilization weakened their inductive capacity. However, admixture of 20 % to 25 % of fresh bone chips prepared from recipient bone improved the results of implantation of homologous lyophilized bone shavings so that the defect became filled up with lamellar bone of typical structure six months after the operation.

RÉSUMÉ

La régénération des os du crâne suivant la transplantation de l'esquille homologue conservée

V. I. Kantorova, K. D. Timachkevitch

Les os du crâne chez le chien, incapables de la régénération sous des conditions normales, ont pris la régénération en suite de la transplantation de l'esquille dans le défaut. Cette esquille n'est point un tissu capable de la guérison dans le défaut, mais, à l'aide de la résorbtion el donne des impulsions au tissu des environs pour former l'os. Pour ce but, on peut se servir des os conservés mécaniquement préparés. Des deux modes de la conservation comme le plus convenable était celui qui faisait reffroidir le tissu sous la température de —78 °C. Dans le défaut de surface de 10—12 cm^2 une lamelle bient soupple a pris formation en suite de la mise de l'esquille en place dans l'interval de deux à deux mois et demi. Approximativment après six à sept mois et demi cette lamelle osseuse resemblait à la normale non pas seulement par la structure, mais aussi par son épaisseur. La conservation à l'aide de la lyophylisation avair pour suite une plus petite formation de l'os nouveau, mais au moment de l'addition de 20—25 % de l'esquille pas conservé du récipient lui-même cette activité de l'os lyophylisé augmenta tellement, que le défaut était rempli par une nouvelle lamelle osseuse à la structure typique dans l'interval de six mois.

ZUSAMMENFASSUNG

Regeneration der Schädelknochen nach Transplantation der konservierten homologen Knochenmasse

V. I. Kantorova, K. D. Timaschkevitsch

Die unter normalen Bedingungen nicht regenerierenden Schädelknochen beim Hund regenerierten nach Transplantation von Knochenmasse in den Defekt. Die Knochenmasse stellt jedoch nicht ein Gewebe dar, welches am Ort des Defektes anheilen würde, sondern sie wird resorbiert und stimuliert das umliegende Bindegewebe zur

Knochenbildung. Es kann zu diesem Zweck auch ein konservierter Knochen benutzt werden, der mechanisch zermalmt wurde. Von zwei Konservierungsmethoden gab das beste Ergebnis diejenige, bei welcher das Gewebe bei —78 °C tiefgekühlt wurde. Im Defekt mit einer Fläche von 10—12 cm² bildete sich nach Ausfüllung mit der Masse des homologen Knochens eine dünne Lamelle neugebildeten Knochengewebes bereits nach 2 und ½ Monaten. Nach 6—7,5 Monaten näherte sich dieser Knochen dem normalen nicht nur in seiner Struktur, sondern auch in seiner Dicke. Die Konservierung durch Lyophilisation verminderte die Fähigkeit der Masse die Knochenneubildung zu stimulieren, die Zugabe von 20—25 % frischer Knochenmasse des Wirtes verbesserte jedoch diese Fähigkeit des lyophilisierten Knochens insofern, dass sich der Defekt mit der Lamelle des neugebildeten Knochens mit typischer Struktur nach 6 Monaten ausfüllte.

RESUMEN

Regeneración de los huesos del craneo después de la transplantación de la pulpa huesosa homóloga conservada

V. I. Kantorova, K. D. Timaškevich

Los huesos del craneo en el perro, los que no regeneran en las condiciones normales, regeneraban después de la transplantación de la pulpa huesosa en el defecto. Pero la pulpa no representa el tejido que se uniría en ellugar del defecto, pero es resorbida y de esta manera provoca el tejido conjuntivo vecino a la formación del hueso. Para esta finalidad se puede aplicar también el hueso conservado lo que fue pulverizado mecánicamente. De dos modos de la conservación los mejores resultados dió él en el que el tejido fue congelado con la temperatura —78 °C. En el defecto de la superficie 10 hasta 12 cm² después de rellenar por la pulpa del hueso homólogo se formó la lámina delgada del tejido huesoso recién formado ya después de dos meses y medio. Después de seis hasta siete meses y medio este hueso se aproximó al normal no solamente de su estructura pero también de su espesor. La conservación por la liofilización disminuyó la capacidad de la pulpa provocar la nuevar formación del hueso pero el agregar 20 hasta 25 por ciento de la pulpa fresca del hueso del recipiente perfeccionó esta capacidad del hueso liofilizado hasta el punto de que el defecto se llenó con lámina del hueso recién formado con la estructura típica después de seis meses.

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PHALANGIZATION OF HAND METACARPALS

K. KARCHINOV

Phalangization represents deepening of the interdigital commissures in a fashion providing the metacarpal rays with the function of phalanges. This is a comparatively simple but, nevertheless, effective reconstructive procedure, suggested by Huguier (1852), and subsequently made popular and further improved by Perthes (1921), Klapp (1912), Albrecht, Parin, Shushkov and others.

The amputation of all or almost all digits of the hand for traumatic or congenital reasons is considered as indication for phalangization. The ampu-

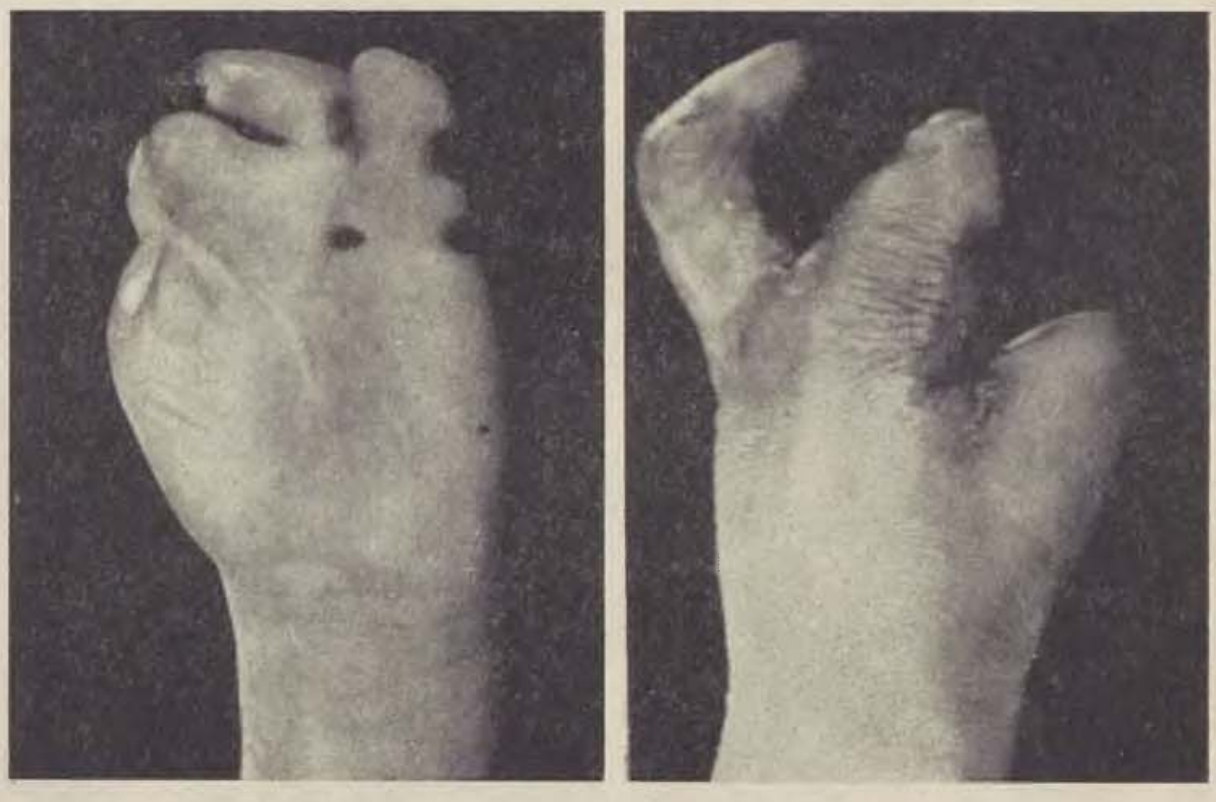

Fig. 1: Congenital amputation of the first three fingers and underdevelopment with clinodactyly of IV and V digits. — Fig. 2a): Phalangization of the thumb, accompanied by partial phalangization between III and IV and IV and V fingers

[1]) All cases were operated upon in Sofia (Bulgaria) and Habana (Cuba).

Fig 3: Amputation of all the fingers of both hands with skin defect reaching up to the wrist level; resurfacing with free skin grafts. — Fig. 4: After phalangization of the right hand, the patient is able to write

Fig. 5: Traumatic amputation of the four ulnar fingers of the right hand with skin defect. — Fig. 6: Phalangization of the fifth metacarpal with removal of the fourth metacarpal ray provides for tip prehension with the normal thumb

tation might be at the level of the distal part of the metacarpals, MP joints or at the base of the proximal phalanges. Thus, a severely mutilated and practically functionless hand might be enabled to obtain lateral and in some instance also pinch prehension. In similar heavy lesions of both hands, there is absolute indication for phalangization (Fig. 3, 4). Of course, it should be right away admitted that the functional improvement brought about by phalangization is achieved chiefly at the expense of the esthetic appearance of the hand.

Over a period of 12 years, we performed phalangization procedures in seven patients (in one both hands were operated on).

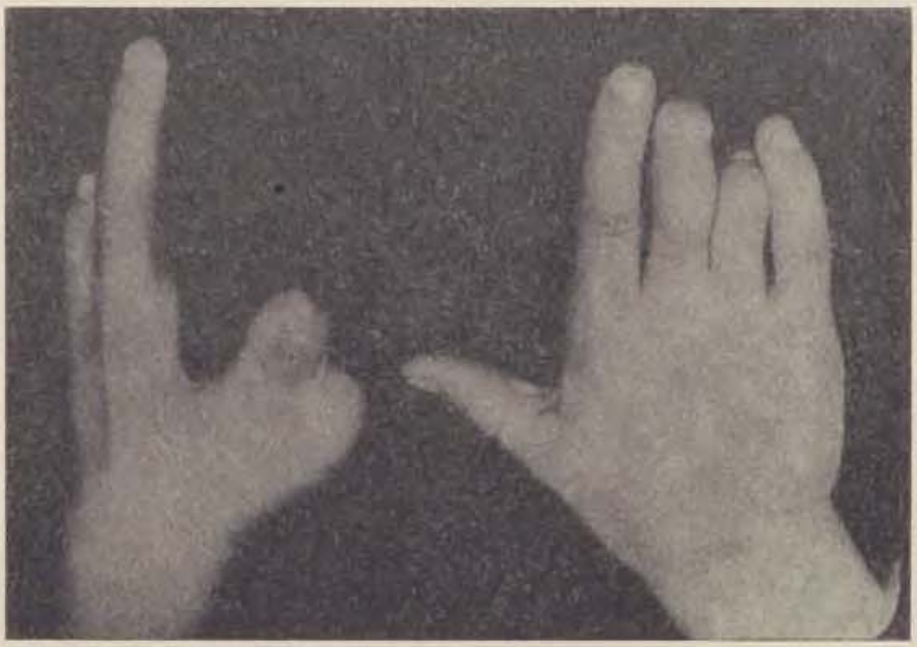

Fig. 7: Congenital amniotic amputation of I and II fingers of the left hand and missing III metacarpal ray (cleft hand)

Phalangization of the first metacarpal is the most frequently employed, since it converts the first metacarpal into a thumb phalanx. By such relatively limited intervention, it is possible to restore prehensile function of the hand, especially when all the fingers of the hand are missing. Thumb phalangization might be realized through deepening of the interdigital webs after the method of Albrecht or by means of extirpation of the second metacarpal. The skin available should be used for covering the newly formed thumb and in case of need, free or local skin grafting for resurfacing the adjacent to the thumb finger might be resorted to. When the second metacarpal is removed, it is desirable to preserve, although partly, the transverse belly of the adductor muscle, which is inserted to the third metacarpal; the first dorsal interosseus is anchored to the adductor, whilst the tendons of the second extirpated digit are transferred to the newly formed thumb. In these cases, the web space should

reach the borderline between the proximal and middle third of the metacarpal bones, which provides for stronger grasping. In cases with normal skin within the interdigital space, as in some of the congenital anomalies, phalangization of the thumb might be accomplished without extirpation of the second metacarpal ray, by means of Z-plasty or combination with minimal skin grafting. In similar cases, the function of the hand is greatly improved if the ulnar fingers are preserved (Fig. 7, 8).

More seldom, it is also possible to perform partial deepening of the web spaces of the remaining fingers, which similarly accounts for improved function of the primarily functionless hand [Fig. 1, 2a), b)].

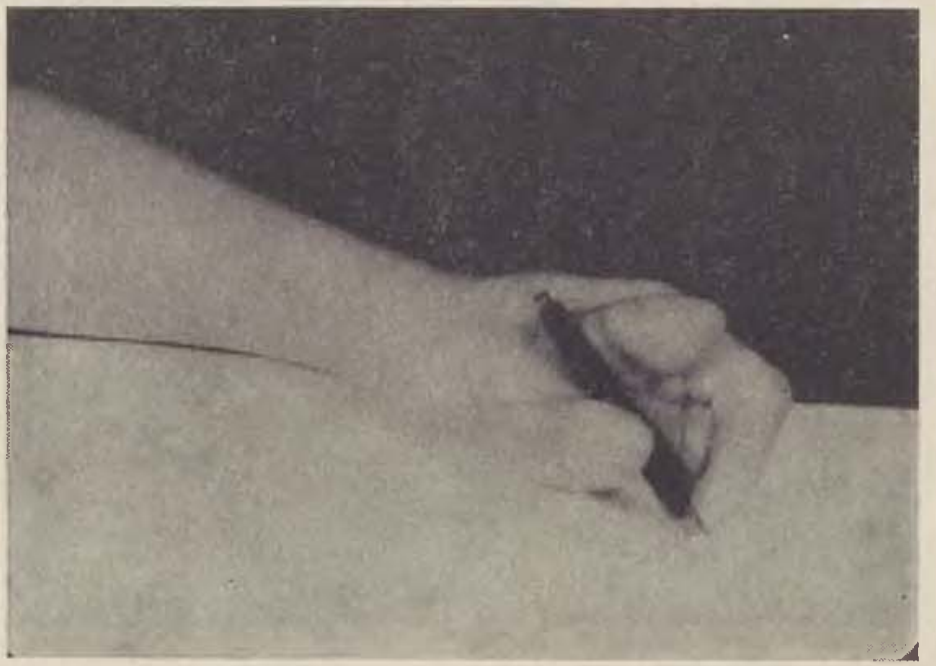

Fig. 8: The function of the hand is improved by employing the thumb mobility

Whenever the thumb is preserved and all the remaining fingers are absent, phalangization of the fifth metacarpal is recommended, since it is endowed with the best mobility as compared to the remaining four metacarpal rays. It is most feasible to associate phalangization of the fifth metacarpal with extirpation of the fourth metacarpal bone. The fifth metacarpal ray undergoing phalangization in these cases accomplishes pinch prehension with the normal thumb (Fig. 5, 6).

In phalangization of the metacarpals of the hand, when the proximal parts of the phalanges are partially conserved, the functional results are invariably superior. Whenever all the digits of the hand are amputated at the MP joints level, phalangization of the thumb and fifth finger might be considered in combination with the creation of a three-digit hand and performing osteotomy at the bases of the fifth and first metacarpal rays for finger tip opposition.

CONCLUSION

Phalangization of the metacarpal rays is easily performed and effective reconstructive operation in amputation of the fingers of the hand of traumatic and congenital origin. It is absolutely indicated in amputation of the fingers of both hands with preserved metacarpals.

Phalangization was performed in a series of seven patients.

Phalangization of the thumb finds widespread application whenever deepening of the interdigital commissure or extirpation of the second metacarpal is practicable, with preservation of part of the transverse head of the adductor muscle, by means of inserting the muscle fibers of the dorsal interosseus to the adductor and anchoring the tendons of the extirpated index to the first metacarpal ray. The tendency is to cover the thumb and the commissure with their proper skin. In the presence of two ulnar digits, phalangization is likewise indicated. In cases of preserved thumb and amputation of all the remaining fingers, phalangization of the fifth metacarpal ray is recommended.

RÉSUMÉ

La phalangisation des os du métacarpe de la main

K. Karchinov

La phalangisation des os du métacarpe est facile à réaliser et elle présente une opération réconstructive très éfficace dans des cas de l'amputation des doigts de la main soit traumatique soit innée. L'indication imposée est celle de l'amputation des doigts des deux mains aux métacarpes conservés.

Cette phalangisation a été réalisée chez sept malades.

La phalangisation du poucet peut être employée partout, où l'on peut réaliser l'élargissement de l'espace interdigital ou l'exstirpation du deuxième métacarpe, tout en conservant la tête oblique du musculus adductor, à l'aide de l'insertion des fibres musculaires de l'interosseus dorsalis dans l'adducteur en addition de la fixation des tendons de l'index exstirpé sur le premier os du métacarpe. L'auteur tâchent toujours de couvrir le poucet et l'espace interdigital par la peau d'eux-mêmes. Dans la présence des deux doigts du coté cubital la phalangisation est de même indiquée par la même manière. Dans des cas de l'amputation du poucet et de conservation des autres doigts, les auteurs récommendent la phalangisation de cinciquième os du métacarpe.

ZUSAMMENFASSUNG

Phalangisierung der Metakarpalknochen der Hand

K. Karchinov

Die Phalangisierung der Metakarpalstrahlen ist eine leicht durchführbare und wirksame Wiederherstellungsoperation bei Fingeramputationen traumatischen oder angeborenen Ursprungs. Eine absolute Indikation ist die Amputation der Finger an beiden Händen mit erhaltenen Metakarpen.

Die Phalangisierung unternahmen wir bei sieben Patienten.

Die Phalangisierung des Daumens kann breit in allen Fällen vorgenommen werden, wo die Vertiefung der Zwischenfingerverbindung oder Exstirpation des zweiten Metakarpus durchführbar ist, unter Erhaltung des Querkopfes des musculus adductor mittels Insertion der Muskelfasern des musculus interosseus dorsi in den Adduktor und Verankerung der Sehnen des exstirpierten Zeigefingers an den ersten Metakarpalstrahl. Wir bemühen uns den Daumen und die Kommissur mit ihrer eigenen Haut zu decken. Bei Vorhandensein von zwei Ulnarfingern ist die Phalangisierung ähnlicherweise eine Indikation. In Fällen, wo der Daumen verschont ist und alle übrigen Finger amputiert wurden, empfehlen wir den fünften Metakarpalstrahl zu phalangisieren.

RESUMEN

Falangización de los huesos de metacarpo de la mano

K. Karchinov

La falangización de los rayos de metacarpo es la operación de reconstrucción eficiente y fácilmente realizable en la amputación de los dedos de la mano del origen traumático o congénito. La indicación absoluta es la amputación de los dedos de ambas manos con los metacarpos conservados.

La falangización realizamos en siete pacientes.

La falangización del pulgar se puede aplicar minuciosamente en cualquier parte donde el ahondamiento del ligamiento interdigital o la extirpación del segundo metacarpo es realizable al conservar las cabezas transversales de musculus adductor por medio de la inserción de los filamentos musculares de musculus interosseus dorsi en el adductor y por anclar los tendones del índice extirpado en el primer rayo de metacarpo. Nos esforzamos cubrir el pulgar y la comisura con su piel propia. En presencia de dos dedos cubitales es indicada la falangización de manera análoga. En los casos cuando el pulgar es conservado y todos los demás dedos son amputados, recomendamos la falangización del quinto rayo de metacarpo.

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THIRD INTERNATIONAL CONGRESS FOR RESEARCH IN BURNS, PRAGUE, SEPTEMBER 1970

Prague was the host to a distinguished gathering of 500 specialists from 41 countries participating at the III. International Congress for Research in Burns which took place on September 20—26, 1970.

The congress was organized by the International Society for Burn Injuries in cooperation with Czechoslovak Medical Society of J. E. Purkyně. The high standard of all 30 sessions in which 177 papers were presented was insured by the presence of nearly all leading specialists in the field of the treatment and research of burns.

Fig. 1. Mr. A. B. Wallace, secretary general of I. S. B. I., receiving the Silver Medal from Lord Rector of the Charles University prof. Švestka in the ancient Aula of Carolinum.

The opening ceremony of the congress took place in the ceremonial hall of the ancient Carolinum of Charles University, founded in 1348. Among the participants were: the Minister of Health of the Czech Socialist Republic, Lord Rector of Charles University, as well as other distinguished personages. During the ceremony, representatives of universities of numerous states from all continents, wearing their traditional university garments, presented greetings to the Charles University. At this festive occasion, high honours were presented to several famous scientists whose friendly contacts with Czech medical science have lasted for years.

Mr. A. B. Wallace of Edinburgh, Secretary general of ISBI, received the Silver Medal of the Charles University. Academician prof. A. A. Vishnevski of USSR and prof. F. D. Moore of USA (in absentia) received honours from the Czechoslovak Academy of Science. Prof. S. Sevitt of Great Britain and prof. T. Skoog of Sweden were granted honorary membership of the Czechoslovak Medical Society J. E. Purkyně, while prof. C. P. Artz of USA and prof. T. J. Ariev of USSR (in absentia) became honorary members of the Surgical Section of the Czechoslovak Medical Society of J. E. Purkyně. Prof. M. Derganc of Yugoslavia, Mr. D. D. Jackson of Great Britain and prof. M. Allgower of Switzerland were awarded medals by the Society for International Relations.

After the opening ceremony, the scientific programme proceeded in two sessions. All problems of the treatment and the research of burns were discussed; major topics were discussed in symposia which were presented by top specialists from all parts of the world.

It was quite important that not only surgeons and plastic surgeons took an active part in the congress, but also specialists in anaesthesia, bacteriology, pathology, psychiatry and other fields of medicine which are indispensable for the complex treatment of the burn illness. Many papers that were presented brought new interesting facts and stressed important trends for future research. Simultaneously with two sessions, a number of very instructive films was shown in the film session.

At the last session of the congress, chairmen of the various symposia presented a summary of all interesting new facts and data presented during the congress and stressed problems on which attention should be concentrated in the future.

There was one new feature to this congress which was widely appreciated. Two scientific sessions were dedicated to nursing care in which nurses and rehabilitation workers participated actively. No doubt most of the burden of the treatment of extensive burns rests on the nursing staff and the success of the therapy must be, to a great degree, credited to the nurses. Therefore the decision to invade nursing personnel as active participants to the congress, to exchange experiences, was more than wise and should be adopted at other similar meetings.

Another important feature of the congress was the fact that, through the iniciative of the ISBI Secretary General, two symposia were devoted to prevention and to the problem of treatment of burns in developing countries. As the ISBI has been officially recognized by the WHO, and WHO sent its representative to the congress, the decisions reached at this meeting may well have very fruitful practical consequences.

The importance of the ISBI has considerably grown since its foundation in 1965 in Edinburgh, during the II. International Congress for Research in Burns. The number of members and member states has increased significantly. Thanks to the dedicated selfless efforts of the ISBI Secretary General, Mr. A. B. Wallace, the aims of the Society are very enlightened and should be widely supported. The ISBI wishes to further international cooperation and facilitate the exchange of scientific informations; it stresses the necessity of help to developing countries where the expert care for extensively burned patients is not yet sufficiently well organized.

The social programme of the congress was also quite extensive. It included a concert of 18th century music in a lovely baroque cathedral, an audience at the Prague City Hall, a picnic on the grounds of a small castle in the vicinity of Prague etc...

Those of the distinguished gueste who were awarded honours at the opening ceremony, were received at the Prague Castle by the President of the Czechoslovak Socialist Republic, Ludvík Svoboda.

The atmosphere at the Prague Congress was very informal, sincere and friendly, no doubt thanks to the fact that the participants are specialists in a rather narrow field of medicine, have known each other for years and are old friends who share the dedication to the problem of burns which requires a great amount of selfsacrifice and high moral qualities from its workers.

All are now sincerely looking forward to meeting again in 1974 in Buenos Aires, at the IV. International Congress for Research in Burns.

Comunication

2. meeting of the Association of German plastic surgeons will be held from 23.—25. 9. 1971 in Ludwigshafen at the Rhine. The subject will be:

Tumors of the skin.

Cosmetic surgery of the nose.

The repair of the traumatised hand.

Early complications in the treatment of burns.

INSTRUCTIONS TO AUTHORS

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

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

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

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

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

Quotations should be adjusted according to Czechoslovak norm as follows: Articles in journals — author's surname and initials, title of the article (may be left out), international abbreviation of the journal, volume, number, page and year of issue. For instance: Frazer F. C., Warburton D.: Plast. reconstr. Surg., 33, 4 : 395, 1964.
Books and monographs — name of author, title of publication, place of issue, publisher, year of issue and — maybe — also page from which quotations has been taken. For instance: Burian F.: Surgery of Cleft, Praha, SZdN 1954.

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