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EDITORIAL

DEAR COLLEAGUES,

we should like to announce to all our contributors, subscribers and readers, that in the future the duties of the Head of the Editorial board will be taken over by Prof. MUDr. Miroslav Fára, DrSc., Head of the Department of Plastic Surgery of the Charles University in Prague. The duties of the Scientific secretary will be entrusted into the hands of MUDr. Jaroslava Moserová, DrSc., Head of the Laboratory for the Research of Burns of the Department of Plastic Surgery in Prague.

For many years, the Journal prospered under the administration and scientific guidance of Prof. MUDr. Helena Pešková, DrSc., and MUDr. Radko Vrabec, CSc. It has gained popularity and scientific prestige. The Journal also helped to strengthen international ties between plastic surgeons and burn surgeons in many countries. The credit no doubt belongs to the Editorial board and its past efforts. The new officers of the Editorial board aim to follow in the footsteps of their predecessors who devoted their joined efforts to the Journal for two decades.

Both the outgoing and future Head of the Editorial board hope that the future cooperation with Editorial board members of the Journal, subscribers and authors will be fruitful, smooth and successful.

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PLASMA LEVELS OF SELECTED PROTEINS IN BURNED INFANTS AND TODDLERS

M. KUDLÁČKOVÁ, M. ANDĚL, J. NOVÁKOVÁ

INTRODUCTION

The common consequences of an acute stress condition involve a general decrease in proteosynthesis on the one hand and, on the other hand, an increase in the so called acute phase proteins. Simultaneously, markers of humoral and cellular immunity are usually decreased. A thermal injury is a significant physical stress agent. Post-burn disorders in proteosynthesis, in cellular and humoral immunity were found both in adults and children.

Nevertheless, the standard values of plasma proteins valid for the category of adults cannot be applied to children. The growth of children brings along physiological changes in the levels of many plasma proteins and thus there are very few reports about their subsequent behaviour after burn shock in youngest children. The proteosynthesis level and immune response are of great importance, both factors playing a significant part in complicated or uncomplicated healing of the burn.

Due to the above reasons, our study was mainly concerned with this problem. We investigated the effect of burn shock on some selected plasma proteins, whose laboratory determination is generally available.

PATIENTS AND METHODS

A total of 24 children aged 6 months to 3 years were followed up, their average age being 15.9 months. The group consisted of 16 boys and 8 girls. The average extent of the burned area was 8.7 ± 3.3 %. These were either 2nd b-degree burns or full-thickness burns rated as 3rd degree. Within 4 hrs. following shock the burned children were hospitalized in a special intensive care unit. The treatment of the burned children followed a traditional procedure: under general Ketalar anaesthesia, separate epidermic parts were re-

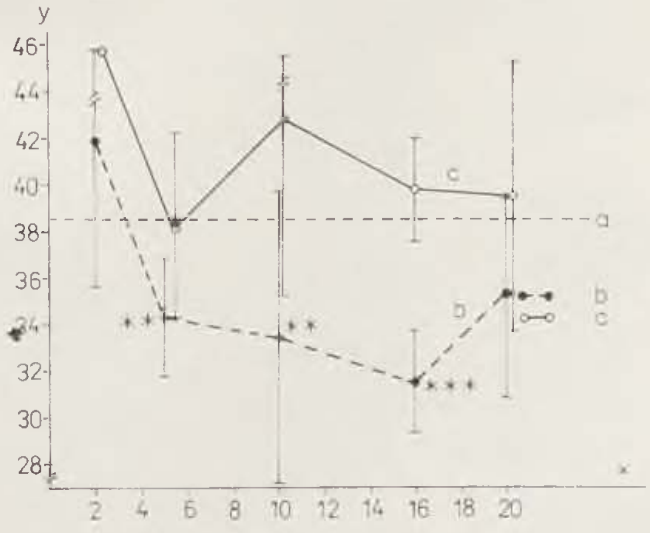
moved and antibacterial creams containing 1 % of silversulphadiazine were locally applied. Dressing was exchanged daily after applying Diazepam in does of 0.3 mg/kg b. w. In burns exceeding 10 % of the body surface a routine anti-shock therapy was used with Hartman's solution, i. e. 10 % of glucose and plasma. The ratio of crystalloids to colloidal components of the infusion therapy was 3 : 1. The average hospitalization period was 26.8 days, the minimum being 9, the maximum 47 days.

In most cases, blood was taken from the cubital vein, between 7 and 8 hours a. m. Blood samples were taken at 1—2, 3—5, 16, 20 post-injury days. Venous blood was analyzed by acetylcellulose electrophoresis for albumin and single globulin fractions. Mancini's radial immunodiffusion method was used to determine C-reactive protein concentrations. Statistical evaluation of the results was made using the paired t-test.

RESULTS

The results can be seen on the following graphs.

Graph 1. shows changes in the plasma level of albumin during burn shock treatment. The values measured after injury were within the range of physiological values. During subsequent measurements, a group of 13 children had a significantly lower level of albumin that the norm and 11 children had normal albumin level. Beginning with the 5th day, differences between the statistically significant albumin values ($p < 0.001$) in both groups were registered. A surprising fact was that the extent of the burned area (8.66 % and 8.8 %) in both groups was almost identical. However, it is to be noted that half of the patients (54.2 %) had their albumin levels decreased. Four of them had complications due to concomitant diseases. Two children had infection of the

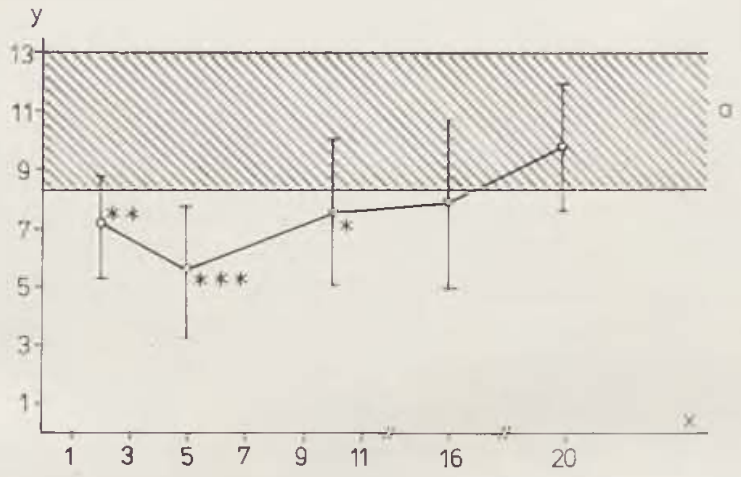


Graph 1. Plasma albumin levels in burned infants and toddlers
a — bottom norm limit 38.6 g/l; b — burned area extent 8.66 ± 3.2 % (n = 13)
c — burned area extent 8.8 ± 3.7 (n = 11) IInd—III degree; x — days; y — g/l

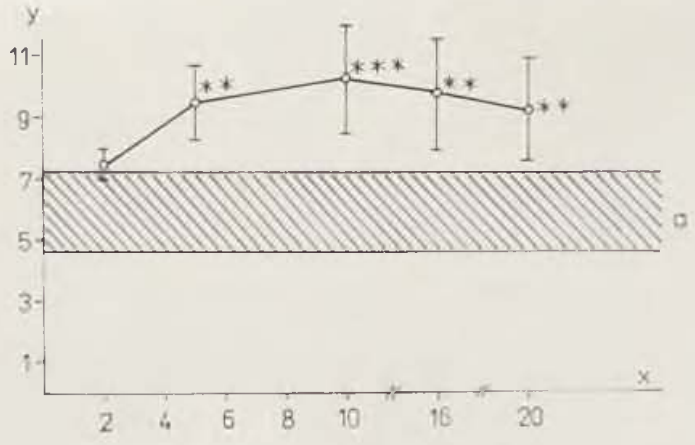
upper respiratory tract, one patient suffered from acute enteritis and one from otitis media.

Plasma gamaglobulin levels are given on graph 2., which shows that shortly after the injury the gammaglobulin levels decreased, the lowest levels being on the 3rd and 5th day ($p < 0.001$). This decrease was followed by an increase which reached the bottom norm limit until after the 16th day after shock.

Graph 3. shows plasma levels of alpha-2 globulins, which were monitored from the first day and the measured alpha-2 globuline values were above the norm. The increase reached its peak on the 10th day after shock ($p < 0.001$) and then the level was slightly decreasing. However, even on the 20th day,



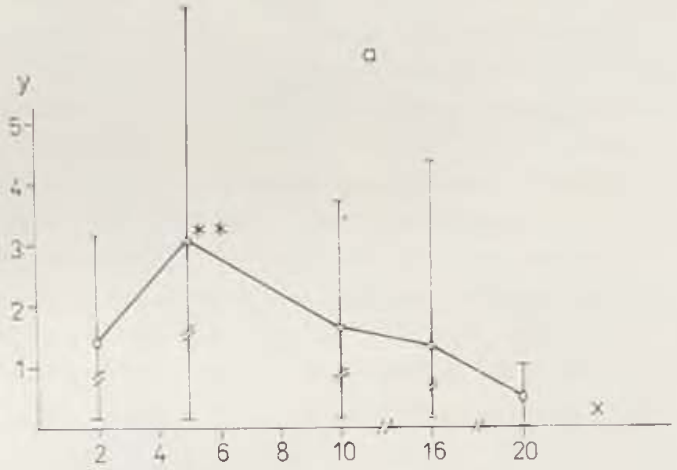
Graph 2. Plasma gamma globulin levels in burned infants and toddlers
a — normal level 8.2 — 13 g/l; x — days; y — g/l



Graph 3. Plasma alpha-2 globulin levels in burned infants and toddlers
a — normal values 4.6 — 7.9 g/l; x — days; y — g/l

the alpha-2 globuline values were still above normal values. Compared to normal values, the increases from the 3rd to 5th day were of statistical significance.

Graph 4. shows C-reactive protein values, which occur in children normally only in trace quantities. Higher values were already found shortly after the patient was admitted to hospital. The highest values were registered from days 3—5 (3 mg/dl). From that period the values were decreasing up to the 20th day. Due to great dispersion of results, a significant increase was noted only up to the 5th day.



Graph 4. CRP plasma levels in burned infants and toddlers
a — normal level 0-traces; x — days; y — mg/dl

DISCUSSION

Our results show a striking similarity of changes in the behaviour of the plasma proteins observed after burn shock with changes occurring in different, so-called post-aggressive states. These states are characterized by an increase in positive acute phase proteins and by a decrease in all the other plasma proteins. Out of the positive acute phase plasma proteins we studied the C-reactive protein levels and the alpha-2 component of blood serum which contains other acute phase proteins, i. e. celuroplasmin, haptoglobin and alpha-2 macroglobulin. Similarly as Arturson and Daniels, we were able to provide proof of the increase in all observed components already in the first post-injury days. We consider the observation of positive acute phase proteins important as it certainly indicates a serious illness. Their decrease indicates improvement in the general condition of the patients.

When following the albumin and gammaglobulin levels we arrived at completely different results. These proteins are usually regarded as the so-called negative acute phase proteins, i. e. as proteins whose plasma level due to the decreased proteosynthesis drops off after stress. We found a definite decrease in gamma globulins, the maximum occurring between days 3—5. Our con-

clusions correspond to those arrived at by other authors. With regard to the fact that the gammaglobulin component contains mostly immunoglobulins, their decrease generally results in a deteriorating immune response and in threatened infectious complications. Therefore, a rapid decrease in the immunoglobulin level should indicate a substitution therapy. In such cases, Shirany et al. recommend passive immunization.

Equally, the plasma albumin level is an important marker of proteosynthesis. This plasma protein is significant not only for maintaining oncotic pressure but also for the transport of many hormones, medicaments and other substances. The results of our observation showed no direct connection between hypalbuminemia and the size of the burned area in medium-sized burns. Similar conclusions were reached by Arturson and Baar. Hypalbuminemia is probably caused by several factors. Apart from the albumin losses due to the burned area, a temporary decrease in liver synthesis occurs. It can probably be explained by an individually different reaction to stress in the most general sense of the word. A significant decrease in the albumin level should be an indication for albumin and plasma administration.

In conclusion, it is necessary to stress that the capability of proteosynthesis and a good immune reaction are essential prognostic factors. Monitoring changes in plasma proteins is important not only for understanding the pathophysiology of the burn shock, it may also signal a deterioration of the clinical condition, which may influence the specific substitution therapy using plasma, albumin or immunoglobulin G.

SUMMARY

The paper assesses the effect of medium-extent burn shock on some parameters of proteosynthesis and humoral immunity in 24 children, aged 6 months up to 3 years. The following parameters were monitored: the plasma values of albumin, alpha-1, alpha-2 and gamma globulin, the immunoglobulin spectrum, and C-reactive protein level (CRP). In a number of burned infants and young children, the burn shock was monitored mainly by means of protein increase in CRP acute phase protein. When healed, the CRP level reached always the normal value. Equally, the alpha-2 globulin level was significantly higher, the increase remaining unchanged throughout hospitalization. In 13 children an albumin decrease was found, in some of these falling even under 30 g/l. In the majority of cases gamma globulin decrease was registered. The results obtained show the significance of the changes accompanying proteosythesis during burn shock, as they may influence not only local healing but also the general condition of the patient.

RESUME

Taux plasmatiques de protéines choisis chez les nourrisons et les petits enfants brûlés

Kudláčková, M., Anděl, M., Nováková, J.

Le travail présente évalue l'influence du traumatisme de brûlure d'étendue moyenne sur quelques paramètres de la protéosynthèse et de l'immunité humorale, dans

un groupe de 24 enfants, agés de 6 mois à 3 ans. On a suivi les paramètres suivants: taux plasmatiques de l'albumine, globulines alpha 1, alpha 2 et gamma, spectre des immunoglobulines et le taux de la protéine C réactive. Chez un grand nombre de nourrissons et de petits enfants, le traumatisme de brûlure était suivi par l'augmentation de la protéine en phase aiguë de la protéine C réactive. La guérison se distinguait toujours par le taux de protéine C réactive normal. Le taux des globulines alpha 2 était aussi considérablement élevé. L'augmentation se poursuivait tout le long de l'hospitalisation. Chez 13 enfants, on a constaté l'abaissement d'albuminémie, chez quelques patients même au-dessous de 30 g/l. Dans la grande majorité des cas, l'abaissement des gamma-globulines s'effectua. Les résultats présentés montrent l'importance des changements accompagnants la protéosynthèse dans le traumatisme de brûlure, ce qui peut influencer non seulement la guérison locale, mais aussi l'état général du malade.

ZUSAMMENFASSUNG

Das plasmatische Niveau ausgewählter Proteine bei Säuglingen und Kleinkindern mit Verbrennungen

Kudláčková, M., Anděl, M., Nováková, J.

In der verliegenden Arbeit wird der Einfluss eines Traumas bei Verbrennungen mittleren Grades auf einige Parameter der Proteosynthese und humoralen Immunität bei 24 Kindern im Alter von sechs Monaten bis zu drei Jahren ausgewertet. Die folgenden Parameter wurden verfolgt: plasmatische Werte des Albumins, Alpha 1, Alpha 2 und Gamma-Globuline, das Spektrum der Immunoglobuline und das Niveau des C-reaktiven Proteins. Bei einer Reihe der Säuglinge und Kleinkinder mit Verbrennungen wurde das Trauma nach der Verbrennung vor allem durch den Anstieg des Proteins der akuten Phase CRP (C-reaktives Protein) beobachtet. Beim Heilen normalisierte sich das Niveau des CRP immer. Bedeutsam gesteigert war auch der Wert der Alpha-2-Globuline, wobei diese Steigerung während der gesamten Dauer der Hospitalisierung anhielt. Bei dreizehn Kindern wurde ein Absinken der Albuminämie festgestellt, bei einigen sogar unter 30 g/l. Bei der überwiegenden Mehrheit kam es zu einem Absinken der Gamma-Globuline. Die erzielten Ergebnisse weisen auf die Schwere der Begleitveränderungen der Proteosynthese bei einem Trauma nach Verbrennungen hin, die eine Wirkung nicht nur auf die lokale Heilung haben können sondern auch auf den Gesamtzustand des Patienten.

RESUMEN

Niveles plasmáticas de proteínas elegidas en lactantes quemados y en los nenes quemados

Kudláčková, M., Anděl, M., Nováková, J.

En el artículo presentado está hecha la valorización de la influencia del trauma de quemadura de media extensión en algunos parámetros de la proteosíntesis y la inmunidad humoral en 24 niños — de edad desde seis meses hacía tres años. Fueron examinados parámetros siguientes: los valores plasmáticos de albumina, alfa 1, alfa 2 y gama globulinas, el espectro de las inmunoglobulinas y la nivel de C-reactiva proteína (CRP). En algunos lactantes quemados y en niños pequeños el trauma de quemadura fué notado por el crecimiento de la proteína de fase aguda de CRP. Después de curación la nivel de CRP siempre fué normalizada. Significamente elevada fué también la nivel de alfa-2-globulinas, su elevación se mantenía a lo largo de la hos-

pitalisación. En trece niños fuë comprobada la disminución de la albuminemia, en algunos enfermos hasta bajo 30 g/l. En mayoría absoluta tuvo lugar la disminución de gamaglobulinas. Los resultados aquí presentados muestran la importancia de los cambios acompañantes de la proteosíntesis en caso del trauma de quemadura, los cuales pueden influir no solamente la curación local, sino también el estado total del enfermo.

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The rest of the literature available at the authors.

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BURNS IN CHILDHOOD — EPIDEMIOLOGY

J. BLAHA

From the day our Centre was opened in 1971 up to May 1, 1987 we had 8,728 patients hospitalized for treatment, including 3,369 children (38.5 %). Those under the age of 3 years were the predominant group with scalds as the most frequent cause of injury. The overwhelming majority were home accidents. Judged by the extent of injury burns up to 10 % of the body surface topped the list. The average time of treatment ranged from 18 to 21 days, with mortality standing at 2.8 %.

The surprising high percentage of burned children prompted us the idea to study the epidemiology of burns in children. To throw more light on the circumstances of the accidents we compiled a questionnaire to obtain data on the parents, on the social situation, family relationships, the site and circumstances of the injury, the children's state of health and behaviour prior to the accident, on the extent of burns and on the children's age. In the 1982—1985 period, we processed 456 questionnaires using the technique of data cards and an IBM computer.

The following conclusions were drawn:

1. Mother's education and age: basic education — 53.51 %, secondary education — 31.8 %, none — 11.1 %, university education — 3.5 %. The predominant age group from 20 to 30 years — 63.1 %, the least numerous group was under the age of 20 — 2.85 %.
2. Father's education and age: basic education — 54.3 %, secondary — 30.2 %, none — 8.5 %, university education — 6.5 %. The predominant age group was that between 20 and 30 years — 51.3 %, 30 to 40 years — 36.1 %, under the age of 20 — 1.3 %.
3. Child's age: up to 2 years — 46 %, up to 6 years — 32.6 %, up to 14 years — 18.6 %, up to two weeks — 2.1 %.
4. Child's sex: 61.6 % were boys, the rest were girls.
5. Child's pre-injury state of health and behaviour: 92.1 % of the parents descrived their children's health as good, 6.5 % as poor, 92.6 % described their children's behaviour as adequate, 3.2 % as choleric, 1.9 % as melancholic.

6. Upbringing: mothers themselves took care of their children in 57.8 % of the cases, grandparents — 8.7 %, 13 % of the children attended school, 10.3 % went to kindergartens, 7 % were looked after in crèches.
7. Number of siblings: 36.1 % of the children had one sibling, 27.1 % had two, 9.4 % had three, 12.5 % had four or more siblings.
8. Housing: 53.5 % of the respondents regarded their housing conditions as satisfactory, 17.1 % as inadequate. 28 families had separate children's rooms.
9. Type of housing: 53.5 % lived in family houses, 34.6 % in housing estate flats, 8.7 % in older urban blocks of flats, 2.8 % in other housing facilities.
10. Medical family history: 84.6 % reported no diseases, 4.3 % reported burns in the family in the previous period, 3.2 % reported alcoholism, 2.6 % — hereditary involvement, 1.9 % — congenital diseases, 1.7 % — psychiatric involvement.
11. Causes of accident: hot water was the most frequent cause — 52.4 %, fire — 11.8 %, explosion — 6.1 %, electric current — 3.5 %, other causes — 25.4 %. First aid was reported to have been provided in health institutions — 86.8 %, at home — 10.9 %, elsewhere — 2.1 %.
12. Degree of burn: 3rd-degree burns — 50 %, 2 nd-degree burns — 47.1 %, 1st-degree burns — 2.4 %. Extent of burn: up to 15 % of the body surface — 40.3 %, up to 5 % of the body surface — 39.2 %, over 15 % of the body surface — 19.5%.
13. Clothing: 53 % of the children were wearing clothing made of natural fibre materials, 29.6 % — artificial fibre fabrics, 16.6 % were naked at the time of accident.
14. Time of day: most of the accidents happened in the morning — 34.5 %, in the afternoon — 33.9 %, in the evening hours — 30.2 %.
15. Place and guarding at the time of accident: 82.2 % of the accident took place at home, 17.1 % outside the children's homes. 60.9 % were guarded, 31.8 % were unguarded at the time of accident.
16. 70.8 % of the accidents were reported the children's own fault, 27.6 % other people's fault.
17. Pre-accident quarrel? was reported in 8.3 % of the cases.

The data for the period under study were obtained from our centre's catchment area — the Slovak Socialist Republic. In the absence of a similar study in our literature we cannot compare our results with those at other centres.

Our catchment area shows a negligible difference in the rate of thermal injuries between large cities, small towns or villages. However, as regards the gravity of burns in young children, extensive burns prevail in smaller community, in particular, children falling accidentally into hot liquids such as pig-slaughtering soup, or into pots of boiling water placed on the ground, etc.

There are more university educated men than women, and more women with incomplete basic education than men. A large proportion of the injured children were looked after by their mothers. In spite of the predominance of

children with no reported family history of disease, there is a large proportion (4.39 %) of families with a history of thermal injury. Most of the accidents happened in family houses and in families who rate their housing as adequate.

Concurrently with other statistics, hot liquid predominates as the cause of injury (2, 4, 6, 7). Nearly a quarter of the accidents resulted from causes other than those in the questionnaire. These were unexpected accidents with the mode of injury depending on the accessibility of diverse chemical substances. As one example for many — decolourizer which is available for a few crowns at any chemist's and which cause typical injuries in boys of younger age groups, specifically in the region of the groin and proximal third of the thigh, injuries which tend to be deep and heal mostly by second intention.

Nearly 87 % of the affected children received first aid at health institutions, in itself evidence of the good organizational structure of the Czechoslovak health services in terms of their availability. Since the Slovak Ministry of Health issued its Methodological Guidelines there has been improvement in the burned children's transport to our Centre, a fact which has had a favourable effect on the rate of survival in children with thermal injuries.

The boys-girls ratio is 1.6 : 1 as reported in most world statistics. The only exception is Algeria where the male-female ratio is 1 : 2, apparently a reflection of the local conditions of life (1). There is a predominance of deep burns affecting a relatively smaller area of the body surface — i.e., burns affecting 5—15 % of the body surface.

Clear identification of artificial fibre textiles as inflammable substances and a potential source of injury remains an open question. The flameproofing of fabrics would seem one of the approached to accident prevention. According to economic calculation, however, this would raise the price of textiles by 35 %. Clearly, this problem requires adequate attention.

CONCLUSION

The parents responses at the time of their children's admission to our Centre are marked by a great deal of subjectivity and distortion of reality. One can hardly take seriously, for instance, the claim that a 6-month old baby "poured itself over" with hot liquid. Equally vague seem to be the data on the children's clothes of artificial or natural materials and artifical fabrics, most of them highly inflammable, are not well marked in this country and are sometimes difficult to recognize. Our experience based on the treatment of more than 3,000 burned children clearly shows the need for more prevention where we seem to have been largely amiss. Every day we can see proof of the generally recognized fact that by far most of the severe injuries result from minor inadvertency with enormous, often lifelong, consequences for the affected child and for the family, and need not have really happened at all. We do not regard as unrealistic the estimate that 90 % of all the burns sustained in childhood are, in fact, preventable accidents. For that reason, we see prevention as the only possible way of reducing the rate of such serious injuries.

SUMMARY

A large proportion (38.5 %) of the patients admitted for treatment at the burns centre are children. The most affected is the age group of up to two years, hot liquids are the most frequent cause of thermal injury. The data obtained indicate that generously conceived and practised prevention is the only way of reducing the frequency of burn injuries.

RESUME

Brûlures à l'âge enfantin — épidémiologie

Blaha, J.

Un grand pourcentage des malades reçus au Centre de brûlures font les enfants (38.5 %). Le groupe le plus atteint est le groupe d'enfants de moins de deux ans. Les liquides bouillantes représentent la cause principale des brûlures. Des donnés acquis résulte une seule possibilité de diminuer le nombre et l'importance de ces traumatismes: la prévention largement répartie.

Zusammenfassung

Verbrennungen bei Kindern — Epidemiologie

Blaha, J.

Kinder stellen einen hohen Prozentsatz der Patienten dar, die in das Zentrum für Verbrennungen aufgenommen werden (38.5 %). Am meisten wird die Altersgruppe bis zu zwei Jahren betroffen, und die häufigste Ursache sind heisse Flüssigkeiten. Aus den gewonnenen Daten geht hervor, dass die einzige Möglichkeit zur Herabsetzung der Häufigkeit und der Schwere solcher Unfälle auf dem Gebiet einer breitest entwickelten Prävention liegt.

RESUMEN

Quemaduras de los niños — epidemiología

Blaha, J.

Un gran porciento de los enfermos, hospitalizados en el centro de las quemaduras, son niños (38,5 %). Por grupo más dañado son niños de edad hasta 2 años, por la causa más frecuente son los líquidos hirvientes. De datos obtenidos influye, que la única posibilidad de la reducción de la frecuencia y de la importancia de los accidentes consiste en prevención ampliamente desarrollada.

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Barclay T. L., Kernahan A. A.: **Rob and Smith's Operative Surgery — Plastic Surgery,** 4th edition. London. Boston, Durban, Singapore, Sydney, Toronto, Wellington. Butterworths, October 1986.

Led by prominent plastic surgeons — T. L. Barclay of Bradford, Great Britain, and D. A. Kernahan of Chicago, USA, — a team of 60 authors and 30 illustrators have ventured to cover the vast range of problems of plastic and reconstructive surgery in the form of a pictorial atlas with extremely practical illustrations and texts describing the different surgical techniques.

The book is divided into 21 chapters: basic technique, restoration of skin cover, lining of facial defects, skeletal replacement, cleft lip and palate, the ear, the nose, the eyelids, the mouth, facial fractures, facial palsy, face lift, benign and malignant lesions of the head and neck, malignant lesions of trunk and limbs, burns, breast, abdominal wall, pressure sores, leg and foot. lymphoedema, urogenital tract. These themes are subsequently elaborated into a total of 62 subchapters. The book contains 763 pages with 1,391 illustrations, most of them presented in more graphic pictures to give details on the partial phases of surgical operations.

Each chapter consists of a general introduction, descriptions of surgical procedure, post-operative aftertreatment and possible complications. In conclusion, the advantages and disadvantages of each method are listed, and references are included to other sources of literary treatment of the problem.

The book obviously aims at giving a survey of the most frequently used surgical techniques of dealing with diseases and defects within the realm of plastic and reconstructive surgery. The wealth of graphic and easy-to-survey illustrations supplemented with richly informative texts will be of use not only to experienced surgeons but, in particular, to young plastic surgeons at the beginning of their careers. The make-up of the whole book and its well balanced chapters are in keeping with the demands currently placed on plastic surgery as a whole. Each chapter contains descriptions of older, well tried methods and techniques of operating as well as the latest achievements such as rotation of large myocutaneous flaps, microsurgical techniques, craniofacial surgery, the possible uses of plastic implants including tissue expanders, etc.

The book does not cover techniques concerning surgery of the hand. This subject is dealt with separately in "The Hand", a volume edited by R. Birch and D. Brooks, as part of Rob and Smith's Operative Surgery.

All this suggests that the 4th edition of Plastic Surgery prepared by Butterworths publishers is a successful work which should be available to all plastic surgeons.

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PROBLEMS OF MICROSURGICAL REPLANTATION

L. BAŘINKA, A. NĚMEC, J. VESELÝ

The expansion of replantation surgery does not go very far back in history. In Europe, replantation centres started being set up in the years 1974—1977, invariably as part of plastic surgery departments engaged in surgery of the hand.

Microreplantation is related to the development of vascular microsurgery which at that time was passing from experimentation to clinical uses, and which is defined, in the upper extremity, as an operation for the reconstruction of all vital and functional structures in amputations distal from the wrist.

During the latter half of the 1970s, three microsurgical replantation units were developing in this country — the departments of plastic surgery in Bratislava and Brno and the 1st Surgical Department in Olomouc. These were joined by the Department of Plastic Surgery, Prague, in 1984, and later also by its counterpart in Košice.

At the Department of Plastic Surgery, Brno, the first attempt at microreplantation was ventured by Prof. Bařinka in 1976. The first successful replantation was accomplished by Dr. Jakubík and Dr. Válka in 1978. The number of injuries thus treated was not very large at first, and began to grow only after 1982 in connection with a new wave of replantation efforts and with increased general and professional knowledge of the potentialities of replantation surgery. Surgeons of the plastic surgery department in Brno have so far replanted or revascularized 248 fingers, 21 hands, 9 forearms, 6 arms and 6 legs subtotally detached in the distal part of the lower leg. The youngest patient was 16 months old, the oldest 73 years.

Amputation of the thumb, amputation of more fingers, of the hand or forearms are absoluted indications for replantation. There are, however, several limiting factors such as contusion of the amputated part, its other injury, the patient's generally poor condition, diabetes, heavy smoking, arteriosclerosis. These factors come into their own in making decisions on relative indications for replantation such as amputation of one finger, amputation of the distal parts of the finger, etc. Age over 60 is not necessarily a strictly limiting factor; it is the patient's physiological condition that is of more relevance.

The surgeon referring his patient to a replantation centre ought to observe the rules for transport as, e. g., the use value of the amputated part

may be reduced by mishandling. For transport the patient's general condition ought to be satisfactory, there should be an X-ray picture, and bleeding ought to be arrested, if possible, with the use of compressive bandage. Hydrogen peroxide should not be used for disinfection as it causes vascular damage. The amputated part should be cooled by wrapping it up in moistened mull and placing it in a polythene bag which should be kept in a larger polythene

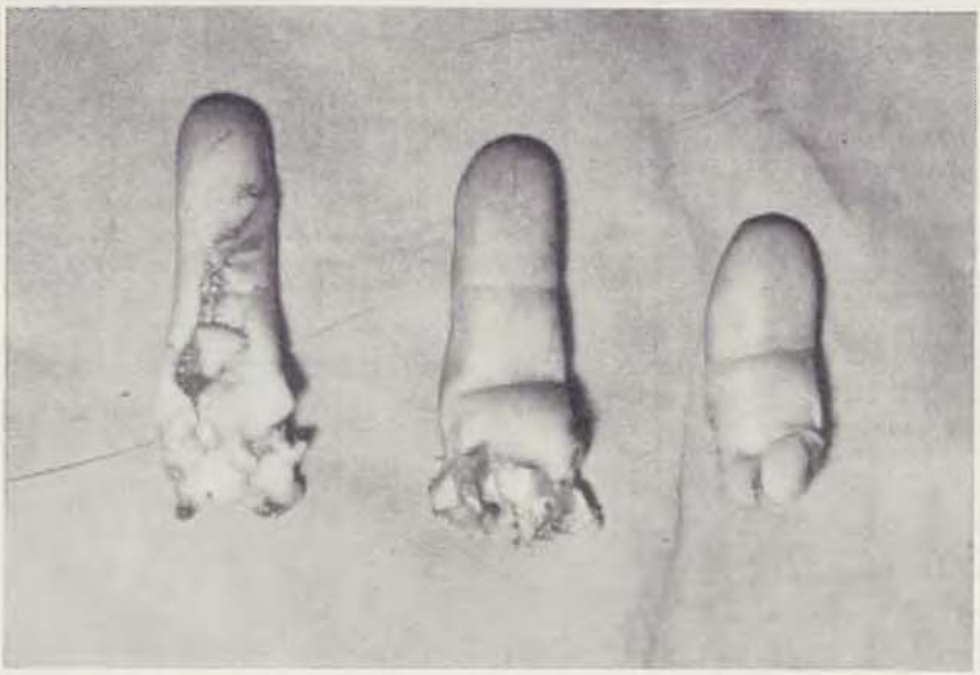

Fig. 1, 2, 3. Total amputation of digits II—IV on the left hand of a 34-year old man, and state after union

bag with a mixture of water and ice at a ratio of $^2/_3 : ^1/_3$. This should keep the temperature at an optimum +4 °C during transport and preoperative preparation. The transport should be as fast as possible to minimize the amputated part ischemia time, i. e., the time lapse between injury and arterial reunion. Obviously, the patient will be referred from the surgical department to the replantation centre following a telephone agreement including details about the limiting factors and the type of amputation.

For general orientation we present our nomenclature:

Total amputation — the amputated part is completely detached from the stump.

Subtotal amputation — the amputated part has no blood supply and is connected with the stump either by bone (type I), or by extensors (type II), flexors (type III), major nerves (type IV), or a skin bridge less than one quarter of the circumference (type V). The major vessels are interrupted and there is no blood circulation in the amputated part.

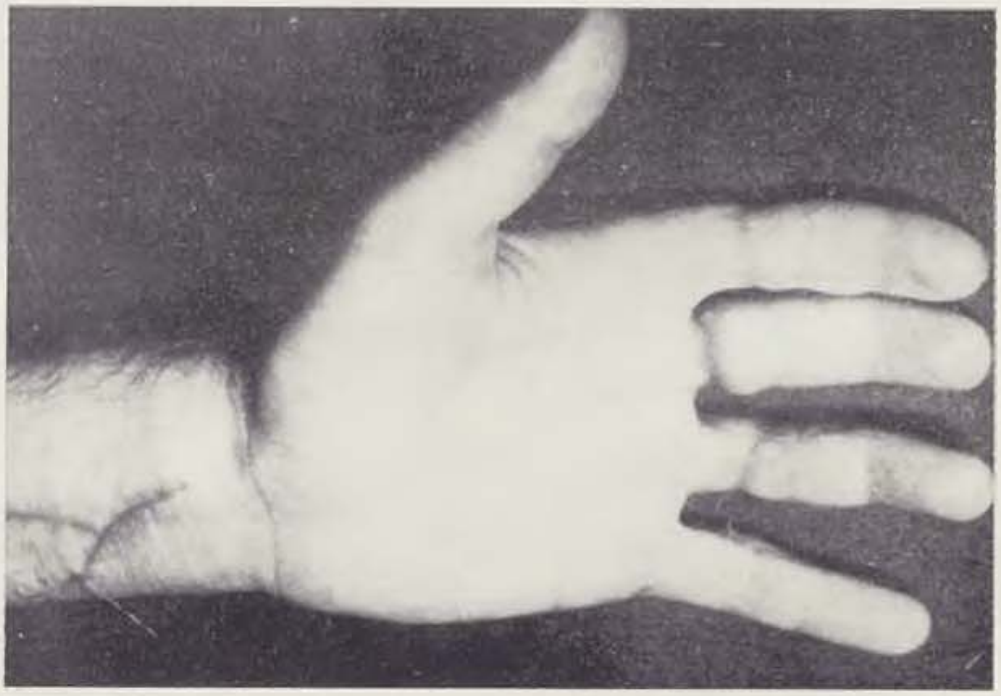

Fig. 3.

Major compounded injury with vascular interruption — the amputate part shows signs of blood circulation, albeit limited, and the connection between it and the stump tends to be greater than in subtotal amputation. For brevity's sake, we use the term semiamputation.

The surgical operation designed to reconstruct all the structure important for survival and function is called replantation in cases of total amputation, and revascularization in cases of semiamputation.

Replantation is a complex surgical operation aimed at bone fixation by means of optimum osteosynthesis, at the restoration of blood supply, nerve continuity and at suturing the tendons. Replantation is a lengthy and — in the microsurgical part involving the reconnection of the vessels and nerves — often complicated operation. During the operation proper and in the course of the first ten post-operative days the purpose of medication is to maintain

Fig. 4, 5. An example of hand amputation in "middlehand" zone

the patency of vascular anastomoses, and to prevent infection. The less heparin we apply, the better healing we can observe. As a rule, we use Heparin retard in s.c. doses of 2 × 7.5 thousand units. For anticoagulants we use Curantyl 3 × 1, ACP effervescent 3 × 1 tablet. The combination and dosage of those drugs is highly individual, and sensitively balanced post-operative treatment can greatly increase the rate of replant survival. Survival is assured

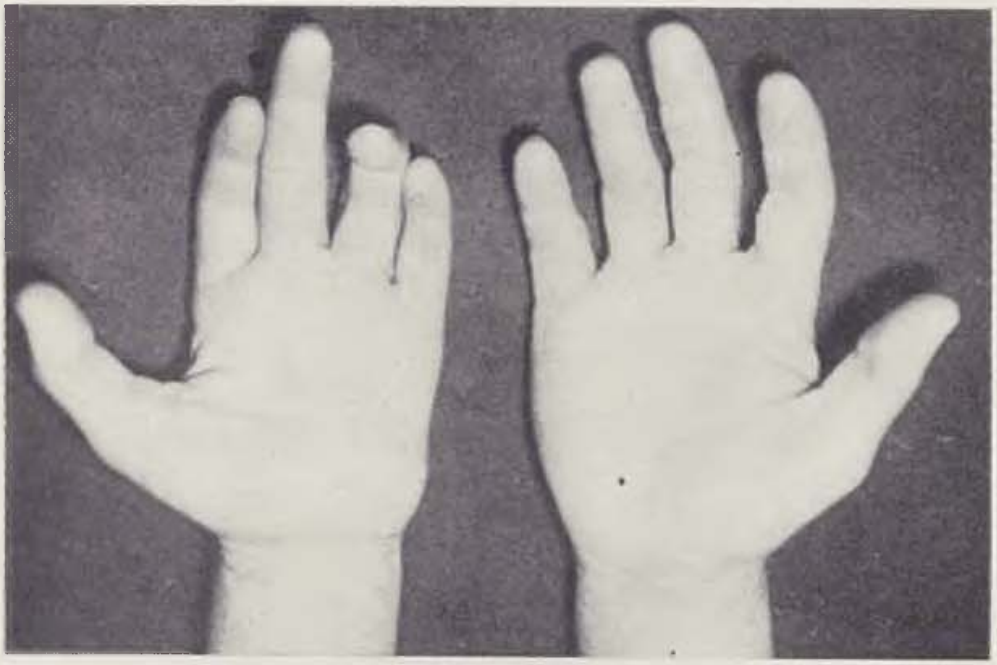

Fig. 6, 7. Functional capacity of replanted hand after secondary operations on flexors, and implantation of MP articular replacement in place of MP joint II

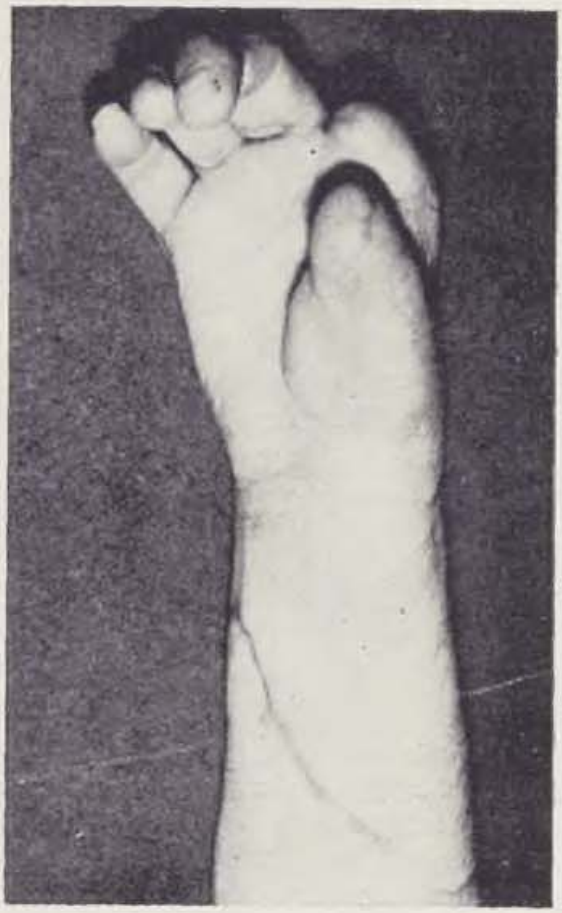

Fig. 8, 9, 10. Amputation of forearm in a 45-year old man, state immediately after surgery, and state after union

after the first ten post-operative days, though until this last critical day we are likely to encounter thrombotic complications requiring revision in cases of up to the 4th post-operative day, from days 5 up to 6 — conservative therapy. It will often be necessary to perform a major resection of the thrombotic portion of the vessel, and to suture in a venous graft taken, as a rule, from the volar side of the wrist.

It is only after the amputated part has healed in that the severed extremity or its part start being restored to life. What follows is protracted and toilsome rehabilitation, or the need may arise for secondary operations. Surprisingly enough, we seldome meet with pseudoarthrosis or ostitis in convalescence. Our secondary operations are most likely to be aimed at the deliberation or reconstruction of tendons, especially flexor tendons, and the reconstruction of joints. In fingers we implant joint prothesis of highpressure polyethylene.

We regard the functional results as very satisfactory if the patient can resume his or her previous job, if there is good finger movement and sensitivity.

Last, we want to stress the need for specialization, the specificity of replantation surgery, and the need for adequately equipped replantation centres. Without modern technical means, adequate suturing material, and refined and flawless microsurgical instrumentarium routine practice is no longer possible. The purpose of the present communication was to inform on the problems involved in microsurgical replantation. We hope our experience will be of help to surgeons in making decisions about the patients thus affected

SUMMARY

The authors briefly discuss the history of replantation surgery in Czechoslovakia, the indications for, limiting factors and nomenclature of replantation. They inform the surgeon referring his patient to the replantation centre on the technique of treatment of the amputated part and on the rules of prompt transport, to report on the technique of replantation, post-operative treatment, complications and secondary operations.

RESUME

Problèmes d'opérations microchirurgicales

Bařinka, L, Němec, A., Veselý, J.

Dans leur article, les auteurs font remarquer l'histoire de la chirurgie de réimplantations chez nous. Ils précisent ensuite les indications, les facteurs limitants et la nomenclature des réimplantations. Au chirurgien assurant le transfert du malade au centre de réimplantation sont destinées les informations sur la façon des soins prétés au fragment amputé avec toutes les recommandations concernantes le transport au centre. Les auteurs mentionnent également les techniques opératoires de réimplantations, le traitement postopératoire, les complications et les interventions secondaires.

ZUSAMMENFASSUNG

Die Problematik mikrochirurgischer Operationen

Bařinka, L, Němec, A., Veselý, J.

In dem Artikel weisen die Autoren auf die Geschichte der Replantationschirurgie bei uns hin. Ferner erläutern sie die Indikationen, die limitierenden Faktoren und die Nomenklatur der Replantationen und informieren die Chirurgen, die einen Patienten zur Replantation zur entsprechenden Abteilung entsenden, über die Art und Weise der Pflege des Amputats und geben Ratschläge für den Transport. Sie führen auch informativ die Methode der Replantation an sowie der Behandlung nach der Operation, die Komplikationen und die sekundären Operationen.

RESUMEN

Problemática de operaciones microquirúrgicas

Bařinka, L, Němec, A., Veselý, J.

En el artículo los autores se refieren a la historia de la cirugía de replantación en nuestro país. Más adelante someten al análisis las indicaciones, los factores limitantes y la nomenclatura de replantaciones. Ellos prestan las informaciones al cirujano, quién envía el enfermo en el departamento de replantación, sobre la técnica de asistencia del amputado y le señalan instrucciones para el transporte. Con fin informativo mencionan el método de la replantación, el tratamiento postoperatorio, complicaciones y operaciones segundarios.

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Ist. International Course on Musculocutaneous Flaps Dissection in Brno (Czechoslovakia)

This course will be organised by the Clinic of Plastic Surgery of the Purkyně University of Brno, Czechoslovakia, head Prof. Dr. I. Bařinka, DrSc., in collaboration with the Department of Plastic Surgery of the National Institute for Cancer Research of Genova, Italy, Head Dr. Perluigi Santi, from October 24th to November 4th 1988.

The course will be organised for 30 participants divided into 3 groups of 10 persons and will last two days for each group, with theoretical lessons in the morning and cadaver dissections in the afternoon.

The official language will be English.

Applicants are invited to contact the following addresses:

Doc. MUDr. J. Samohýl, CSc.,
Klinika plastické chirurgie,
Berkova 34, 612 00 Brno
Czechoslovakia

or

Dr. Pietro Berrino,
National Institute
for Cancer Research,
Genova, Italy

P. J. Šafařík University, Medical Faculty, Košice (Czechoslovakia)
Teaching Hospital
Department of Plastic and Reconstructive Surgery
Head Ass. Prof. A. Kipikaša, M. D., CSc.

FERTILITY IN PATIENTS WITH HYPOSPADIAS

I. JUGENBURG, A. KIPIKAŠA

Literature on the fertility of patients with hypospadias is not very extensive. In their monograph on impotence, Wagner and Green do not even consider hypospadia to be a potential cause of impotence. Other authors, though, such as Mayo, 1901, Marx, 1938, regard the majority of patients with hypospadia to be impotent. However, their conclusions are not based on exact testing and so they cannot be considered reliable.

For many years our department has been concerned with the study of hypospadias from various angles aiming to attain better surgical results, following the psychosocial development of the patient, concomitant anomalies, etc. This study is based on investigations made by Kipikaša, Sørensen and Farkaš, and our task was to find out the relationship between the maldescent of the testes and the form of hypospadia and the relationship between the form of hypospadia and pathological finding in descended testes.

MATERIAL AND METHODS

We decided to carry out a random check-up of our patients operated on in adolescence. This group consisted of 33 cases.

The quality of the matured testes was carefully investigated through the biopsy of both testes as the finding in one need not be identical with that in the other side. The material for biopsy was obtained through the excision made above the raphe of scrotum. Before that, however, both the patient and his parents received detailed information about it, and were invited to give their consent. The material obtained was assessed in the Institute of Pathological Anatomy, Medical Faculty, P. J. Šafařík University, Košice.

RESULTS

33 patients underwent biopsy. 16 patients, i. e. 48.8 %, had normal findings, while 17 subjects, i. e. 51.2 %, were found to have hypospermatogenesis of various degrees up to "Sertoli's cells only", azoospermia. The bioptic finding corresponds with the degree of hypospadia and it concerns patients with

urethral opening in the medial part of the penis, in worse cases this leading up to the perineal hypospadia.

25 patients, i. e. 75 %, had no pathological finding as regards the localization and size of the testes. 8 subjects had maldescensus testes and out of this group 3 patients were found to have right-sided retention, 5 left-sided retention, with one post-operative case of bilateral retention involving bilateral azoospermia. In two cases the testes were smaller, classified as hypoplastic, on both the right and left sides. The contralateral part was of normal size and it is of interest that such testes may be without the assumed pathologico-histological finding. In these cases the function of the testes was normal. Hydrocele was observed, once on the right, once on the left; there was one case of varicocele. In one adult male patient, the left testis failed to descend from the abdominal cavity.

Table 1. Sørensen's Classification of Hypospadias

Type of hypospadia	Number of patients	With children	Bilateral retention	Without children
Juxtaglandular	24	21	0	3
Penile	6	6	0	0
Penoscrotal	12	4	1	8
Perineoscrotal	5	0	3	5

Table 2

Localization	Specification	Percentage
Cryptohypospadia	HsH	4.58
Glandular	I	2.78
Sulcus coronarius	II	18.72
Penile distal	IIIa	42.82
Penile medial	IIIb	16.13
Penile proximal	IIIc	6.97
Scrotal distal	IVa	4.98
Scrotal medial	IVb	1.99
Scrotal proximal	IVc	0.39
Perineal	V	0.59

Table 3 shows the results of histological examination according to the type of hypospadia, the patient's age at biopsy, and the local testicle finding. Table 4 shows a relatively high percentage of maldescended testes registered in the second group and in more serious hypospadias, which corresponds to the assumed connection between the testicle maturation and the formation of external genitals. The high percentage of maldescended testes in group II

Table 3.

Clin. notes No.	Name	Age	Type	Testes	Right	Left
7338	T. K.	16	II	1/1	hypo II	hypo I
9861	J. Č.	17	II	1/1	norm	norm
8170	P. G.	18	II	1/1	norm	norm
7905	L. K.	15	II	1/M	azoosp.	azoosp.
7957	J. M.	13	II	M/1	norm	norm
12175	P. M.	16	II	1/1	norm	norm
10979	V. Š.	23	II	M/1	norm	norm
6805	M. K.	18	HsH	1/1	norm	norm
5319	E. K.	18	HsH	1/1	norm	norm
7321	J. S.	15	HsH	1/1	norm	norm
7832	M. J.	22	HsH	M/1	hypo-azo	hypo I
12569	V. B.	18	IIIa	1/1	norm	norm
12271	J. F.	21	IIIa	1/1	norm	norm
12868	M. K.	15	IIIa	1/1	norm	Sco
11285	S. K.	19	IIIa	1/1	norm	norm
10426	V. M.	22	IIIa	1/1	norm	norm
11483	J. P.	17	IIIa	1/1	norm	norm
10447	M. P.	36	IIIa	1/1	hypo II	hypo II
13760	V. S.	16	IIIa	1/1	norm	norm
11975	M. V.	14	IIIa	1/1	norm	norm
7033	J. B.	21	IIIb	1/1	norm	norm
8199	S. D.	18	IIIb	1/1	norm	norm
6580	F. F.	17	IIIb	1/1	hypo I	hypo I
7481	Z. K.	15	IIIb	1/1	norm	norm
9103	M. K.	16	IIIb	1/1	hypo I	hypo I
8625	G. D.	18	IIIc	1/1	hypo III	hypo III
1560	G. H.	38	IIIc	M/M	norm	hypo I
8217	J. Š.	21	IIIc	1/M	hypo III	0
3341	J. J.	20	IVa	M/M	azoosp.	azoosp.
4876	J. K.	24	IVa	1/M	azoosp.	0

Abbreviations: M — maldescensus at birth
hypo I—III — assessment of activity
azoosp. — azoospermia
Sco — Sertoli's cells only
O — testis absent

can be explained as random occurrence in a randomly selected group, which accounts for 39 % of the cases with pathological findings in the bioptic material in this group. The high values of pathological findings in groups IIIc and IVa point to a direct dependence between the form of hypospadia and the functional activity of the testes.

DISCUSSION

Fertility often depends on various factors. A complicated bilateral retention may prevent sperm production and maturation, the downward bowing of the penis can lead to problems during coitus due to the hypospadic orifice placed in the scrotal area, which prevents the sperm from entering the vagina. The last two cases mentioned can be corrected by surgery. In this con-

Table 4

Group	Number of patients		Descended testes		Maldescensus testes		Biopsy			
							norm.		pathol.	
II	7	21 %	4	57 %	3	43 %	5	71 %	2	39 %
IIIa	12	33 %	12	100 %	0	0 %	9	75 %	3	25 %
IIIb	5	15 %	5	100 %	0	0 %	4	80 %	1	20 %
IIIc	3	9 %	1	33 %	2	66 %	0	0 %	3	100 %
IVa	2	6 %	0	0 %	2	100 %	1	50 %	1	50 %
HsH	4	12 %	3	75 %	1	25 %	3	75 %	1	25 %
Total	33	100 %	25	75 %	8	25 %	22	66 %	11	33 %

text, the attitude of two German surgeons, Marx (1938) and Schürer (1939) is therefore to be regarded as objectionable as they were willing to perform the reconstruction of the urethra only when given consent to sterilization in order to prevent transmission of pathologic genes.

Sørensen followed up 77 patients with hypospadia, aged over 20, according to the type of hypospadia, marital status and marital relationship. The author's group involved 30 unmarried patients, 3 with sexual problems due to penile gryposis, which, however, subsided after correction. Apart from gryposis, there were no other complaints.

Table 1 shows an analysis of Sørensen's study and his classification of hypospadias. Out of the total number, 75 % of patients had no fertility disorders.

Farkaš classifies functional disorders in patients with hypospadia into: 1. Facultas coeundi, which aggravates ventral penile bowing. The degree of gryposis of penis is evaluated during erection. The penile rotation is not responsible for the disorder. 2. Facultas generandi, which can be prevented by mechanical means, such as a narrowing of the urethral orifice, in milder types of hypospadias. Sterilitas e defectu seu deformatione, i. e. the ejaculation of the semen through a wide fistula situated in the proximal part of the penis, can be frequently observed. According to sexologists, unilateral cryptochism does not cause male infertility, however, the bilateral one results in sterility.

Hypospadias are frequently occurring together with other congenital defects. Some authors report the presence of congenital anomalies of the uropoetic system in one third of the cases with hypospadia. Simultaneously, there is a large number of syndromes with hypospadia present.

A separate paper will be devoted to these problems.

It is of interest that each described syndrome with hypospadia also involves maldescensus testes. Soderstrom studied 5 patients with Klinefelter's syndrome; in 3 of them ultrastructures showed a complete hyalinization of

seminiferous tubules; in one patient only Sertoli's cells were present. Hyperplasia of Leydig cells was present in all patients.

During the 6th week of embryogenesis, the genital plicas start to produce primitive sexual cells which later develop, by genetic processes, into the testes. These produce seminiferous tubules, which remain closed until puberty, supporting Sertoli's cells and Leydig cells formed in the mesenchyma, which produce testosterone. The testes then descend into the scrotum and the development is to be completed in the 8th—9th months of pregnancy. The gonads should be descended into the scrotum by the time the child is born and this is one of the signs of the newborn's maturity. From the viewpoint of embryology there is a close connection between urethral formation and the gonad descent beginning in the 3rd month of intrauterine life. The materials prepared by the International Foundation in Geneva in 1973, point out that the anterior lobe of hypophysis, which affects the testes by producing follicle-stimulating hormone (FSH) is considered a physiologically regulatory factor of the descended testes and urethral formation. The testes themselves must be capable to react to FSH stimulation by producing testosterone by means of Leydig cells, and the androgen production is stimulated by the interstitial cells stimulating hormone (ICSH). During intrauterine life, proper urethral formation and the descent of the testes depend on a sufficient concentration of human chorion gonadotropin (HCG).

When the descent of the gland is complete, its function is impaired and consequently in adulthood it produces immature sperms. This process is known as retention of the testes, which can be abdominal, inguinal, prescrotal, sliding or migrating. The gravest type is the abdominal form — cryptorchism — with its seminiferous tubules remaining infantile thus failing to produce mature sperma. The retained testes are also less active hormonally.

In the descended testes, from the 12th up to the 16th years of age, the tubules grow in length and begin to produce the sperma proper.

According to Hynie, the retention of the testes in adults occurs at a ratio of 1 : 500 up to 1000 males, in patients with hypospadias the ratio is much higher. Farkaš reports the occurrence of retained testes in 5.5 % in patients with hypospadia, Savčenko mentions a similar figure. Our results are higher, the figure in our group of 33 patients reached as much as 25 %.

Thus the histological picture deviates from the normal function of the gland in mature testes containing spermatogenic tubules where according to Clermont, are produced in 14 stages of sperm maturation, and this maturation process lasts from 75—80 days. The other cases may result in hypofunction both with decreased quantity (less than 1.5—2 ml of ejaculum) and quality. This hypofunction may develop into failure of the spermia to mature, into the production of teratoid forms, or even into aspermatism, testicular azoospermia being one of its forms. The ejaculum contains no sperms, only cells arising from the germinal epithelium, but there may be aplasia of the germinal epithelium with Sertoli's cells only present. From the clinical viewpoint, the testis is only a little smaller than the normal one (long axis — 34 mm, 10 cm^3 in volume, according to Hynie).

The presence of androgens during organogenesis due to testicular function during the second and third months of embryonic development decides whether the foetus will develop with male or female characteristics. If hypospadia is understood as a certain form of arrested masculinization, then it can be assumed that this congenital defect is caused by insufficient function of embryonic testes. Thus the quality of the testes in patients with hypospadia should point to the correlation between the form of hypospadia and the functional activity of the testes, which was proved by our results.

At our centre, the whole group of 502 post-operative patients showed the following percentage based on localization, as seen in Table 2.

Czeisel divides hypospadias into the mild form (50.7 %), penile form (45.6 %) and the extreme form (3.7 %). In his monograph, Sørensen divides hypospadias into the juxtaglandular form (62 %), the penile form, the penoscrotal form (29 %), and the perineoscrotal form (9 %). Mild forms of hypospadias reported by many authors occur at a high rate.

The aim of this study is to help to clarify problems which tend to be neglected in literature. As such an extensive treatment of this subject is not available, we consider our paper a contribution.

CONCLUSIONS

The development of the external genitals is, on the whole, uniformly controlled, as regards the normal localization of the urethral opening, the size of the penis, the testes, their descent, and quality of their structure. Since hypospadia is generally characterized as incomplete masculinization of the external genitals due to insufficient hormonal activity in the 3rd month of embryonic life, then it is to be assumed that other structures of the external genitals may be affected, in particular, the testes.

1. Patients with hypospadia have a more frequent maldescensus testes than the normal population.

2. Bioptic investigation of 33 randomly selected patients with various forms of hypospadia shows potential dependence of the form of hypospadia on testicular activity.

3. Surgery (i. e. treatment of maldescensus and hypospadia) plays an important part in quo ad facultatem coeundi et generadni treatment of hypospadia, however, in terms of timing. Maldescensus is to be operated on before the baby reaches the age of 2 years, hypospadia after two years of age.

SUMMARY

The authors investigated the relationship between the maldescended testes and the form of hypospadia together with pathological findings in the descended testes. The results of bioptic examination of the testes in 33 randomly selected patients with different forms of hypospadia showed that the bioptic finding in 16 patients (48.8 %) was normal. In 17 patients (51.2 %) biopsy revealed hypospermatogenesis of various degrees reaching up to "Sertoli's cells only", azoospermia. The bioptic finding corresponded with the form

of hypospadia. As regards the localization and size of the testes, 8 patients had maldescensus testes, 2 had hypoplastic testes, one unilateral testes but with normal spermatogenesis. In one case, the testes failed to descend from the abdominal cavity. Out of the whole group of 33 patients, maldescensus testes occurred in up to 25 %. These results lead the authors to the assumption that there is a direct connection between the form of hypospadia and the disorder in spermatogenesis, maldescensus testes included. The authors believe that patients with hypospadia suffer at a higher percentage from fertility disorder than the normal population.

RESUME

Fertilitě des malades avec hypospadias

Jugenburg, I., Kipikaša, A.

Les auteurs ont suivi la relation entre les testicules mal descendus et le degré de l'hypospadias et la relation entre le degré de l'hypospadias et l'état pathologique des testicules descendus. Chez 33 malades avec l'hypospadias de divers degré, qui ont été choisis fortuitement, les résultats d'examens des testicules par biopsie trouvent un état normal des tissus biopsiés dans 16 cas (48,8 %). Chez 17 malades (51,2 %), la biopsie a montré une hypospermatogenèse de divers degré, jusqu'à «Sertoli cells only» l'azoospermie. La gravité du résultat bioptique correspond au degré de l'hypospadias. Quant à la position et à la grandeur des testicules, chez 8 malades on a constaté les testicules maldescendus, chez 2 malades les testicules hypoplastiques unilatéralement, mais d'une spermatogenèse normale. Dans un cas, le testicule n'était pas descendu de l'abdomen. Au total, dans le groupe de 33 malades, le pourcentage des testicules mal descendus fesait 25 %. A la base des résultats ci-dessus, les auteurs présument une corrélation directe entre le degré de l'hypospadias et de l'anomalie de la spermatogenèse et la position des testicules mal descendus. De tout cela résulte la conclusion que le pourcentage des perturbations de fertilitě chez les malades avec l'hypospadias est plus élevé que dans une population courrante.

ZUSAMMENFASSUNG

Die Fruchtbarkeit bei Patienten mit Hypospadie

Jugenburg, I., Kipikaša, A.

Die Autoren beobachteten die Beziehung einer Maldeszenz der Hoden zum Grad einer Hypospadie sowie die Beziehung des Grades der Hypospadie zum pathologischen Befund der abgesunkenen Testes. Die Ergebnisse der bioptischen Untersuchungen der Testes bei 33 zufällig ausgewählten Patienten mit verschiedenem Grad der Hypospadie ergaben, dass sich in 16 Fällen ein normaler bioptischer Befund zeigte (48,8 %). Bei 17 Patienten (51,2 %) erschien bei der Biopsie Hypospermatogenese verschiedenen Grades erst nach „Sertoli cells only" des Azoospermiums. Die Schwere des bioptischen Befunds entspricht dem Grad der Hypospadie. Bei 8 Patienten wurden, was die Lage und Grösse der Hoden betrifft, maldescensus testes festgestellt, bei zwei Patienten hypoplastische Hoden einseitig jedoch mit normaler Spermatogenese. In einem Fall war die Hode nicht aus der Bauchhöhle herausgetreten. Insgesamt haben wir bei den 33 Patienten maldescensus testes bei 25 % der Fälle gefunden. Auf Grund der obangeführten Ergebnisse setzen die Autoren einen direkten Zusammenhang zwischen dem Grad der Hypospadie und der Störung der Spermatogenese und der Maldeszenz der Hoden voraus. Hier lässt sich schliessen, dass der Prozentsatz einer Störung der

Fruchtbarkeit bei Patienten mit Hypospadie höher ist als bei der normalen Bevölkerung.

RESUMEN

Fertilidad en los enfermos con hipospadia

Jugenburg, I., Kipikaša, A.

Por los autores fué investigada la relación de la maldescensión de los testículos hacía el grado de la hipospadia, y la relación entre el grado de la hipospadia y el diagnóstico patológico en los testículos ya descendentes. Los resultados de las examinaciones biópticas de los testículos de 33 enfermos con la hipospadia, elegidos casualmente, con diferente grado de la hipospadia, muestran, que en 16 casos la biopsia dió el diagnóstico normal (48,8 %). En 17 enfermos (51,2 %) la biopsia mostró la hipoespermatogénesis de distinto grado hasta "Sertoli cells only" azoespermía. La importancia del diagnóstico bióptico corresponde con el grado de la hipospadia. En la colocación y en el tamaño de los testículos en 8 enfermos fué comprobada maldescensión de los testículos, en dos enfermos el testículo hipoplástico de un solo lado, pero con la espermatogénesis normal. En un caso el testículo no fué descendente de la actividad abdominal. En total en el grupo de 33 enfermos la maldescensión de los testículos fué comprobada hasta en 25 %. En base de los resultados mencionados anteriormente los autores suponen la existencia de la relación directa entre el grado de la hipospadia y el defecto de la esparmatogénesis y la maldescensión de los testículos. De ésto se puede razonar, que existe más gran porciento del defecto de la fertilidad entre los enfermos con la hipospadia, que en la población ordinaria.

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CONTOUR PLASTY OF THE FACE USING ALLOGENOUS FASCIA

A. T. TITOVA, N. I. YARCHUK, V. V. RUMYANTSEVA, A. A. LIMBERG

Wide experience has been gathered in the Department of Jaw and Face Surgery, R. R. Vreden Institute, in using hard (pulverized allogenous cartilage) and soft (pedicle and dermatolipidic flaps) biological tissues for contour plasty of the face.

During the observation of patients, not only merits, but also shortcomings of plastic surgery using the mentioned tissues were revealed. It has been established that transplantation of cartilage, even in pulverized form, is not indicated either under atrophied and scarred tissues or in parts of the face lacking bony support (cheeks, lips, eyelids). Plastic operation using the tissues of pedicle flaps is a many-stage and protracted process; freely transplanted dermatolipidic flaps become considerably shorter in the process of transformation. What is more, the use of autoplastic tissues is connected with an additional operative trauma due to withdrawal of plastic material.

In 1971, we proposed allogenous fascia lata of the thigh, preserved by freezing at —70 °C, to be used in contour plasty of the face (2, 4).

During the period from 1971 to 1984, we used allogenous fascia for contour plasty of the face in 106 patients in whom we performed 161 transplantations. The age of the patients (59 women and 47 men) ranged between 9 and 57 years; most of them (73.6 %) were 18—40 years old.

The main indication to using allogenous fascia for contour plasty in our opinion consists in disturbance of volume proportion of the soft tissues of the face caused by their congenital underdevelopment and also by cicatricial changes following mechanical injuries and inflammatory processes. Another equally important indication to such an operation from our point of view is the necessity of correcting the contours of the soft tissues of parts of the face lacking bony support (cheeks, lips, eyelids).

The table presents distribution of the patients according to diagnoses and transplantations of fascia according to localization.

Table 1. Contour plasty of the face using allogenous fascia

Diagnosis	Number of patients	Total of transplantations	Regions of transplantations							
			forehead	eyelids	nose	lips	cheeks	chin	temporal region	malar region
Sequels of mechanical injuries	43	55	9	1	17	—	10	2	5	11
Congenital anomalies of the face	25	32	1	—	6	1	18	2	—	4
Facial hemiatrophy (Romberg's syndrome)	10	27	3	1	—	4	13	—	2	4
Unilateral lower micrognathia	8	14	—	—	—	1	7	5	—	1
Facial lipodystrophy	3	10	—	—	—	—	8	1	—	1
Specific inflammation	3	6	—	—	—	—	6	—	—	—
Other disorders	14	17	—	1	3	—	9	1	2	1
Total	106	161	13	3	26	6	71	11	9	22

As can be seen from the table, most transplantations go to the cheeks (71), the nose (26) and the region of the cheekbones (22).

Preparation of allogenous fascia to transplantation, methods of operation.

In the operating theatre, the fascial transplants are unpacked under observation of all rules of asepsis and placed in sterile physiological saline containing antibiotics for 30—35 minutes at room temperature for thawing.

After routine pre-operative preparation of the skin, the part of the face to undergo correction is marked out. Using linear incisions from 5 to 20 mm in length, we split off the skin at the level of the subcutaneous fatty layer within the limits marked out, thus forming the recipient bed for the fascial transplant. Fig. 1 shows the typical sites of incisions and parts of the face whose shape can be corrected by transplantation of allogenous fascia. The longest incisions (15—20 mm) are made in the temporal region along the hairline in transplantation of large pieces of fascia necessary for the correction of pronounced volume deformations of the cheeks.

Depending on the degree of the volume deformations of the face, the transplantation of the fascia is carried out in one layer or in several layers and sometimes the fascia is placed in the bed in pleated (wrinkled) form (in folds).

When the fascia is transplanted in one layer, the transplant is cut out in correspondence with the size of the sunken part of the face to be corrected.

When the fascia is transplanted in several layers, then its pieces are placed one upon the other and fixed to each other by catgut sutures.

The size of a transplant used in pleated form can be determined in advance only approximately. In such cases it is sometimes suitable to resort to transplantation of several pieces of fascia.

When introducing fascial transplants into the bed, it is expedient to use needles of varying length, adjusted from Kirschner pins. The edges of the transplant are sutured with catgut threads and pulled into the bed by means of the mentioned needles; there it is fixed by sutures through the skin. The ends of the threads are tied up on gauze balls above the skin. The upper border

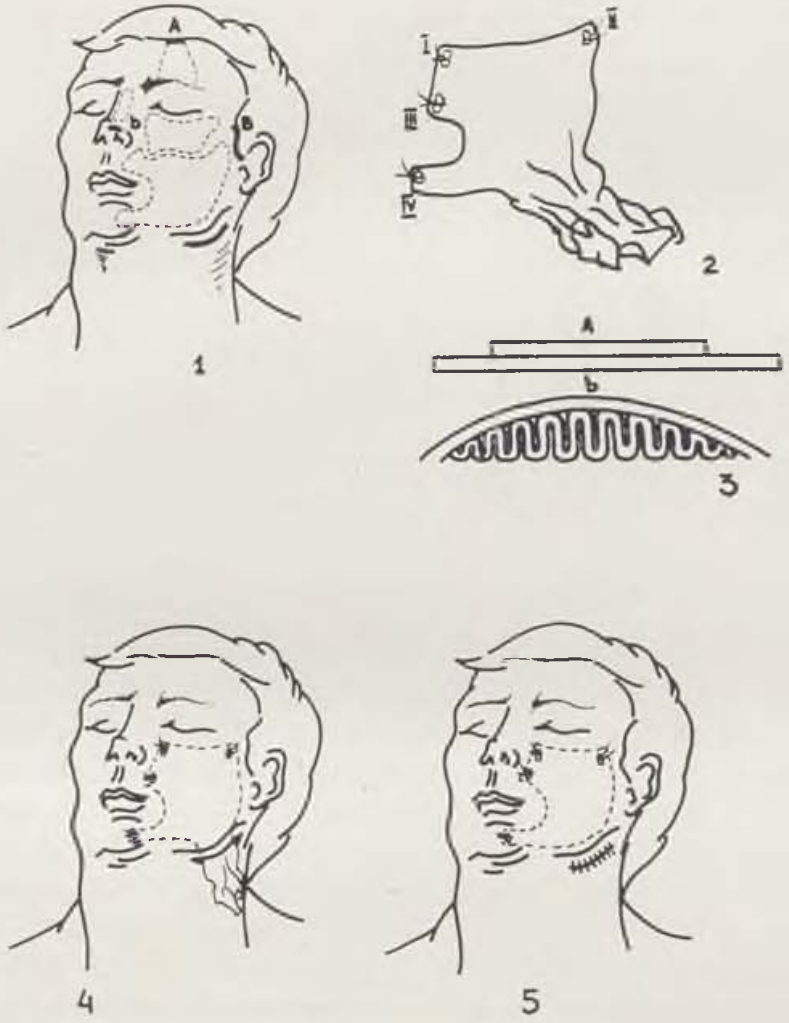

Fig. 1 Diagram of transplantation of the fascia lata for the correction of the shape of the face

1 — regions of intended transplantation of fascia (dotted line), lines of incisions for the formation of the bed and introduction of fascia (solid line); 2 — piece of fascia intended for transplantation in the region of the cheek and lip with catgut threads led through its margins. Roman figures designate topical orientation of the transplant (see 4 and 5); 3 — variants of arranging the fascia in the bed: top — in 2 layers (A), bottom — in wrinkled condition (b); 4 — through the incision below the angle of the jaw the fascia is introduced into its bed, its borders are marked by the dotted line. Catgut threads are led out through the skin and fastened to gauze balls. The end of the transplant sticks out of the wound; 5 — the wound was sutured below the angel of the lower jaw

of the transplant is fastened to the skin particularly thoroughly to prevent its displacement due to its weight. The operation is concluded by suturing the edges of the wound layer by layer and applying a moderate pressure dressing to the face.

The transplantation of fascia was carried out under local anesthesia using 0.5—1.0% novocain with the addition of two drops of 0.1% hydrochloric adrenalin per 30—40 ml of the anesthetic solution. In cases where extensive exfoliation of soft tissues was necessary, local anesthesia was combined with neuroleptic analgesia.

Adaptation of the fascial graft was not accompanied by pronounced general reaction of the organism. From two to three days after transplantation, slightly pasty condition of the soft tissues was obeserved locally, conditioned by edema of the fascial transplant. In order to reduce the edema, the patients were prescribed cold to apply locally and antihistaminic drugs to take for 5—7 days.

Postoperative edema of the transplant involves a danger for the healing of the wound in cases where the incision for the formation of the bed is situated immediately above the region of transplantation. Excess tension may then occur in the edges of the wound, they become disjoint and part of the fascia may slip out. This complication can be avoided by making the skin incision for the introduction of the fascia at some distance from the region of transplantation.

Transplantation of 144 fascial grafts was uncomplicated. In the period of elaborating the methods of transplantation 17 complications were observed: disjunction of the edges of the wound in one limited spot (6 transplantations) and suppuration of the wound (11). Six transplantations following removal of part of the fascial transplants and application of secondary sutures resulted in smooth taking and a positive outcome.

On suppuration of the wounds it was necessary to remove the transplant and transplantation was repeated 10—12 months later.

Experiment

In order to reveal morphological changes developing during the transplantation of fascia, 3 series of experiments on 14 Chinchilla rabbits were carried out (1, 3). Allogenous fascia of rabbit back, preserved by freezing at —70 °C and stored for a period of 1 month at —25 °C, was used as the plastic material. The fascia was transplanted under the skin of the recipient rabbit in one layer (Group 1), in 2 layers (Group 2) and in pleated (wrinkled) condition — in folds (Group 3). All the 3 types of transplantation were carried out in each of the animals; the intervals of observation were as follows: 3, 7, 14, 30, 90, 180 and 365 days (2 animals at each interval). Allogenous fascia of animals of the same groups which had been under study before transplantation served as control. At the given intervals, the animals were discharged from the experiment and the transplanted fascia together with the surrounding tissues was excised for morphological examination. All wounds after transplantation of fascia healed without complications.

Histological examinations showed that the morphological changes in the transplant and the surrounding tissues were identical in all the variants of transplantations. The fascial transplant is resolved, gradually transformed and replaced by connective and fatty tissue. Results of the experiment were confirmed by biopsy of tissues taken from 6 patients 4, 6, 7 and 12 months after fascial transplantation. The transformation of fascial transplants in patients proceeds slowly and its course is similar to that observed in the animals. A year after transplantation, acellular connective tissue can be observed in the central part of the transplant and loose fibrous connective tissue in its periphery.

Results of contour plasty of the face using allogenous fascia were followed up in 41 patients at intervals ranging from one to 13 years after transplantation (69 operations).

Good results were obtained in 19 patients (25 transplantations) in whom allogenous fascia was used for the correction of the shape of the chin and

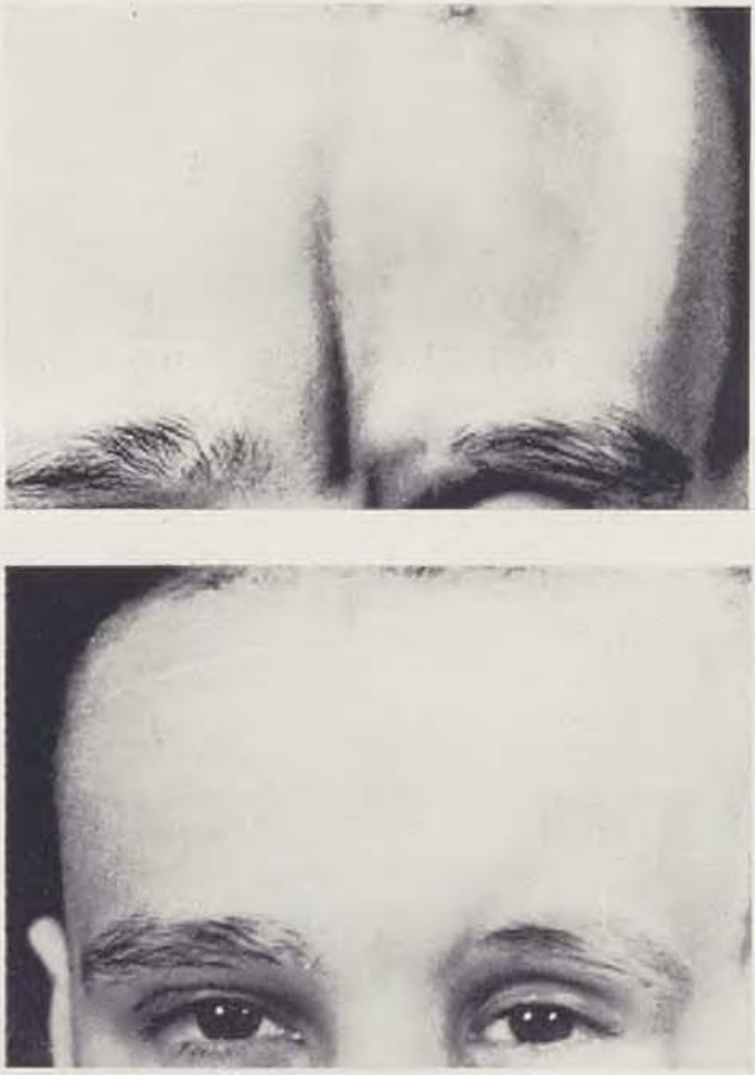

Fig. 2 a, b Patient G. Diagnosis: hemiatrophy of the face on the left
a — before operation, b — 2 years after transplantation of fascia in 2 layers

for the removal of disproportions in the size of the cheeks. In these patients, the transplantation of the fascia promoted the restoration of natural outlines of the face in the operation area (Fig. 2). The skin above the transplanted

Fig. 3 a, b Woman-patient F. Diagnosis: flattened chin, micrognathia on the right a — before operation, b — 4 years after transplantation of fascia in wrinkled condition

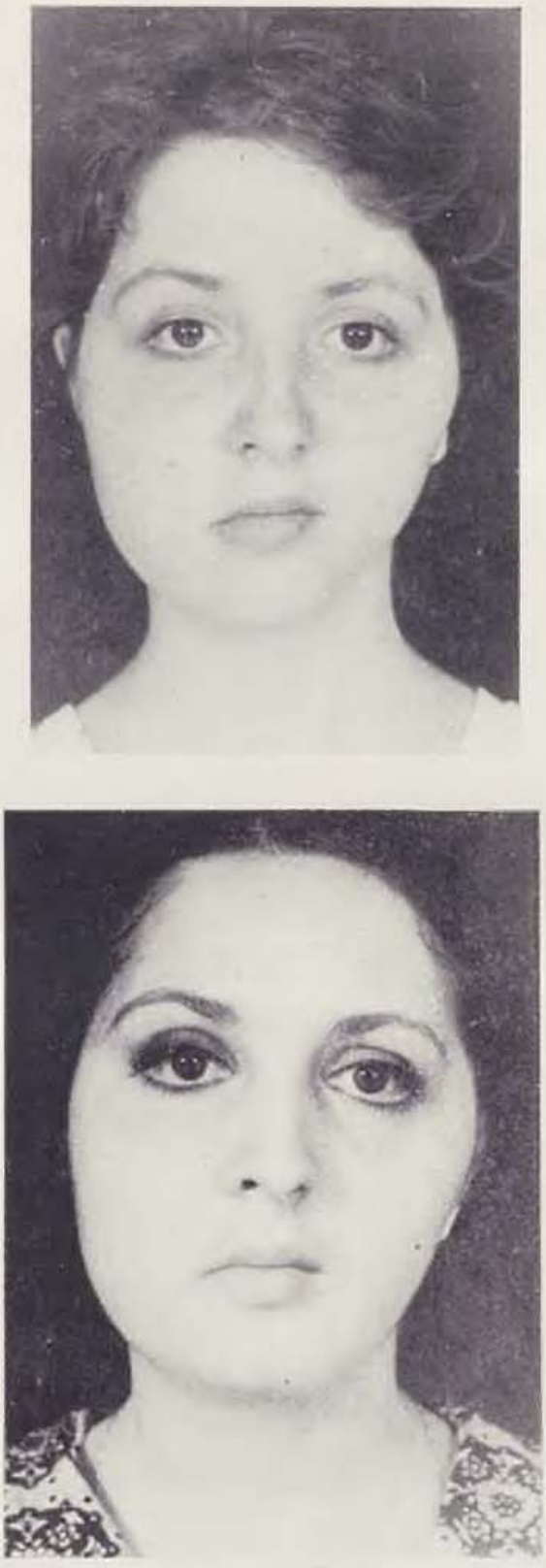

Fig. 4 a, b Woman-patient K. Diagnosis: syndrome of I and II branchial arches on the left

a — before operation, b — 6 years after transplantation of fascia in wrinkled condition

Fig. 5 Patient T. Diagnosis: scars and sunken bridge of the nose after mechanical injury
a — before operation, b — a year after transplantation of fascia
c — after additional transplantation of allogenous pulverized cartilage

fascia showed normal colour and plied easily; no disturbances in the function of the mimic muscles were observed (Fig. 3).

A consinderable improvement in the shape of the face was obtained in another 5 patients in whom allogenous fascia was transplanted under the skin of the cheeks to remove underdevelopment of soft tissues. In 14 patients with hemiatrophy of the face and branchial arch syndromes, the transplantation of allogenous fascia made it possible to achieve improvement in the shape of the face, but the effect was incomplete (Fig. 4). In our opinion, this was conditioned by the highly expressed underdevelopment of the soft tissues accompanying branchial arch syndromes and their atrophy in Romberg's syndrome. What is more, the effect of the unfavourable immunological background, characteristic for the patients of these groups, on the process of reconstruction of allogenous fascia cannot be excluded (5).

Particular attention should be paid to transplantation of allogenous fascia under scarred skin coalesced with bone after mechanical injuries. Under these conditions, contour plasty using hard biological tissues is not indicated since it does not produce proper cosmetic effect. Transplantation of allogenous fascia under scarred tissues has proved to be useful from various points of view: the transformation of the fascial transplant into fatty and delicate fibrous tissue improved the condition of local blood circulation thus leading to the restoration of mobility and natural colour of the skin. Slightly expressed deformations of the face (cheeks in particular) caused by cicatricial changes in the subcutaneous fatty cellular tissue could be successfully removed with a single, transplantation of the fascia. More pronounced deformations, such as e. g. of the bridge of the nose, of the malar region, were corrected by subsequent contour plasty using pulverized cartilage, however under better conditions with a recipient bed well supplied with blood, which had been formed by a previous transplantation of allogenous fascia (Fig. 5).

Clinical experience over many years and results of experiments on animals have thus demonstrated that allogenous fascia preserved by freezing is a valuable soft-tissue material suitable for contour plasty of the face. It has advantages over other tissues used for these purposes in that it can be transplanted under scarred and atrophic soft tissues and also in parts of the face lacking bony support (cheeks, lips, eyelids).

The slow reconstruction of fascial transplants and their replacement by loose connective and adipose tissue preserving the volume proportions obtained during the operation are particularly valuable in cases of filling up underdeveloped or damaged soft tissues of the face.

Patients with a considerable underdevelopment and atrophy of the soft tissues, which are mainly characteristic of expressed hemiatrophy of the face and the syndrome of branchial arches, are an exception.

SUMMARY

Allogenous fascia lata of the thigh preserved by freezing was used for the correction of the shape of various parts of the face in 106 patients with 161 transplantations. Indications for the plasty using allogenous fascia are determined, the planning and methods of operation described. Clinical observations and results of experiments over many years have shown that allogenous fascia is a reliable soft-tissue plastic material suitable for the correction of volume deformations of the face. Allogenous fascia has advantages over other biological plastic tissues in that it can be transplanted under scarred skin covers including preparation of the bed for subsequent plastic operations using hard tissues, and also into parts of the face without osseous support.

RESUME

Fascia lata comme matériel d'utilisation pour plastie de contours

Titova, A. T., Iartchouk, N. I., Roumiantzeva, V. V., Limberg, A. A.

Fascia lata, conservé par congélation, a été utilisé comme matériel correctif de 161 greffes effectuées sur diverses parties de la face chez 106 malades. On a énoncé les indications aux plasties faites du fascia lata, la description du plan opératoire et la méthodique opératoire sont données. Les observvations cliniques de plusieurs années et les résultats d'expérimentations ont prouvé que le fascia lata représente un matériel sûr pour les plasties des tissus moux, convenable aux corrections de déformités de volume de la face. Le fascia lata a l'avantage sur d'autres tissus biologiques plastiques, consistant en sa faculté d'être greffé sous des téguments cutanés déformés par cicatrisation, y compris la préparation des surfaces à greffer successivement par des tissus durs ou également à modeler les parties de la face qui ne possèdent pas de soutient osseux (joues, lèvres, paupières).

ZUSAMMENFASSUNG

Konturenplastik des Gesichts unter Anwendung einer Allogenfaszie

Titowa, A. T., Jartschuk, N. I., Rumjanzewa, W. W., Limberg, A. A.

Eine durch Tiefkühlung konservierte breite Allogenfaszie des Oberschenkels wurde zur Korrigierung der Form verschiedener Teile des Gesichts von 106 Patienten bei 161 Transplantationen verwendet. Es wurden die Indikationen zur Plastik mit einer Allogenfaszie festgelegt und das Planen und die Methodik der Operation beschrieben. Langjährige klinische Beobachtungen und Versuchsergebnisse haben gezeigt, dass die Allogenfaszie ein zuverlässiges plastisches Material weicher Gewebe ist und sich zur Korrektion voluminöser Gesichtsdeformationen eignet. Die Allogenfaszie besitzt gegenüber anderen biologischen plastischen Geweben den Vorteil, dass man sie unter durch Narben veränderte Hautdecken transplantieren kann, einschliesslich der Betten zur Vorbereitung einer darauffolgenden Plastik der harten Gewebe, sowie ebenfalls bei Teilen des Gesichts ohne Knochenstütze (Wangen, Lippen, Augenlider).

RESUMEN

Plástica de contorno del rostro con ayuda de fascia alógena

Titova, A. T., Yarchuk, N. I., Rumyantseva, V. V., Limberg, A. A.

A la alógena fascia ancha del muslo, conservada por congelación, la emplearon paora corrección de forma de diferentes partes del rostro en 106 enfermos durante 161 trasplantaciones. Fueron determinados indicaciones para plástica con la fascia alógena y descrito el planeamiento y metodología de la operación. Los estudios clínicos a lo largo de muchos años, lo mismo como los resultados experimentales muestran, que fascia alógena está una materia segura para la plástica de tejidos blandos, que es conveniente para la corrección de las deformaciones volumétricas del rostro. Las ventajas de la fascia alógena — en comparación con otros plásticos tejidos biológicos — residen en lo, que se la puede trasplantar debajo de las cubiertas cutáneas, alternadas por cicatrices, incluso preparar lecho para la plástica siguiente por tejidos duros, y también emplearla en partes del rostro sin sostén óseo (mejillas, labios, párpados de los ojos).

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CORRECTIVE OTOPLASTY

I. KRYSLOVÁ, K. FAHOUN

Protruding ears are a relatively frequent congenital anomaly likely to tax the victims with often serious psychic discomfort in childhood and in adult age. A whole series of surgical approaches for the correction of prominent ears have been described. Their very number suggests that corrective otoplasty is but a seemingly simple operation. The purpose of sugery is, in part, to draw the protruding pinna closer to the head, i. e., to correct the cephaloconchal and scaphoconchal angles, and, at the same time, to achieve a natural shape of the varied relief of the anterior side of the outer ear.

Over the years, we have tried out all the familiar surgical methods. Having assessed their advantages and drawbacks, and considered the results achieved we decided to adopt our present surgical approach, the subject of the present communication. Using this technique, we have performed corrective otoplasty on 800 patients since 1982, invariably with very good results. Our surgical technique rests on the mobilization of the whole concha, incision of the rudimentary muscles, and immersion with a fixation stitch suture. We correct the scaphoconchal angle without actually resecting or softening the concha, and use the grinding technique to give shape to the cartilage.

From the psychological and somatic points of view, we prefer to operate on protruding ears in childhood, between five and six years of age, before the child begings to go to school while the deformity is unlikely to produce serious stress caused by the reaction of the surroundings.

METHODS

Our surgical technique:

With a few exceptions, we perform the operation in local anaesthesia using Trimecaine with adrenaline or vasopressin. The extent of the diamond or dumb-bell-shaped skin excision depends on the degree of the anomaly, though we always make sure that the resulting scar should remain hidden in the retroauricular furrow. We insist on concervative skin resection such as can, if necessary, be extended at the site of protruding lobules. We mobilize the skin all over the posterior surface of the pinna from the edge of the helix

right down to the mastoid process, and arrest bleeding with spot electrocoagulation. Mobilizing the concha we cut through the posterior auricular muscle

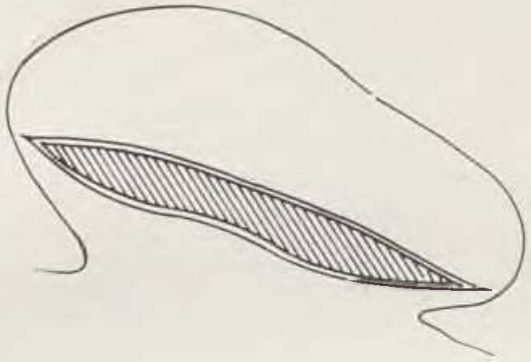

Diagram 1. Skin excision

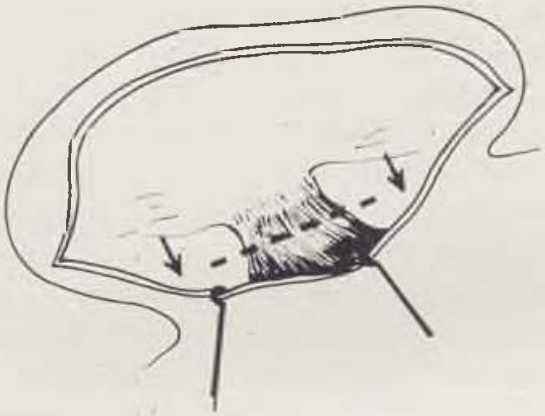

Diagram 2. Skin mobilization on the posterior side of ear with transsection of rudimentary muscle

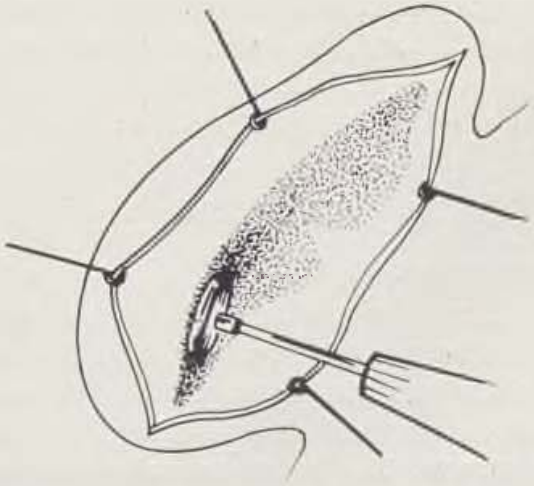

Diagram 3. Abrasion of cartilage

which is often enlarged. Then, using a high-speed cutter we cut the cartilage of the posterior side of the pinna at the sites of the anthelix and concha to reduce the thickness of the whole area. The extend and depth of the cutting operation depend on the thickness and stiffness of the cartilage. Using the technique of abrasion we give the anthelix and the crus superior anthelicis the required shape, and, in the lower third, cut the interconnection of the helix, anthelix and antitragus, and transsect the musculus antitragicus. With this crucial point disconnected the lower part of the cartilage is rendered workable. We then rotate the concha to bring it nearer to the external acoustic meatus, and fix it to the periosteum of the mastoid process with a plaited silon suture. In our own experience, hypertrophy of the concha is for the most part a relative affair caused by the smoothed anthelix. Having shaped the

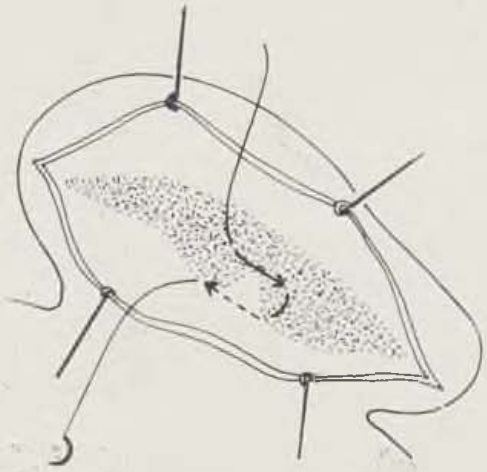

Diagram 4. Fixation suture to rotate and impress the concha

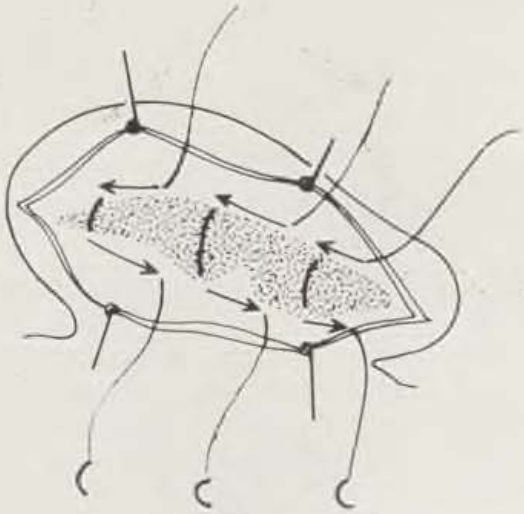

Diagram 5. Shape-giving internal sutures

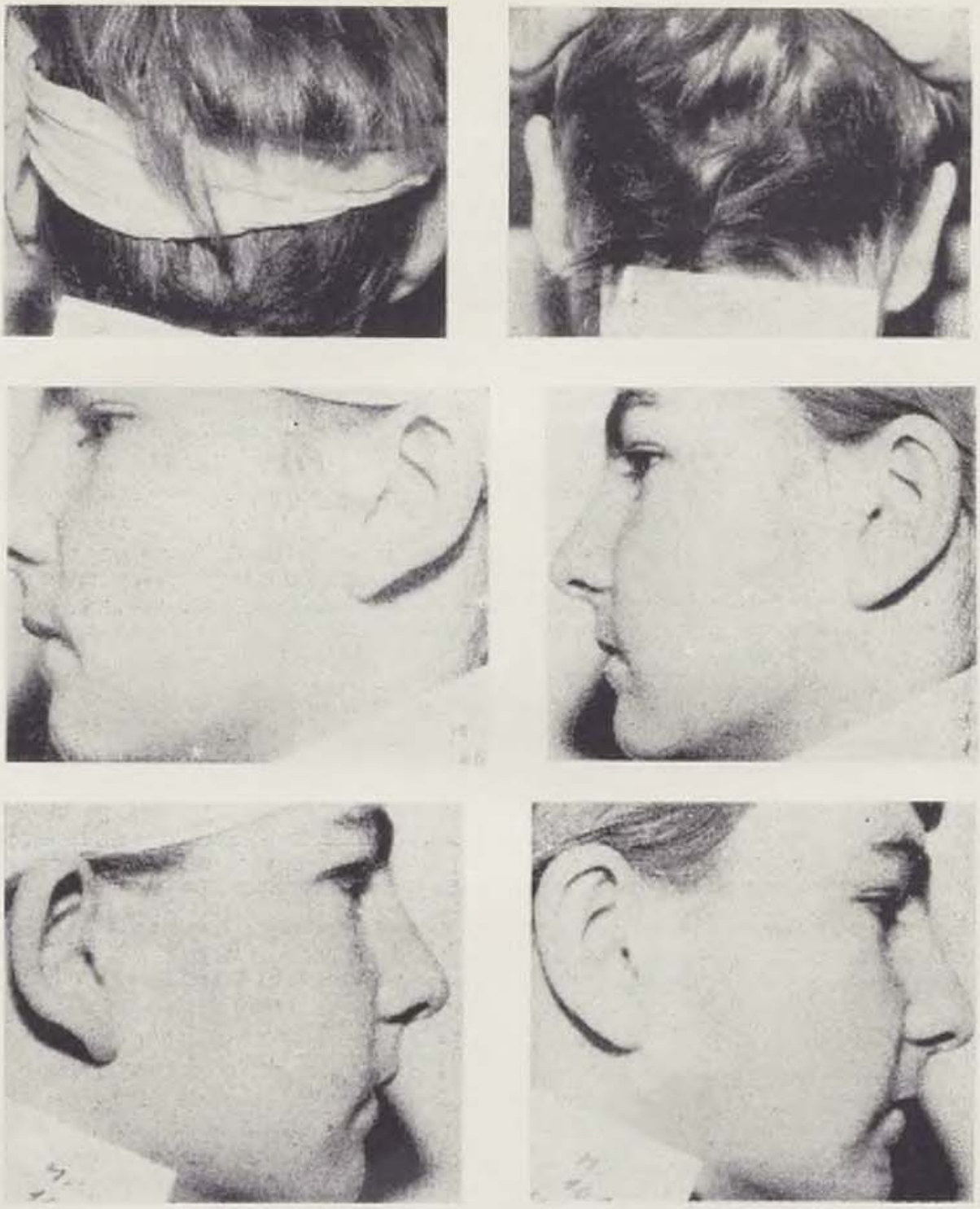

Fig. 1a, b, c, d, e, f, g, h 16-year old student, asymmetrically protruding ears, 70° on the right, 50° on the left. Thick cartilage, anthelix bilaterally smoothed out, lobules greatly deviated. Operated on Oct. 4, 1983
a, c, e, g — prior to operation; b, d, f, h — 6 months after operation

anthelix we do not have to resect the cartilage of the concha, thus avoiding its subsequent deformation. For internal modellation we use two basic sutures

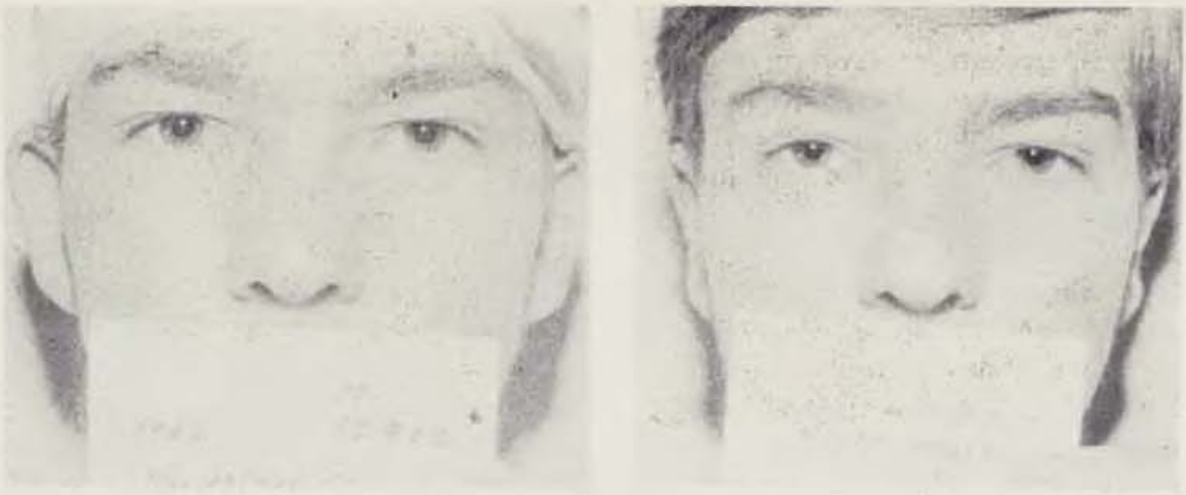

Fig. 1g, h

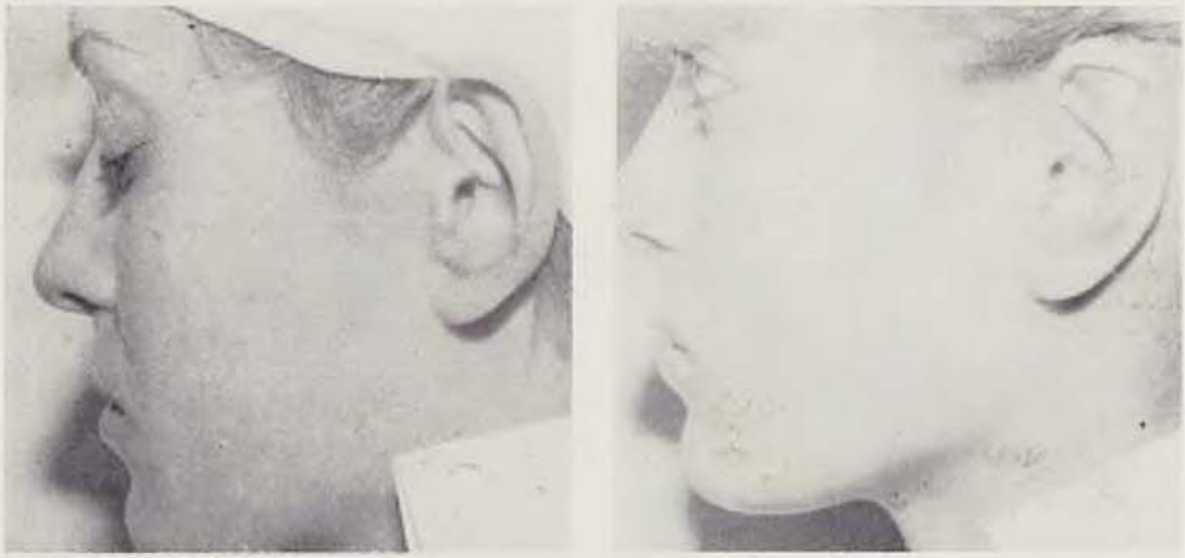

Fig. 2a, b 23-year old office worker, operated on in June 1984. Ears protruding at 90° bilaterally, symmetrically. Anthelices smoothed out, relatively deep concha
a — prior to operation; b — one year after surgery

(plaited silon 3/0) to bring closer the lower and upper parts of the pinna which we immerse making sure that they do not abut on the skin suture. Occasionally, another suture may be necessary to tie the medium part of the pinna. We close the skin with an external continuous catgut suture. Given correct internal shaping of the cartilage there will be no need for any external modelling sutures as these are just a way out of a necessity or a means of giving the anthelix a better shape. If we do use external suture we opt for catgut counting with its elimination in two weeks time. We then fill the anterior side of the pinna with shapeable tulle gras, and apply well-lined, slightly compressive dressing for two weeks dispensing with an elastic bandage.

We check on the state of the ears on the second post-operative day and perhaps a week after surgery at the time we apply a new light dressing. After two weeks, we remove the dressing without having to remove the sutures. To avoid any traumatization in sleep, we recommend light fixation of the ears with a scarf or elastic headband during the first post-operative month.

We have encountered no major complication in our group of 800 patients. Post-operative bleeding occurred only in patient operated on during the flu incubation period while there were as yet not detectable signs of viral infection. Suture fistula was seen in a few cases involving the upper fixation suture, and was due to irritation of the superficially placed suture. Its removal may result in a deviation of the upper part of the ear. This kind of asymmetry is easy to correct, without any new abrasion, by placing in a new suture following a minor skin excision.

Fig. 3a, b, c, d 23-year old window dresser, ears protruding bilaterally, symmetrically, at 90°, slightly scrolled. Anthelices extinct, thick cartilage
a, c — prior to operation; b, d — 5 months after operation

Advantages:

1. Rotation of concha without reduction excision.
2. Relief shapeable by means of abrasion without affecting the integrity of the cartilage.
3. Naturally shaped anterior part of the pinna with no deforming edges often resulting from modellation incisions.
4. Smoother post-operative course (less swelling, less tenderness, no need to remove external modellation sutures).
5. Fewer post-operative dressing changes.

SUMMARY

The authors present their own technique for corrective otoplasty using high-speed cutter abrasion to shape the cartilage, concha mobilization with resection of the posterior auricular muscle, free from any reduction resection of the concha cartilage. They have used this technique with success in 800 patients operated on at their Department of Plastic Surgery. The method has not major complications, and the resulting effect meets the requirements for a naturally shaped, good-looking relief of the outer ear.

RESUME

Otoplastie corrective

Krýslová, I., Fahoun, K.

Les auteurs présentent une technique d'otoplastie corrective qui comprend le modelage cartilagineux, effectué par meulage à la fraise à grands tours, la mobilisation de la conque avec résection de musculus auricularis posterior, sans résections réductrices du cartilage de la conque. La méthode de correction des pavillons décollés décrite ci-dessus a été adoptée avec succès chez 800 malades, opérés dans le Département de la chirurgie plastique à l'Institut de la cosmétique médicale de Prague. La méthode ne présente aucunes complications importantes et son effet définitif correspond aux exigences esthétiques: un pavillon au relief beau et naturel.

ZUSAMMENFASSUNG

Korrektive Otoplastik

Krýslová, I., Fahoun, K.

Die Autoren führen die Technik einer korrektiven Otoplastik an, mit Modellierung des Knorpelgewebes vermittels Ausschleifens mit einer sich schnelldrehenden Fräse, Mobilisierung der Koncha unter Resektion des musculus auricularis posterior, ohne reduzierende Resektion des Knorpelgewebes der Koncha. Die beschriebene Art und Weise einer Korrektion abstehender Ohrmuscheln wurde bei 800 Patienten erfolgreich angewendet, die auf der Abteilung für plastische Chirurgie der Hauptstadt Prag operiert wurden. Die Methode weist keine ernstlichen Komplikationen auf, und das Resultat erfüllt die Anforderung einer natürlichen schönmodellierten Ohrmuschel.

RESUMEN

Otoplástica correctiva

Krýslová, I., Fahoun, K.

Los autores presentan aquí la técnica de la otoplástica correctiva con la modelación del cartílago por medio de la rectificación por fresa de superrevoluciones, por la movilización de la concha con la resección de musculus auricularis posterior, sin las resecciones reductores del cartílago de la concha. Al método descrito de la corrección de resaltados pabellones de la oreja se le emplearon con éxito en 800 enfermos, sometidos a la operación en el Departamento de la cirugía plástica del Hospital de la Capital de Praga. El método no tiene ningunas complicaciones importantes y el efecto resultante cumple las exigencias de hermoso y natural relieve del pabellón.

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FLAP OPERATIONS FOR DUPUYTREN'S CONTRACTURE

M. KRÁLOVÁ, A. NĚMEC

Surgical treatment in some of the more complicated cases of Dupuytren's contracture can be no easy affair. In some patients with productive fibroplastic diathesis there is so much connective tissue proliferation that the surgeon has to deal with a hand suffering from more or less functional impairment. Correct surgical treatment of a hand thus affected requires — in addition to professionally performed aponeurectomy — also correction of dermal, tendinous or atricular contracture of fingers.

Fig. 1, 2. 38-year old patient with flexion contracture of the left hand little finger, state after two operations for Dupuytren's contracture. Cross finger flap marked on the dorsum of digit IV.

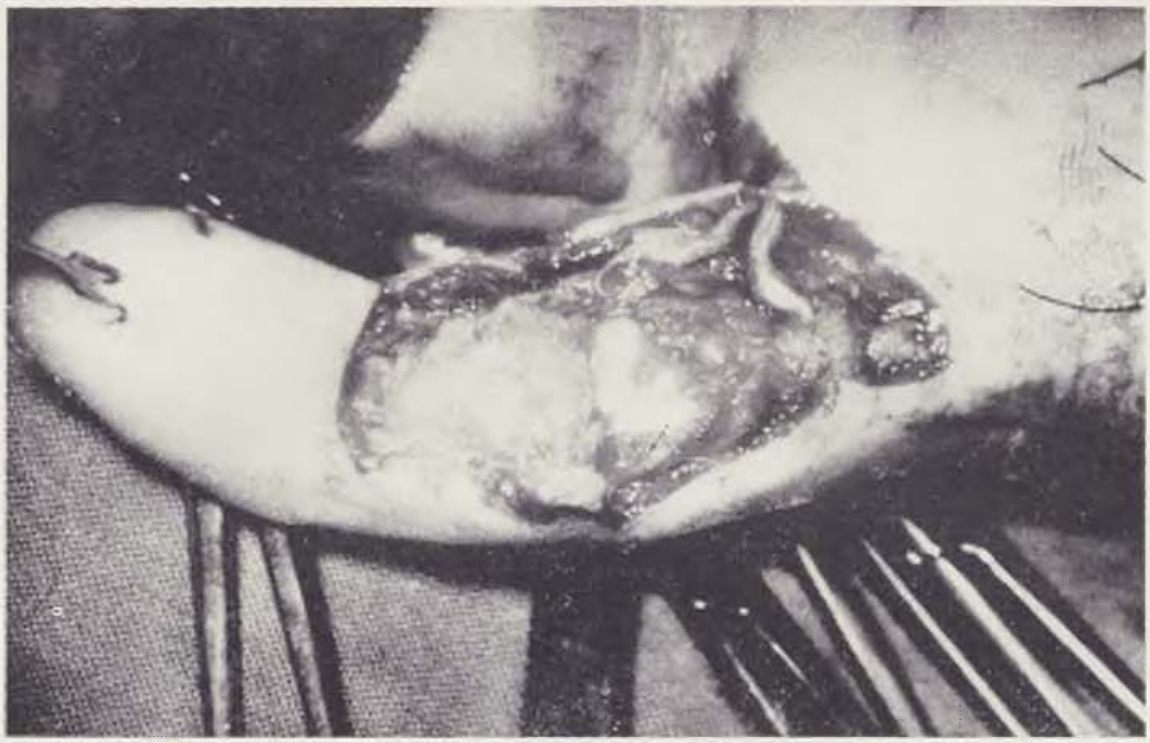

Fig. 3. Surgery eliminated skin, tendinous and articular contracture resulting in skin cover defect over two phalanges of the little finger

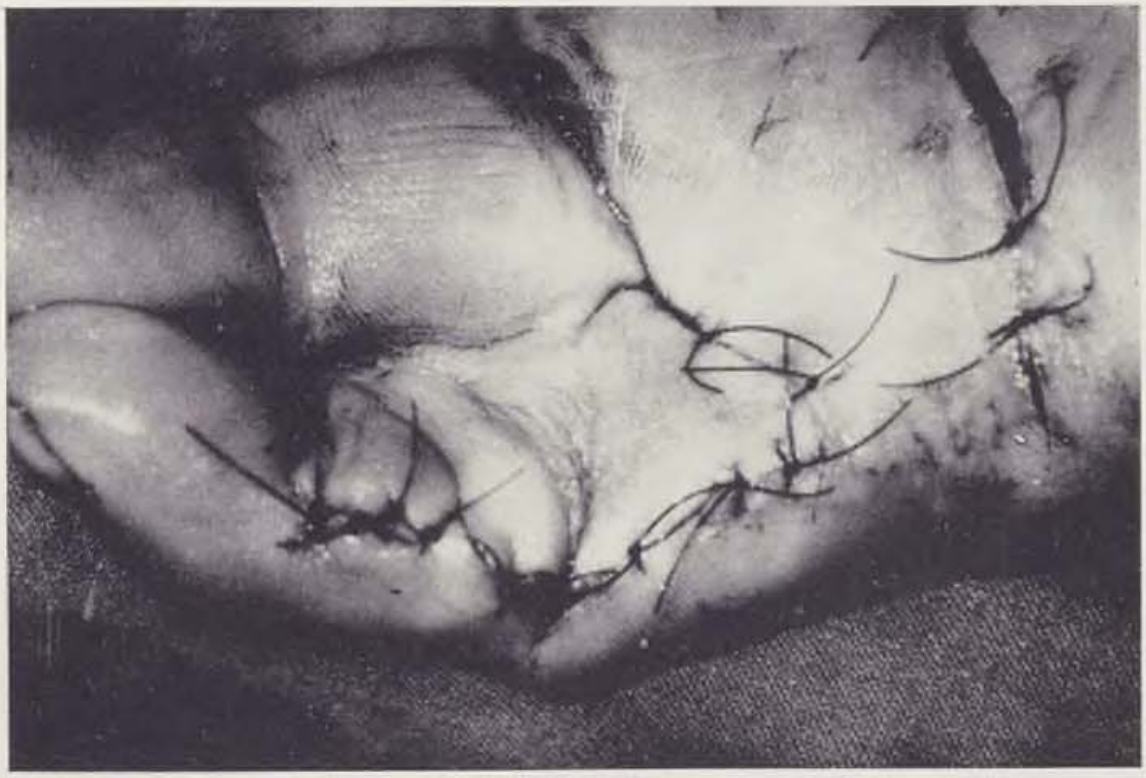

Fig. 4. Cross finger flap sutured in

Fig. 5. State after union

Fig. 6. Contractures of fingers of both hands in a 37-year old patient with four previous operations for Dupuytren's contracture and for camptodactyly

With the complex or relapsing Dupuytren's contractures of the hand it is often necessary to remove the redudant, cicatrically altered skin over the stripes and knots of palmar aponeurosis. While skin excision and contracture elimination help to straighten the finger partially or even completely, a skin defect results with important tissue structures of the volar side of the finger situated at the base. We do not consider a free skin graft a suitable cover for the denuded tendons and neurovascular bundles. Nor does it provide an adequate cover for the volar area of the hand which has a multitude of functions to perform and where the frequent contractions of the healed in skin transplant are consequently undesirable.

The method of "Z"-plasty is well suited for the purpose. We use this technique for the kind of Dupuytren's contracture where it is not necessary to excise the skin over the stripes and knots of the hypertrophic palmer aponeurosis. The deficiency of skin cover resulting from the release of the contracture of the finger can be compensated by an interchange of skin wedges which do not contract after union has been achieved. This exchange also helps to interrupt the course of superficial collagenous fibres passing from the pretendinous stripes to the corial layers of the skin of the volar side of the finger where they remain and take a share in the contracture of the finger.

A rather large skin defect is likely to develop in cases of major flexion contracture affecting one or more fingers after the decontracture of the tendons and joints. Even an interphalageal joint may sometimes be seen denuded at its base. In our view, it is desirable to cover the site with good-quality flap tissue. A cross finger flap from the dorsum of the neighbouring finger is a good solution, or flaps from some of the more remote

Fig. 7. Axillary flap sutured into defect on the volar side of digits IV and V of the right hand

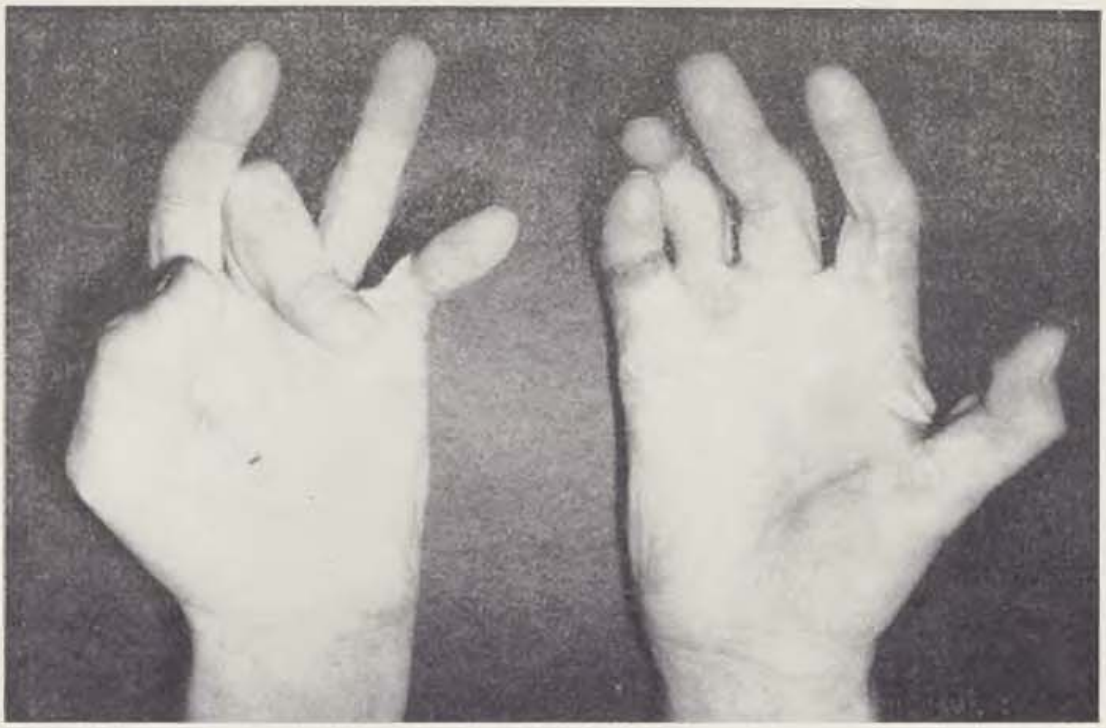

Fig. 8, 9. State after separation of digits IV and V, flap union achieved. Contracture of digit III of the left hand only partially repaired, a cross finger flap from the dorsum of digit IV sutured into the defect over the 1st interphalangeal joint of the finger

Fig. 10. Inconspicuous scar at axillary flap donor site

Fig. 11. The hand of a 50-year old man operated on several times for Dupuytren's contracture

Fig. 12. Inguinal flap on volar side of digits IV and V of the right hand

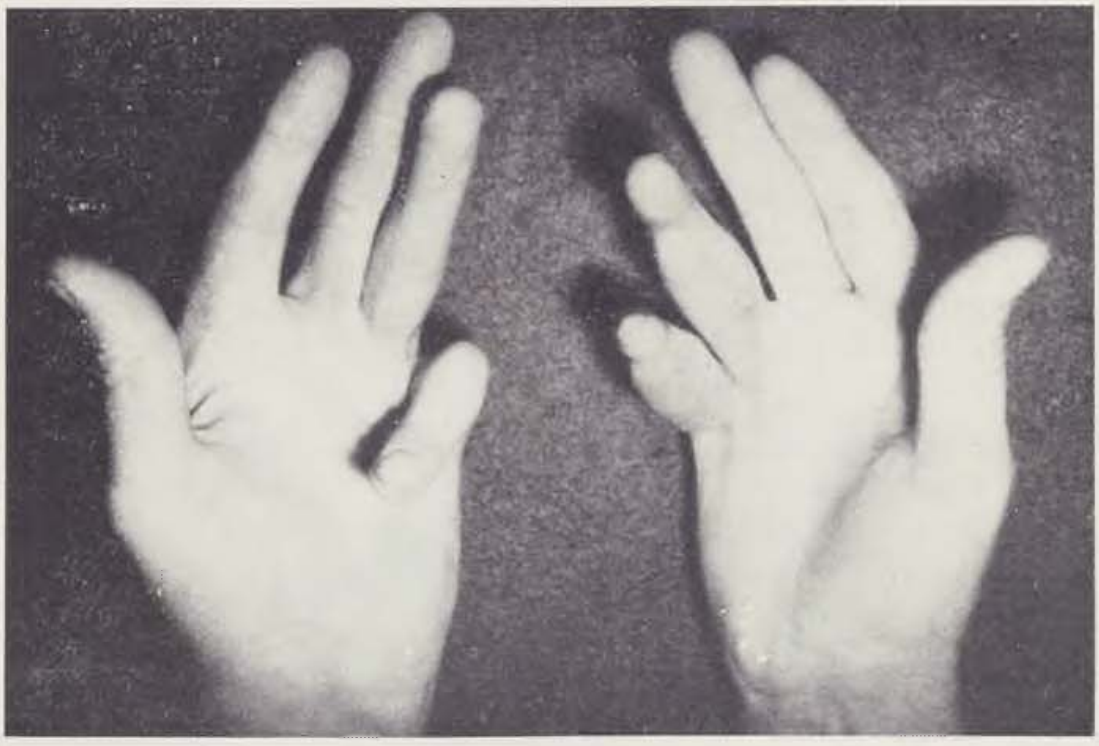

Fig. 13. Digits IV and V after separation, improved contractures, more improvement expected after rehabilitation. Contracture of left hand little finger to be corrected

areas of the body, a flap from the forearm (Colson's flap), from the arm, axilla or groin. The skin of all those flaps meets the requirements for a good-quality cover for the functionally important tissue structures of the volar area of the fingers, while scars resulting from the lifting of such flaps are rather inconspicuous. While flaps from the forearm, arm and the axillary region are being healed in the upper extremity and the chest provide a suitable splint to immobilize the hand. Some of the above listed flap plastic operations designed to deal with some of the complex types of Dupuytren's contracture are shown in illustrated form.

SUMMARY

The authors discuss surgical appproaches to complicated forms of Dupuytren's contracture of the hand listing some of the optional surgical techniques in cases of severely contracted fingers which would otherwise have to be amputed. They stress the need for prcfesionally accomplished extirpation of palmar aponeurosis and for skin cover replacement with good-quality flap tissue.

RESUME

Plasties par lobes dans les opérations de la rétraction de Dupuytren

Králová, M., Němec, A.

Dans leur travail, les auteurs traitent la problématique du traitement chirurgical de types compliqués de la rétraction de Dupuytren de la main. Ils proposent les possibilités de méthodes convenables pour un procédé chirurgical efficace, afin que les doigts de la main gravement rétractés ne doivent pas être amputés. On accentue la nécessité d'effectuer l'extirpation de l'aponévrose palmaire d'une façon hautement spécialisée et l'importance de substitution du revêtement cutané par un tissu de lobe de qualité.

ZUSAMMENFASSUNG

Lappenplastik bei Operationen der Dupuytren-Kontraktur

Králová, M., Němec, A.

Die Autoren behandeln in ihrer Mitteilung die Problematik einer chirurgischen Behandlung komplizierter Typen einer Dupuytren-Kontraktur an der Hand. Sie führen mögliche und geeignete Methoden einer Operation bei schwer kontrahierten Fingern an, die man sonst ohne eine solche Behandlung amputieren müsste. Sie betonen die Notwendigkeit einer fachmännisch unternommenen Exstirpation der palmaren Aponeurosis sowie die Bedeutung des Ersetzens der Hautdecke durch ein qualitatives Lappengewebe.

RESUMEN

Plásticas de lóbulos en operación de la contractura de Dupuytren.

Králová, M., Němec, A.

En su informe los autores tratan sobre la problemática del tratamiento quirúrgico de complicados tipos de la contracturra de Dupuytren sobre la mano. Presentan aquí posibles métodos convenientes de la técnica operatoria en caso de gravemente con-

tracturados dedos de la mano, a los que sin método citado del tratamiento debería necesidad a amputar. Los autores subrayan necesidad de especializadamente realizada extirpación de la aponeurosis palmar y el significado de la sustitución de la cubierta cutánea por tejido del lóbulo de buena calidad.

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N. G. Georgiade, G. S. Georgiade, R. Riefkohl, W. J. Barwick: **Essentials of Plastic, Maxillofacial and Reconstructive Surgery**. Wiliams and Wilkins, Baltimore, USA, 1987.

This excellent publication gives a survey of the latest knowledge and experience of all plastic surgery. The text is divided into nine parts: basic principles, skin and soft tissues, the head and neck, surgery of the face, breasts and genitals, microsurgery, and principles of plastic surgery in practice. Each part has a number of chapters — a total of 94 — compiled by 140 authors, most of the from the US except two from other countries, and each of the chapters contains the basic bibliographical data, though again with a minimum of references to other than English-language sources. Each chapter is noted for encyclopaedic arrangement, lucid style and a wealth of the latest information. The authors are all even internationally recognized specialists, each in his own field, but the whole shows the firm guidance and unifying influence of Nicolas G. Georgiade, a world famous plastic surgeon and teacher, as the master author. This accounts for the selection of co-authors, his followers and prominent experts, each in his own field. The essential theoretical knowledge is presented in a well balanced form. The publication benefits from clear, graphic illustrations. These are a fine guide to the surgical techniques described indicating the standard of the results required. The whole text is presented in adequate proportions making it possible for the whole publication to appear in a single, well devised volume. Summed up, this is an enviable textbook likely to serve for a number of years, primarily, students, surgeons, clinicians and teachers of plastic surgery.

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REMOVAL OF BOTH BREASTS FOR PARAFFINOMA AND SUBSEQUENT REPLACEMENT

I. CZETI, P. P. SIKÓ

The correction of aplastic, hypoplastic and atrophic breasts is still a problem that has yet to be solved surgically. Sequential autoplastic surgical procedures are not satisfactory from the esthetic viewpoint because of poor contours and large scars left behind.

For these reasons alloplastic materials were introduced for the correction of the breast.

In 1900 Gersuny injected petrolatum intranasally for saddle nose correction. Following this in the early 1900s soft and hard paraffin was used for contour correction.

However, breast enlargement performed with paraffin quickly led to complications. The enlarged breasts hardened, and diffuse glandular tubercules developed. An organe peel-like skin with extreme pigmentation was formed with necrosis occurring frequently.

The patients suffered from constant pain and carcinophobia. More and more publications, even of the recent past, reported severe complications. Paraffin oil became quickly obsolete. Many surgeons tried multicomponential mixtures made of vegetable and mineral oil derivatives, but these also caused severe inflammatory reactions without capsule formation.

Today the use of organic and inorganic oils is considered a justifiable malpractice. In Hungary such cases do not exist any more, only patients with complications due to the past treatment.

In 1983, a 38 year old woman patient reported complications to our surgical ward. She had breast enlargement due to paraffin treatment in 1975. The amount of oil injection was 300 ml. Six months after the operation her breasts hardened. In the course of time, the skin pigmentation increased and an orange peel-like skin developed. Both glandular regions were 14×10×6 cm in size, of hard consistency, easily movable on the chest wall, but they were closely attached to the skin. Because of the constant pains and the impending risk of necrosis, a complete mastectomy of both breasts was indicated (Fig. 1).

In the summer of 1983 we operated on the right breast using the following technique: after removal of the nipple we implanted the areola complex

for conservation in the same-sided inguinal region. With two horizontally arched incisions the breast was removed. The lack of skin cover was corrected by a laterally based bilobed skin flap. This technique is also used in smaller skin cover defects, especially those of the face (Fig. 2).

Fig. 1.

Fig. 2.

Fig. 3.

Histological examination showed oil granuloma.

Three months later the left breast was removed using the same technique saving the areola complex. Four months after satisfactory recovery on both sides was achieved, a 175 cm^3 silastic endoprothesis was implanted for breast contour. Two months later the nipple areola complexes were retransplanted. The patient is satisfied with the result and has no complaints (Fig. 3).

SUMMARY

Not submitted.

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REVIEW

Burns. (A manual for physicians.) (Popáleniny. Příručka pro lékaře): B. S. Vikhriyev, B. M. Burmistrov, Moscow 1986. 272 pp., 80 b.+w., 4 colour photographs, 25 figures, 17 tables, 11 roentgenograms, 7 histograms, 4 graphs, 30,000 copies, price 1.7 roubles.

Professor Vikhriyev, head of the thermal injuries chair of the S. M. Kirov Military Medical Academy, Leningrad, and Prof. Burmistrov, member of the same chair, supplemented the 2nd edition of their compendium, compared with the 1981 edition, with chapters on myocutaneous plastic surgery using microsurgical techniques in 4-degree burns, on haemoperfusion for the management of burn toxaemia, and on acute surgical involvement. Both editors take a share in all the 15 chapters (Vikhriyev has written all the supplemented ones), and for work on 27 subchapters they invited 16 coworkers, mostly authors of 12 monographs and 62 dissertation theses from an institute where over 10,000 injured persons have received treatment since it was launched. The history part describes the development of burns care throughout the world and in the USSR where against the 43 specialized centres in 1979 there are now already well over 100, thereof 26 in the Ukraine; the list of burn centres includes references to 4 in Czechoslovakia, 3 in Japan, 4 in Canada, 5 in Italy, 11 in England, 13 in France, and 37 in the USA with a note telling us that only about 10 % of those burned are treated there. Chapter 2 gives a detailed description of the mechanism of thermal, electric and chemical damage, wound morphology and diagnosis depending on the degree of damage — 1, 2 and 3a (superficial) and 3b and 4 (deep damage), and methods of objectivizing the extent and depth of injury. The chapter on the pathogenesis and clinical aspects of the burn disease were written by Rozin, author of the monograph on burn shock (1975), and Batkin, author of studies of the simultaneous flue gas involvement of the respiratory tract (1978); the chapter on shock states is dynamic with tables giving the criteria of their classification into mild, serious and critical degrees using Frank"s index of burn extent and depth. The subsequent sections deal with acute toxaemia, septicotoxaemia, convalescence, and clinical peculiariites in children and in the elderly; there is also a table permitting the diagnosis of respiratory involvement. As for complication, sepsis, pneumonia and cachectization are described; as for surgical emergencies — ulcelaration of the digestive tract, acute cholecystitis, upper mesentery syndrome (acute gastric dilatation), thrombosis and embolism of mesenteric vessels and peritonitis (their steadily increasing occurrence is now 3rd or 4th on the list of immediate causes of death; diagnosis is difficult, 19 of the 34 patients operated on at the author's clinic died (¼ of them due to peritonis.) The section on first aid transport is written precisely for all three types of injury.

The chapter on pathogenetic treatment sums up the duties of the burn centre internist (with at least 50 beds) who, along with the surgeon and transfusion specialist, is co-responsible for anti-shock treatment, haemoperfusion, for treatment with antibiotics, hormones and diet, for physiotherapy and therapeutical physical exercises. Rozin gives details of anti-shock treatment drawing on his experience of 600 treated patients. Blood transfusion was necessary in deep burns involving more than 10 % of the body surface for

the management of toxaemia and septicotoxaemia; the familiar recommendations for transfusion are made to include assisted diuresis, the use of protease inhibitors with heparin and haemoperfusion in cases of major intoxication. An extensive table on the treatment of burn disease of stages II and III sums up otherwise thoroughly discussed principles of chemotherapy with antibiotics and sulphonamides, the treatment and prevention of staphylococcal infection and candidosis, immunotherapy with active immunization with staphylococcal anatoxin, and passive immunization with antistaphylococcal gamma-globulin, treatment with anabolics, glucocorticoids, replacement solutions and diet in the three stages of clinical gravity; attention is devoted to the treatment of pneumonia where, apart from broncholytics and trypsin aerosol, microtracheocentesis is recommended for the instillation of antibiotics and drugs.

Burmistrov's chapter on conservative treatment of burn wounds, adequate for outpatient treatment and for 80 % of those hospitalized for superficial burns, discusses the covert and overt approach using chemotherapy, antibiotics, keratolytics and physical treatment of granulations (ultraviolet rays, hyperbaric oxygenation, controlled abacterial environment, isolated beds with infraradiators). The most extensive chapter is that on surgical treatment of deep burns — written by Vikhriyev and his 4 coworkers on a total of 45 pages. It deals with the strategy and techniques of necrectomy and defect covering (for single-stage covering of 5—15 % of the body surface they use autotransfusion), in particular, free transfer of grafts worked with a dermatome, mesh-flap plastic operations (including the tubular Burian-Filatov flap), and axial vascular supply flaps (a term proposed by the author), including its free transfer with microsurgical techniques. A specialist is bound to be interested by detailed descriptions of work with Soviet-made dermatomes (Krasnogvardeyets and Electrodermatome DPE-100), by descriptions of whole graft transfer, by the use of label and mesh grafts, and by summed up directions for planning the use of such techniques. At Vikhriyev's centre, the microsurgical technique was used in 97 myocutaneous complexes in axial vascular supply flaps, particularly for electric burns: there is a 10-page description of the indications, approach, technique and problems concerned, complete with photographs and sketches. Burmistrov's subchapter gives a similarly detailed description of allotransplantation and combined auto-allodermatoplasty, again amply illustrated. The techniques are presented according to their particular use in the face, on the scalp, on the extremities, over large joints and bones, including indications for the amputation of irreversibly damaged acral parts of the extremities, which they had to use in 5 % of the 4-degree injuries, particularly in contact burns.

The following chapters deal in detail with post-operative treatment, with therapeutical specificities in burned children, and with anaesthesia. Writing on 37 pages, Vikhriyev describes plastic operations designed for the management of post-burn scarring deformities in the face, on the neck and head, on the extremities, and contractures over large joints; a highly interesting subchapter is devoted to chronic venous insufficiency and trophic ulcers resulting from leg burns, including the development of cancer in the scar resulting from a deep burn of the back of the hand (again amply illustrated). The compendium ends with the two editors' chapters on burn unit work organization, on outpatient aftertreatment and rehabilitation.

Finally, it is worth quoting Burmistrov's brief data on the results of burns treatment. The result may be anything from complete recovery, to healing with loss of fitness for work, to death. Complete recovery was achieved in all cases of superficial involvement (1st, 2nd and 3rd-a degrees), with deep involvement (3rd-b and 4th degrees) the rate of recovery was

96.9 % in those with burns involving up to 10 % of the body surface, 66.7 % in those with 11—20 % involvement of the body surface, and 17.8 % in those with more than 20 % of the body surface affected. Prognosis can be based on the gravity of the shock state; with burns involving 20—30 % of the body surface prognosis is uncertain (44 % deaths), with deep burns involving over 30 % of the b. s. there is 90—95 % lethality. Deep burns involving over 50 % of the b. s. is incompatible with life, and similarly incompatible with life is extreme shock with the victims surviving for only 5.5 ± 0.75 days. The immediate causes of death of those taken to hospital in a state of shock include shock itself — in 36 %, pneumonia in 25.5 %, and sepsis in association with pneumonia in 28 %. Over the past 15 years, lethality was 9—11 % on average; 0.3 % in superficial burns (with only the elderly and otherwise diseased dying there), 24 % in cases of deep burn; 3.1 % in deep burns involving up to 10 % of the b. s., 33.3 % in deep burns involving 11—20 % of the b. s., 82.2 per cent in deep burns with more than 20 % involvement of the b. s. Mortality due to shock dropped from 38 to 23 %; the rate of deaths due to toxemia and septicotoxemia continues to be high, i. e., more than half the lethal cases. The rate of scarry deformation was 31.8 % in deep burns involving up to 10 % of the b. s., and 55 % of burns covering over 10 % of the b. s. About one third of the deformations, particularly supraarticular contractures could not be removed completely by surgery. Work could be resumed by 82 per cent of those with deep involvement of up to 10 % of the b. s., 27.7 % of those with deep involvement of 11—20 % of the body surface, and by only 13.3 % of those with deep burns involving over 20 % of the body surface.

The list of references comprises 190 Soviet and 132 foreign communications. As for Czechoslovak authors, Kolář, Drugová and Vrabec are quoted in the part on acute gastric ulcers in burn disease (1972). This well written and readable compendium will be appreciated by surgeons, traumatologists, burn centre internists and plastic surgeons who are bound to be interested by the chapters on surgical treatment and plastic operations on scarry deformations and contractures, the interesting details of which could not be included in the present report.

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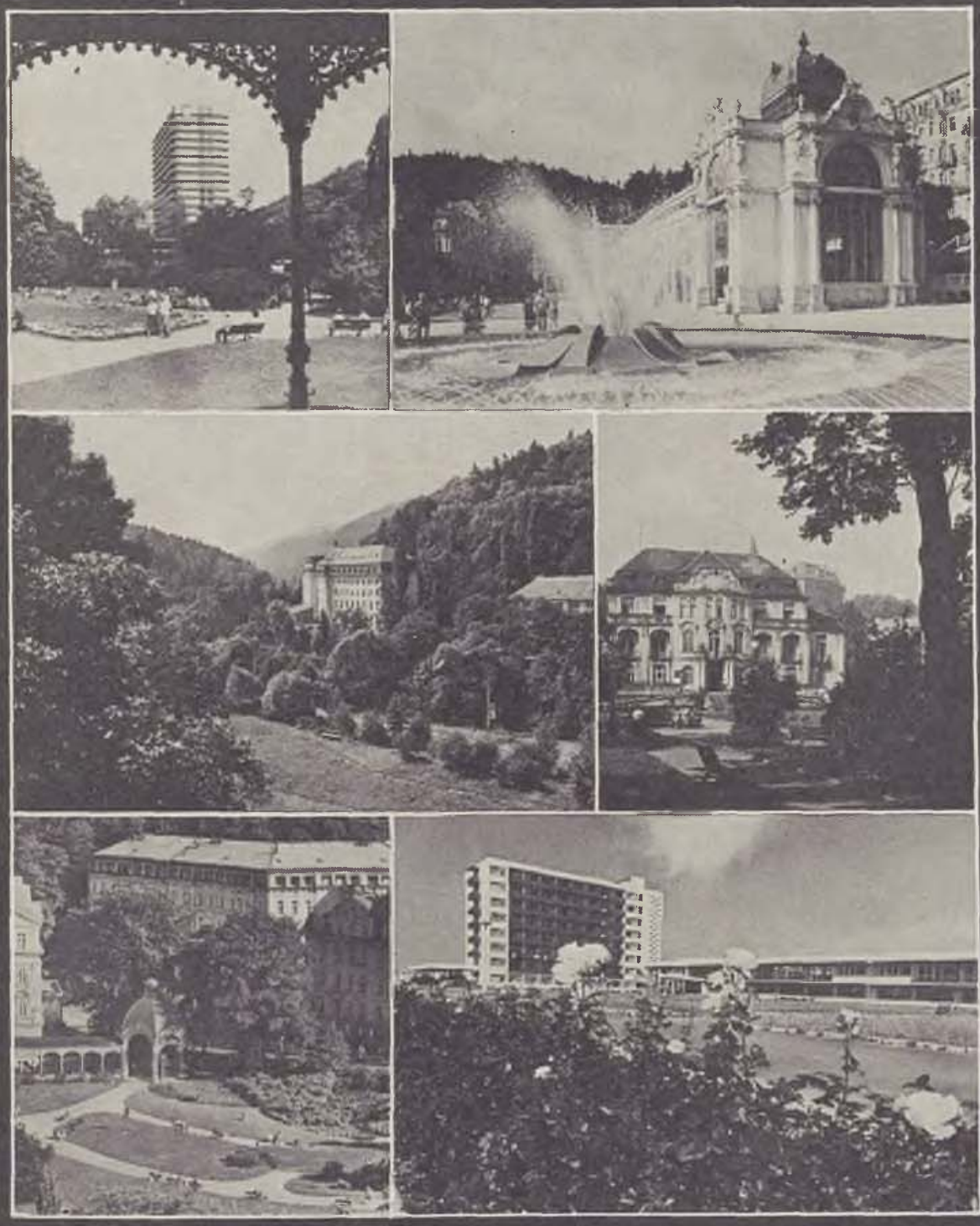

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