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Centre for Emergency Medical Aid, Medical Academy, Sofia (Bulgaria)

Chair of Traumatology

Head: Prof. E. Paneva-Holevich, M. D.

THE CHINESE FLAP IN HAND SURGERY

B. HOLEVICH-MADJAROVA



The so-called Chinese flap has already a history covering ten years. The interest in it is growing constantly. The number of communications in literature, regarding its application increases each year.

The experience hitherto has shown great efficiency of this method for covering deep hand wounds where mainly flaps on retrograde blood flow are used (3) and on the other hand its employment in plastic surgery concerning other regions where it is used as free flap by microsurgical suture (10).

The possibilities for applying the Chinese flap as a compound one have been increased including a fasciocutaneous island as well as some other tissues as bone, tendons and nerves. Such compound flaps were used in cases of severe injuries with tissue defects as well as for the reconstruction of amputated thumb (1,7).

Our communication reflects the limited experience of the Chair of Traumatology at the Centre for Emergency Medical Aid regarding the employment of the so-called Chinese flap on retrograde blood flow.

The flap was used in 5 patients for covering granulating hand wounds of different size out of which 3 are presented.



Fig. 1. a — Condition prior to operation



b — Transfer of the flap onto the recipient surface



c — Final result

Case 1. Male patient aged 34 sustained electrical burns of the left hand one month before admission to the clinic. A forearm flap was raised of corresponding size for covering the granulating wound on the dorsal hand surface. Allen test revealed good blood supply of the hand by *a. ulnaris*. The tendons of *m. extensor pollicis brevis* and *m. abductor pollicis longus* were severed temporarily in order to achieve sufficient mobility of the vessel pedicle without cutting or folding *v. cephalica*. Thereafter the vessel pedicle was exposed up to the level where *a. radialis* penetrates both the bands of *m. interosseus primus*. It includes also the dorsal subcutaneous veins which form *v. cephalica*. Thereafter the cut tendons were sutured. The postoperative course was uneventful without any venous stasis of the flap. A second stage is to follow aiming to restoration of *extensor digitorum communis*. (Fig. 1 a, b, c).

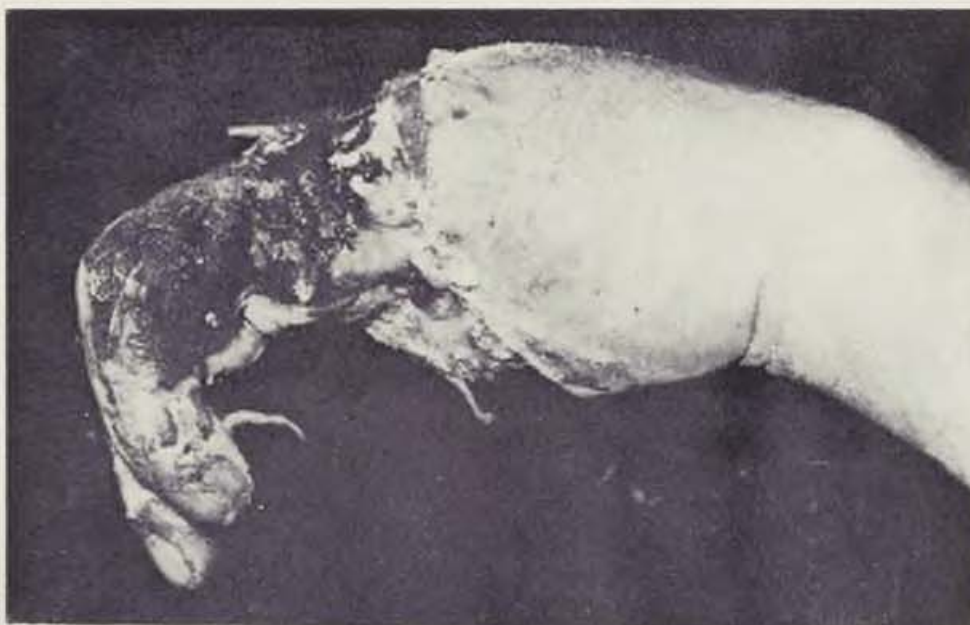


Fig. 2. a — Condition prior to operation



b — Thirty days after operation

Case 2. Male patient aged 42 sustained a circular injury. The second and third fingers of the left hand were replantated immediately. One month later the granulating wound on the dorsal and volar aspects of the palm was covered with a Chinese flap. (Fig. 2 a, b).



Fig. 3. a — Condition prior to operation
b — Final result

Case 3. Male patient aged 37 was admitted to the clinic one month after sustaining a roller-wringer injury to the left hand. Amputation of the necrotic fingers was carried out and the wound was covered with a Chinese flap. (Fig. 3 a, b).

This flap was employed as a stage in the reconstruction following traumatic thumb amputation in 3 patients out of which two are presented.

Case 1. Female patient aged 33 with granulating wound after amputation of the first three digits of the right hand due to roller-wringer injury was admitted seventy days after accident. First excision of the necrosis was performed comprising some segment of the metacarpal bone. A pedicled Chinese flap including a. radialis, the corresponding veins and v. cephalica was applied after arteriography. Two months later the first metacarpal bone was lengthened gradually by means of an external fixator. Thus the tip gripping ability between the fourth and fifth digits on the one hand and the lengthened first 'ray' on the other was restored (Fig. 4 a, b, c, d, e, f, g).

Case 2. Male patient aged 35 sustained machine injury to the right thumb followed by amputation. At the first stage the Chinese flap was transplanted onto the amputation stump while during a second stage the latter was lengthened by an external fixator (Fig. 5 a, b, c).



Fig. 4. a — Photograph prior to treatment
b — Arteriography prior to treatment



c — Photograph during transfer of the flap
d — Photograph 30 days after transfer of the flap

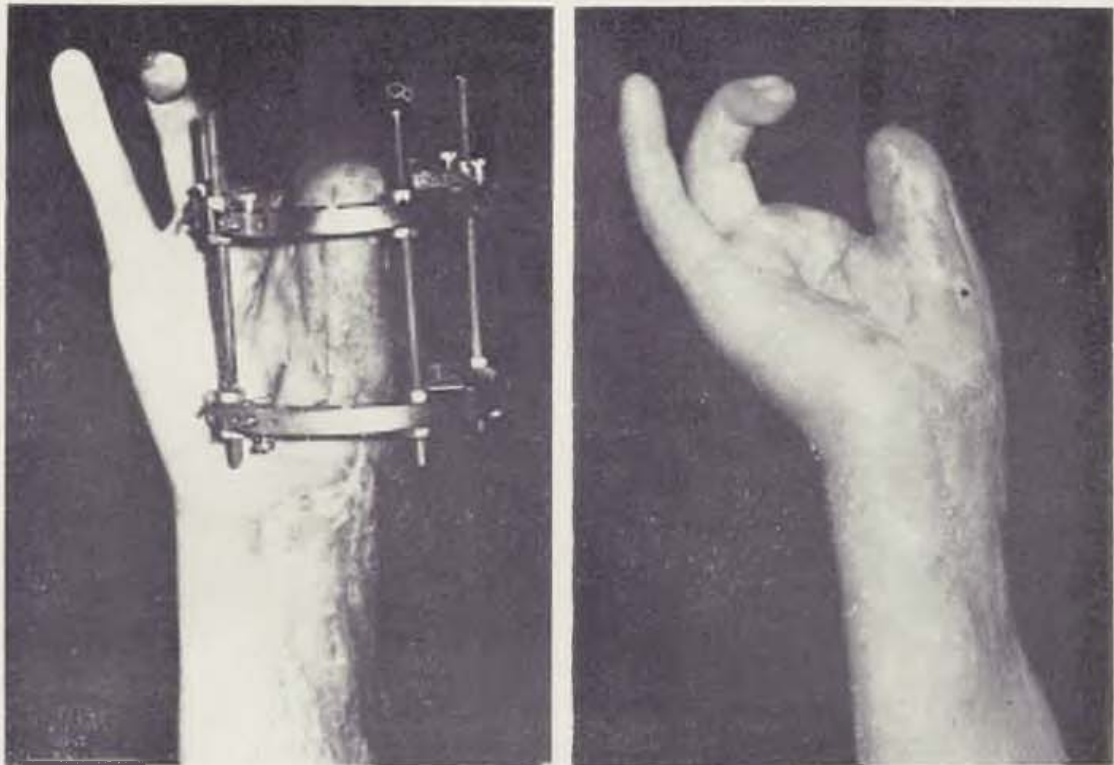


Fig. 4. e — Lengthening of the amputation stump
 f — Photograph after lengthening of the amputation stump



g — X-ray picture after lengthening of the amputation stump

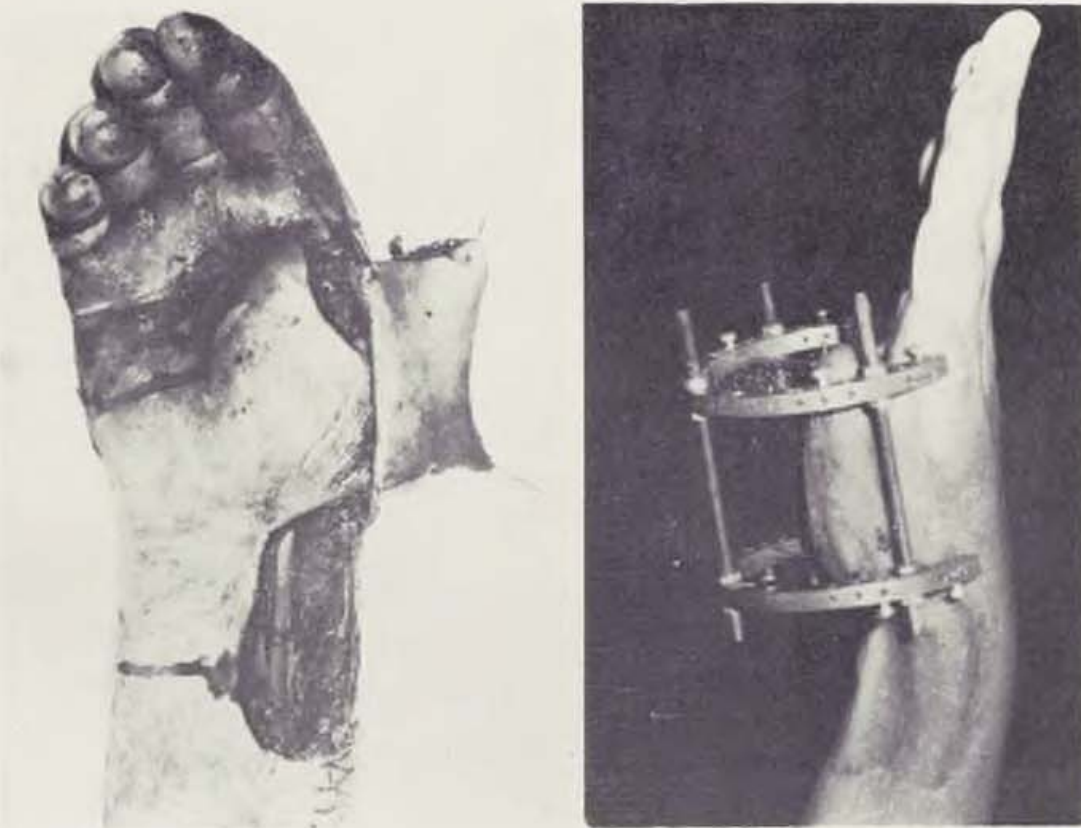


Fig. 5. a — Photograph during transfer of the flap
b — Photograph during lengthening of the amputation stump



c — Photograph after lengthening

DISCUSSION

Despite the great experience with the Chinese flap according to literature some questions, related to its application, are still not completely clarified. The opinion of most of the authors is that the venous flow in the satellite veins of *a. radialis* is effective (5). Yet the existence of venous stasis during the first days after operation is emphasized. Sin-Daw-Lin et al. (9) prove a considerable increase of the venous pressure in the flap during the first hours which gradually increases. When *v. cephalica* remains intact in the vessel pedicle, according to many authors (1, 8) this reduces the risks of venous stasis. Brotherstone et al. (3) emphasize the particularly great significance of preserving the anastomoses between the superficial and deep veins. When lesion of one of these veins exists then stasis follows which is dangerous for the flap. According to these authors such cases only necessitate anastomosis between the superficial and adjacent veins. The improved venous flow is considered to be due to the circumstance that, besides the anastomoses between both the adjacent veins bridging the flaps, there exist also anastomoses between the superficial and deep veins. When only the superficial veins remain intact then the pedicle can be mobilized only up to the level of *m. abductor pollicis longus*. Some authors suggest these veins to be cut and after transfer of the flap are to form anastomoses with the adjacent veins of the recipient surface (7). When the vessel pedicle needs a considerable mobilization, Braun (2) recommends all the flap to be passed under *m. abductor pollicis longus* and *m. extensor pollicis brevis*. Thus it can be mobilized up to the site where *a. radialis* penetrates both the pedicles of *m. interosseus primus*. This does not allow *v. cephalica* to be preserved.

This problem was solved in our fourth patient by temporary cutting of *m. extensor longus* and *m. abductor brevis* of the thumb. Thus the artero-venous vessel flap is mobilized considerably more distally without affecting *v. cephalica*. The tendons cut were sutured.

This method contributes to the experience obtained so far and may be employed in practice.

The last three of our cases demonstrate two new possibilities for the employment of the Chinese flap in the reconstructive thumb surgery. The question might be discussed here whether such a treatment is justified when the possibility of a one-stage thumb reconstruction exists using a compound Chinese flap as suggested by Biemer et al. (1). We are of the opinion that the gradual restoration, already described, might be employed in some cases as it reduces the postoperative risk and is applicable even by a less experienced hand surgeon.

One question, pertaining the Chinese flap, still is to be discussed and namely whether any risk exists in regard to the blood supply of the hand after *a. radialis* is severed. The anatomical investigations and clinical experience show this risk to be minimal. Jones et al. (6) report on cases with hand ischemia in which Allen test had not revealed any blood supply disturbances along *a. ulnaris*. The defect of *a. radialis* was bridged using a venous

graft from v. saphena rotated to 180°. Thus the hand blood supply was restored. Some authors propose principally when employing this operation a venous graft to be used (8). Some incidents have been described due to neglected traumatic lesions to a. ulnaris and some rare anatomical variations. In order to avoid similar incidents Cha-Cha et al. (4) suggest after exposure of a. radialis proximally from the flap, the artery to be clamped using a soft arterial clamp and after some time the hand blood supply to be controlled. The arteriography remains to be one of the most dependable methods when some doubt exists.

SUMMARY

The Chinese flap was employed at the Chair of Traumatology in eight patients with different injuries. In four of them it was applied on granulating wounds and in one the flap was used for replacing a scar. In the other three cases the Chinese flap was employed for reconstruction of amputated thumbs.

RÉSUMÉ

Lambeau chinois en chirurgie de la main

Holevich-Madjarova, B.

A notre chaire de la traumatologie, le lambeau chinois a été appliqué chez 8 patients présentant de divers traumatismes de la main: 4 d'eux présentaient des plaies granuleuses, dans un cas il s'agissait du recouvrement d'une cicatrice. Quant aux autres cas, le lambeau chinois servait à la reconstruction d'un pouce amputé (de la main).

ZUSAMMENFASSUNG

Der chinesische Lappen bei der Chirurgie der Hand

Holewitsch-Madjarova, B.

An unserem Katheder der Traumatologie wurde ein chinesischer Lappen bei 8 Patienten mit verschiedenen Traumata der Hand angewendet: bei viere von ihnen handelte es sich um granulierten Wunden, in einem Fall um den Ersatz einer Narbe. In den sonstigen Fällen diente der chinesische Lappen zu einer Rekonstruktion des amputierten Daumens (an der Hand).

RESUMEN

El colgajo chino en la cirugía de la mano

Holevich-Madyarova, B.

En nuestro departamento de traumatología se usó el colgajo chino en 8 pacientes con varios tipos del trauma de la mano: 4 enfermos tuvieron la granulación de la lesión, en un caso se trató de la sustitución de la cicatriz. En los otros casos este colgajo sirvió para la reconstrucción del pulgar (de mano) amputado.

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SKIN GRAFT HARVESTING UNDER LOCAL ANAESTHESIA

P. ČESNÝ, D. RAŠKA

Today's anaesthesiological technique commonly uses general anaesthesia for cutaneous transplant taking. However, there are situations when we need to take either a small transplant where general anaesthesia would put an excessive stress on the organism, or when the patient is not prepared for it, or when the patient's internal or general condition does not allow to apply narcosis. In such cases, we have to opt for local anaesthesia. In our experience there are three options for local anaesthesia when taking cutaneous transplants:

1. Local anaesthesia induced by injecting — Mesocaine, Procaine, etc.
2. Local anaesthesia induced by freezing — Kelene, Chloroethyl.
3. Local anaesthesia induced by EMLA ointment — today's novelty.

The earliest type of anaesthesia using Procaine injections is effective but has some disadvantages. The injections alone are relatively painful, the application takes a long time and is unpleasant both for the patient and surgeon. Last but not least, the rather uneven surface of the skin caused by injections is not advantageous for taking the transplant.

For this reason we gave preference to freezing of the skin surface by Kelene — Chloroethyl application. After routine preparation of the operation site, the graft was taken from the region frozen with Kelene spray. The site is to be well frozen until its colour turns white-grayish and the skin becomes stiff. The skin stiffness appears to have a certain advantage as it does not tend to fold or to slip, which usually happens with untreated skin. The transplant obtained resembles a stiff disc which is defrozen in a saline solution. It should be remembered that such a transplant is usually thick and therefore it is necessary to cut it thinner. The histological examination shows that immediately after collection, the graft is subject to hydropic degenerative change, i. e. the freezing causes tissue dehydration, which disappears after soaking the transplant in saline solution. Such transplantation is successful, the transplants survive. The advantage of this method is in its speed, effectiveness, painlessness for the patient, its disadvantages are a short-lived anaesthetic effect, and grafts rather thicker than needed.

When searching for other options, the authors found a new substance applicable for local anaesthesia — EMLA ointment produced by ASTRA, a mixture of two anaesthetics: lidocaine and prilocaine in the form of an ointment. Its application is very simple, originally it was used for skin anaesthesia for the insertion of vascular cannulae. The authors made use of this preparation in graft-taking with a good result.

The application of this ointment is very simple: the outline of the graft is marked with colour, the best is to use methylene blue solution. After washing the site, it is necessary to know precisely which part should be anaesthetized. Then an adequate EMLA quantity is applied onto the marked site, its thickness resembling a well-buttered bread. The next step is to cover this part with a polyethylene sheet, or in case of a small area with a sheet with a window cut-in. Then the site is bandaged for moderate compression, and the bandage, in accordance with the date valid for routine anaesthesia, should be kept in place for one hour. The authors' experience confirmed one-hour period for transplant taking as being the optimum time for application. Then the bandage is removed, the ointment is washed off, the skin area is treated in the usual way and the graft is taken in the same manner as under general anaesthesia. The duration of anaesthesia is about 40 minutes from the beginning of surgery, whereafter its intensity decreases.

The graft taking is practically painless: out of 25 cases, 24 were without pain, one patient complained of pain as the cut extended as far as the non-anaesthetized part of the skin; this was due to a rather large cutting range of Watson's knife, a fact not taken into account. This is to be kept in mind and therefore a larger area of the skin should be anaesthetized.

The healing of both the transplants and the donor site posed no problems.

The histological check-up showed no changes in the quality of the skin graft.

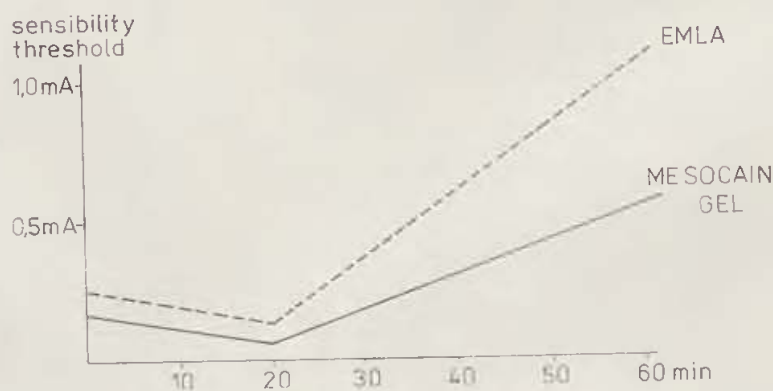


Fig. 1. Comparison of sensibility threshold in Mesocain Gel and EMLA treated skin

Many authors report no allergic manifestations, overdose or an elevated blood level of the anaesthetic. Neither did the authors observe any side effects. The advantage of this method resides in its simplicity, safety and easy manipulation.

No disadvantage was observed; however, there was no objectivized evidence of the effect of EMLA, of how quickly it takes effect and no means of comparison with similar preparations.

We therefore searched for a method which might allow (to a degree) an objective evaluation of the different local anaesthetics under study. We chose measurements of superficial skin sensibility threshold and measurements of the speed of sensory fibres impuls conduction.

The measurements were carried out with the aid of a Danish EMG device, type Dantec Neuromatic 2000 c. (Prior to this, it was necessary to devise a measuring technique /Fig. 1/). The measurements were performed at intervals of 20, 30, 45 and 60 min.

The results showed that the onset of the effect of the compared anaesthetics (EMLA and Mesocaine Gel, Spofa) was roughly identical when compression bandage was used. The maximum effect was attained within 45–60 min. of application. An interesting point is that after 20–30 min., the sensibility threshold first decreased, later to increase on average by 1 mA with the EMLA application, but only by 0.5 mA when Mesocaine Gel was used.

Another interesting fact resulted from measuring the sensory fibres conduction speed. There was no reason to assume that a local anaesthetic could influence the speed of conduction. However, the measurements showed a decrease of 2–4 ms.

These findings inspired the authors to devise a measuring method and to compare both substances. EMLA appeared to be twice as effective as Mesocaine Gel.

SUMMARY

The paper compared three methods of local anaesthesia application used for taking dermoepidermal transplants.

1. Procaine injections:
 - advantage: effectivity
 - disadvantage: lengthy procedure, uneven surface.
2. Freezing with Kelene:
 - advantage: speed, no preparation needed, good effect
 - disadvantage: thicker grafts.
3. EMLA local application:
 - advantage: effectiveness, simplicity
 - disadvantage: none

This shows EMLA application as an optimum method. If anaesthesia without preparation needs to be applied quickly, it is advantageous to use Kelene. Undoubtedly, it is a question of the method of choice, standard usage as well as availability of the anaesthetic.

RÉSUMÉ

Prélèvement des greffons cutanés sous l'anesthésie locale

Česaný, P., Raška, D.

L'article présente l'évaluation de trois méthodes d'anesthésie locale pour le prélèvement des greffons dermo-épidermiques.

1. Injections de procaine:

avantage: efficacité

inconvénient: lenteur, inégalité de la surface

2. Infiltration à Kéléne:

avantage: rapidité, préparation nulle, bon effet

inconvénient: greffons plus épais

3. Application locale d'EMLA

avantage: efficacité, simplicité

inconvénient: nul.

De cela résulte l'application d'EMLA comme l'optimum. Dans les cas où l'exécution rapide de l'anesthésie sans préparation préalable est nécessaire, l'application de l'anesthésie locale à Kéléne est avantageuse. En tous cas, il s'agit des méthodes de choix et de coutume ainsi que d'accessibilité des produits anesthésiques.

ZUSAMMENFASSUNG

Die Entnahme von Hauttransplantaten in lokaler Anästhesie

Česaný, P., Raška, D.

Im Artikel werden drei Methoden einer lokalen Anästhesie zur Entnahme dermo-epidermaler Transplantate miteinander verglichen.

1. Umstechungen mit Procain:

— Vorteil: Wirkungskraft

— Nachteil: Langwierigkeit, unebene Oberfläche

2. Gefrierungen mit Kelen:

— Vorteil: Schnelligkeit, keine Vorbereitungen, gute Wirkungskraft

— Nachteil: stärkere Pfropfen

3. Lokale Anwendung von EMLA:

Vorteil: Wirkungskraft, Einfachheit

Nachteil: keiner

Hieraus ergibt sich als optimales Mittel EMLA. Dort, wo man eine rasche Anästhesie ohne Vorbereitungen braucht, ist die Verwendung einer lokalen Anästhesie mit Kelen günstig. Es handelt sich also entschieden um eine Methode der Wahl und Gewohnheit, sowie darum, welches Präparat gerade erhältlich ist.

RESUMEN

Los colgajos cutáneos tomados en la anestesia local

Česaný, P., Raška, D.

El papel hace una comparación de tres métodos de la aplicación de la anestesia local empleados para tomar los trasplantes dermoepidérmicos.

1. Inyecciones de Procaína

- ventaja: eficacia
- desventaja: procedimiento de larga duración, superficie desigual

2. Liofilización por Quelen

- ventaja: eficacia, sencillez
- desventaja: ninguna

Estos resultados indican que la aplicación del ungüento EMLA está el método óptimo. Si la anestesia tiene que ser aplicada inmediatamente sin preparación, está ventajoso emplear Quelen. Indudablemente es una cuestión de la selección de un método propio, del uso habitual así como la disponibilidad del anéstetico.

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REHABILITATION IN PLASTIC SURGERY SPLINTING AND POSITIONING OF FLEXOR TENDONS OF THE HAND

V. SMRČKA, M. KOPŘIVOVÁ

Surgery for damaged flexor tendon must also restore the function of the hand. Thus post-operative therapy makes full use of conservative rehabilitation techniques among which splinting is the most important.

In this paper the authors present their own technique based on empirical long-term testing performed at the rehabilitation centre of the Department of Plastic Surgery, Brno, Czechoslovakia. The materials used for this purpose are easily available.

A) THREE-PHALANGEAL FINGER SPLINTING

I. After acute injury with suture on the flexor tendon, we use full plaster-of-Paris fixation in the physiological position for a period of three weeks. The splint is applied by the surgeon in the operating theatre.

In reconstructive operations which require early exercise to ensure flexion, we use a dorsal plaster-of-Paris splint fixed in the palm of the hand and on the wrist with a bandage of plaster-of-Paris cuff (Fig. 1). In reconstructive operations (especially for tenolysis), we fix the extension position as otherwise within several hours flexion contracture develops again, which is very difficult to repair. The extension position or semi-flexion position is considered advantageous but this depends on the use of a skin cover conditioned to contracture. In cases of semi-flexion position achieved with a dorsal plaster-of-Paris splint, the finger should be straightened using gentle finger tip fixation within a few hours of surgery (Figs. 1, 2). The fixation is removed only at exercise.

II. Flexor function improvement after reconstructive surgery

1. Finger fixation up to maximum flexion ("binding")

In cases where flexor function falls short of our expectation, we can increase the tension and also the flexor function by maintaining the finger in maximum



Fig. 1 Early fixation of extension using traction at distal phalanx with the aid of a strip of reinforced adhesive tape



Fig. 2 Removal of the strip allows flexion exercise of the finger

flexion. This finger position should be maintained for 1—2 hours using a bandage (Fig. 3). The patient should not remove the bandage by himself; this should be done only by the rehabilitation worker, who — when gradually extending the finger — is to find out the functional position of the flexor.



Fig. 3 „Binding“ — finger fixation reaching maximum flexion with the aid of bandage

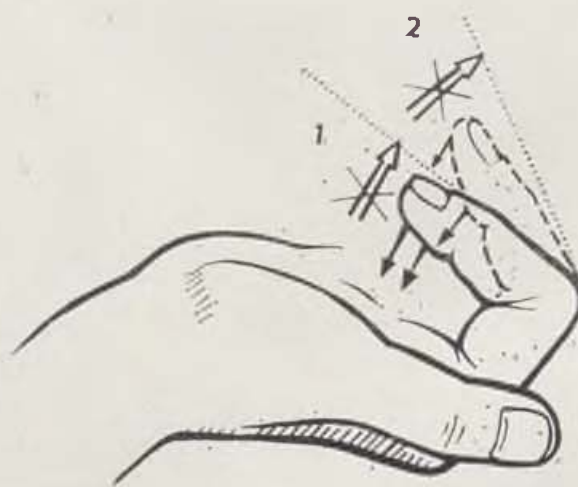


Fig. 4 Movement in the direction of flexion: 1. from the initial position during „binding“
2. after partial release.

From this position, used as a starting point, the patient should perform maximum number of movements in the flexion direction and back (Fig. 4). This technique can be also used in partial flexor lesions with functional impairment (Kopřivová et al., 1981).

Caution: This “binding” method must not be used until the skin cover has been healed.

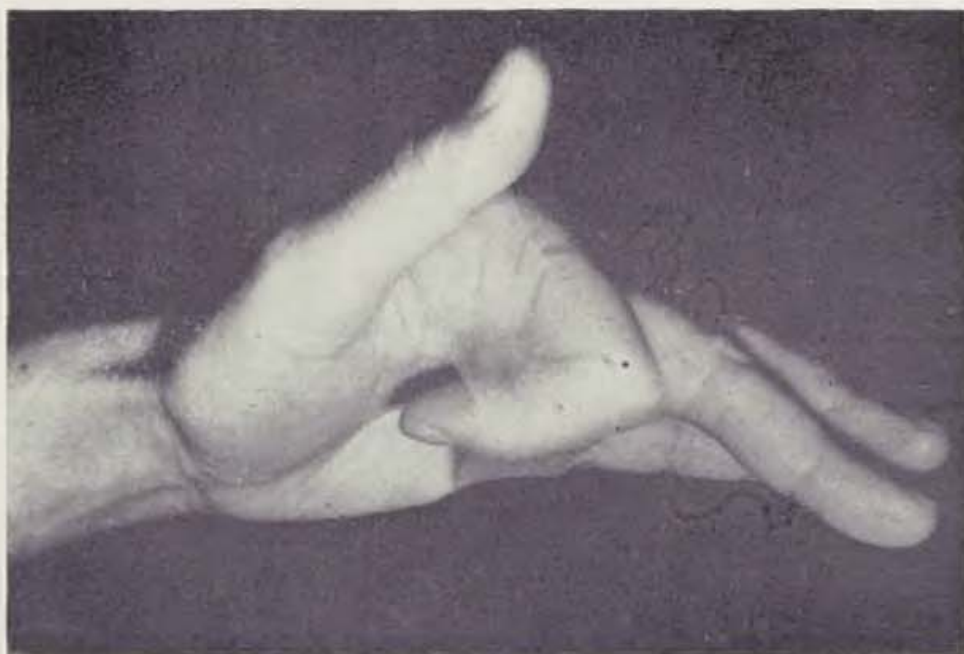


Fig. 5 Elastic strip positioning

2. Finger fixation in flexion position using an elastic strip

Finger fixation up to maximum flexion ("binding") can also be replaced by a broad strip taken from the surgical glove (or some other elastic material) and extended circularly over the hand dorsum fixing the finger over the DIP joint. However, this technique is not as effective as the one mentioned above; nevertheless, it is advantageous as the patient can apply it by himself (Fig. 5).

3. Flexor function enhancement with elastic traction

If surgery has achieved full extension, it is possible to enhance the flexor function with elastic traction using Kramer's splint (Fig. 6).

Caution: Elastic traction cannot be used in the presence of the least signs of contracture to prevent rapid progression and deterioration.

Preparation of the splint: Kramer's splint is bandaged and supported up to the finger tips. Above this level the splint is slightly bent. Elastic traction strips are fixed at its free non-bandaged end (see Fig. 5). We use elastic strips taken from surgical gloves. We increase traction according to the breadth of the strip.

3. Replacement and band protection

The flexor synovial sheath is a twofold hollow tube, tightly closed at both ends. Its distal end is at the level of distal interphalangeal joint (DIP). The fibrous part of the channel has five annular bands. The annular bands fix the sheath to the bony network. Destruction of these bands results in various

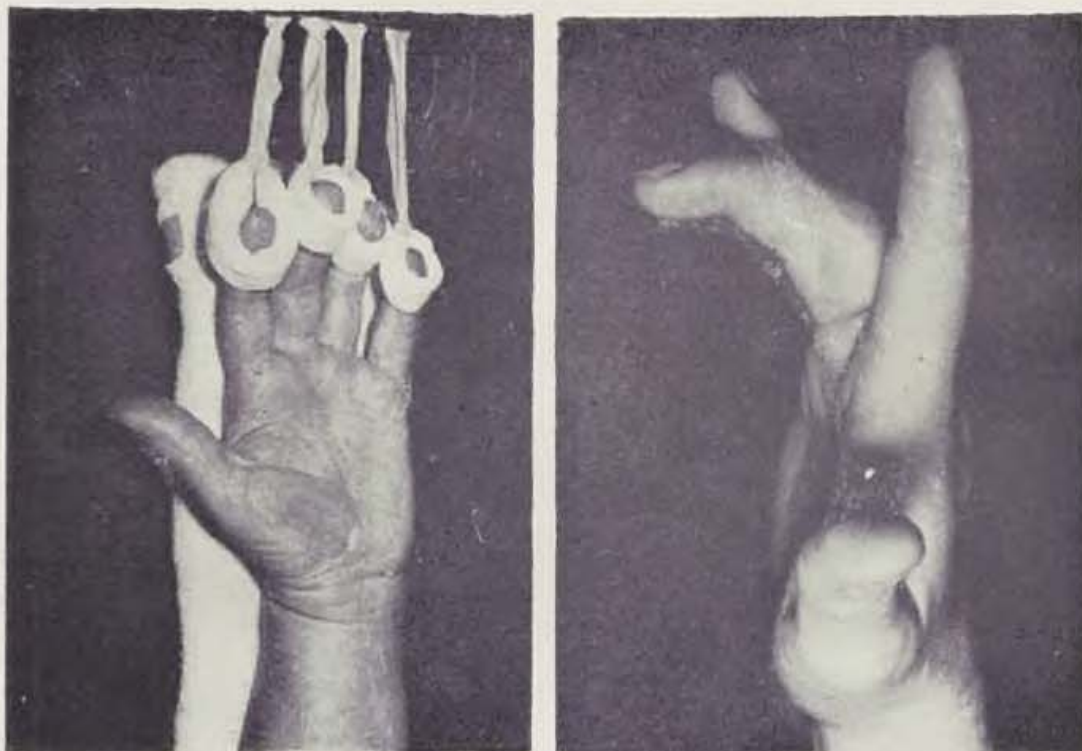


Fig. 6 Flexor strengthening on elastic traction strips

Fig. 7 Contracture with bow-string effect at the site of the A2 and A3 bands.



Fig. 8 Temporary substitute of the missing band with a ring resulting in flexion increase

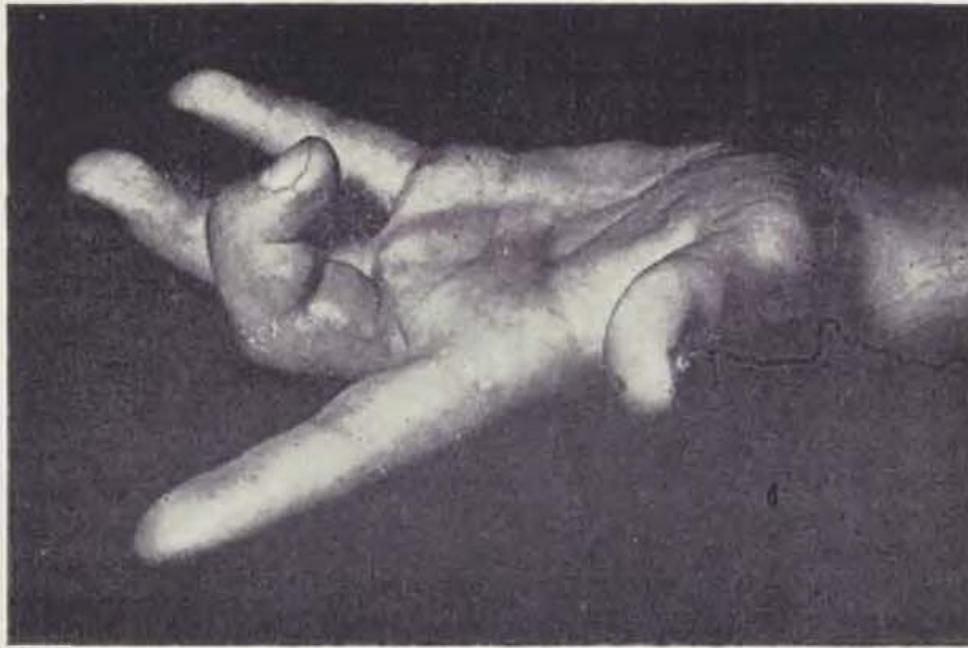


Fig. 9 Extensive flexor contracture after m. palmaris replacement

degrees of bow-string effect in flexor tendons. The annular bands are 2—20 mm long and 0.1—0.75 mm wide. Between the annular bands and the above-lying joint is a cruciated band which is membranous and flexible to such an extent that it stretches and contracts with movement.

The A2 and A4 bands ensure the finger movement within its basic extension range, with the A2 band playing the principal role. It arises from the basic phalanx, distal to the metacarpophalangeal joint (DIP). The band is 18—20 mm long but it can be shortened down to 5 mm.

The A4 band is situated in the medial third of the second phalanx and is 10—12 mm long.

The position of the bands on the thumb differs from that on three-phalangeal fingers. The flexor synovial sheath of the thumb begins 20 mm radial to the processus styloideus radii and ends distal to the interphalangeal joint (IP). Attached close to the sheath are three constant bands, two annular ones and one oblique band. The A1 band lies above the MP joint and is 7—9 mm wide. The median part of the oblique band is 9—11 mm wide, extending from the ulnar side obliquely radialward. The A2 band is placed close to the insertion of m. flexor poll. longus, is 8—10 mm wide but thin (Doyle, Blythe 1975).

If, for some reason, the A2 band is missing, it is possible to replace it temporarily by a "ring" and thus to improve the flexor function before the A2 band can be reconstructed. The ring can be made from any material, which does not cause sores (suitable materials are leather, synthetics, metals).

The aim of the reconstructed ring is to prevent the band rupture or slipping out. Thus the ring width should not extend the width of the reconstructed band. The ring of this type (it can be also substituted by adhesive tape bandage) should protect the reconstructed band for at least 2—3 months.



Fig. 10 Wooden splint used formerly for correction. Present use of metal splint applied at identical angle

III. Flexor contracture traction

The splint used for this purpose must have the following principal qualities: 1. it must be shapeable, 2. it must not change its shape with body temperature, 3. it must be so strong as to keep the correction position.

Caution: In cases of great contracture, the splint must extend from the finger tips as far as the forearm, in cases of lesser-extent contracture, it is sufficient to use a splint extending over all the three phalanges as far as the wrist.

As regards material, surgeons used to apply semi-arcuate splints shaped into various forms (Fig. 10). At present, we use only metal splints which possess all the above-mentioned properties.

Preparation of the splint: the splint breadth should coincide with the finger breadth so as not to prevent movements of the other fingers. We bandage it using adhesive tape. At the site of the greatest contracture (of PIP joint) we place a fixation strip of adhesive tape supported at the place of contact with the skin.

B. THUMB SPLINTING

Similarly as in cases of three-phalangeal fingers, we use for primary flexor thumb sutures total plaster-of-Paris fixation and leave it in position for three weeks. If we plan early exercise (for example in tenolysis), we place the dorsal plaster-of-Paris splint from the thumb tip as far as the proximal third of the forearm.



Fig. 11 Contracture corrected in the PIP joint. DIP joint straightening is still to be attained

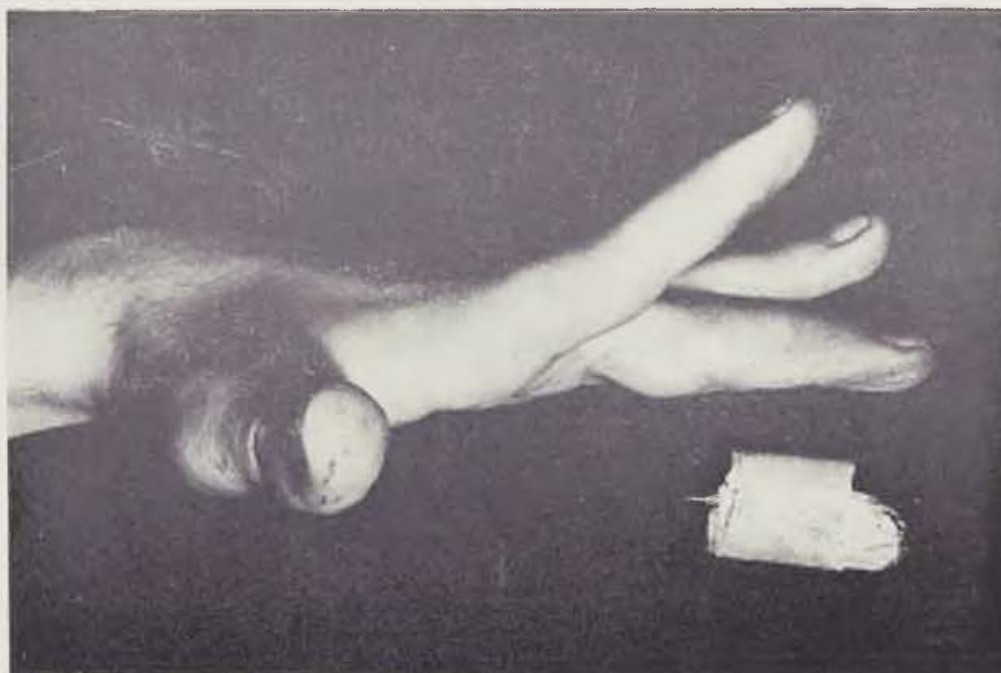


Fig. 12 Complete contracture correction needs only a short splint fixed over the DIP

When the flexor tendon of the thumb is to be exercised, we employ a splint which fixes the MP joint (Fig. 16). This allows to make exercises of flexion and extension of the distal phalanx.



Fig. 13 Flexion after contracture straightening

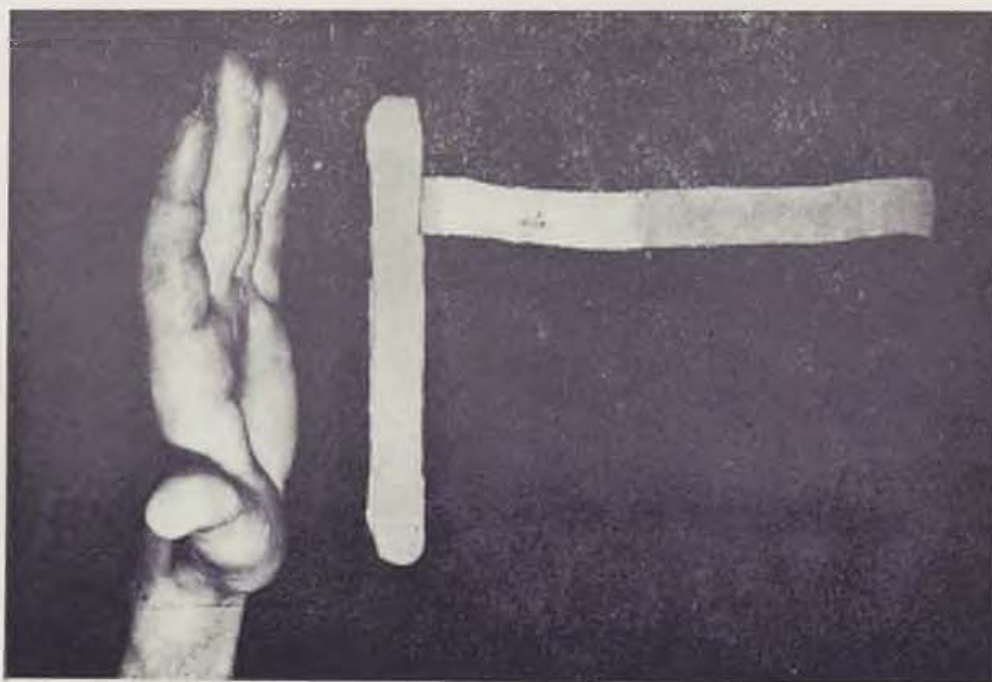


Fig. 14 Correction of slight contracture with a small splint

Preparation of the splint: of late, we have been using a splint made of methacrylate resin (proprietary name — Duracryl) used in stomatological laboratories. After mixing the resin components, the splint is shaped as required. As the chemical process releases warmth, the hand is to be greased with an indifferent ointment and cooled with cold water after shaping the splint. After its partial setting, the cast is removed and cooled separately.



Fig. 15 Splint application



Fig. 16 Thumb flexion exercise performed with MP joint fixation

In order to increase the flexor tendon tension, thereby facilitation, we use elastic traction fixed to a strip on the wrist (Fig. 17). This elastic traction can simultaneously help to stretch the contraction scar of the thumb extensor (Smrčka, Kopřivová, 1987).



Fig. 17.

SUMMARY

The paper describes a method of conservative therapy for damaged flexor apparatus of the hand using splinting. It describes splinting of the thumb and three-phalangeal fingers in acute injuries and reconstructive operations. It shows techniques of splint preparation and application designed to improve the flexor function and contracture removal.

RÉSUMÉ

Rééducation en chirurgie plastique

Application d'attelles et mise en position des tendons fléchisseurs de la main

Smrčka, V., Kopřivová, M.

Présenté un schéma du traitement conservatif des troubles de l'appareil fléchisseur de la main par l'aide des attelles. Donnée la description de la mise d'attelles au pouce

et aux doigts à trois segments, dans les cas des traumatismes urgents et des opérations seconstructives. D'une manière méthodique, on précise l'étape préparatoire et mise en place d'attelles, ayant pour but l'amélioration de la fonction fléchisseur et l'extension de la contracture.

ZUSAMMENFASSUNG

Rehabilitierung bei plastischer Chirurgie Verschienung und Positionierung der Beugemuskeln der Hand

Smrčka, V., Kopřivová, M.

Es wird ein Schema konservativer Behandlung von Störungen des Flexorapparates der Hand mit Hilfe von Verschienungen vorgeführt. Beschrieben wird die Verschienung des Daumens und der dreigliedrigen Finger bei akuten Verletzungen sowie die rekonstruktiven Operationen. In methodischer Weise wird die Vorbereitung und das Anlegen der Schienen zur Verbesserung der Funktion der Beugemuskeln und zum Herausziehen der Kontraktur angeführt.

RESUMEN

La rehabilitación en la cirugía plástica

Entablillamiento y colocación de los tendones flexores de la mano

Smrčka, V., Kopřivová, M.

El papel presenta un tratamiento conservativo de los defectos del aparato flexor de la mano empleando la tablilla. Aquí se describe la aplicación de la tablilla al pulgar y a los dedos de tres falanges en las lesiones agudas y operaciones reparadoras. De manera metódica, los autores presentan sus experiencias con la preparación y aplicación de la tablillas para mejorar la función del flexor y la tracción de la contractura.

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USE OF PERMANENT MAGNETIC FIELD IN RECONSTRUCTIVE SURGERY OF THE MAIN ARTERIES (EXPERIMENTAL STUDY)

G. V. LUD, A. M. DEMECKIY

The present search for new methods of achieving better results in reconstructive surgery on the main arteries is chiefly directed along the following lines: improvement in surgical technique, prevention of hypercoagulation and restoration of rheological properties by administering anti-coagulants and anti-aggregation agents, use of massive infusions of low-molecular solutions, normalization of central and peripheral tonus employing spasmolytic and other preparations.

Rather large doses of medicaments administered to patients post-operatively to achieve a positive effect often lead to complications due to their side-effects. Thus it is very desirable to search for therapeutical methods without medication, which would have a biological effect and stimulate natural compensation mechanisms of the organism after surgery on the vessels.

One of the methods meeting these demands is the use of permanent magnetic field (PMF) which, if given in therapeutic doses, has significant hypotensive, spasmolytic and anti-coagulation effects (I). It was therefore useful to explore this physical factor in reconstructive surgery on the main arteries. This experimental study brings results of PMF effect on reconstructive surgery replacing a part of the artery by venous graft.

For this purpose we used mongrel dogs of both sexes, 15—20 kg in weight. We carried out 3 series of experiments.

1st series — the PMF effect was tested (the source was located externally) following reconstructive surgery on the femoral artery using a venous graft in two groups of the animals; a control group and an experimental one (each consisting of 10 dogs).

2nd series — the PMF effect was tested on implanted elastic magnets during femoral artery reconstruction in 3 groups: a control group (7 dogs), a group with placebo (8 dogs) and an experimental group (30 dogs).

3rd series — PMF implantation effect of an absorbable source was tested in 3 groups with cervical artery reconstruction: a control group (7 dogs), a placebo group (7 dogs) and an experimental group (10 dogs).

The surgery was performed under venous anaesthesia with Nebutal (30 mg of Nebutal per 1 kg of animal body weight). For femoral and cervical artery reconstructive surgery a 5 cm venous autograft was used from the external jugular vein on the opposite side. The graft was washed and stored in a warm saline solution. It was sutured into the artery inversely, i. e. the peripheral venous end was sutured to the central arterial stump. The suture was performed with Supramide material, 6/0 strong, according to Carrel and Morozova.

The arterial blood flow volume was evaluated according to the values obtained from the electromagnetic flow meter. The authors measured the median and systolic blood flow in the vessel prior to and immediately after surgery, above and below the graft or directly in it. The results showed that the median and systolic blood flow volume in the venous graft was greater than before surgery. This is due to the fact that the venous graft is larger than that of the substituted artery, to the flaccidity of the venous wall caused by the operational trauma, and to nervous and vascular bundle impairment of the venous graft. The restored artery flow reached 94—96 % above the graft and under it 80—84 % of its volume. In 5 animals, due to technical faults, the blood flow volume under the venous graft reached only 40 % of the pre-operative value (measured within 3 to 7 days), and thrombi were found in the graft.

Flow measuring — peroperative electromagnetic flow monitoring, helps to judge the sufficiency of the restored blood flow and predicts the outcome of reconstructive surgery.

The authors evaluated peripheral haemodynamics according to the results of longitudinal rheography of the extremity and of its different levels. Thromboelastography, electrocoagulography and biochemical coagulogram were used to monitor change in blood clotting. The reconstructive process of the vascular wall was followed up in the histological changes in the main arteries and in the venous graft.

RESULTS AND ASSESSMENT

The 1st series testing the PMF external effect was carried out with elastic magnets, $12 \times 10 \times 2$ cm in size, produced in the Leningrad branch plant of scientific institute for rubber industry. For the initial experiments (2), the authors determined the optimum PMF dose for the main nervous and vascular bundles in the following way: PMF induction — 40 mT1, duration of application: 30 min. daily for 1 week starting with the first day of the surgery.

The results obtained in the control group, where femoral artery reconstruction with venous graft was performed without the PMF application, were as follows: immediately after blood flow restoration, the vascular wall tonus decreased, which may have been due to the length of the implanted venous segment. Then, starting with the first day, a reflex increase in the tonus was estimated from prolonged vessel filling time and from the reduced pulse

wave propagation. Within that period the parameters showing blood supply to the extremities decreased. The femoral haemodynamics was severely impaired; crural blood flow was reduced lasting up to 3 days. The changed values took 2 weeks to restore after surgery. Some of the repeated decreased values in the blood flow through the extremity was due to the morphological reconstruction of the venous graft.

The results of thromboelastography, electrocoagulography and biochemical coagulogram showed activation in blood clotting, thrombinemia and depression of fibrolysis, and a mild hyperfibrinogenemia, the latter leading to increased thrombocyte content. The greatest disorders in hemostasis were observed in the course of the 1st post-operative week.

PMF application in the early post-operative period prevents the development of reflex spasm of the reconstructed vessel, and helps to restore its tonus. This, in turn, helps to restore the blood flow in the main arteries and improve blood supply to the peripheral part of the extremity. This is one of the most important preventive methods helping to avoid early post-operative disorders of the reconstructed vessels.

The PMF effect on hemostasis in the femoral artery reconstruction with a venous graft showed its great influence on the first phase: PMF not only prevents its acceleration but slows it down, which may be due to the change in the functional properties of thrombocytes (decreased adhesion); the other phases of coagulation remained unchanged, fibrinolysis being slightly decreased in the first post-operative week.

A week after surgery, histological examination of a part of the femoral artery above and below the graft, and in the graft itself, showed no changes in the tissue regeneration process. Due to increased load and absence of nervous and vascular bundles in the venous graft wall, destructive and inflammatory changes developed in both groups of the animals. The thickening of the wall was due to adventitial oedema. Endothelium was absent in many parts, the inner surface was covered with fibrin and with shaped blood elements. Disorganization and splitting soft tissue fibres and collagenous fibres and damage to elastic layer were noted. The changes observed were typical of the early stages of venous graft reconstruction. They coincided with other authors' observation (4—6).

The 2nd experimental series used products made by the Leningrad branch plant of the scientific institute for rubber industry — elastic magnets with I-6 mT1 induction covered with silicon layer, which helped to implant them into the organism. They were slipped onto the vessel after reconstructive surgery, then the wound was sutured, the magnet remained inside the body and was removed at the next surgery. The magnets had the shape of hollow tube, 5—6 cm long and cut longitudinally. The preceding experiments had shown that better results were achieved at 3 mT1 induction of the magnetic field, the application lasting 7 days at most. In this case the haemocoagulation process was being restored as early as at the end of the first post-operative week, whereas in the control group this process did not start until after one

month. Morphological examination of the main artery at the suture site and in the neighbouring tissues showed that the implantation of PMF source into the wound zone significantly reduced the extent of the tissue swelling and produced but a narrow and fine scar at the site of the vessel suture.

After a week, new granulation tissue appeared at the site of magnet implantation; in case the magnet were left in the organism for longer than one month, a fibrous capsule would form around it separating the magnet from the neighbouring tissue. In the control group, the suture site remained swollen for two weeks, and leucocyte infiltration was observed. A fibrous scar formed as late as after one month, accompanied by arterial wall thickening at the scar site.

Notwithstanding the good results of the experiment, there are disadvantages which consist in the presence of foreign body in the organism and in the need for another operation to remove the magnet. Therefore, it was desirable to look for such material which would be gradually absorbed by the organism after implantation. This material was developed using the structure of collagenous sponge (3).

To test this absorbable PMF source and its effect on the blood vessels and neighbouring tissues in a temporal artery reconstruction with venous graft, we carried out 3 series of experiments.

The first two groups of the control group (without using any source) and the placebo group (using a means analogical to PMF source but without any magnetic charge) showed no changes in the peripheral blood reaction, its coagulation or in the venous graft reconstruction process. The animals of both groups have accelerated blood coagulation (especially in the 1st and 3rd phases of haemostasis), increased thrombocyte aggregation, increased density of the blood cake and decreased fibrinolysis.

The implantation of the absorbable PMF source following temporal artery reconstruction with venous graft prevents activation of blood coagulation. During a two-week period, a certain retardation in the 1st haemostatic phase was observed in the presence of decreased blood coagulation.

The histological results of the temporal artery compared with its neighbouring tissues at the surgical site showed that in the 1st post-operative week, the scar formation process in the vascular wall at the venous graft site had developed in all three groups approximately in the same way. The only difference was observed in experiments using implanted absorbable PMF source marked by significantly weaker leucocytic infiltration and more intensive proliferation.

As early as the 15th post-operative day a difference was noted in the stage of vascular wall regeneration. The control groups had prolonged connective tissue proliferation — in the neighbourhood of ligatures it was characterized by new granulation tissue with leucocytic infiltration foci, perivascular connective tissue was sclerotic with lymphocyte aggregations. In this period, the ligatures of the experimental group had already been en-

capsulated by a thin fibrinous capsule. As soon as a scar developed, leucocytic infiltrations disappeared.

A visible difference in experiments using implanted absorbable source persisted for as long as one month; the venous graft was partially substituted by cicatricious tissue, the external envelope and perivascular connective tissue being mildly sclerotic.

The comparison of results obtained from PMF application in the reconstruction of the main arteries with a venous graft showed that independently of the source and its use, it is possible to derive the following principles governing this physical factor:

- stimulation of central and peripheral blood flow
- prevention of hypercoagulation in the early post-operative period characteristic of the 1st haemostatic phase
- reduction in swelling and inflammatory signs at the surgical wound site.

Characteristic of the PMF external effect is especially its stimulatory effect on the extremity haemodynamism. This is due to the large area of the exposed tissues and a higher PMF induction. Apart from the direct effect on the central vessel at the surgical site, the PMF has also a reflex effect on the vessel by means of cutaneous receptors, which results in a more generalized reaction of the whole organism.

The local effect of the implanted sources with a significantly lower PMF induction and longer action on the main vessel substantially changes the vascular wall reconstruction and the neighbouring tissue condition.

Thus, in the indicated doses, the PMF can be used for improving the results of reconstructive operations on the main arteries. However, the specific properties affecting the functional and morphological development must be taken into account when choice is made of the type of magnetic source and application method.

SUMMARY

To achieve better results in reconstructive surgery on the main arteries using venous graft, the authors used a permanent magnetic field from different sources: elastic magnets with external effect and absorbable magnets implanted into the surgical wound. This physical source was found to possess the following effects: stimulation of the central and peripheral blood flow, hypercoagulation prevention, reduction on oedema and inflammation. The restored specific properties of these magnetic sources should be taken into account in the selection and use during the post-operative period.

RÉSUMÉ

Utilisation du champ magnétique constant pour les opérations sur les grandes artères

Lud, G. V., Demeckij, A. M.

Dans l'expérimentation, on a utilisé le champ magnétique constant afin d'améliorer les résultats d'une opération reconstructive sur la grande artère par greffon veineux. Les sources magnétiques variaient: aimants élastiques à l'action exogène, sources magnétiques résorbables, implantées dans la plaie opératoire. On a découvert des lois d'action de ce facteur physical: stimulation du débit sanguin central et périphérique, prévention de l'hypercoagulation, réduction d'un oedème et de symptômes inflammatoires. Les propriétés spécifiques renouvelées de diverses sources du champ magnétique constant aiment d'être respectées dans le choix et dans le mode d'emploi en période postopé-

ZUSAMMENFASSUNG

Die Anwendung eines ständigen magnetischen Feldes bei rekonstruktiven Operationen an den Hauptarterien

Lud, G. V., Demeckij, A. M.

Bei einem Versuch bei einer rekonstruktiven Operation der Hauptarterien mittels Venenpropfen wurden zur Verbesserung der Resultate der Operation ständige magnetische Felder aus verschiedenen Quellen angewendet: von elastischen Magneten äusserlicher Wirkung und von sich absorbierenden Quellen eines in die chirurgische Wunde implantierten magnetischen Feldes. Hierbei wurden die folgenden Gesetzmässigkeiten der Wirkung dieses physikalischen Faktors festgestellt: eine Stimulierung des zentralen und peripheren Blutdurchflusses, eine Prävention der Hyperkoagulation, eine Verringerung von Anschwellungen und entzündlichen Erscheinungen. Bei der Wahl und Art der Anwendung zur Zeit nach der Operation muss man die erneuerten spezifischen Eigenschaften der verschiedenen Quellen des ständigen magnetischen Feldes in Betracht ziehen.

RESUMEN

El uso del campo magnético permanente en la cirugía reparadora de las arterias principales

Lud, G. V., Demeckiy, A. M.

Para alcanzar mejores resultados en la cirugía reparadora de las arterias principales con ayuda del trasplante venoso, los autores usaron el campo magnético permanente del origen diferente: imanes elásticos con el efecto externo y los imanes que pueden ser absorbido, los que fueron implantados en la herida quirúrgica. Este fenómeno físico tuvo, según la experiencia de los autores, los efectos siguientes: la estimulación del flujo sanguíneo central y periférico, la prevención de la hipercoagulación, la reducción del edema y de la inflamación. Hay de considerar y evaluar las calidades específicas restituidas con ayuda de los recursos magnéticos en cuanto a su selección y aplicación en el período post-operatorio.

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EARLY REHABILITATION OF CHILDREN WITH CLEFT PALATE

E. U. MAKHKAMOV, S. M. MURTAZAYEV, A. U. YULDASHEV

Cleft lip and palate is rather a frequent defect affecting the development of face and jaws, and what's more, it has a general tendency to increase steadily (3—5). Moreover, this condition causes the most severe morphological and functional disorders in neonates, leads to jaw and teeth deformities, especially if the chosen reconstructive technique is incorrect. The choice of a proper surgical technique and determination of optimum time for surgery are still open to discussion.

Communication between the oral and nasal cavities in neonates causes difficulties in sucking, swallowing, breathing, later in chewing and speech. As breast-feeding is impaired, it must be substituted by artificial feeding, which leads to generally decreased organ immunity and susceptibility to common diseases, and retardation in growth and development. These are the main reasons for surgical treatment of such patients.

It is well-known that breast-feeding exerts an important influence on the vitality of the neonate's organism and morphological and functional conditions of the small intestine (1, 2).

Some clinical manifestations of digestive disorders and malabsorption in children with cleft palate are analogical to other diseases affecting the whole digestive tract. Artificial feeding of neonates is indicated in 70 % and more children with congenital face and jaw defects. The authors carried out a clinical and experimental study in order to examine the effect of cleft lip and palate on the growth and development of the maxilla and on the morphological and functional condition of the small intestine.

The study is based on the presumption that the growth dynamics (1 1/2 to 12 months) will be negatively affected by the perforated cleft lip and palate as regards the growth and development of the upper jaw, which leads to the enlargement of the primary jaw defect and to secondary dentition deformities.

The authors examined digestion in children with cleft lip and palate from the macro- and microscopic aspects, and found that both digestion and absorption were impaired. This was seen in the prolonged KI absorption period, disorder of lipidiol hydrolysis, increase in the d-xylose level of the blood at 30 and 60 minutes after taking food. These consequences were due to morphological changes in the mucosa of the proximal part of the small intestine, where atrophy of the hypergeneration type gradually develops leading to absorption area reduction. Observations of children aged 3—6 years, who had underwent surgery for cleft palate a year before, showed normalization of digestion and absorption processes.



Fig. 1 Phase of operation on soft palate with the narrowing of oesophageal orifice

Accordingly, we worked out a rehabilitation programme for children of tender age with congenital face and jaw defects, which could reliably rectify the upper lip and palate clefts, and, simultaneously, prepare optimum conditions for the child's growth and development. We were especially concerned with the timing of surgery, its extent and techniques. Radical surgical methods are not permissible at an early age.

Early surgery of cleft palate consisted of two stages, the first operation rectifying the primary soft palate defect (Fig. 1). Then, 72 patients with unilateral cleft lip and palate had a plastic closure of the soft palate performed simultaneously with the narrowing of the oesophageal orifice (modified method according to L. E. Frolova, which consists in separating the soft palatine aponeurosis from the distal edge of the palatal plates, and in the mobilization and suture of both sides).

The results obtained showed that in these patients the cleft width at the hard palate level gradually had narrowed, and in 27 children out of 72 the defect closed spontaneously leaving only a very narrow opening. At this stage, the edges of the defect are smeared with lapis thus preventing com-

munication between the oral and nasal cavities. After performing early operation on the soft palate and after pharyngoplasty, in some patients further therapy can dispense with hard palate surgery.

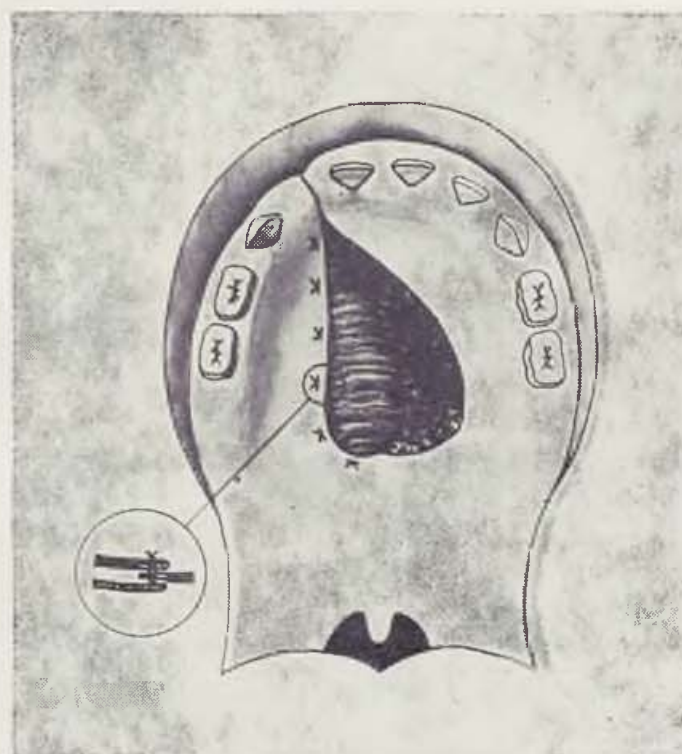


Fig. 2 Phase of operation on hard palate using one-layer mucoperiosteal flap (second stage operation on the palate) succeeding early surgery for soft palate with the oesophageal orifice narrowing

Early surgery of soft palate with the narrowing of the oesophalangeal orifice has a very positive effect on the growth and development of the maxilla. Here an important role is played by soft palate muscles whose anatomic and functional position gives shape to the osseous palatal processes (processus palatinus). The hard palate defect after velo- and pharyngo-plasty is not regarded as a resulting deformity of the upper jaw fragments but as a consequence of the growth and correction of the hard palate position.

Our aim was to reduce as much as possible tissue traumatization, the duration of surgery and its technical complications; we worked out a method of cleft hard palate surgery in the following way: the defect is covered with a one-layer mucoperiosteal flap rotated from a larger cleft palate fragment (Fig. 2).

In this fashion, we operated on 25 children. This operations helps to eliminate a great deal of the trauma accompanying radical surgery for cleft palate as well as the needed retroposition of the soft palate. As regards the second stage of the operation, i. e. covering the defect with a flap, this can be performed only in smaller defects (up to 8—10 mm wide).

In this way, the two-stage operation restores the anatomical shape and integrity of the oesophageal orifice, the uvula, soft and hard palate without the need to perform lateral incisions according to Langenbeck. Thus in case of a minor damage of the maxilla, the relief of the palate surface is preserved as maximum, and the extra-osseous vessels are left intact. This condition ensures a correct growth and development of the facial skeleton.

The atraumatic aspect of this surgical technique permits its use in children of tender age suffering from cleft palate. An early atraumatic correction of cleft palate is also important for the prevention of functional and structural changes in the child's small intestine.

SUMMARY

A clinical and experimental study showed the negative effect of cleft lip and palate on the growth and development of the maxilla, as well as on the morphological and functional conditions of the small intestine, which resulted in impaired digestive function and malabsorption and led to atrophy of the hyperregeneration type. Based on these facts, the authors developed a method of atraumatic surgery for soft palate with oesophageal orifice narrowing. The technique was applied in 72 children of tender age, out of whom 27 had their defect eliminated solely by means of soft palate surgery without involving the hard palate tissue. Early surgery enables to achieve normalization of a number of clinical and laboratory factors.

RÉSUMÉ

Rééducation précoce d'enfants avec la fente palatine

Machkamov, E. U., Murtazajev, S. M., Juldašev, A. U.

Se basant sur les études clinico-expérimentales, on a constaté l'influence défavorable de la fente labio-palatine sur la croissance et sur le développement du maxillaire supérieur et sur l'état morphologique et fonctionnel de l'intestin grêle qui s'était manifestée par l'altération de la fonction digestive et d'absorption et par l'apparition de l'atrophie de la muqueuse, de type hyperrégénératrice. En considérant les faits ci-dessus, on a élaboré une méthode d'intervention atraumatique du palais mou avec retrécissement de l'orifice pharyngien. La méthode a été utilisée chez 72 enfants en bas âge, dont chez 27 cas, on a réussi à éliminer le défaut simplement par l'opération du palais mou, sans intervenir aux tissus du palais dur.

L'intervention effectuée à temps permet de normaliser bien d'indicateurs clinico-laboratoires.

ZUSAMMENFASSUNG

Rechtzeitige Rehabilitierung von Kindern mit Gaumenspaltung

Machkamow, E. U., Murtazajew, S. M., Juldaschew, A. U.

Auf Grund einer vorgenommenen klinisch-experimentellen Studie wurde der negative Einfluss einer Lippen- und Gaumenspaltung auf das Wachstum und die Entwicklung des Oberkiefers sowie auf den morphologischen und Funktionszustand des Dünndarms festgestellt, was sich in einer verschlechterten Funktion der Verdauung und

Absorbierung äusserte sowie in der Entstehung einer Atrophie der Schleimhaut vom hyperregenerativen Typ. Im Hinblick auf diese Tatsachen wurde eine Methode der atraumatischen Operation des weichen Gaumens mit Verengung der Rachenmündung ausgearbeitet. Diese Methode wurde bei 72 Kindern in frühester Jugend angewendet, wobei es bei 27 Kindern gelang, den Defekt nur durch die Operation des weichen Gaumens zu beseitigen, ohne einen Eingriff in die Gewebe des harten Gaumens.

Eine rechtzeitige Gaumenoperation ermöglicht so die Normalisierung einer ganzen Reihe klinischer Laboratoriumsindikatoren.

RESUMEN

La rehabilitación temprana en los niños con fisura palatina

Makamov, E. U., Murtasayev, S. M., Yuldasev, A. U.

A base del estudio clínico y experimental, los autores observaron un efecto negativo de la fisura de labio y paladar sobre el crecimiento y desarrollo maxilar, así como sobre las condiciones morfológicas y funcionales del intestino delgado, lo que resultó en la malfunción digestiva y malabsorción y en consecuencia condujo a la atrofia de la mucosa del tipo hiperregenerativo. Con respecto a esto datos, los autores elaboraron un método de la operación atraumática del paladar blando con el estrechamiento del orificio esofágico. Esta técnica fué aplicada en 72 niños de edad tierna; de este número, 27 niños tuvieron el defecto eliminado solamente por medio de la operación del paladar blando sin intervención en los tejidos del paladar duro. La operación del paladar temprana ayuda a la normalización de algunos indicadores clínicos y laboratorios.

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NASOLABIAL MYOCUTANEOUS ISLAND FLAP FOR RECONSTRUCTION OF PALATAL FISTULA (A CASE REPORT)

A. GOVILA

INTRODUCTION

Nasolabial flap has stood the test of time: since its description, 600 years B. C. (Pers, 1967), and over the years it has had its periods of popularity, now and then. It has been used as a regional flap for variety of defects, such as for nose and lip. Its use for circumoral defects (Warren, 1986) has had its popularity, but its use for intraoral defects (Elliot, 1976) was a further extension of its use, especially for the defects of anterior floor of mouth using bilateral flaps based inferiorly, tunneled through the cheek near their bases and placed beside one another (McGregor, 1977).

Thiersch (1868) and Esser (1918) used cheek and nasolabial skin on a subcutaneous pedicle, passed transbuccally, for palatal defects. On similar line of thinking, in an attempt to make this flap more dependable, we used the new knowledge of anatomy, physiology and microcirculation of myocutaneous flaps. Instead of conventional nasolabial flap (random) we used it as a myocutaneous island flap in case of wide anterior fistula of the palate and report it here.

Fistulas of anterior palate, are commonly produced in attempts to repair a wide cleft of the palate by a beginner in plastic surgery or by an occasional oral surgeon. In western world most common mode of treatment of these are occlusion plates while in this country surgical repair is mandatory, if the patient has to lead a normal life, since prothodentic facilities are limited to few big cities.

If the fistula is small in size, the repair of the palate is revised completely. Sometimes, one may get away, by local adjustment of tissues, but if the fistula is greater than 1.5 cm in any one direction, additional tissues have to be brought from somewhere else. There are not many methods to supply such an ammount of tissue. Since we performed one such case successfully by a simple and reliable flap we report it here.

ANATOMICAL CONSIDERATIONS

By definition, the blood supply of a nasolabial flap is based upon the subdermal plexus, providing this flap a limited length-to-width ratio (Georgiade, 1969). This definition is applicable to a "random pattern" flap, and is therefore not applicable to what we have used, and to others who have used it similarly for other reasons (Warren, 1986).

Excellent microcirculation has been demonstrated in the nasolabial myocutaneous flap by Hagan and Walker 1986. Facial muscles, being the muscles of expression are intimately attached to the skin of the face, and therefore provide a unique vascularity to this skin. A skin island, based on the underlying mimetic musculature, used as a carrier, being included in its pedicle, could be transferred, intraorally through an opening made in the oral mucosa.

A flap could be based inferiorly or superiorly depending upon the reconstructive requirements. In females, it does not matter which way the flap is based, but in males, for transferring hairbearing skin, the flap has to be based superiorly and for no-hairbearing skin inferiorly. Vascularity of either flaps remain good.

DESIGN

In the case reported, we have used a superiorly based flap since the patient not only had a very low beared line, but it was essential for transferring it intraorally, so that the pedicle would sit in the alveolar notch which was made raw for this purpose. An inferiorly based flap in any case would not reach the palatal defect anteriorly.

A circular disc of 1.5 cm is marked on the lower, most hairless area of the nasolabial fold and a pedicle of 7 mm width is marked, superiorly, virtually sitting next to the base of alae. A triangular piece of skin, inferior to the skin disc, is marked for excision to facilitate direct closure of the nasolabial donor area of the flap (Fig. 1 a, b).

TECHNIQUE

De-epithelisation of the skin pedicle, marked earlier, was carried on first. Skin incision of the circular skin disc was completed. The triangular piece of skin below the disc is excised. The incision around the disc is then deepened up to the underlying muscles and then the dissection is carried to create a pedicle including these muscles. Finally an incision was made in the oral mucosa, very near to the base of the pedicle to bring the flap intraorally. In the region of the alveolar notching, left out of the repaired cleft, the mucosa is elevated in the form of flaps, under which the pedicle of the nasolabial flap is passing.

Surgical repair of the palatal fistula requires two layer closure. Therefore a hinge flap is developed out of surrounding mucoperiosteum of about three millimeter. The flaps are turned in, and are stitched in position by catgut stitches. The oral cover is provided by the nasolabial flap.

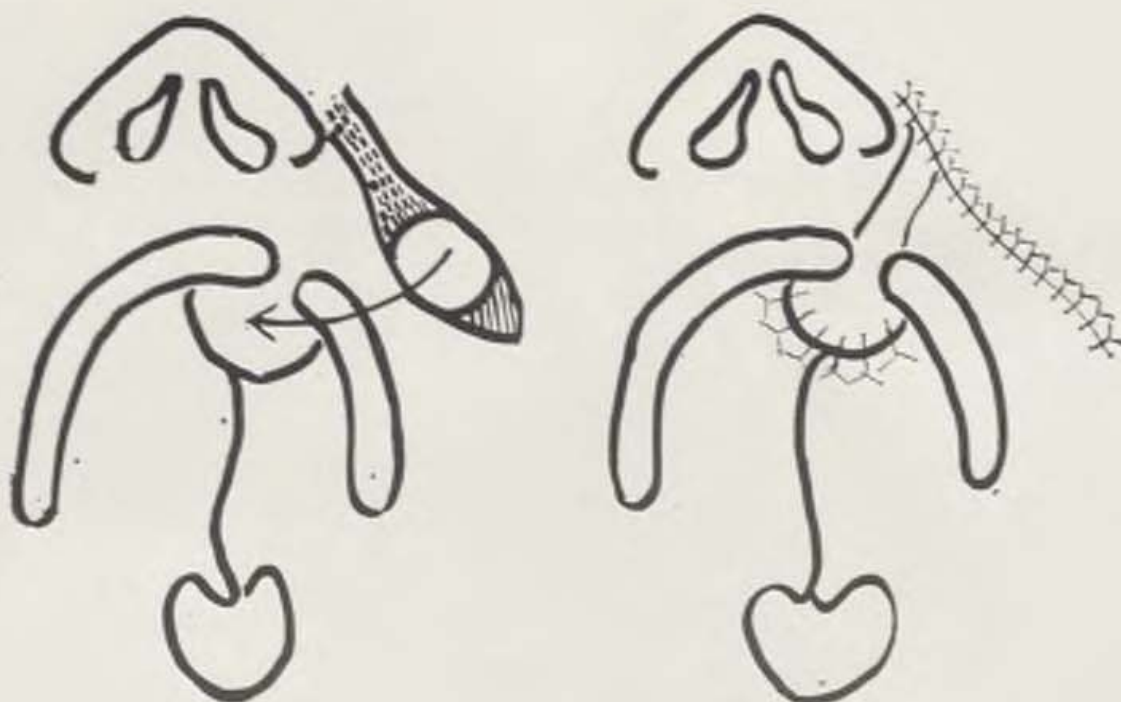


Figure 1a Diagrammatic representation of the design and the method of transfer of the nasolabial flap to the palatal fistula

CASE REPORT

A 24 year old patient was admitted after failed attempts of repair a wide cleft of palate by some plastic surgeon with an anterior fistula of about 1.2 cm in diameter (Fig. 2a). Not only had he difficulty in speech but there was trouble in taking liquids orally. To achieve a permanent solution of this problem, we decided to perform a surgical repair using nasolabial myocutaneous flap. Mucoperiosteal turn over flaps were created for nasal lining and stitched in position. A nasolabial flap, as described, of 1.5 cm size skin disc was raised (Fig. 2b), and transferred to the palatal defect. Post operative course was uneventful. In ten days time the fistula was well healed (Fig. 2 c). The patient was last seen two years after the repair, with no feeding trouble of any kind. There was considerable improvement in the nasal escape as well.

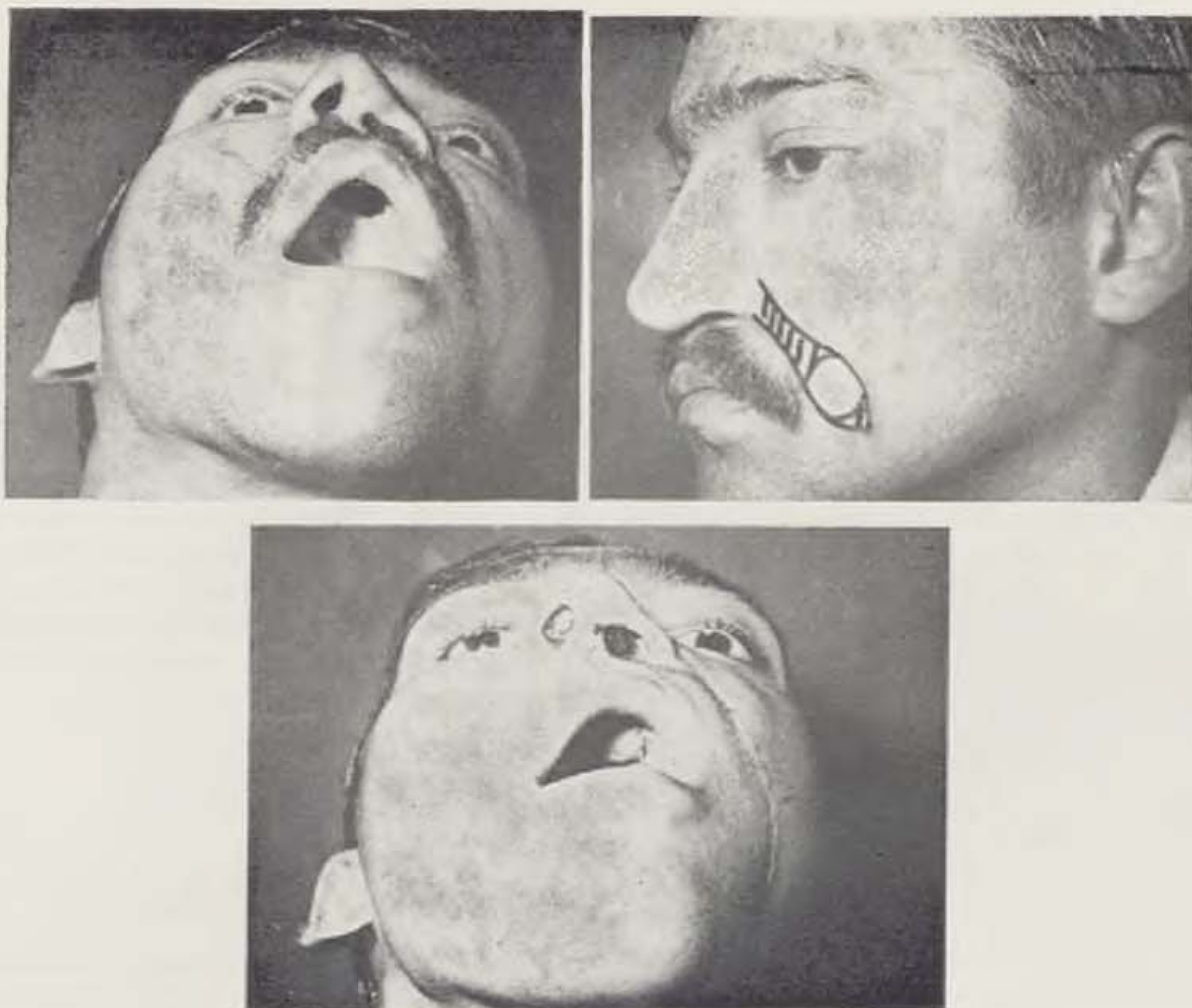


Figure 2a Preoperative photograph of the patient with anterior fistula of the palate.
(b) Marking the flap on the patient (c) early post operative photograph

DISCUSSION

Nasolabial flap has been used for a long time. It provides good quality skin and nice colour match for local facial defects. For intraoral defects its use is innovative, however in its pure form such a use may be unreliable since it has the limitations of a random pattern skin flap.

As a myocutaneous flap, its use is more reliable, and therefore it provides a good solution to oral cavity defects. Its regional availability and vascularity are points of merits. Moreover there are not many methods for reconstruction of such defects.

SUMMARY

With better understanding of microcirculation of the flaps and with the introduction of the concept of myocutaneous flaps, nasolabial flap has regained its past popularity. Although it has been used increasingly for oral

defects, its use for reconstruction of palatal defects has not been reported. Large anterior fistulae of palate are commonly produced when a wide cleft of palate is being repaired in an adult patient, especially by a beginner in plastic surgery, and are difficult to treat surgically. We have used superiorly based nasolabial myocutaneous island flap in one such case and report it here.

RÉSUMÉ

Lambeau myocutané nasolabial en ilot dans la reconstruction de la fistule palatine

Govila, A.

Grâce aux connaissances approfondies en microcirculation des greffes liées à la naissance de la conception des lambeaux myocutanés, les lambeaux nasolabiaux ont regagné leur popularité d'antan. Quoiqu'ils soient utilisés de plus en plus dans le recouvrement de défauts oraux, leur intérêt dans la reconstruction des défauts palatins n'était pas documenté. Au cours des reconstructions de grandes fentes palatines, il n'est point rare que de larges fistules palatines antérieures apparaissent — surtout si l'opérateur est débutant — et leur réparation chirurgicale n'est pas facile. Nous présentons notre expérience avec l'application du lambeau myocutané nasolabial en ilot.

ZUSAMMENFASSUNG

Ein nasolabialer myokutaner Insellappen zur Rekonstruktion einer palatalen Fistel

Govila, A.

Mit der Vervollkommnung der Kenntnisse über Mikrozirkulationstransplantate und mit dem Entstehen der Konzeption myokutaner Lappen errangen die nasolabialen Lappen wieder ihre ehemalige Popularität. Obwohl sie immer häufiger zum Abdecken oraler Defekte angewendet werden, wurde von ihrer Anwendung zur Rekonstruktion palataler Defekte nirgends referiert. Bei der Rekonstruktion grosser Gaumenspaltungen entstehen häufig breite vordere palatale Fisteln bei erwachsenen Patienten, besonders dann, wenn ein Anfänger operiert, die sich schwer chirurgisch wiedergutmachen lassen. Es wird ein Fall der Anwendung eines nasolabialen myokutanen Insellappens beschrieben.

RESUMEN

El uso del colgajo nasolabial miocutáneo aislado para la corrección palatal de la fístula

Govila, A.

Los nuevos conocimientos sobre la microcirculación de los transplantes así como el nuevo concepto de los colgajos miocutáneos renovaron la popularidad primera de los colgajos nasolabiales. Estos se usan más frecuentemente para cubrir los defectos orales, pero pueden ser también empleados para reparar los defectos palatales, lo que no fué mencionado en la literatura. En la reparación de las grandes fisuras palatinas muchas veces aparecen fistulas palatales anteriores anchas en los adultos, especialmente si la operación está realizada por un principiante, y éstas son muy difíciles de corregir quirúrgicamente. El autor describe la aplicación del colgajo nasolabial miocutáneo aislado y sus experiencias.

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LOCAL TREATMENT FOR EXTENSIVE DEEP DERMAL THICKNESS BURN AND FOLLOW-UP STUDY

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INTRODUCTION

Conservative treatment is generally rendered to patients of extensive deep dermal thickness burn. However, with such treatment being invariably given, noticeable hypertrophic scars will remain. To prevent such scarring, there is no other option but to apply grafting. Therefore, to determine which grafting method should be employed at what time and which treatment method would provide good results after treatment, or what the difference in results after treatment would be according to the age of patient, the present investigation was made retrospectively from the experience of the author in cases of treatment.

PATIENTS AND METHODS

1. Patients

The patients were those to whom the author rendered treatment throughout from the initial stage. In these cases, the burn area involved more than 10 per cent BSA in the case of infants and children and more than 20 per cent BSA in the case of adults. Both superficial dermal thickness burn and deep dermal thickness burn were included (Table 1). Burns of the face and hands were excluded from the present investigation.

2. Conservative treatment

The conservative treatments during the period of from the initial stage of burn to the grafting are shown in Table 2. In all 41 cases, the impregnated ointment* gauze was used. (*The ointment used for impregnation was Eksalb which is composed of mixed killed bacterial suspension and hydrocortisone in water /oil emulsion; Dr. Kade Pharmazeutische Fabrik GMBH. The gauze is impregnated with this ointment in an autoclave.) L(D) PS was also used in 24 cases, and silver sulfadiazine used in 16 cases. Also, depending on the condition of the burn surface, wet-to-dry dressing (Namba, 1981), or hydrotherapy or skeletal suspension was provided (Table 2).

Table 1. Patients

41 CASES		
Age (yr)		Cases (no.)
10 >	:	23
10~19	:	3
20 ≤	:	15
Burn Surface Area		
10~90 %	(Average: 39 % B. S. A.)	
10 yr >	:	Average 36 %
10~19 yr	:	Average 32 %
20 yr ≤	:	Average 44 %

Table 2. The methods of conservative treatment

	Cases (no.)
Impregnated ointment gauze	41
L(D)PS	24
Silver sulfadiazine	16
Wet-to-dry dressing*	15
Hydrotherapy	11
Skeletal suspension	9

*application of coarse mesh gauze dressings wet down with normal saline, allowed to dry and changed two to three times daily.

3. Surgical treatment

Of the 41 cases investigated, 38 had some surgical treatment such as grafting rendered.

1. Time of grafting

The time of operation of 38 cases receiving grafting is late, being 23 days on average after the injury. Only 4 cases received grafting at a relatively early stage of within 2 weeks after injury. In these cases, the burn area was relatively small, and the region of deep dermal thickness burn was clearly demarcated from the initial time of burn. On the other hand, of the 8 cases receiving grafting after an elapse of 1 month or more after injury, 6 infants had more than 40 per cent BSA (Fig. 1).

Table 3. The time of skinraft (post burn)

Average		:	23 days (38 cases)
(a) Age	10 yr >	:	24 days (average)
	20 yr >	:	22 days
(b) B. S. A.	40 % >	:	21 days
	40 % >	:	26 days

Table 4. The Type of skinraft (38 cases)

Patch graft	:	38 cases
Mesh graft	:	5 cases
Allograft	:	5 cases

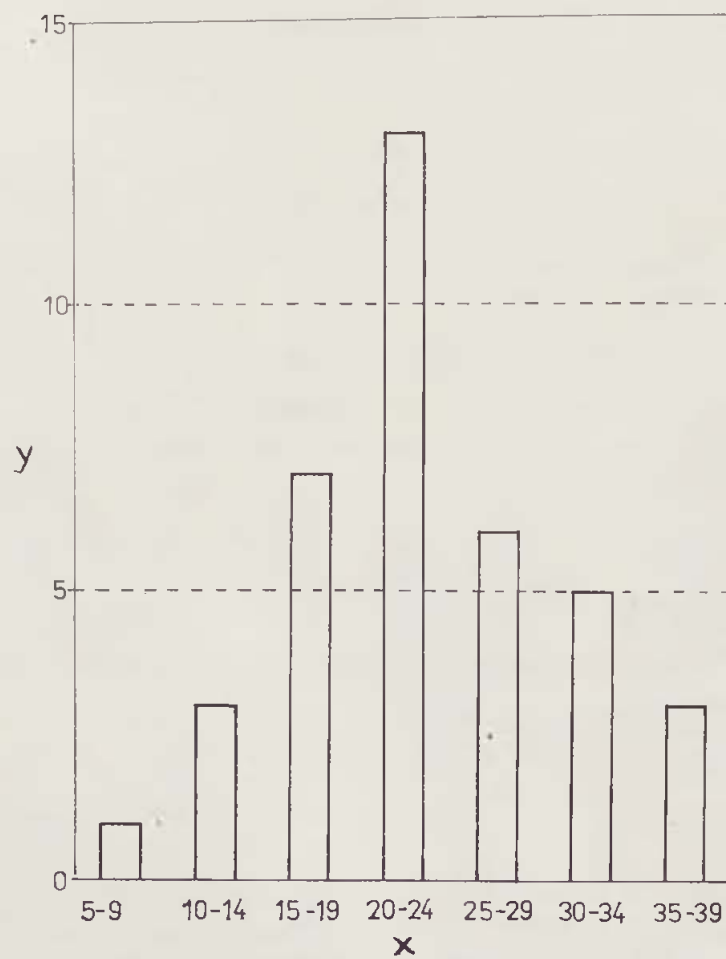


Fig. 1 The time of the skin graft (Average: 23 days)
y — cases(no.), x — postburn(days)

Examining the time of graft by the age of patient, those of more than 20 years old averaged 22 days. Patients 10 years old or less averaged 24 days. The time of operation was therefore later in the case of infants and children. By burn area, the time of grafting was later for cases of more extensive burn a) Table 3).

2. Type of grafting

Table 4 shows the type of grafting provided. Patchgraft is provided to all 38 cases including 5 cases, of which meshgraft is jointly given.



Fig. 2 Combined graft (Autograft + Allograft). a: Allogenic mesh graft and autogenic patch graft (—); b: Many Allogenic patch and a little Autogenic patch graft.



Fig. 2c: The state 7 weeks after combined graft. It has been healed being nearly epithelized

Allograft is made in 5 cases, 2 being grafting to improve the general condition, with the other 3 receiving a combination of autograft and allograft applied to the injured surface, which seems to be close to the full skin thickness burn, for less donor morbidity.

Combined graft includes various type of combinations eg., very sparse auto-patchgraft covered with allo-meshgraft; auto-patchgraft placed over iatrogenic circular defects made in the allo-sheetgraft; and patchgraft for both auto and allo types (Fig. 2-a, b).

RESULT OF POST-TREATMENT EXAMINATION

Table 5 shows the result of post-treatment examination of the 38 graft cases. In 20 cases, considerable hypertrophic scar was noted. Of these 20 cases, 16 were infants and children less than 10 years of age, and account for about 70 per cent of the total cases of infants and children, indicating a higher frequency of hypertrophic scarring in the infants and children.

Regarding the relation between the time from injury to grafting and the occurrence of hypertrophic scar, most cases receiving late grafting presented hypertrophic scars.

Table 5. Condition of the scar

Grade of the scar	No. of cases	Years	Days from burn to the skin graft (average)
severe	20	9 yr ≤ : 16 cases 10~19 : 2 cases 20 yr ≤ : 2 cases	28 days
moderate mild	4 14	9 yr ≤ : 4 cases 20 yr ≤ : 10 cases	20 days

As shown in Table 5, the time from injury to grafting was an average of 28 days with 20 cases presenting noticeable scars, and was 20 days with 14 cases which presented mild scars.

DISCUSSION

In general, extensive deep dermal thickness burns are not the object of grafting. However, when treatment is provided for extensive dermal burn (comprising both superficial and deep), the part of superficial dermal thickness burn has epithelium developed and is cured in about 2 weeks. There does, however, remain a part of deep dermal thickness burn which is scarcely turned into epithelium or there is some part where the deep dermal thickness burn transits to full skin thickness burn. Particularly, in the case of infants and children, the burn readily develops into a deeper wound because of thin skin and an underdeveloped circulation system. If such wounds are rendered the conservative treatment alone, cure will be protracted, resulting in noticeable hypertrophic scarring and also, in functional difficulty due to scar contracture.

Therefore, even deep dermal thickness burn should receive positive debridement or grafting as soon as is practicable and if the general condition allows. This is considered preferable from the point of view of reducing both the treatment period and post-treatment scarring.

With infants and children, the generation of hypertrophic scar is more appreciable than normally prospected. A 2 years old patient with dermal burn of over 45 per cent BSA is shown in Fig. 3. Patchgraft was applied to the areas of the neck, chest and upper limbs which seemed to be deep dermal thickness burn at a relatively early time of 2 weeks after injury (Fig. 3-a).



Fig. 3 2 years old female. a: Patch graft was given at 2 weeks after burn injury on the neck, chest and upper arm



Fig. 3b: One month after the skin graft. No hypertrophic scar in this time; c: The 7 months after the skin graft. It shows severe hypertrophic scar and contracture

At a month after grafting, the wound surface seemed to be fairly cured (Fig. 3b) However, the condition at 7 months after grafting presented hypertrophic scar and contracture, as seen in Fig. 3-c. This is partly because there was a shortage of patchgraft, but may also indicate that for infants and children, the scar after cure of deep dermal thickness burn is apt to become hypertrophic. For infants and children, therefore, it is important to take measures primarily intended for the earlier closure of the burn surface rather than to attempt to improve the form of scar after cure by grafting. From this point of view, patchgraft involving the least sacrifice by the donor will be optimum for the grafting of extensive burns.

The usefulness of patchgraft is seen in the report of Namba and Horiuchi (1976). In cases of extensive burn, patients have generally sound skin as a donor left here and there spottedly and in a small range, and so the patchgraft allowing graft with thin and small pieces of skin gathered together is distinguished, first of all, in respect of the donor. Patch grafting also advantages by reduction in operation time under general anesthesia. As the operation is partly done in the OT that is for debridement and skin harvesting. And part of the operation that is patch grafting is done later in the ward.

Allograft also presents as another important step in the surgical treatment. Our present investigation includes only 5 cases of 38 cases, but when the donor problem is resolved, allograft is considered a very useful means for patients of extensive deep dermal thickness burn including full skin thickness burn.

Fig. 2-c shows a patients 7 weeks after operation, who received mixed grafting. The wound is nearly covered by epithelium and is cured without addition of autograft after rejection of allograft. The effect of accelerating epithelium by mixed grafting still has some points requiring clarification, but Namba, Koga and Mukae (1984) reported that in the case of deep dermal thickness burn or full skin thickness burn, there would be remaining epithelial elements, although in a small number in the depth. These would gradually rise to the surface into epithelium under improved environment by the deposition of allograft but would not come to the surface at the time of rejection of allograft so that they would not be subject to hazard due to rejection and thereafter, would rapidly cover the wound surface under an improved environment after rejection of allograft. Yang, Shin and Chu (1980) reported that the allo dermis remaining after rejection and the falling off of allograft would greatly participate and that the presence of such dermis would serve to form epithelium.

Namba, Koga and Mukae (1984) observed, in their experiments, auto epithelium spreading over the allo dermis remaining after rejection.

Lastly, for the generation of hypertrophic scars after the cure of burns, many cases were noted in infants and children receiving grafting. This may be partly attributable to belated grafting due to the general health of the patient, but it is probable that hypertrophic scar is apt to occur in the case

of infants and children. In general, however, cases receiving grafting at an earlier stage had less hypertrophic scarring.

From the foregoing, it should be stressed that extensive deep dermal thickness burns should receive grafting as soon as is practicable (in about the second week after injury). The treatment period would then be reduced and good results obtained with respect to the function and form after cure.

SUMMARY

For the local treatment of extensive burn patients including superficial dermal thickness burn and deep dermal thickness burn, it is often difficult to determine whether conservative treatment should be followed consistently or grafting be employed. The present study was made to determine when grafting should be provided if required and the treatment method to provide the best results.

For the study, a total of 41 cases were taken to which the author rendered treatment from the initial stages, in the period from January 1981 to December 1985. In these cases, the burn area was more than 10 per cent of the body surface area (BSA) in infants and children, and more than 20 per cent BSA in adults. Both superficial dermal thickness burn and deep dermal thickness burn were coexisting. The treatments and results of examination after convalescence are as follows.

1. In conservative local treatment, impregnated ointment gauze, L(D)PS and silver sulfadiazine were used, with wet-to-dry dressing, and hydrotherapy or skeletal suspension used jointly in some cases.

2. Of 41 cases, 38 received grafting during the treatment process. Patch autograft was applied to all cases, and allograft was jointly applied to 5 cases.

3. From post-convalescence examination, most cases showed hypertrophic scar when grafting was provided at a later stage and with the younger age of the patient. From this, it can be emphasized that earlier grafting will cause reduction in treatment period, with better functional and esthetic results, even in deep dermal thickness burn.

RÉSUMÉ

Traitement local de vastes et profondes brûlures cutanées et observation ultérieure

Fujii, T.

Dans le traitement local des patients avec de vastes brûlures cutanées, superficielles ou profondes, il est parfois difficile de décider le mode de traitement: suivre un traitement conservatif ou greffer? Le but de cette étude est de préciser les indications des greffes et les méthodes qui puissent assurer de meilleurs résultats. Le groupe observé était composé de 41 sujets, suivis par l'auteur dès le début, c'est-à-dire de 1. janvier 1981 à décembre 1985. Dans ces cas, l'étendue de brûlure présentait plus de 10 % de surface corporelle chez les nourissons et chez les enfants en bas âge, et plus de 20 % de surface corporelle chez les patients adultes, pendant que les brûlures représentaient de plaies

superficielles aussi que de plaies profondes. 1. Le traitement conservatif local consistait en application du coton hydrophile imbibé d'onguent, L(D)SP, sulphadiazine argentine, pansements humides séchants, hydrothérapie ou suspension squelettique, dans de diverses combinaisons. 2. Au cours du traitement, 38 de 41 cas ont subi une greffe. Il s'agissait toujours d'autogreffes en forme de petits lobes, dans 5 cas combinées avec les homogreffes. 3. En période postopératoire, dans la majorité des cas, les cicatrices hypertrophiques se sont présentées, si la greffe était effectuée au stade subséquent chez de jeunes patients. On en peut conclure que les greffes précoces raccourcissent la durée du traitement, en assurant de meilleurs résultats fonctionnels et esthétiques, et cela même aux cas des brûlures profondes.

ZUSAMMENFASSUNG

Die lokale Behandlung ausgedehnter tiefer Hautverbrennungen und die darauffolgenden Beobachtungen

Fujii, T.

Bei der lokalen Behandlung von Patienten mit ausgedehnten Hautverbrennungen sowohl an der Oberfläche als in der Tiefe, ist es manchmal nicht einfach sich zu entscheiden, ob man sich immer an die konservative Behandlungsmethode halten soll oder eine Transplantation vornehmen soll. Die vorliegende Studie hat den Zweck zu bestimmen, ob man sich der Transplantation zuneigen soll, oder welche Methoden zu besseren Ergebnissen führen. Die beobachtete Gruppe bestand insgesamt aus 41 Fällen, denen sich der Autor von Anfang an widmete und zwar in der Zeit vom Januar 1981 bis Dezember 1985. In diesen Fällen bildete die verbrannte Fläche mehr als 10 % der Körperoberfläche von Säuglingen und kleinen Kindern sowie mehr als 20 % der Körperoberfläche bei erwachsenen Patienten, wobei sowohl Hautverbrennungen der Oberfläche als auch tiefe Wunden vertreten waren. 1. Bei der konservativen lokalen Behandlung wurden mit Fett eingelassene Gewebe, L(D)SP, Sulfadiazin-Silber, feuchte trocknende Verbände und Hydrotherapie oder Skelettiersuspensionen in verschiedenen Kombinationen angewendet. 2. Während der Behandlung waren 38 der 41 Fälle einer Transplantation unterzogen, und zwar stets waren es Autotransplantate in der Form kleiner Lappen, in fünf Fällen in Kombination mit Allotransplantaten. 3. Nach der Operation erschienen in den meisten Fällen hypertrophische Narben, wenn die Transplantation bei jüngeren Patienten im späteren Stadium ausgeführt wurde. Man kann daher wohl sagen, dass eine frühzeitige Transplantation die Dauer der Behandlung bei besseren Funktions- und ästhetischen Ergebnissen sogar im Fall einer tiefen Wunde verkürzt.

RESUMEN

El tratamiento local de las profundas quemaduras cutáneas extensas y el control post-operatorio

Fuyii, T.

En el tratamiento local de los pacientes con extensas quemaduras cutáneas, superficiales tanto como profundas, algunas veces es difícil decidirse entre la técnica conservativa o la transplatación. El objeto de este estudio fue escoger una de estas técnicas y determinar cual de éstas serán más exitosas. El grupo sobre observación consistió de 41 pacientes quienes fueron tratados por el autor desde los principios, es decir, desde enero 1981 hasta diciembre 1985. En estos enfermos la zona quemada cubrió más que

10 % de la superficie del cuerpo en caso de los niños recién nacidos y los niños pequeños y más que 20 % de la superficie del cuerpo en los adultos, ambos grupos con quemaduras superficiales tanto como profundas. 1. Durante el tratamiento conservativo se empleaba en diferentes combinaciones la gasa impregnada por el ungüento, L/D/SP, sulfadiazina de plata, las vendas húmedas secantes y hidroterapéutica o suspensión esquelética. 2. Durante el tratamiento de 38 desde 40 pacientes se sometieron a la operación. Siempre se trató de los autotransplantes en la forma de los lóbulos pequeños, en 5 casos en combinación con los alotransplantes. 3. En el período post-operatorio, en la mayoría de los enfermos se aparecieron las cicatrices hipertróficas si la transplantación fué realizada más tarde en los pacientes jóvenes. Por eso es posible decir que la transplantación más temprana reduce el período del tratamiento y resulta en mejores resultados funcionales y estéticos, incluso los casos con las heridas profundas.

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THE USE OF BACTROBAN FOR INFECTION MANAGEMENT IN BURN PATIENTS

J. VRTIŠKOVÁ, R. KÖNIGOVÁ

INTRODUCTION

Bactroban, or Mupirocin, is a new antibiotic used for local treatment of cutaneous infections, manufactured by Beecham Pharmaceuticals, Great Britain. Chemically, it is a pseudomonic acid of type A produced by *Pseudomonas fluorescens* (1). Mupirocin has a bacteriostatic effect and in higher concentrations it can also act as a bactericide drug for local therapy. It is especially active against Gram-positive bacteria including multi-resistant *Staphylococci* but it also affects Gram-negative bacteria. One of its main advantages is that it rarely provokes resistance (2).



Fig. 1 Disintegrated infected site after facial burn in a four-year old boy.

Fig. 2 The same patient 5 days after Bactroban application

METHODS

Bactroban was applied in 25 patients aged 3—61 years with burn injury extending up to 55 % of the total body surface area. Four persons had complicated 2nd to 2nd b degree infected burns, eight patients had infections of disintegrated donor site, nine had residual granulation zones after transplantation and four suffered from disintegration of spontaneously healed 2nd degree burn site.

Bactroban was used either in the form of 10×10 cm squares of tulle gras soaked with 2 % Mupirocin supplied directly by the producer, or in the form of an ointment containing also 2 % Mupirocin which was spread over the tulle.

We changed the dressing daily after washing the burn wound; extensively burned patients had the dressing changed under general anaesthesia every other day. At dressing change we took bacteriological samples, evaluated the objective finding, and, whenever possible, collected photographic documentation.

RESULTS

In four cases with Bactroban applied to 2nd to 2nd b degree infected sites, this antibiotic failed to bring the desired effect as infection led very quickly to deepening of burn wound. In such cases, surgery should be performed or topical antibacterial creams of Sulfamylon or Dermazin type applied, as these also have a mild necrolytic effect.

In eight patients with Bactroban applied to infected disintegrated donor sites, the infection was seen to be quickly receding. But with frequent changes of dressing, there is always a danger of damaging the delicate newly-formed epithelium, especially in more extensive areas. Newertheless, we can say that the application of Bactroban, mainly to long disintegrated sites, improved what was otherwise complicated therapy.

In nine patients, Bactroban was used on residual infected granulation sites after transplantation of the 3rd degree burn mostly in extensively burned patients. In most cases, the secretion receded, or at least decreased, but prior to it the patient's general condition must be taken into consideration.

A very good result was achieved in four patients with Bactroban applied to infected disintegrated sites, originally spontaneously healed, mainly in the face, which helped to lessen future aesthetic impairment.

DISCUSSION

In the majority of cases, the infection receded both clinically and bacteriologically. Only three bacteriological control samples showed *Pseudomonas pyocyanea* but without clinical signs of this infection. Bactroban yielded good results especially when applied to long disintegrated or just disintegrating surfaces resistant to conventional therapy. Generally, we can say that in

our experience Bactroban therapy was followed by no negative effects, either local or general. Nor did any forms of allergy appear either. Subjectively, Bactroban was well tolerated by the patients, the application being painless.

SUMMARY

The paper summarizes experience with the application of Bactroban which was used for local antimicrobial treatment in 25 patients at the Burn Centre of the Department of Plastic Surgery, Prague. Various types of deep skin layers with mixed infection were chosen for this therapy, mostly due to Staphylococcus, even though a resistant Staphylococcus never occurred during the testing period. Bactroban was applied in cases where commonly used preparations had failed, and its therapeutical results can be considered positive.

RÉSUMÉ

Application de BACTROBAN dans le traitement des infections chez les brûlés

Vrtišková, J., Königová, R.

Le travail résume les expériences avec l'application de BACTROBAN, produit destiné au traitement antimicrobien local, obtenues chez 25 patients du Service des brûlures de la Clinique de la chirurgie plastique à Prague. Il s'agissait de diverses bases d'infection mixte, le plus souvent de l'infection staphylococcique, même qu'aucun Staphylocoque résistant n'était découvert dans le Service des brûlures au cours des examens. Vu que d'habitude nous n'avons appliqué BACTROBAN qu'après l'échec de produits couramment utilisés, on peut généralement apprécier les résultats obtenus positivement.

ZUSAMMENFASSUNG

Die Anwendung von Bactroban bei der Behandlung von Infektionen bei Verbrennungen

Vrtišková, J., Königová, R.

Die Arbeit fasst die Erfahrungen mit der Anwendung von Bactroban, einem Präparat zur lokalen antimikrobiellen Behandlung, zusammen, die bei 25 Patienten an der Abteilung für Verbrennungen der Klinik für plastische Chirurgie in Prag gewonnen wurden. Es handelte sich dabei um die verschiedensten Typen des Untergrunds und um gemischte Infektionen, am häufigsten durch Staphylokokken, obwohl resistente Staphylokokken sich zur Zeit der Prüfungen an der Abteilung für Verbrennungen nicht zeigten. Im Hinblick darauf, dass Bactroban gewöhnlich angewendet wurde, bis die laufend angewendeten Mittel versagten, kann man die erzielten Ergebnisse positiv bewerten.

RESUMEN

La aplicación de Bactroban en el tratamiento de la infección en los pacientes quemados

Vrtišková, J., Königová, R.

Este trabajo es un resumen de las experiencias con la aplicación de Bactroban, una preparación usada para el tratamiento antimicrobiano local, a 25 enfermos tratados en el Departamento de la Clínica de la Cirugía Plástica, Praga, Checoslovaquia. Se trató de diferentes tipos de las capas cutáneas basales con una combinación de infecciones, principalmente con el *Estafilococo*, aun cuando el *Estafilococo* resistente no ocurrió durante el período de las pruebas. Los autores empleaban Bactroban en los casos, donde las preparaciones generalmente usadas no habían tenido éxito y los resultados pueden considerarse como positivos.

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BOOK REVIEW

■ Surgery in Solitary Kidney and Corrections of Urinary Transport Disturbances

Volume 23 in the series of Progress in Paediatric Surgery, Volume Editors: L. Spitz, London, P. Wurnig, Vienna, Th. A. Angerpointner, Munich, Springer-Verlag, Berlin, Heidelberg, New York, London, Paris, Tokyo.

A monograph, 205 pages, 136 figures and 34 tables. It is composed of 2 parts, Part I concerned with Surgery in Solitary Kidney, Part II with Corrections of Urinary Transport Disturbances.

The chapters are written by authors who are outstanding and well-known specialists in their respective branches of medicine.

Part I: Surgery in Solitary Kidney

1. Value of Ultrasound in the Treatment of Solitary Kidney in Infancy and Childhood.

(H. J. Beyer, V. Hofmann and D. Brettschneider)

This chapter deals with the significance of primary ultrasound diagnosis and sonographical function tests in solitary kidney, as every other patient suffers from concomitant kidney disease. The author discusses the significance of these diagnostic methods with regard to primary diagnosis, assessment of the course of treatment and post-operative long-term follow-up.

2. Renal Function in Single-Kidney Rats (A. P. Provoost, M. H. De Keijzer, J. N. Wessel and J. C. Melonaar)

Based on experiments on rats, this chapter copes with the question whether patients, either with congenital kidney absence or after its loss, can lead a normal life both from the

qualitative and quantitative aspects.

3. Urological Operations for Solitary Kidney in Children (F. J. Helmig, D. Vogl, K. Devens)

Children with solitary kidney who must undergo urological surgery have approximately the same prognosis as equally affected children with both kidneys. In such cases, however, one must consider the long-term prognosis.

4. Reconstructive Surgery in Eight Children with Solitary Kidneys (O. H. Nielsen and J. Thorup)

Children, aged 0–5 years, underwent reconstructive urological surgery. Here infection was the most important prognostic factor.

5. Surgery on Solitary Kidneys in Childhood (H. D. Jaeger and G. Gutsche)

This study recapitulates a group of 30 children operated on for affected solitary kidney. In the first years of life, the children underwent surgery mainly for solitary kidney malformation, older children for acquired solitary kidney disorders.

6. Outcome Following Surgery for Solitary Kidney in Children (K. Gdanietz and G. Piehl)

This paper makes analysis of 386 children with primary or secondary solitary kidney; out of this number 41 children had to undergo surgery. The prognosis is generally worse, the worst being in cases of subvesical stenosis combination with uropathy.

7. Bladder Shrinkage as a Complication on Long-Term Suprapubic Urinary Diversion in Children with Solitary Kidney (M. Gharib and R. Engelskirchen)

This study discusses the problem of bladder shrinkage in children, and describes a method of continual bladder

distension using hydrostatic bladder dilatation.

8. Problems in Severe Bilateral Urinary Tract Anomalies (O. H. Nielsen and J. Thorup)

Based on their experience with 29 children patients, the authors came to the conclusion that the removal of an obstruction does not always result in full functional restitution. Renal dysplasia and uterovesical muscle impairment seem to impose limitations to therapeutical procedures.

9. Double Ureter in Children: Surgical Management (M. H. Kheradpir and E. Bodaghi)

In this study the authors analyze 25 cases, 6 of whom had ureterocele. Further, they describe different surgical techniques used in individual patients.

10. Surgical Treatment of Bilateral Wilms' Tumours with Special Reference to Second Operations in Metachronous Disease (W. Pumberger and P. Wurnig)

This analytical study concerns 6 patients with tumours developed synchronously in 3 cases, and in the next 3 patients successively.

11. Infants with Posterior Urethral Valves: a Retrospective Study and Consequences for Therapy (H. Mildemberger, R. Habenicht and H. Zimmermann)

The study refers to 18 patients with posterior urethral valves diagnosed during the first year of the infant's life.

Part II: Corrections of Urinary Transport Disturbances

1. Microvascular Autotransplantation of Intra-Abdominal Testes (P. Frey and A. Bianchi)

The authors' study concerns 23 microvascular autotransplantations of intra-abdominal undescended testes, successfully performed in 82.6 % patients.

2. Role of the Kock Pouch in Adolescent

Urology (J. Cumming and C. R. J. Woodhouse)

This operation is recommended for patients, where no other urinary tract reconstructions can be performed.

3. Cloacal Malformations: Embryology, Anatomy and Principles of Management (D. F. M. Thomas)

The authors suggest a method how to cope with this severe congenital anomaly dividing the procedure into the following stages: a) the determination of the anatomical features by means of detailed examination, b) neonatal surgery to eliminate obstruction, c) definitive reconstructive surgery.

4. Genitoplasty for Congenital Adrenal Hyperplasia: Anatomy and Technical Review (R. H. Whitaker)

Even if virilization occurs in the female pseudohermaphrodite with congenital adrenal hyperplasia of different degrees, there are always present normal ovaries, uterus and the upper part of the vagina. For psychological and practical reasons, the author recommends reduction of the clitoris and opening of the vagina into the perineum at an early age, between 6—18 months.

5. Surgical Correction of Virilised Female External Genitalia (J. Engert)

As vaginal orgasm is rather exceptional, the sexual life of the woman depends entirely on the sensitivity of the clitoris; therefore, maximum care must be taken to preserve its sensitivity, whether it was reconstructed or reduced. In case of vaginal reconstruction, the author, to avoid introitus shrinkage, recommends to rotate a perineal cutaneous pedicle flap into the posterior vaginal wall. In the author's opinion, surgery on the clitoris, vulva and vagina should be performed at an early age.

6. Reconstruction of the Epispadic Penis in Adolescents (C. R. Woodhouse)

The procedures that the author suggests are based on the fact that in

adolescence the most frequent erectile deformity of epispadias is due to a firm and short dorsal chorda.

7. One-stage Preputial Pedicle Flap Repair for Hypospadias Experience with 100 Patients (P. Frey and A. Bianchi)

Based on their experience, the authors describe a modified Asop technique applied to 224 patients. A vascularized preputial pedicle flap is rotated ventrally to form the neo-urethra and to cover the ventral cutaneous defect on the penis.

8. Reconstruction of Foreskin in Distal Hypospadias Repair (P. Frey and S. J. Cohen)

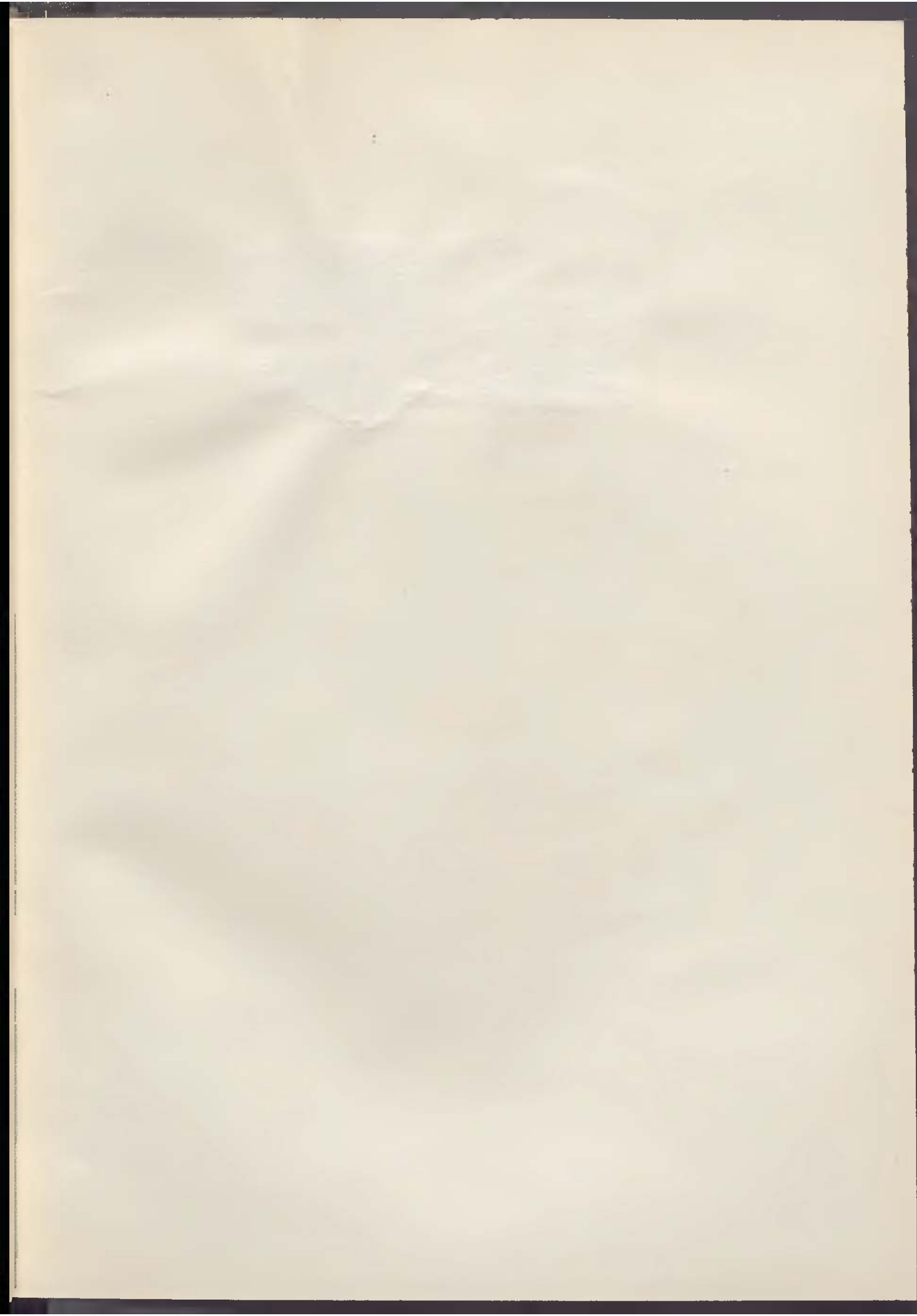
The study refers to 101 patients with the distal form of hypospadias after one-stage surgery according to Magpi — Duckett or its modified form preserving the preputium.

Generally speaking, while Part I of the book consists of fairly complementary approaches to the problem of solitary kidney, Part II is a collection of rather heterogeneous studies pertaining to surgery on the congenitally malformed external genitalia. In any case, the book is to be a valuable addition to the libraries of pediatric urologists as well as plastic surgeons.

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