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Modern Surgery - Chapter 35. Plastic Surgery

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XXXV. PLASTIC SURGERY.

PLASTIC surgery includes operations for the repair of deficiencies, for the replacement of lost parts, for the restoration of function in parts tied down by scars, and for the correction of disfiguring projections. Many reparative operations have been devised. Among them are: cheiloplasty, or the construction of a new lip; the closure of a cleft in the palate, the lip, or the penis; the making of a new nose; skin-grafting; grafting of muscle or tendon; nerve-grafting; the introduction of celluloid or metal into the tissues to act as supports; the injection of paraffin into the tissues to amend a de-

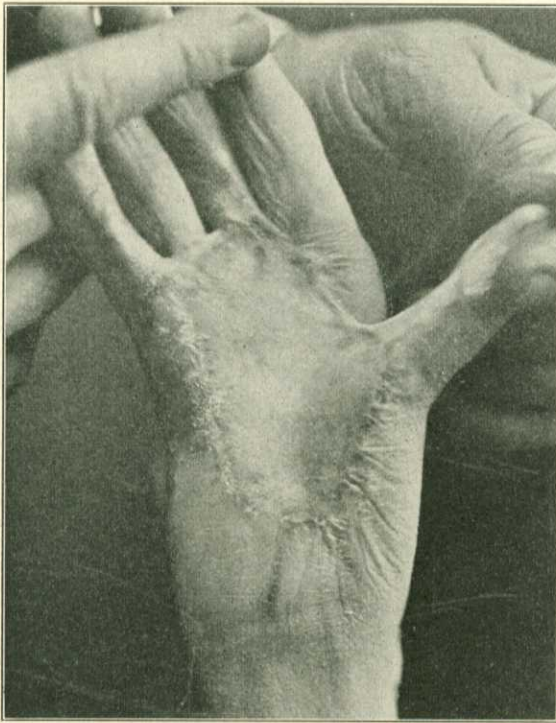


Fig. 541.—Injury caused by crush and burn. Healed by granulation in eight months. Showing a condition after removal of scar of the palm, which has been repaired by stitching in an autoplastic graft (free flap) from the thigh (Geo. S. Brown).

pression; the diminution in the size of a lip or a nose; the amendment of protuberant ears; the correction of distortion due to cicatrices; excision of scars; closure of congenital sinuses and of fistulæ; removal of disfiguring growths.

The subject of plastic surgery is very extensive, and a treatise upon it should be consulted if one wishes to obtain detailed and comprehensive information.

A plastic operation can be successful after lupus only when the disease has been cured. It is useless to do a plastic operation during active syphilis,

and a plastic operation for a syphilitic loss of substance is to be performed only after the patient has been thoroughly treated and the disease has been apparently cured. The first step of a plastic operation consists in making raw the surfaces which are to be brought together; the second step is the complete arrest of bleeding; the third step is the approximation of the surfaces without tension; the fourth step is to close any gap from which tissue may have been transplanted; and the final step is the application of the dressings.* The following are the methods used: †

Displacement is the method of stretching or of sliding: (1) approximation after freshening the edges (as in harelip); (2) sliding into position after transferring tension to other localities (linear incisions to allow of stretching of the skin over large wounds).

Interpolation is the method of borrowing material from an adjacent or a distant region or from another person: (1) *transferring a flap with a pedicle*, which flap is put in place at once or is gradually gotten into place by a series of partial operations (as in rhinoplasty, when a flap is taken from the forehead); (2)

transplanting without a pedicle, which is performed by placing in position and by fixing there portions of tissue recently removed from the part, from another part of the same individual, or from a lower animal (as replacement of the button of bone after trephining, transplanting a piece of bone from a lower animal to remedy a bone-defect in a human being, or the grafting of a piece of nerve from a lower animal or an amputated human limb to remedy a loss of nerve in a human being in nerve-grafting, or skin-grafting). *Retrenchment* is the removal of redundant material and the production of cicatricial contraction.

Skin-grafting.—As long ago as 1847 Dr. Frank Hamilton partly covered an ulcer with a pediculated flap, and trusted that the uncovered portion would be healed by new skin from the flap. We may graft small pieces of epithelium taken from the patient, or another person, or one of the lower animals, or we may graft large pieces of epithelium. The grafts should, if possible, come from the person to be grafted. The epidermic scales may be scraped

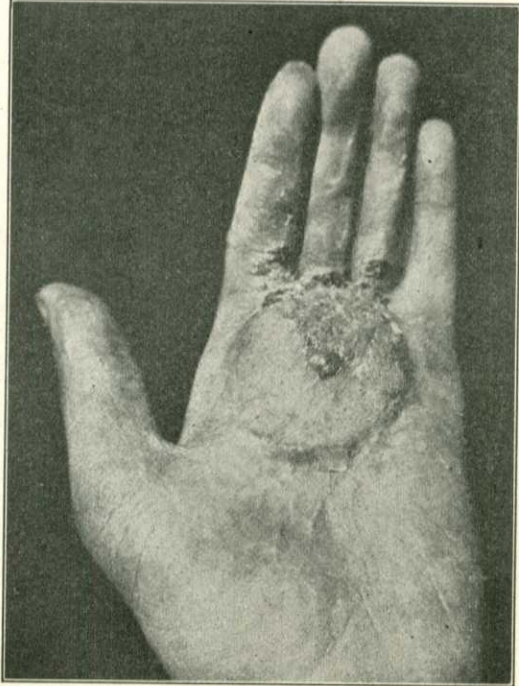


Fig. 542.—Claw-hand from burn. A flap with a pedicle was taken from the chest. The pedicle was cut on ninth day.

* "American Text-book of Surgery."

† *Ibid.*

off the sound skin and grafted. Lusk has blistered the skin with cantharides and grafted portions of the epidermis. The shavings of a corn have been used. The best plan is to cut off and transplant small bits of epidermis.

Grafts may come from another person or from a lower animal, but such grafts are not apt to grow, and even when they do grow fail to furnish a secure cicatrix. Frog-skin furnishes unsatisfactory grafts. Some surgeons have used bits of sponge; others the skin of rabbits, guinea-pigs, or pups. Arnot has employed the lining membrane of a hen's egg, cut in strips and applied upon the wound with the shell-surface uppermost. Small bits of epidermis taken from a recently amputated foreskin or leg may be used.

Reverdin's Method.—This operation was devised by Reverdin in 1869. Small bits of epithelium are used and they are taken preferably from the person himself. The surface to be grafted should possess healthy granulations level with the skin. Cleanse the skin from which the grafts are to come, the ulcer, and the skin about it, and, if corrosive sublimate is used, wash it away with a stream of warm normal salt solution. Thrust a sewing-needle under the epidermis to raise it, cut off the graft with a pair of scissors, and place the cut surface of the graft upon the ulcer. After applying a number of grafts, place thin pieces of gutta-percha tissue over them and extending on each side of the ulcer, and so placed as to have distinct intervals between them, the gaps permitting drainage. This tissue, after being aseptized, is moistened with warm normal salt solution. Dress with a pad of aseptic gauze moistened with salt solution; place over this gauze a rubber-dam, and over the latter absorbent cotton and a bandage. In the case of children apply a light silicate bandage. Put the patient in bed. In forty-eight hours remove all the dressings except the gutta-percha tissue, irrigate with normal salt solution, and reapply the dressings. All signs of the grafts will often have disappeared. In a day or two, at the site of grafting, bluish-white spots should appear, which are islands of epidermis. Each graft is capable of forming about half an inch of cicatrix. Grafting also stimulates the edges of the ulcer to cicatrize and contract. At the end of seven days the special dressings can be dispensed with. The spot from which the grafts are taken is dressed antiseptically. Reverdin's method does not limit cicatricial contraction to any great degree, and the new skin is apt to break down.

The Ollier-Thiersch's Method.—Ollier, of Lyons, in 1872 succeeded in transferring large pieces of epidermis. In 1886 Thiersch, of Leipzig, set forth the technic practically as it is employed to-day. The Ollier-Thiersch method is performed as follows: Thoroughly aseptize the ulcer, the surrounding skin, and the site from which the graft is to come (the inner side of the arm or the thigh), and wash away the mercurial preparation with normal salt solution. Apply dressings wet with salt solution. On bringing the patient into the operating-room remove the dressings from the ulcer, scrape the ulcer and its edges, irrigate with salt solution, and compress to arrest hemorrhage. Grafts are then obtained by putting the prepared skin upon the stretch and cutting strips with a razor. While the razor is being used the part is constantly irrigated with salt solution. Mixer's apparatus enables one to perform this operation with great neatness and speed. This apparatus consists of a knife and an open square with sharp points on the under surface.

The square is forced down upon the front of the thigh, the epidermis mounts up in the opening to above the level of the metal sides, and the grafts may be cut with ease. The graft contains the epidermis, the rete, and part of the true skin. In Halsted's clinic the skin of the thigh is made tense by pressing upon it with a piece of asepticized wood, the wood is drawn slowly along, and is followed closely by the sharp catlin, with which the surgeon cuts long grafts. The grafts are pressed into place upon the raw surface, and each graft overlaps a little the edges of the wound and the adjacent grafts. The skin-wound is dressed antiseptically, and the grafted area is dressed as in Reverdin's method. Recently it has been suggested that a ring of aseptic gauze be made to encircle the limb below the grafted area, and another ring above the grafted area; on these pads little strips of wood wrapped in aseptic gauze are so laid as to make a cage, and around this cage the dressings are applied (moist chamber plan) (Fig. 543).

Wolfe's Method.—It was pointed out by Wolfe, of Glasgow, that a piece of skin, comprising the entire thickness of that structure, can be successfully transplanted without a pedicle. The ulcer is extirpated and asepticized and bleeding is arrested. The flap is cut one-sixth larger than the surface to be covered. Fat is kept out of the graft. The bit of tissue is laid upon

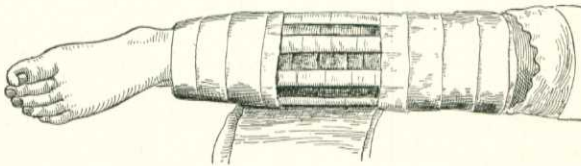


Fig. 543.—Mayer's dressing for Thiersch's method of skin-grafting ("American Text-book of Surgery").

the wound, the edges of the graft being brought against the edges of the raw area. It is not necessary to employ sutures. The part is dressed in a moist chamber. If the graft perishes, remove it.

Subcutaneous Injection of Paraffin for Prosthetic Purposes.

—The principle of injecting solidifying oils into tissues to mechanically obtain effects was first laid down by J. Leonard Corning in 1891. The use of paraffin was introduced by Gersuny to amend the deformity of a saddle-nose. It has been used to limit incontinence of feces, incontinence of urine in women, to prevent reunion of nerves after division, to replace a testicle, to obliterate smallpox marks, to narrow a hernial ring, to correct sinking of the cheek after removal of the upper jaw, and for other purposes (Moszkowicz, in "Wien. klin. Woch.," June 20, 1901). Paraffin is not toxic. Its injection may produce some swelling and redness, but applications of cold quickly control inflammation. In two or three months the paraffin becomes hard like cartilage and encapsuled. It is questionable whether or not it is subsequently destroyed and replaced by granulation tissue. Sometimes sloughing takes place in the skin above it.

Prepare the paraffin as follows: In Gersuny's clinic solid paraffin is mixed with liquid paraffin. The melting-point of the mixture should be about 104° F. It is rendered sterile by boiling, is injected by a warm syringe, and as

a semi-solid, the skin having been first warmed by a hot sponge. After injection it is moulded into proper shape. It sets in half a minute. It is not wise to use a mixture with a much higher melting-point, because it would possibly cause thrombosis of veins.

Rhinoplasty.—The complete operation may be performed by transferring a flap from the forehead. This is known as the Indian operation. It was employed for centuries in India, and interest in it was awakened in England about 1820 by Mr. Carpue. The edges of the defect are made raw. A model of the desired nose is made out of gutta-percha, and its outlines are marked upon the forehead, and the cut is made one-quarter of an inch outside of the outline so as to allow room for retraction. The flap is turned down and sutured in place (Fig. 544), care being taken not to cut

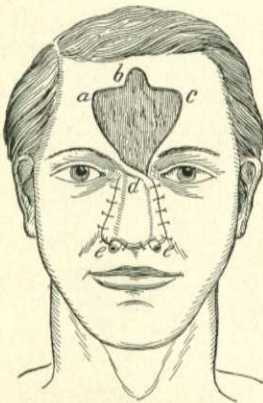


Fig. 544.—Indian method of rhinoplasty.



Fig. 545.—Italian method of rhinoplasty.

off the blood-supply in the pedicle. Plugs of gauze or tubes are inserted to support the flap.

The complete operation can be performed by the Italian method (Tagliacotian method). This method was first described in Tagliacozzi's book, which was published in 1597. In this operation the flap is marked out on the arm, is made twice the size of the desired nose, and is left attached by a broad pedicle. The nasal surface is rendered raw at proper regions, and the flap is sutured in place, the hand being held upon the head by a special apparatus (Fig. 545). The raw surface upon the arm is dressed. In about three weeks the flap is cut loose from the arm, and is pared and corrected as may be necessary.

The operations for harelip and cleft palate, and plastic operations on muscles, nerves, tendons, and bones, are considered in other portions of the work.