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SURGERY.

ON SKIN-GRAFTING.

M. Marduel has published in the *Lyon Medical* a history of skin-grafting, which is abstracted and supplemented by other references in the *Glasgow Medical Journal* for May, 1873, so as to make it a comprehensive and tolerably complete history.

Although M. Reverdin is generally regarded as the originator of skin-grafting, yet Hamilton, of New York, states that he proposed it in 1847, but, owing to the non-compliance of his patient, was prevented from carrying it out; and that he advised the use of skin-grafting in a paper in the *New York Medical Journal* in 1854. It is also known that Tigrì, in the *Sommario Anatomico e Fisiologico* (Sienna, 1867), states that detached portions of the epidermis retain their vitality through imbibition of nutritive fluid. Though Tigrì only referred to the epidermis raised by a blister, it would require a very little extension to come to the *lambeaux cutanes* of Reverdin. However this may be, the honour is undoubtedly due to Reverdin, if not of being the first to mention the subject, at least the first to carry it into practice, and bring it prominently before the medical public.

As is usual at the outset of any innovation, considerable diversity of opinion exists in many points bearing on this subject.

Most observers are at one in regarding the healing sore as the most favourable field for the graft to live on, and some even consider it to be an essential. Page (*British Medical Journal*, December, 1870) states that the grafts must be planted on healthy vigorous granulations. Macleod (*Glasgow Medical Journal*, May, 1871,) states that the granulations must be sound and viable. Reverdin, in his paper published in the *Archives Generales de Médecine*, 1872, points out that the wound should either be on the point of cicatrization, or the cicatrization should have already commenced, and that the granulation should be healthy. He adds, however, that these conditions are not absolute, for he has planted with success a piece of tissue on a syphilitic ulcer of the lower limb in a woman aged sixty-one years, and success was further obtained by him in the following cases:—On a wound resulting from ablation of a cancerous mamma; on an ulcer, the result of a bubo, after its specific character was lost; and in one case affected with hospital gangrene. Heiberger and Hugo Scholtz (*Berliner Klinische Wochenschrift*, viii. 10, 1871) have met with considerable success in using grafts on patients who were affected with hospital gangrene. Mr. Gayet of Lyons succeeded in planting grafts on a surface from which a canceroid ulcer had been removed. We find in a paper of M. Achille Dron, published in the *Lyon Medical* in December, 1872, that he performed skin-grafting on a

undoubted initial syphilitic sore. These facts greatly enhance the value of skin-grafting as a remedial agent, and, should they stand the test of future experience, we may hope no longer to see the deformities produced by the ulcerative action of buboes induced by soft sores, which sometimes, as we have seen, cause the lower limbs to be flexed on the abdomen, by the contraction of the tissues in forming the cicatrix, and thus compel the person to walk in a stooping attitude.

The grafts proposed are various. The use of scrapings from the epidermis was advocated, and cases recorded where they were employed with success; but Mr. Goldie's experiments (*Lancet* 1, April 16, 1870) made in the Charlton Union Hospital, showed that the epidermal scrapings were of little value compared with grafts comprising the whole skin. Jacenko, Reverdin, and Macleod have failed to produce islets of epidermis from the employment of epidermal scrapings, though the latter remarks, that 'their presence on the sore has sometimes seemed in a curious manner to augment the cicatrizing activity of the edges.'

Grafts, including at least the Malpighian or mucous-layer, are now advocated by Reverdin, Macleod, Page, and many others; while some think they succeed best by using the whole thickness of the skin. Some prefer to take their grafts from particular parts of the body, but it matters little, provided the tissue be sufficiently vascular. M. Ollier, of Lyons, takes his from limbs amputated for accidents, and in this way secures, as a rule, healthy tissue. This proceeding is practised also by Dr. Wilson, of Greenock, (*Glasgow Medical Journal*, 1871, p. 346). Dr. Hofmök, of Vienna, (*Wien. Med. Presse*, 1871), took a strip of epidermis half an inch square from an amputated hand, and placed it on an ulcer. 'Fourteen days afterwards, a cicatrization commenced round the margin of this piece of skin, which had adhered firmly to its new seat.' Czerny, of Vienna (*Med. Centralblatt*), took a portion of epithelium adhering to a nasal polypus two hours after it had been removed from the nose, and transplanted it on an ulcer. Its cilia were still in motion at the time of its transplantation. The epithelium grew, lost its cilia, and became converted into pavemented epithelium. He also found that portions of epithelium transplanted from an uvula, excised half an hour previously, to a wound left by excision of the mamma, grew and helped to form the cicatrix. Jacenko (of Kiew) states that he has transplanted tissue from man to man, from man to the dog, from dog to dog, but that he failed to transplant from the dog to man. Then there comes the well-known case where Mr. Bryant transplanted the skin of a negro on to a white man. Netolitzki communicates to the *Wiener Medizinische Wochenschrift*, August, 1871, the fact that a M. Philippe transplanted a portion of the skin of a

rabbit to a man with success. Reverdin used a graft from a rabbit, and another from a sheep, and succeeded in both instances.

M. Dubreuil (*Gazette des Hôpitaux*, July 30, 1872) transplanted a graft from the guinea-pig on to an ulcer of the leg, and another portion from a dog on to a wound on a girl's cheek, and both succeeded. M. Letiévant (*Lyon Medical*, 1871) transplanted with success a portion of the skin from the abdomen of a dog. M. Mollière failed in his attempt to graft a portion of the tissue of a cat on an ulcer of the leg. Ollier grafted a portion of periosteum, and found that it formed an islet of epidermis. Lastly, Mr. Benjamin Howard found an American officer who permitted him to remove a portion of muscle from his arm and engraft it on an ulcer from which the officer suffered, and it is stated that the cicatricial process was thereby hastened and that the ulcer healed. To this we may add (says the writer in the *Glasgow Medical Journal*), that we have planted a portion of the dermal covering of a dog on an ulcer beginning to heal, and we found that in four days after it was firmly adherent and a ring of epidermal cells formed round it. The hair and superficial layers of the dermis were shed, as was the case in all the instances where grafts from animals were used.

The size of the graft employed has been very varied. M. de Wecker (*Annales d'Oculistique*, 1872) forms a mosaic with numerous little fragments of skin on wounds of the eyelids. Macleod thinks that the graft should be about the size of a three-penny piece; while Hofmök used a strip of epidermis half an inch square.

The grafts do not seem to go on extending their margins indefinitely. Dobson, of Bristol, found that the islets never extended more than the size of a florin, and generally did not go beyond that of a sixpence. Reverdin states that they do not extend indefinitely, and that they vary from the size of a 20-centime piece to that of a 50-centime piece. He further asserts that the grafts always tend to grow towards each other, or towards the marginal cicatrix, but that it is not generally admitted that they influence the growth of the cicatrix at the margin of the wound; but, as we have already mentioned, Macleod states that the epidermal scrapings appear, in a curious manner to augment the cicatrizing activity of the edges.

Considerable difference of opinion still exists regarding the histology of this subject. Page, in the *British Medical Journal*, December, 1870, thought that he had established, by microscopic investigation, that the epithelium of the skin-graft comported itself in the same manner as ordinary cicatricial epithelium; and Jacenko (of Kiew) stated that he found a multiple nucleus in the interior of the cells of the Malpighian layer of the skin-graft. But most observers deny the theory of proliferation. M. Ponceet and M. Colrat have both given papers founded on micro-