

# The conception and development of skin grafts

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While the classification of dressings are the current and predominating theme in UK wound care, let us turn our attentions to a wholly different type of wound ‘dressing’ — skin grafts — and their conception and development.

According to Davis (1941), the early Hindus were the preeminent masters of plastic surgery in ancient times, being ‘especially skilled in skin-shifting and other phases of reconstructive work.’ The work of the Tilemaker caste in ancient India in utilising full-thickness grafting for the reconstruction of noses is said to be the earliest recorded instance of the technique (Davis, 1941), dating from approximately 2500–3000 years ago (Hauben et al, 1982; Ratner, 1998). Whilst an ostensibly delicate operation, the preparatory methods were perhaps less than subtle; Davis (1941) mentions that the gluteal donor site was ‘beaten with wooden slippers until a considerable amount of swelling had taken place.’

Whether or not such procedures were successful will forever remain a mystery. As we have seen in previous columns, there exists a large gap between the conception of a treatment in ancient times, and its re-adoption in the recent past. Many works (such as Ratner, 1998) credit Swiss surgeon Reverdin (1842–1929) with bringing free skin grafts into the western medical consciousness, but credit must be paid to the experiments of one Giuseppe Baronio in 1804.

Baronio, a physician, experimented with various skin grafts on a single ram, altering the time between re-adhesion and observing the effect on transplant success. Sources (Davis, 1941; Mazzola 2013) are conflicted as to whether different thickness grafts were harvested intentionally, but according to Davis (1941), all grafts were successful, and bled when cut into after 10–12 days. In spite of this, ‘little notice was taken of these very significant experiments.’

A quintet of German surgeons from 1823 onward (Bünger, von Graefe, Valther, Dieffenbach, and Wutzer) attempted remedial rhinoplastic procedures using full-thickness free grafts from the thigh, but with little success. The breakthrough came with Reverdin’s 1869 report to the Société Impériale de Chirurgie in



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Paris, in which he outlined his successful healing of granulating wounds with tiny fragments of epidermis (Davis, 1941); heralded by some as the first organ transplantation (Fariña-Pérez, 2010).

Thenceforth the grafting process was investigated and refined; Ollier (1830–1900) and later Thiersch (1822–1895) achieved success grafting larger areas of skin, and devised what could be adequately termed the split-thickness graft, utilising the epidermis and a thin layer of the dermis.

The present day sees a wealth of grafting procedures utilised in everyday situations such as burns care, and technology has advanced sufficiently that porcine xenografts can now be employed in lieu of human allografts and indeed conventional dressings (Troy et al, 2013).

Thus we see yet again that commonplace techniques employed in the present day have their origins in ancient times. Certainly, elements of skin grafting as a method of wound healing may have been refined — donor sites are no longer beaten with wooden slippers to incite swelling prior to harvesting, but the basic concept remains the same.

Moreover, the timeline follows a familiar pattern: ancient people conceive, practice, and record a medical treatment, only for the ravages of time to ruin painstakingly compiled manuscripts and for the people in power to deem medical science to be sacrilegious and a slight against God, as occurred with Gaspare Tagliacozzi and his pedicle-flap... but more on that in the next issue.

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