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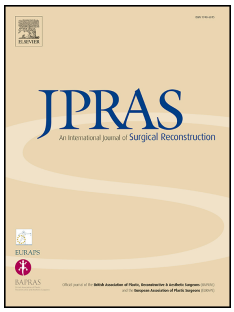

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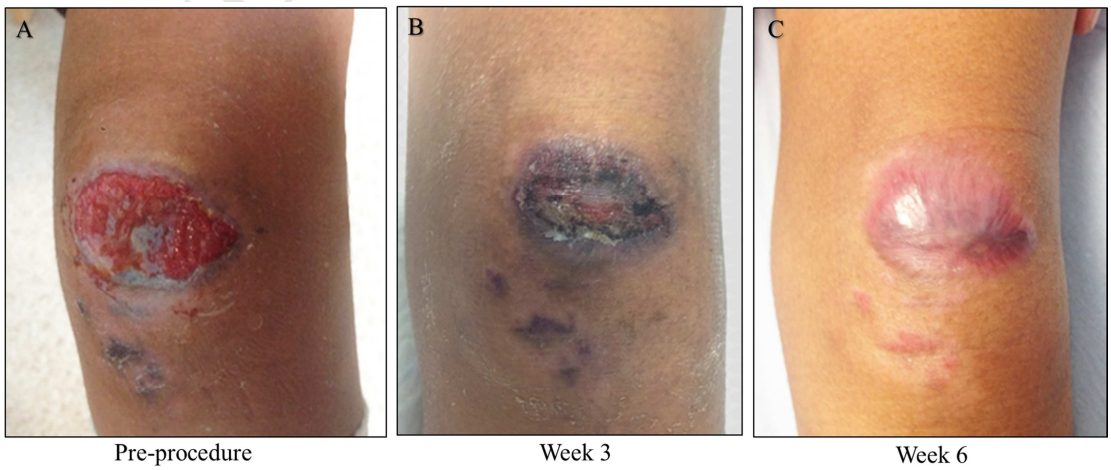
Current wound management with split thickness skin grafts requires a period of immobility, attentive donor site wound care, meticulous pain management and yield permanent donor site scarring. Despite split thickness skin grafting being a widely used surgical technique, factors such as patient's co-morbidities, post-operative donor site wound care, pain management and even practical issues can complicate this procedure

We present a novel epidermal harvesting device, CelluTome™ from Kinetic Concepts Inc. (KCI, San Antonio, Texas, USA), for the treatment of acute wounds in the outpatient setting, as an alternative to the current wound management methodology. CelluTome enables pain-free epidermal skin grafting, reducing hospital stay and cost, even if carried out as a day case, benefitting both the patient and the wider healthcare system.

A healthy young male presented with an acute wound over his left knee, sustained from a motorbike injury. The wound measured 4.5cm x 3cm over the left patellar region with and exposed infra-patellar tendon [Figure 1], requiring debridement and negative pressure wound therapy (NPWT). The wound granulated well with 4 weeks of NPWT and was ready for grafting. Instead of a split-thickness skin graft, the patient received a single harvest of epidermal grafts from the thigh using the novel device, CelluTome.

Figure 1: Left knee wound prior to epidermal grafting, at week 3 and week 6.



Pre-procedure Week 3 Week 6

This device harvests epidermal micrografts via formation of suction blisters without the use of anaesthesia in outpatient specialist clinic. Combining negative pressure and heat (40^{o}C), this device produces an array of epidermal grafts within 45 minutes [Figure 2]. The microdomes are formed at the layer of lamina lucida of the dermal-epidermal junction. Following the harvest, epidermal grafts were transferred onto a fenestrated 3M Tegaderm Film (measuring 6cm x 7cm) and applied on the wound [Figure 2]. The grafted wound was secured with crepe bandage while the donor site was dressed with 3M Tegaderm Film. The patient returned home the same day. The wound was reviewed on day 5 post-grafting and dressed with non-adherent silicon dressing, Adaptic Touch (Systagenix), following which the dressings were changed every 3 days and reviewed weekly up to 6 weeks. Complete epithelialisation of the wound was noted after 4 weeks post-grafting (Figure 1) while the donor site healed within the first week without a noticeable scar (Figure 3).

Figure 2: Harvesting device (vacuum head) with microdomes in-situ at the end of harvesting process. The arrow (black) points at the microdomes.

The CelluTome is easy to use and well tolerated by patients. Elderly patients with multiple co-morbidities would benefit from this technique as it does not require anaesthesia and avoids the complications of reduced mobility, maintaining patients' independence and quality of life. The results suggest that the possibility of using this epidermal grafting device to treat acute and chronic wounds in the out-patient setting as an alternative to the current skin grafting methods is promising.

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