To Evaluate the Efficacy of Non-Cultured Epidermal Cell Suspension in Cases of Stable Vitiligo

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Abstract

Introduction: Vitiligo is an acquired disorder of pigmentation caused by loss of epidermal melanocytes. Surgery in vitiligo has come up a long way from tissue grafting to cellular grafting techniques which includes non-culture epidermal cell suspension.

Materials and Methods: 30 patients with vitiligo, stable for atleast 1 year were included in this study. Ultra-thin split thickness graft was harvested and incubated in Trypsin-EDTA. The suspension was centrifuged to obtain a pellet which was re-suspended and applied to derma braded recipient area.

Results: Overall, 19 (66.67%) patients showed excellent (>90%) pigmentation, 5 (16.67%) had very well (50%- 75%) repigmentation and 4 patients (13.33%) had a good response (25%-50%). Majority of patients (53.33%) had good colour match with surrounding skin. 13 patients (43.33%) complained of dyspigmentation and 1(3.33%) patient had scarring at donor site.

Conclusion: Non-cultured epidermal cell suspension is a safe and effective surgical modality in management of stable vitiligo.
pin-point bleeding spots was considered the end-point. A thin film of suspension was spread over dermabraded area and subsequently dressed using dry collagen dressing and Tegaderm transparent dressing. Patients were immobilized for an hour after procedure and were advised restricted movements for duration of 1 week. Prophylactic antibiotics, anti-inflammatory drugs and analgesics were given for 1 week.

Follow-up
The response parameters were noted every fortnight. On each visit, patients were examined for evidence of partial or complete pigmentation, to record any donor or recipient site complications and to ensure that patients were not using any other treatment. Photographic documentation was done before the procedure and thereafter, periodically. Results were assessed at 6 weeks, 12 weeks and 24 weeks. Degree of repigmentation was evaluated on the basis of Visual Analogue System Score for extent of pigmentation and colour match as: 0-25% - Poor 25%-50% - Good 50%-75% - Very good and >75% - Excellent.

Results
Demographic characteristics are shown in Table 1. Majority of patients had focal vitiligo. Maximum number of vitiligo lesions was present on lower limb, followed by face, trunk and upper limb. The recipient area of most cases epithelialized completely at 10 days post-operatively and no further dressing was required (Figure 1A). Onset of pigmentation started in almost all patients by 4 weeks post-op and at 6 weeks of follow-up, majority of patients (53.33%) were showing 0-25% re-pigmentation followed by 25%-50% in 46.67%. By the end of 12 weeks, 6.67% patients had excellent response with >75% re-pigmentation, 30% showed 50%-75% while majority (43.33%) of patients were still showing good response with 25%-50% repigmentation. At 24 weeks, 19 (66.67%) patients had excellent (>90%) pigmentation, 5 (16.67%) had very well (50%-75%) repigmentation, 4 patients (13.33%) had good response while 2 (6.67%) patients showed poor response with <25% repigmentation (Figures 1B and 1C). All three types of repigmentation-diffuse, perifollicular, and marginal were observed but maximal patches (76.66%) showed diffuse repigmentation. Majority of patients (53.33%) had good colour match with surrounding skin while 46.67% patients had pigmentation somewhat darker than surrounding skin. 13 patients (43.33%) complained of dyspigmentation and 1 (3.33%) patient had scarring at donor site. 3 (10%) and 2 (6.67%) patients respectively developed infection and scarring each, at recipient site while 1 patient (3.33%) was unable to sustain pigmentation during follow-up (Figures 2A and 2B).

Discussion
Vitiligo is an acquired, idiopathic depigmentation disorder characterized by sharply defined white patches of variable shape and dimensions [1]. Several therapeutic options, both medical and surgical are available for repigmentation of vitiligo, although none
provides truly satisfactory results. An ideal surgical modality should not only provide a good colour and texture match of recipient area with the surrounding normal skin, but also induce minimal or no complications at donor site, especially no permanent scarring. Non-cultured epidermal cell suspension is a one-time day care procedure for vitiligo allowing treatment of recipient area manifold larger than donor site area [5]. Since its introduction by Gauthier and Surleve-Bazelle in 1992 [6], the technique of NCECS has undergone several modifications. By Van Geel N et al. [7] and Mulekar et al. [4] various studies at multiple centres have established NCECS as a strategic treatment modality for stable vitiligo. We share our experience of this technique in stable vitiligo. In NCECS group, majority of patients showed poor pigmentation (53.33%) followed by 46.67% with good pigmentation at 6 weeks. At 12 weeks, excellent repigmentation was observed in 6.67% of patients and 30 % patients showed very good repigmentation. However, majority of patients still showed less than 50% repigmentation. In the study by N. Geel et al. [7] 13.55% patients showed 70% repigmentation at 12 weeks post op. At 24 weeks, excellent repigmentation (>90%) was observed in 66.67%, very good response (with 75%-90% repigmentation) in 16.67% and good response (with 50%-75% repigmentation) in 13.33% of patients. This was comparable to the study by N. Geel [7] where 57% patients showed 70% repigmentation at 3 months. The higher repigmentation rate of 92% patients with >75% repigmentation was reported in the study by Singh C et al. [8] 53.33% patients were observed to have pigmentation colour similar to the surrounding skin while 46.67% showed pigmentation somewhat darker than surrounding skin. 13 (43.33%) patients complained of dyspigmentation and 1 (3.33%) patient reported scarring with hypertrophic scar at the donor site. This was attributed to probably a deeper donor site graft. The author felt that harvesting an epidermal graft without significant donor area complications involves a learning curve for the operating surgeon. Furthermore, 3 (10%) and 2 (6.67%) patients respectively developed scarring at the recipient site, due to a deeper level of dermabrasion during preparation of recipient site.

**Conclusion**

Non-cultured epidermal cell suspension is a safe and effective surgical modality in management of stable vitiligo. Also, the degree of repigmentation was found to be independent of age, gender of the patient, type or duration of vitiligo, period of stability and site of patch.

**References**