

Eyelash Transplantation for the Treatment of Vitiligo Associated Eyelash Leucotrichia

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ABSTRACT

Background: Eyelash leucotrichia is cosmetically disfiguring condition and remains a therapeutic challenge in successful management of vitiligo. **Aims:** To study the efficacy of eyelash transplantation in management of eyelash leucotrichia associated with vitiligo. **Materials and Methods:** Fifteen patients with eyelash leucotrichia were treated with follicular unit transplantation. Improvement in leucotrichia was evaluated using objective assessment. **Results:** Out of fifteen patients, good to excellent response was seen in 13 patients (86.67%), fair in one patient (6.66%) and poor in one patient (6.66%). **Conclusion:** Eyelash transplantation is safe and effective method for eyelash leucotrichia.

KEYWORDS: Eyelash leucotrichia, eyelash transplantation, vitiligo

INTRODUCTION

Vitiligo is a common disease which occurs in approximately 1% of general population and is characterised by depigmented macules.^[1] Leucotrichia is seen in almost all cases of vitiligo involving hair bearing areas and is not easily noticeable as white hairs are present on a white background. Vitiligo involving head and neck area is associated with leucotrichia of eyelashes and eyebrow in many cases.^[2] Leucotrichia in these cosmetically important areas is easily visible and results in psychosocial morbidity. Surgical management of vitiligo like mini punch grafting or melanocyte keratinocyte cell suspension leads to the repigmentation of leucotrichia in many cases.^[3] Leucotrichia involving eyebrows also repigments with surgical management of underlying vitiligo; however, eyelash leucotrichia generally does not respond to medical or surgical therapy involving periocular region.^[4]

Eyelash transplantation is a procedure in which hair follicles from hair bearing areas are transplanted in

eyelashes. It has been used as a therapeutic option for the loss of eyelash resulting from diverse aetiology such as trauma or trichotillomania.

Vitiligo of eyelashes with eyelash leucotrichia is a therapeutic challenge. The aim of the study was to study the efficacy of follicular unit transplantation of pigmented hair of scalp for management of eyelash leucotrichia.

MATERIALS AND METHODS

This was a prospective study involving 15 cases of vitiligo associated with eyelash leucotrichia. The study was carried out in a tertiary care centre of Eastern India from June 2011 to July 2014. Ethical committee clearance was obtained prior to start of study. The patients were selected consecutively based on the inclusion and exclusion criteria.

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Inclusion criteria

Patient with vitiligo associated with eyelash leucotrichia, stable disease (no new lesion or increase in lesion for last 1 year) and patient willing for the procedure were included in this study.

Exclusion criteria

Patients of age <18 years, patient with any inflammatory or autoimmune disease involving eyes (uveitis) or eyelids (blepharitis), mental illness, pregnancy or bleeding disorder were excluded from the study.

Procedure

Written informed consent was obtained for photography and procedure from all the patients. Patients particulars, detailed history regarding disease such as onset, duration, site and stability, history of chronic disease and drug allergy were endorsed in a printed proforma. All the patients underwent baseline investigation which included complete haemogram, coagulation profile (prothrombin time, activated partial thromboplastin time), hepatitis B surface antigen, anti-hepatitis C virus - IgM and enzyme linked immuno-sorbent assay for HIV. Photographs were taken at baseline, 3 months and after 6 months [Figure 1a and d].

Mild sedation was achieved using tablet diazepam 10 mg per oral half an hour prior to starting of procedure. Corneal eye shield was applied after topical anaesthesia with lignocaine eye drops. Local anaesthesia was achieved using 2% lignocaine with adrenaline in donor and recipient site using infiltration. Temporal area was prepared by clipping of hairs, and single hair follicles were harvested using 0.8 mm punch with follicle unit extraction motor. The involved eyelashes were removed with 20 gauge needle similar to creation of chambers for hair transplantation of the scalp [Figure 1b]. Black hair obtained from the temporal scalp of the patient was harvested as in hair transplant surgery and single hair grafted onto the chambers created, using fine jeweller's forceps or implanter [Figures 1c, 2 and 3]. Implantation were done in one row in a fan-shaped manner. About 15–20 hairs per lash were transplanted in one sitting. Some patients underwent second and third sitting at the interval of 1 month. Donor lashes were trimmed to size of other lashes. Thereafter, a pad and bandage was applied to the operated eye for a week.

Post-procedure care

Capsule amoxicillin clavulanic acid 625 mg and tablet ibuprofen 400 mg 8 hourly were advised for 5 days. Curvature of eyelash were maintained with mascara or curling device and protective goggles were advised for 4–6 weeks.

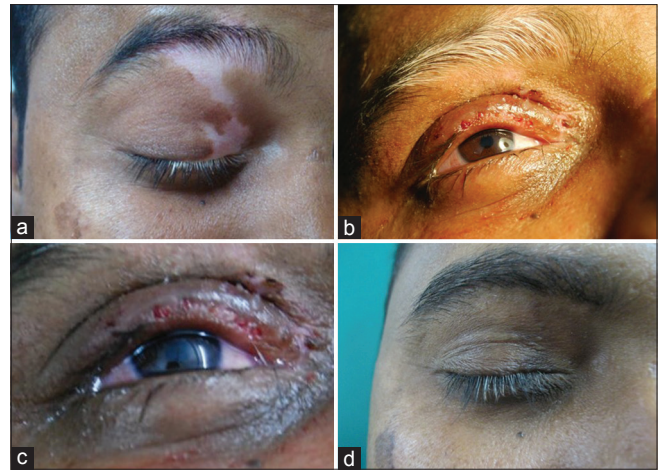


Figure 1: (a) Segmental vitiligo with eyelash leucotrichia (b) chambers created using 20 gauge needle (c) follicular graft *in situ* (d) post-operative results



Figure 2: (a) Pre-operative photograph (b) post-operative photograph



Figure 3: Use of implanter for implanting follicular units

Assessment

Patients were followed up regularly for a period of 6 months, and assessment was made at the end of 6 months. We graded repigmentation of eyelashes on the basis of objective grading. We counted the number of follicular units transplanted and regrowth of black

eyelashes at the end of 6 months after last surgery. Response was graded as Grade 1 - poor response (0–25%), Grade 2 - fair response (25–50%), Grade 3 - good response (50–75%) and Grade 4 - excellent response (75–100%).

RESULTS

The study included 15 patients of stable vitiligo with leucotrichia of eyelashes treated with eyelash transplantation [Table 1]. Out of 15 patients, 14 patients had segmental vitiligo and one had vitiligo vulgaris. Two out of 15 patients underwent mini punch grafting and 13 patients underwent melanocyte keratinocyte cellular suspension for management of vitiligo and had already achieved an excellent repigmentation prior to undergo eyelash transplantation. None of the patient showed any repigmentation of eyelash leucotrichia.

Patients consisted of 10 females (66%) and 5 males (34%). The age of the patient ranged from 19 to 36 years with a mean of 27.8 years. Duration of disease ranged from 4 to 14 years with a mean of 8.4 years. Duration of stability ranged from 2 to 18 years with a mean of 6.86 years. Number of surgeries performed in single patient depended on the number of lashes involved and the outcome desired. Majority of patients underwent two sittings (60%), two patients (13.3%) underwent three sittings and four patients (26.6%) underwent one sitting.

Post-operative evaluation

After procedure, eye pad was applied and treated eye was kept covered for 7 days. There was formation of scab around transplanted follicle and transplanted hair falls off by 2–3 weeks and regrowth of eyelashes are first noticed by 8–10 weeks, and results were assessed at the end of 6 months.

Surgery was free from major complications, and most common complications noticed were bruising and

swelling of eyelids. Blepharitis was seen in one case, which resulted in poor outcome of the surgery.

Using objective scoring, good to excellent results were seen in thirteen cases (86.6%), fair response was seen in one case (6.66%) and poor response was seen in one case (6.66%). Poor response probably resulted from post-operative blepharitis and poor uptake of grafts [Chart 1].

Direction of eyelashes were straight in all cases, and patients were told to use curling devices to give direction to eyelashes. Apart from direction, transplanted eyelashes matched closely with natural eyelashes and were cosmetically elegant. Scalp hairs grow faster and hence required trimming of these lashes by patient at regular intervals.

DISCUSSION

Eyelash leucotrichia leaves behind telltale sign of vitiligo even after successful surgical or medical management of underlying disease. It results in the

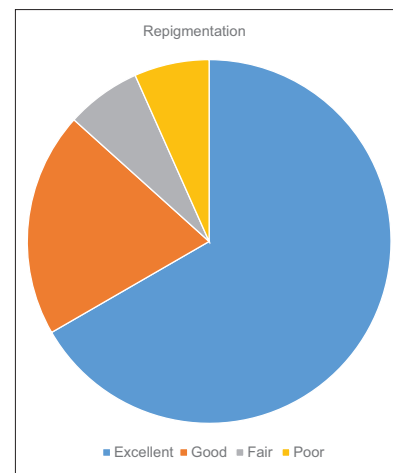


Chart 1: Eyelash repigmentation

Table 1: Clinical characteristics

Age (years)	Sex	Diagnosis	Duration of disease (years)	Stability (years)	Number of surgery	Outcome	Complications
34	Male	Segmental vitiligo with leucotrichia right eyelashes	14	12	2	Excellent	Bruising
32	Female	Vitiligo vulgaris with leucotrichia-bilateral eyelashes	8	4	3	Excellent	Nil
24	Female	Segmental vitiligo with leucotrichia right	4	2	2	Excellent	Swelling
28	Male	Segmental vitiligo with leucotrichia left	5	4	2	Excellent	Nil
26	Female	Segmental vitiligo with leucotrichia right	10	8	1	Excellent	Nil
28	Female	Segmental vitiligo with leucotrichia right	7	6	2	Good	Bruising, swelling
36	Male	Segmental vitiligo with leucotrichia left	20	18	2	Excellent	Nil
19	Female	Segmental vitiligo with leucotrichia right	3	2	1	Excellent	Nil
22	Male	Segmental vitiligo with leucotrichia left	4	3	2	Excellent	Nil
28	Female	Segmental vitiligo with leucotrichia right	8	6	1	Poor	Swelling, bruising, blepharitis
31	Female	Segmental vitiligo with leucotrichia right	12	12	1	Fair	Nil
36	Male	Segmental vitiligo with leucotrichia right	8	7	2	Good	Nil
23	Female	Segmental vitiligo with leucotrichia left	5	3	2	Excellent	Nil
25	Female	Segmental vitiligo with leucotrichia left	6	5	2	Excellent	Nil
26	Female	Segmental vitiligo with leucotrichia left	12	11	3	Good	Nil

dissatisfaction of the patient as the patient needs to camouflage leucotrichic eyelashes despite undergoing therapy. Treatment of eyelash leucotrichia remains an unmet need in the management of vitiligo. Follicular unit transplantation for the management of vitiligo is not a new concept and has been used previously by various authors.^[5] Presence of stem cells in hair bulb and repopulation of melanocyte from these stem cells leads to the repigmentation of vitiligo patches. However, eyelash transplantation has never been used earlier for the management of eyelash leucotrichia resulting from vitiligo. We hypothesised that transplantation of pigmented follicular units from scalp will result in the growth of pigmented eyelashes thus curing eyelash leucotrichia. In our study, good to excellent repigmentation was seen in 86% cases thus achieving good success rate in the management of this distressing condition.

Eyelash transplantation is generally done for reconstruction of lost eyelashes resulting from various aetiology such as trauma, trichotillomania and alopecia areata. It can also be done for aesthetic purpose for patients who demand denser eyelashes.^[6]

Eyelash transplantation can be performed by various methods. It can be done using “pluck and sew technique” as described by Caputy and Flowers.^[7] It can also be done using single hair transplant with Choi and Kim hair transplanter^[8] or by strip composite eyebrow graft as described by Kasai.^[9] We harvested single unit grafts using motorised punches similar to hair transplantation and implanted them in chamber created after removal of leucotrichic eyelash using forceps or implanter with excellent repigmentation of leucotrichic eyelashes. Use of implanter makes the procedure faster as comparison to forceps technique; however, use of implanter has steep learning curve.

CONCLUSION

Replacement of the vitiliginous eyelashes involved with leucotrichia with single hair from the patient’s scalp seems to be a good therapeutic option in the management

of vitiligo involving the eyelashes. Procedure has a steep learning curve and may take about 2–3 h.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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