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Short Communication

Clinical Outcome of Integrating Microneedling with Tacrolimus Ointment 0.1% In Lip Vitiligo Management

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Abstract

Vitiligo is a chronic skin condition marked by well defined depigmented patches because of progressive loss of melanocytes. Its pathogenesis involves autoimmunity, oxidative stress, and melanocyte destruction. Lip vitiligo is challenging due to its impact on aesthetically sensitive area affecting patient's quality of life and contributing psychological discomfort. Current therapeutic strategies for lip vitiligo include topical medical treatment, phototherapy and surgical intervention. Microneedling, a minimal invasive procedure with Tacrolimus 0.1% has shown promising result in vitiligo vulgaris, but this modality has not been explored in lip vitiligo.

Aim: To evaluate the efficacy and safety of microneedling with Tacrolimus ointment 0.1% in treatment of lip vitiligo.

Methodology:

Sample size – 25 patients (17 females and 8 males) fulfilling the inclusion criteria. Microneedling was performed using Dermapen with cartridge having 36 needles graduated to 1.5 mm skin depth, followed by application of Tacrolimus 0.1%. Procedure was repeated after an interval of 4 weeks for 6 sessions. Outcome evaluation was done by assessment of percentage area improvement.

Result: Seven patients had >75% repigmentation, while six patients had >50% repigmentation. Five patients showed minimal repigmentation. Seven patients had no improvement.

Conclusion: Miconeedling with Tacrolimus is an effective modality in treatment of lip vitiligo and can be used in resource poor setting.

Keywords: chronic skin

Introduction

Vitiligo is a chronic skin condition affecting 0.5% to 2% of population[1]. It is characterised by progressive loss of melanocytes, responsible for pigment production, leading to well defined depigmented patches on the skin and mucocutaneous sites. Among the various forms of vitiligo, lip vitiligo is challenging due to its impact on the aesthetically sensitive and highly visible area. This localised form of vitiligo significantly affects patients' quality of life contributing to social discomfort and psychological distress.[2]

Although the exact cause of vitiligo remains incompletely understood, it is thought to arise from an intricate interplay of genetic, autoimmune and environmental factors.

Various treatment options have been explored till now, but managing lip vitiligo remains difficult because of unique anatomical and physiological characteristics (including thin skin and exposure to environment). Current therapeutic strategies for vitiligo include topical medical treatment, phototherapy and surgical intervention.[3]

Microneedling, a minimally invasive procedure involving the use of fine needles to create micro traumas in the skin, has emerged as a novel approach in management of vitiligo. Microneedling enhances the absorption of topical medicines and stimulate skin's regenerative process. It also helps in migration of melanocytes from surrounding skin. Thereby microneedling may offer a synergistic effect when combined with topical treatment like Tacrolimus ointment 0.1%.

Aim: To evaluate the efficacy and safety of microneedling with Tacrolimus ointment 0.1% in treatment of lip vitiligo.

Inclusion criteria: Patients of both sexes of age 15 years to 60 years, with stable lip vitiligo, will be included in the study.

Exclusion criteria: Unstable vitiligo, bleeding disorders, keloidal tendency, pregnancy and lactating mothers, active infection at local site.

Materials and method: Twenty-five patients with stable lip vitiligo attending OPD fulfilling inclusion criteria were taken up for study. Demographic data of patient (Name, Age, Sex, Duration of disease, Treatment taken) were noted. After taking consent, 1% lignocaine was injected at site of vitiligo and around using insulin syringe. Microneedling was performed using Dermapen with cartridge having 36 needles. Penetration depth was adjusted at 1.5 mm. Repeated strokes were done till pinpoint bleeding points appeared. Haemostasis was achieved by compression. Tacrolimus oral gel 0.1% was applied at microneedling site. Procedure was repeated every 4 weeks and total 6 sessions were done. In between patient was instructed to apply Tacrolimus ointment 0.1% at night.

Outcome of procedure was assessed by percentage area of repigmentation

75% improvement - excellent
50% improvement - good
25% - 50% improvement - minimal
< 25% improvement - poor

Result: Total twenty-five patients were taken comprising of seventeen females and eight male patients. Minimum age was 17 years and maximum was 58 years. Maximum number of patients were in 20- 40 years age group. Duration of illness ranged from two years to seven years. Sixteen patients had depigmentation involving lower lip, while upper lip was involved in six patients. Depigmented macules were present on both lips in three patients.

Microneedling with tacrolimus was done at 4 weeks interval. Repigmentation started appearing after three to four sessions. Seven patients had >75% repigmentation. 50% to 75% improvement seen in six patients. Five patients showed minimal repigmentation, seven patients not responded at all.

Discussion: Vitiligo affects 0.5% to 2% of people without any predilection for age, sex and race. It is characterised by loss of melanocytes in affected area.[1]

Vitiligo can be localised or generalised. Localised vitiligo can be acral, segmental or mucosal. Depigmented patches present over exposed parts specially face and lip affect self esteem of individual and cause anxiety and depression.[2]

Treatment of lip vitiligo is challenging due to thin skin and lack of melanocytes reserve as found in hairy areas. Various treatment modalities are:

Topical corticosteroids: Low potency steroids as Hydrocortisone and Desonide reduce inflammation and supress cytotoxic T- cells thus stimulating repigmentation.[3]

Calcineurin inhibitors: Tacrolimus and Pimecrolimus control activity of T- lymphocytes through inhibition of cytokines, thus inhibiting proliferation of cytotoxic T-cells and help in repigmentation. Calcineurin inhibitors are devoid of potential side effects of prolonged use of topical steroids.[3]

Phototherapy:

- Narrow band UVB [5]
- Excimer Laser[6]

Surgical treatment:[4]

- Skin grafting
- Punch grafting [7]
- Blister grafting [8]
- Split thickness grafting [9]
- Autologus melanocyte transfer [4]
- Surgical excision and primary closure in small depigmented patch [10]
- Camouflaging the depigmented area by micropigmentation or lip balm [11]

These techniques have disadvantage of being invasive, time consuming and expertise dependent. There are multiple studies on evaluation of surgical modalities but dual approach of combining microneedling with tacrolimus in management of lip vitiligo has not been explored.

Microneedling with tacrolimus in vitiligo vulgaris has shown promising results in studies conducted by Mina et al, Ebrahim et al and Sharma et al[12,13,14]. So, this study was undertaken to know efficacy at mucosal site.

Microneedling enhances penetration of topical agents and stimulates production of growth factors like platelet derived growth factor (PDGF) and transforming growth factor – beta (TGF-b). The synergistic use of microneedling and tacrolimus aims to improve clinical outcome in lip vitiligo.[3]

This study demonstrates that microneedling combined with tacrolimus0.1% is safe and effective treatment approach as 52% patients showed excellent to good response.

Regarding the adverse effects patients had swelling of lip after procedure which subsided within 24 hours. No patient developed hyperpigmentation, ulceration or infection. Relapse was not noticed at three months follow-up.

Conclusion: though skin grafting is ideal procedure to treat lip vitiligo but microneedling combined with tacrolimus 0.1% is safe and effective modality in resource poor settings

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