

Pinhole technique for cobblestoning in patients post mini-punch grafting for stable vitiligo

Sir,

Vitiligo is an acquired depigmenting skin disorder characterized by localized loss of skin pigment, secondary to multifactorial melanocyte damage. Most patients are adequately managed by medical means, except some who remain resistant to all non-surgical treatment modalities. The only effective treatment in this sub-set of patients is surgical replacement of damaged melanocytes. Punch grafting is an established treatment modality for stable vitiligo (more than one year) or in patients unresponsive to conventional therapies.¹ However, relatively common complications such as cobble stoning, keloid formation, variegated appearance and peripheral halo have raised concerns among dermatologists regarding its acceptability. To overcome this complication, we attempted pinhole ablation using ultra pulse CO₂ laser.

We report two patients with stable vitiligo who developed cobblestoning post mini-punch grafting using 1.5 mm punch [Figures 1a and 2a]. Both patients were willing to undergo corrective procedure for cobblestoning at 8-10 weeks follow-up. A signed informed consent was obtained from each patient. Cobblestoning was localized to lips in both patients. We administered topical anaesthesia on the affected sites, 40 minutes prior to procedure. The surgical field was cleansed using betadine and normal saline. The laser instrument used was CO₂ laser 30 W machine with power 3 W operated in continuous mode. A small necrotic column was created in the center of each cobble stone by directing the laser beam to the top of lesion for 2–3 s, thus burning the excess skin at the grafted site in a vertical column fashion. The patient was advised to apply mupirocin ointment twice daily post procedure for two



Figure 1a: Patient 1 with lip vitiligo



Figure 2a: Patient 2 with lip vitiligo



Figure 1b: Patient 1 post mini-punch grafting on week 8



Figure 2b: Patient 2 post mini-punch grafting on week 8

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Figure 1c: Post pinhole ablation on day 1



Figure 2c: Post pinhole ablation on day 15: patient 2



Figure 1d: Post pinhole ablation on day 15: patient 1

weeks. Healing of ablated skin led to shrinkage of elevated cobblestone areas, within 10-12 days. This allowed the settling of graft at base, thus improving the cosmetic appearance. The pre- and post-surgery and CO₂ (day 1 and day 15) results are illustrated in Figures 1a-d and Figures 2a-c demonstrating significant improvement of cobblestoning.

We are aware that split skin grafting and melanocyte transfer are more suitable for stable vitiligo compared to mini-punch grafting. However, we attempted this procedure to overcome the requirement of strict immobility and pressure dressing on the recipient area causing patient discomfort.

Cobblestoning is a morphological complication denoting raised skin surface, similar to cobblestones.² It results due to excess amount of dermis in the donor graft which projects above the skin surface after grafting. Various modifications have been suggested over decades to prevent this complication. A study conducted by Falabella in 1988 recommended punch grafting using 1.2 mm punch, thus giving acceptable results, but subtle cobblestoning post-surgery could not be prevented.¹ Additionally, the smaller graft usage resulted in 3-5 mm perigraft halos. Another study in 1995 by Boersna *et al.* suggested recipient holes about 1 mm deeper than the graft thickness to minimize lifting of grafts thereby reducing, cobblestoning. The limitation to this technique includes avoiding areas such as hands, fingers and wrists where superficial vessels, nerves, tendons, or bony structures may prevent proper preparation

of recipient area.^{1,2} We chose CO₂ laser over radiofrequency (RF) based on the principle of “Selective photothermolysis” by Anderson and Parrish which highlighted that high-energy powers and short pulse widths may be used to destroy intended target while inflicting minimal damage surrounding tissue to preserve grafted melanocytes.³ The edema and erythema post-RF may persist upto two weeks, thus having longer downtime than CO₂ laser.⁴ Moreover, RF can result in undesired fat atrophy by heating the subcutaneous fat. This can be prevented using CO₂ laser, where the amount of destruction and depth of penetration is time dependent.⁵ Ablative RF needling has been used for cobblestoning to facilitate coagulation but lack of precision during ablation prompted us to select, CO₂ laser for this purpose.

In our technique, we created a column of necrosis each cobblestone using ablative CO₂ laser, thus debunking the area to allow the graft to settle at the base for better cosmetic outcome. Furthermore, we used thin graft comprising only superficial portion of papillary dermis during our mini-punch grafting procedure. Both techniques combined may have attributed to our excellent results. In author’s experience, the only may be an inability to create an adequately wide necrotic column, due to narrow beam of CO₂ laser (0.3 mm). Hence, to overcome this limitation, we may need to extend the column using circular motion of hand piece. In the wake of our encouraging results, we recommend using ablative CO₂ lasers to obtain better surgical outcome for cobblestoning.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

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Rhytidectomy for pachydermoperiostosis

Sir,

Pachydermoperiostosis, a rare genetic disorder, presents with various cutaneous manifestations such as thickened skin thrown into folds and furrows, thickened eyelids with mechanical ptosis and seborrhea.¹ The furrows on the forehead give an appearance of premature aging resulting in significant cosmetic morbidity. There are no successful medical treatment options for improving the facial appearance in these patients and therefore, it remains a therapeutic challenge.²

Rhytidectomy on the forehead furrows has been performed rarely to improve the facial features in patients with pachydermoperiostosis.³ The procedure of rhytidectomy is carried out as follows: The furrows to be excised are marked [Figure 1]. Taking sterile aseptic precautions, local anesthesia containing lignocaine 2% with adrenaline 1:100,000 is infiltrated around the central forehead furrows and other horizontal and longitudinal furrows using a 26-gauge needle. After anesthesia, an incision is made on the upper and lower furrow, followed by excision of central forehead skin (along the furrows). Other furrows are excised more selectively sparing the adjoining skin. The furrows are excised up to the level of the subcutaneous tissue [Video 1]. After hemostasis and undermining [Video 2], the wound is closed in layers with Vicryl (polyglactin 910) 4–0 suture in the subcuticular plane and Prolene (polypropylene) 5–0 suture in the skin layer [Video 3]. The suture line is placed in the furrow itself. Oral antibiotics are prescribed after the surgery. The sutures may be removed on the seventh post-operative day. Significant improvement can be achieved in facial appearance after surgery.

We report a case of pachydermoperiostosis who experienced excellent transformation of his facial features after three sessions of rhytidectomy on his forehead. A 30-year-old male



Figure 1: Pictorial representation of incision placement

had complaints of thickening of skin over the scalp (cutis verticis gyrata), face (coarse facies and deep furrows and mechanical ptosis), both hands, feet and shin with associated clubbing, palmoplantar hyperhidrosis and joint pain and swelling in the bilateral knee and ankle joints for the past nine years. Laboratory investigations including hemogram, liver and renal functions, thyroid function test, rheumatoid factor, anti-nuclear antibody, anti-cyclic citrullinated peptide, oral glucose tolerance test and insulin-like growth factor-1 levels were normal. With a diagnosis of pachydermoperiostosis, he received hydroxychloroquine 200 mg twice daily for six months with minimal improvement. Thereafter, the treatment was changed to methotrexate 25 mg a week and naproxen one gram daily followed by the addition of colchicine one milligram daily which did not result in improvement in his facial appearance, although joint pains improved significantly.

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