

## Role of Microdermabrasion in Chickenpox Scars

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### Abstract

Chickenpox scars currently do not have definitive evidence based treatment. Microdermabrasion is a minimally invasive epidermal resurfacing procedure used to treat uneven skin tone/texture, photoaging, striae, melasma, and scars. In our study microdermabrasion was performed in a subject with post varicella scars in order to evaluate the efficacy of the same.

**Keywords:** Microdermabrasion, Chickenpox, Scar.

### Introduction

Chickenpox or varicella is a contagious disease caused by the varicella-zoster virus (VZV). The virus is responsible for chickenpox (usually primary infection in non-immune hosts) and herpes zoster or shingles (following reactivation of latent infection).<sup>1</sup> Chickenpox results in a skin rash that forms small itchy blisters which scab over. Varicella rash commonly evolves into permanent depressed scars, leaving life long cosmetic issues for patients. Although there are many reviews on depressed scars, the viral etiology and the morphology of post varicella scar differentiates it from other

depressed scars. Therefore it is required to assess the efficacy of scar removal modalities on these scars.<sup>2</sup> Microdermabrasion (MDA) is a minimally invasive epidermal resurfacing procedure used to treat uneven skin tone/texture, photoaging, striae, melasma, and scars, including acne scars. The MDA procedure can be performed in the outpatient setting (medical office, medical spa) by a trained clinician, aesthetician, medical assistant, or nurse without the use of anaesthesia.<sup>4</sup> Using negative pressure, the device pulls the skin into the hand piece. The device then releases the abrasive crystals at a controlled flow rate. Surface debris and



Fig. 1: Patient at presentation

the stratum corneum layer of cells are removed, and the particles collect in a reservoir. The device is then passed over the skin to target the desired surface area. A single treatment usually requires three passes over the treated area. In addition to the cosmetic benefits of MDA, studies have also shown improved skin permeability, and enhanced delivery of transdermal medications dosed on an area of the skin treated with MDA.

### Materials and methods

This study was conducted in the Department of Plastic Surgery, in a tertiary care centre in South India after getting the department ethical committee approval. Informed consent was obtained for examination, for the treatment modality and clinical photography. The details of the patient in the study are as follows: The subject was 23 years old male with history of varicella infection 2 weeks back following which he started noticing scars which were pigmented depressed scars with Vancouver Scar Scale 6 (Figure 1). Patient presented to our OPD for scar management and was started on microdermabrasion therapy. Eight MDA treatments were performed 7 to 10 days apart, at a fluence of 12-14 J/cm<sup>2</sup> and a pulse duration of 0.3 milliseconds with a repetition rate of 5 Hz, on



Fig. 2: Microdermabrasion procedure ongoing

OPD basis (Figure 2). Scarring, skin texture as well as post-inflammatory hyper pigmentation was assessed (Figure 3).

### Results

In this study, microdermabrasion therapy was noted to result in clinically significant improvements in scarring, skin texture and post-inflammatory hyperpigmentation after 2 months of therapy as noted by the patient and treating doctor. Vancouver Scar Scale post treatment was 3 (Figure 4). There were no side effects noted.

### Discussion

Atrophic scars are a common complication of varicella infection. They have been reported to occur in up to 18% of patients in various studies. Adults are more prone as they have more and deeper skin lesions.<sup>1,2</sup> Current treatment modalities for scars, including deep dermal peels, ablative and nonablative fractional laser resurfacing, and surgical techniques, are not widely available to patients with Fitzpatrick skin types IV to VI because of increased risks for pigmentary complications.<sup>3</sup> These complications are particularly likely when treating large areas of facial scarring, including scars following chickenpox infection. A study by Agarwal et al used High strength Trichloroacetic acid (TCA), which is known to cause dermal



Fig. 3: Immediate post procedure



**Fig. 4:** Post eight microdermabrasion sessions

collagen remodelling and found good clinical improvement. Another study by Badawi et al used a combination of MDA and Nd:YAG laser therapy with good results.<sup>5</sup> Microdermabrasion was found to cause the structure of the epidermis to change, by decreasing the population of keratinocytes and stimulating the proliferation of the living cell layer, microcirculation, and lymphatic drainage. Ours is one of the first studies evaluating the effect of MDA as standalone therapy for varicella scars. Limitations of our study include lack of a control group and study on a single subject. Larger controlled studies need to be performed to arrive at any conclusion.

## Conclusion

We draw the conclusion that microdermabrasion is

an effective treatment modality for chickenpox scars. However, it needs large scale randomized trial for clinical application.

**Conflicts of interest:** None.

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