



Research Article

## A CLINICAL STUDY TO EVALUATE THE EFFECT OF GHARSHANA KARMA (MICRODERMABRASION) IN MUKHDUSHIKA (ACNE VULGARIS)

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### ABSTRACT

Ayurveda classic has mentioned various diseases. *Mukhdushika* is explained by *Acharaya Shushrut* in *Nidansthan*. It can be correlated with *Acne vulgaris*. *Acne vulgaris* is the most common skin disease of the youth especially in the puberty age. One of the most common complication of acne is scarring. It has been found to have a significant impact on their psychological well-being and has been associated with depression and suicidal ideation. Acne causes emotional upset and impact to the patient by disfiguring face and scarring skin. *Gharshan karma* with *Samudraphen* has been described in *Astang Hridaya*. In the modern medical science this technique closely resembles microdermabrasion (MDA), which is a resurfacing technique. **Aim:** To study the efficacy and safety of microdermabrasion (MDA) in managing acne vulgaris at Skin Care Unit, R.G.G.P.G. Ayurvedic College, Paprola, Kangra (H.P.). **Materials and Methods:** Based on inclusion and exclusion criteria 30 patients with acne scars, who visited the hospital outdoor patient department were included in the study. All patients were treated with MDA for 12 sittings, 2 weeks apart. **Results:** Out of 30 patients, 1 (3%) patient got excellent improvement, 18 (60%) patient got good improvement, 10 (33.3%) patient got fair improvement and 1 (3%) patient got poor improvement.

### INTRODUCTION

Acne is a disease of pilosebaceous unit commonly affecting adolescents<sup>[1]</sup>. Clinically characterized by pleomorphic papular eruptions over face, shoulders, back and mainly it is self-limiting. However, it is often associated with scarring, varying from minimal to severe, depending on the degree of inflammation occurring during the disease process. The scars, either atrophic or hypertrophic, formed due to injury to the tissue. In the case of acne, the injury is caused by the body's inflammatory response to sebum, bacteria and dead cells in the plugged hair follicles.

Scarring due to severe inflammatory nodulocystic acne causes hyperpigmentation. In Ayurveda texts there is a group of diseases called *Kshudra Roga*, which include 44 diseases. *Mukhdushika* is a disease that occurs as papules resembling the sprouts on the bark of the *Shalmali* tree (*Bombax malabaricum*) appearing on the face and adolescents caused by vitiated *Kapha*, *Vata dosha* and *Rakta dhatu* together which makes face ugly and also known as *Yuvanpidika*.<sup>[2]</sup>

In Ayurveda, *Gharshana karma* with *Samudraphena*<sup>[3]</sup> is explained in *Ashtang Sangrah*. According to *Yug-Anurupa Sandharbha Gharshana karma*<sup>[4]</sup> can be compared with microdermabrasion at present day. *Acharya Sushruta*<sup>[5]</sup> has also mentioned that before application of *Lepa* the individual should rub or abrade the superficial skin with some mechanical material such as *Samudraphena*, rock stone etc. By abrading the superficial dead skin cells the penetration of the drug is increased and the *Lepa* will effect more quickly.

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## Microdermabrasion (MDA)

MDA<sup>[6]</sup> as the name suggests is one of the superficial resurfacing technique in which skin surface is abraded with rough aluminium oxide crystals of 100 microns. Microdermabrasion works by making epidermal and dermal changes through superficial wounding. Superficial epidermis including stratum corneum, surface debris, oil and dirt are removed immediately on direct impact of Al<sub>2</sub>O<sub>3</sub> crystals on the skin surface. Resultant superficial wounds are then allowed to heal by secondary intension with partial re-epithelization and remodelling of dermal collagen.

Following are the mechanism through which it acts:

1. Mechanical disruption of the stratum corneum.
2. Partial epithelization and stimulation of epidermal cell turnover (production of new cells), vasodilatation of dermal blood vessels and dermal oedema.
3. Stimulation and remodelling of dermal collagen.

**Figure 1: MDA machine**



**Figure 2: Direction of probe**



**Figure 3: After Procedure**



Following study was conducted to evaluate the efficacy of MDA in post acne scarring in terms of results and patient satisfaction.

## AIMS AND OBJECTIVES

1. The patients were selected for the study, treated with Microdermabrasion for 3 months.
2. A review of the literally concept related to the use of microdermabrasion (*Gharshan karma*) in Ayurveda.
3. To formulate Guidelines for future treatment evaluation by adopting Ayurveda principles as an integrative approach.

## MATERIALS AND METHODS

Review of research papers and article were searched online from scientific databases as PubMed, Clinical Dermatology, MEDLINE, Clinicaltrials.gov etc. were analysed.

### Study Design

It was an open monocentric and prospective study was conducted at Skin Care Unit, R.G.G.P.G. Ayurvedic College, Paprola, Kangra (H.P.) on 30 patients aged from 18 to 40 years old with post acne scars over face. Written consent was taken from all patients before participating in trial.

**Inclusion criteria:** Acne patients of both sexes, aged 18 years and above with post acne scars and those willing for follow up and being photographed.

**Exclusion criteria:** It includes active nodulocystic acne, active skin infections, keloidal tendency, bleeding disorders, oral steroids, pregnancy and diseases like SLE, porphyria and patients on oral isotretinoin for past one month.

In the history all the patients were asked about type of acne, duration of acne and all the previous drugs and treatment history.

Examination included evaluation of scars (icepick, rolling, boxcar, and hypertropic). Approximately number of scars on forehead, cheeks, chin and nose were counted in terms of mild (<10), moderate (10-20), severe (>20). Pigmentation if present was also examined. Size of the hyperpigmented scars were noted varying from the smallest size to the larger one.

All the patients were treated with MDA full face for upto 12 sessions at a gap of 2 weeks. During the procedure, one round was given to full face and in second round only the affected area is abraded. At every visit, subjective and objective evaluations were done. In subjective evaluation patient were asked to grade the response from poor to excellent, poor <\_25% improvement, fair = 25-50% improvement, good =50-75% improvement, excellent>\_75% improvement.

**Table 1: Objective criteria of evaluation were based on the grades**

	No. of Scars	Extent of Acne
1	<10	superficial
2	<10	Superficial and deep
3	<10	Deep
4	10-20	Superficial
5	10-20	Superficial + deep
6	10-20	Deep
7	20-30	Superficial + deep
8	20-30	Deep
9	>30	Superficial + deep
10	>30	Superficial + deep

On every visit the change in the grades was noted and objective evaluations were done. In subjective evaluation patient were asked to grade the response from poor to excellent, poor <\_25% improvement, fair=25-50% improvement, good=50-75% improvement, excellent >\_75% improvement.

**Objective criteria of evaluation were based on the grades**

#### Side Effects

Erythema, pigmentation, abrasion, worsening were also recorded.

By asking each patient about the response from poor to excellent, we calculate their overall response and objectively the same was calculated by subtracting the grades on starting of treatment and on last sitting. Difference of 2 was considered poor response, difference of 2-4 was considered fair response, difference of 4-6 was considered good response and difference of 6 was considered excellent response.

#### RESULT

This study comprises 30 patients of scarring on face following acne vulgaris. Patients were evaluated and analysed after 12 sittings (2 weeks apart) or before (if complete response occurred before 12 sittings).

#### Age Incidence

As shown in table 2, the main age group affected was 21-30 years i.e., 73% (22 patients). The second group affected was 11-20 years i.e., 20% (6 patients). 6% patients belonged to 31-40 years age group. The post acne scarring was found to be highest in the age group of 21-30 years.

**Table 2: Age incidence**

Age (years)	No. of patients	Percentage
Upto 17	-	-
18-20	6	20%
21-30	22	73%
31-40	2	6.6%
41-50	-	-
51-60	-	-
>60	-	-

#### Sex Incidence

As shown in table 3, 20 (66.6%) male patients and 10 (33.3%) female patients were affected. The reason behind this may be due to severity and complications of acne that are more common in male patients.

**Table 3: Sex incidence**

Sex	No. of patients	Percentage
Male	20	66.6%
Female	10	33.3%

#### Severity of Acne

As shown in table 4, 10 (33%) patients had mild acne, 15 (50%) patients had moderate acne and 5( 16%) patients had severe acne. Patients with nodulocystic acne were included in the study.

**Table 4: Severity of acne**

Severity of Acne	Grade	No. and Percentage
Mild	I.	10, 33%
Moderate	II.	15, 50 %
Severe	III.	5, 16 %
Nodulocystic	IV.	0

### Type of Scarring

As shown in table 5, 22 (73.3%) patients had rolling scars, 5 (16.6%) patients had ice pick scars and 3 (10%) patients had boxcar scars. Hypertrophic/keloid scars were not observed in any patients.

**Table 5: Type of Scarring**

Type of Scar	Total number	Percentage
Ice pick	5	16.6 %
Rolling	22	73.3%
Boxcar	3	10 %
Hypertrophic/ keloid	-	-

### Prevalence of Scarring according to Site

As shown in table 6, cheek was involved in all 30 (100%) patients, chin in 28 (93%) patients, and forehead in 20 (66%) patients and nose in only 18 (60%) patients.

**Table 6: Prevalence according to site**

Site	No. of Patients	Percentage
Forehead	20	66%
Cheek	30	100 %
Chin	28	93 %
Nose	18	60 %

### Subjective Evaluation

This was based on patients own observation regarding improvement in acne scarring. The criteria is as follows:

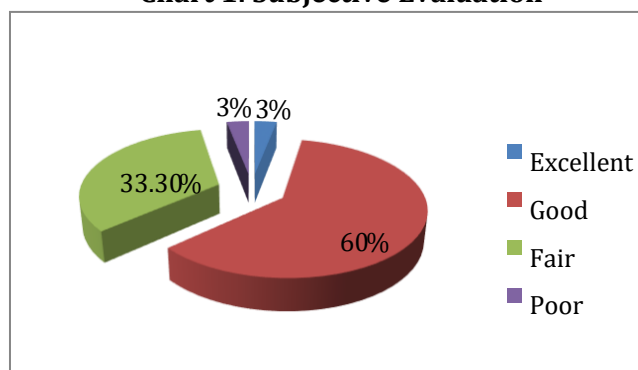
**Table 7: Subjective Evaluation**

Criteria	
<25% improvement	Poor response
25-50 % improvement	Fair response
51- 75% improvement	Good response
> 75% improvement	Excellent response

The patients were evaluated on every visit and final evaluation was done on last visit.

As shown in the chart 1, 1 (3%) patient got excellent improvement, 18 (60%) patient got good improvement, 10 (33.3%) patient got fair improvement and 1 (3%) patient got poor improvement.

**Chart 1: Subjective Evaluation**



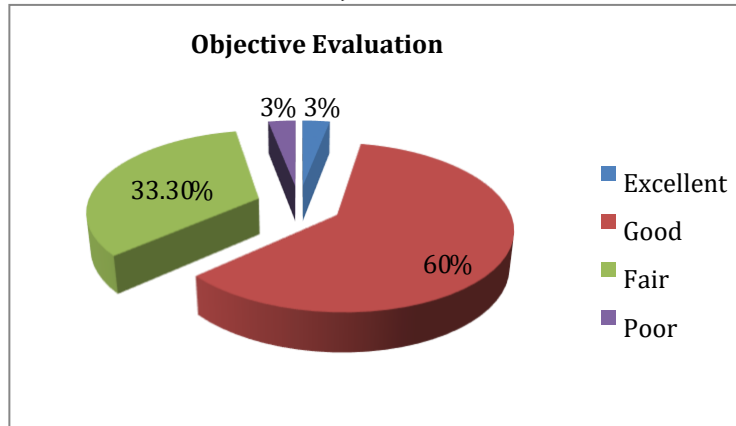
### SUBJECTIVE EVALUATION

#### Objective Evaluation

This was done by the observer who was conducting the study. All patients on their first visit were evaluated and given a Grade 0-10. At last visit, patients were evaluated again and given a Grade 0-10 according to the same criteria. The difference between the baseline grade and the last visit grade was calculated and response evaluated.

**Objective score** = baseline score - last session score, Difference of <2 = Poor response (P), 2-4 = Fair response (F), 4-6 = Good response (G), >6 = Excellent response (E)

**Chart 2: Objective Evaluation**



As shown in the chart 2, (3%) patient got excellent improvement, 18 (60%) patient got good improvement, 10 (33.3%) patient got fair improvement and 1(3%) patient got poor improvement.

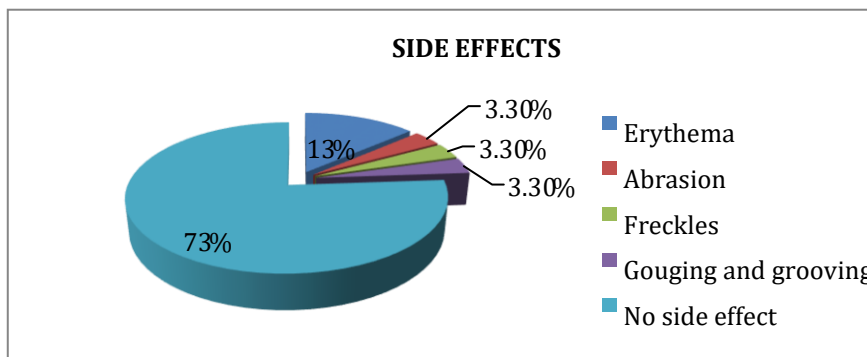
**Figure 4**



**Side Effects**

As shown in chart 3, 8 (26%) patients had side effects, 4 (13%) patients had erythema, 1 (3.3%) patients had abrasion, 1 (3.3%) patients had freckles, 1 (3.3%) patients had gouging and grooving, 22 (73%) patients didn't have any side effects.

**Chart 3: Side Effects of MDA**



**DISCUSSION**

Acne is a polymorphic disease<sup>[6]</sup>. It mainly occurs on the regions of body rich in sebaceous glands mainly face, mid-chest, shoulders, back and upper arms. Many factors like circulating sex hormones, alteration in pattern of keratinization within the sebaceous follicle, quality and quantity of sebaceous secretion, colonization of follicular canal by microbial

flora, immunological factors, environmental factors and genetic susceptibility play important role in etiology of acne vulgaris. *Gharshan Karma* with *Samudraphen* is indicated in *Samhitas* to treat *Vyanga* i.e., hyperpigmentation. Acne Scarring also cause hyperpigmentation. So, *Gharshan karma* gives results in post acne scarring. *Gharshan Karma* has close

resemblance to Microdermabrasion and gives promising results in same. MDA has gained widespread acceptance in recent years in treating hyperpigmenting disorders.

#### CONCLUSION

*Gharshan Karma* i.e., microdermabrasion along with other treatments give promising results in scarring caused hyperpigmentation and give high patient satisfaction. It's the need of hour, to use Ayurvedic treatments with modern equipments and procedures.

In future, microdermabrasion may play a role in enhancing skin permeability for the purpose of the transdermal delivery of small hydrophilic molecules, vaccines and other therapeutic molecules.

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