



## EFFECTIVENESS OF LASER CARBON PEEL FOR FACIAL REJUVENATION.

## Dermatology

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## ABSTRACT

**Background:** The laser carbon peel is a fast and painless procedure done to help improve the look of skin mainly for people with oily skin, acne, and enlarged or clogged pores. As the awareness of people regarding cosmetic dermatology is increasing, there is a growing desire to look near flawless so this study is taken up to assess the effectiveness of facial rejuvenation in our set of patients. **Materials & Methods:** A total of 30 people were enrolled in the study after informed consent. Carbon peel was applied evenly and let dry. Q switched Nd YAG laser (1064 nm) was done at the energy of 2000 mJ and 9Hz. A total of 3 sessions were done 3 weeks apart. Pre and post-photographs were taken at every visit and results were compared. Results were assessed by Global Aesthetic Improvement Score (GAIS) and through a patient satisfaction questionnaire. **Results:** In 30 patients who were included in the study, the main indication was PIH and pigmentation in 16 (53.3%) of the total population. Among 30 patients, 20% had very much improvement, 13.3% had much improvement, 46.6% improvement, and 20% had no change according to GAIS. There was a significant improvement even in individual variables. No adverse events were reported. **Conclusion:** Carbon laser peel was found to be an effective treatment modality for patients desiring facial rejuvenation with an excellent safety profile and the least downtime.

## KEYWORDS

Carbon peel, Facial rejuvenation, Q switched Nd YAG laser, GAIS.

## INTRODUCTION:

Carbon peel is popularly called *Hollywood peel*, or *charcoal peel*. The laser carbon peel is the application of charcoal suspension followed by Q switched Nd YAG laser (1064nm). It is an innovative laser resurfacing treatment that utilizes focused light beams to treat imperfections.

Laser carbon peels are used to treat acne, acne pigmentation, enlarged and clogged pores, oily skin, uneven skin tone, and fine lines. Though these problems can be addressed even with chemical peels, laser carbon peels have the advantage of less irritation and redness in people with sensitive skin. They use heat instead of chemicals for results.

## AIM:

To assess the effectiveness of carbon peel Q switched Nd YAG laser for facial rejuvenation.

## OBJECTIVES:

- To study laser and patient parameters (severity of pigmentation and percentage of area involved) affecting the outcome of the procedure.
- To study the side effects of laser carbon peel.

## METHODS:

It is a prospective interventional study, approved by the institutional ethics committee (IEC).

## Study place and period:

The study was conducted in our Department of Dermatology OPD from July 2022- September 2022.

## Sample size: 30

## Inclusion criteria:

Patients >18 years presenting with facial melanosis, acne with

pigmentation, and seeking facial rejuvenation were included in the study.

## Exclusion criteria:

Patients with a known underlying systemic disease as the cause of pigmentation were excluded.

A total of 30 people who fulfilled the criteria and were willing to undergo the procedure are included in the study. Fitz Patrick's skin type was noted. A detailed history regarding the duration of the complaint, previous treatment history, and history of cosmetic use is noted. After taking informed consent they were counseled regarding the procedure and post-care. A thin layer of carbon peel is applied to the skin surface and let it dried. The patient was subjected to a passive Q-switched Nd YAG (1064nm) laser with proper eye protection. Parameters were adjusted in such a way that the ink's full diameter is taken out in one shot. The carbon particles actively absorb the light along with damaged cells found in the upper layers of the skin before a vacuum suction gently removes them. The post-procedure skin surface was cleaned and sunscreen was applied. 3 laser sessions were performed 3 weeks apart. Pre and post-photographs were taken at every visit and results were assessed.

**Clinical evaluation** by Global Aesthetic Improvement Score (GAIS)<sup>1</sup> was done. Taylor hyperpigmentation scale<sup>2</sup> was used for measuring improvement in pigmentation, and patient satisfaction level was noted. Photography before treatment and after 3<sup>rd</sup> laser session was performed to assess the response. Adverse effects were monitored. Subjective tolerance was assessed. A self-assessment questionnaire regarding the treatment was given to the patient. Results were analyzed using statistical software.

## RESULTS:

Out of 30 people included, there were 22 (73.3%) females and 8 (26.67%) males, with the females to males ratio is 11:4. Most of the people belong to the Fitz Patrick skin types 5 and 4. The most common

age group is 20-25 years and the mean age of presentation is 28.8 years. In this study, the main indication was PIH and pigmentation in 16 (53.3%).

**Table 1: Indications.**

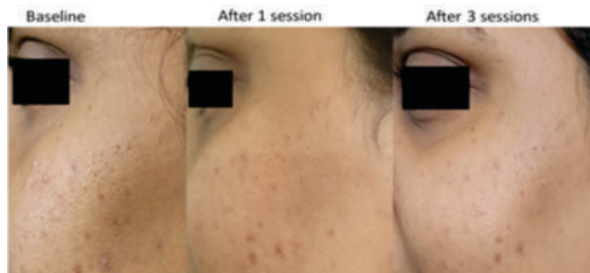
Indication	No. of the population (30)	Percentage
Acne	18	60%
Acne PIH	22	73.3%
Pigmentation	24	80%
Open pores	26	86.6%
Fine lines	2	6.66%

**Table 2: Global Aesthetic Improvement Score (GAIS).**

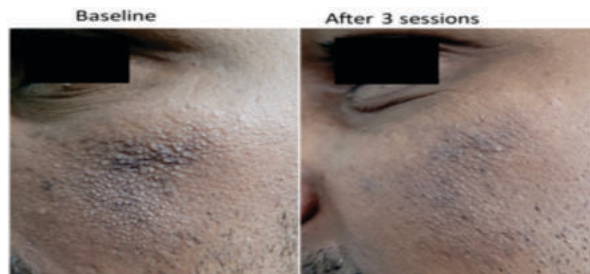
Score	GAIS	No. of the people (30)	Percentage
1	Very much improved	6	20%
2	Much improved	4	13.3%
3	Improved	14	46.6%
4	No change	6	20%
5	Worse	0	0

According to GAIS scoring, the majority (46.6%) has a score of 3 improved GAIS<sup>1</sup>.

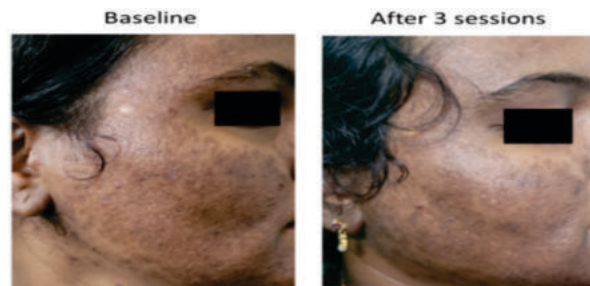
At the baseline, Taylor hyperpigmentation<sup>2</sup> mean scoring was **8.5**, and at the end of 3 sessions mean score was **6.5**.



**Figure-1:** Pre and post treatment photographs of patient with Acne PIH & Open pores.



**Figure-2:** Pre and post treatment photographs of patient with Acne and Pigmentation



**Figure-3:** Pre and post treatment photographs of patient with Facial melanosis.

Based on the patient satisfaction questionnaire, 40% of patients expressed that they have a good response (51-75%) overall improvement. Concerning **radiance** most of them had a good response and concerning **smoothness** and **skin tone evenness** there is a moderate response (26-50%).

Based on the severity of acne lesions scoring was done using Comprehensive acne severity system and Taylor hyperpigmentation score was used for grading severity of pigmentation in cases of acne

PIH and pigmentation. Friedman test is applied to see the changes over period of time

**Table-3: Results of Friedman test showing improvement.**

Variables	Median (IQR)				Test statistics	p-value
	Baseline	1st sitting	2nd sitting	3rd sitting		
Acne (i)	2.00 (3.25,1.75)	1.00 (2.25,1.00)	1.00 (2.00,1.00)	1.00 (2.00,0.75)	38.46	<0.001*
Acne PIH (ii)	8.00 (9.00,7.00)	7.00 (8.00,6.00)	6.00 (7.00,6.00)	6.00 (6.00,4.00)	58.44	<0.001*
Pigmentation (ii)	8.00 (9.75,8.00)	8.00 (9.00,7.00)	7.00 (8.00,6.00)	6.50 (7.75,6.00)	63.76	<0.001*

I. Based on Comprehensive acne severity system. 6  
 II. Severity based on Taylor hyperpigmentation scale. 2  
 \*statistically significant p<0.05.

**DISCUSSION:**

The laser carbon peel is a fast and painless procedure to help improve skin look, mainly for people with oily skin, acne, and enlarged or clogged pores.

Laser carbon peels deeply exfoliate skin and stimulate collagen production. The concept of applying a carbon-based solution onto the skin to obtain laser light conversion into heat followed by heat transfer to the tissue is valid for laser skin resurfacing.<sup>3</sup> The Q-switched Nd: YAG laser at 1064 nm, either alone or in combination with a carbon particle solution, was shown to induce some dermal remodelling.<sup>4</sup>

As the awareness of people regarding cosmetic dermatology is increasing, there is a growing desire to look near flawless so this study is taken up to assess the effectiveness of facial rejuvenation in our set of patients.

In 30 patients included in the study, the main indication was PIH and pigmentation (16) 53.3% of the total population. Results showed that GAIS<sup>1</sup> was **3 (improved)** in 46.6% of the population suggesting a reasonable improvement with a decrease in pigmentation, acne, and open pores.

In a study done by Chun SI et al., carbon assisted Q switched laser showed significant improvement in moderate to severe acne along with a reduction in pore size.<sup>5</sup> At the baseline Taylor hyperpigmentation<sup>2</sup> mean scoring was **8.5**, at the end of 3 sessions mean score was **6.5**.

Laser parameters are 2000mJ, and 9Hz for most of the patients (86.7%). Few patients (13.3%) could not tolerate that setting so the procedure was done at 1650 mJ – 1850 mJ. Although most did not have any adverse effects during the procedure or post-procedure, few reported dryness following the procedure which came to normal on using moisturizers. Otherwise, patients are compliant and comfortable with the procedure. One patient failed to take proper photoprotection which resulted in tanning.

**Limitations:**

The sample size was small. Only 3 sessions were performed with passive Nd YAG laser machine.

**CONCLUSION:**

The laser carbon peel technique has gained popularity in the last few years. Despite its popularity, scientific data in the literature regarding this technique is lacking. Further studies are needed in the area to find adequate protocols for treatment. In our study carbon peel laser was effective with an excellent safety profile and the least downtime.

**Conflicts Of Interest:** NONE.

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