

# Outcome of intralesional saline for the management of atrophic acne scars

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## Abstract

**Objective** To determine mean satisfaction score with intralesional saline for the management of atrophic acne scars.

**Methods** In this descriptive case series, 50 patients of age 16-50 years, fulfilling the inclusion and exclusion criteria, were enrolled. After local anesthesia with xylocain, the saline (0.9% NaCl) was injected intra and sub-dermally with a 31-gauge needle. The frequency of administration was once weekly for five weeks. Satisfaction level of patients was assessed on visual scale (VS). SPSS 20 was used for analyzing data.

**Results** Mean age of the patients was  $26.8 \pm 6.0$  year. Out of 50 patients, 30 (60%) were males while 20 (40%) were females. Mean duration of acne scar was  $26.2 \pm 16.8$  months. Types of scars were: ice pick 42 (84%), boxcar 39 (78%), and rolled scars 37 (74%). Mean VS at baseline was  $6.92 \pm 1.49$  and after treatment it was  $10.1 \pm 1.37$ . This increase in VS was statistically significant ( $p < 0.001$ ).

**Conclusion** The response to intralesional saline was convincing in all types of atrophic acne scars. The study demonstrated that saline can be an effective and safe therapeutic modality for all types of atrophic acne scars.

## Key words

Atrophic acne scars, intralesional saline, efficacy.

## Introduction

Acne is a common skin problem especially in youngsters. Its prevalence varies from 35% to more than 90%.<sup>1</sup> It persists in approximately 12-14% of cases with considerable psychological and social distress.<sup>2</sup> Post-acne pigmentation and scarring are by-products of inflammatory and nodulocystic acne among which scarring results in the most imaginably damaging and psychologically detrimental outcome.<sup>3</sup>

Scarring is an undesired end point of acne. The overall prevalence of acne scarring is 22%.<sup>4</sup>

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Acne scarring can involve either wasting (atrophic) or excessive build up (hypertrophic) of fibrotic tissue, former being more common.<sup>5</sup> Atrophic scars include rolling, ice-pick and boxcar scars and results from impaired healing in and around the pilosebaceous unit during active inflammation.<sup>6</sup>

Dermatologists are frequently presented with acne scarring and consequently have to manage the aforementioned problem.<sup>7</sup> Patients should be properly counseled regarding every aspect of their disease and a treatment plan be devised after thoroughly discussing its merits and demerits.<sup>8</sup>

During recent decades, a number of treatment modalities have been devised to treat acne scars,

like chemical peels, subcision, dermabrasion, punch grafting, tissue augmentation, and lasers, with fluctuating results.<sup>9</sup>

Bagherani and Smoller, for the first time, instituted intralesional saline as a novel therapeutic option for the atrophic acne scars. They showed that post first and fifth sessions, the mean subjective response scores were  $7.1 \pm 1.2$  and  $10.2 \pm 1.08$ , respectively.<sup>10</sup> As acne is a very common disease in our society with cosmetic as well as psychological impact, we planned a study in which we have used intralesional injections of normal saline. Saline is cost effective and easily available. It acts by breaking the intra- and sub-dermal adhesions and stimulates the fibroblasts causing collagen and extracellular matrix neof ormation.<sup>10</sup>

## Methods

The present study was a descriptive case series carried out in Department of Dermatology unit II, Mayo Hospital, Lahore from February to July 2018. After approval from local ethical committee, 50 patients of age 16-50 and either gender with clinical diagnosis of atrophic acne scars of more than 6 months duration, and no history of any surgical or physical intervention in last 2 months, were enrolled. Pregnant and lactating females were precluded from the study. Patients with history of concomitant medical conditions like hypertension, cardiovascular disease, diabetes, and bleeding disorders were also not enrolled. Patients having keloidal tendency or active local infection were omitted too.

After informed consent, 50 patients satisfying the selection criteria were enrolled through outpatient department of dermatology, Mayo Hospital, Lahore. Name, age, gender, duration and type of scars were noted. After local anesthetic (xylocain), the saline was injected with a 31-gauge needle. The amount of saline

was such that it filled the atrophy and spread around 2 cm perilesionally (seen as blanching). The frequency of administration was once weekly for five weeks. The patient was photographed at baseline and before every session in the same light. Baseline and final visit visual score was noted. Satisfaction level of patients was assessed on visual scale. Safety was measured in terms of no bruising, oedema, redness or pain.

The data were analyzed in SPSS version 20. Mean and SD was calculated for variables like age, duration of acne scars and after treatment satisfaction scores. Percentage and frequency was calculated for gender and type of scar.

Data were stratified for age, gender, type of acne scar, and duration of scars to deal with effect modifiers. Post-stratification, paired sample t-test was applied with p-value  $\leq 0.05$  taken as significant.

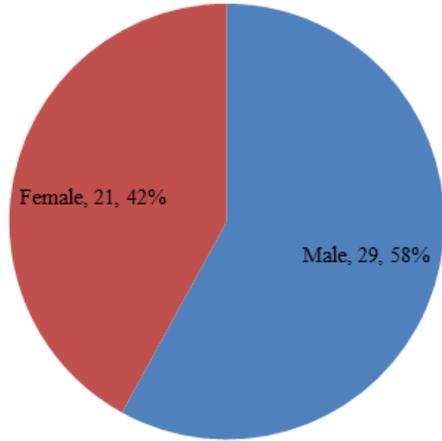
## Results

50 cases meeting the selection criteria were registered in the study. Mean age of the patients was  $26.8 \pm 6.0$  year. Out of 50 patients, 30 (60%) were males while 20 (40%) were females. Mean duration of acne scar was  $26.2 \pm 16.8$  months.

Types of scars were as follows: ice pick 42 (84%), boxcar 39 (78%), rolled scars 37 (74%). Comparison of visual score between baseline

**Table 1** Visual scoring for assessing response to the treatment.

Score	Description
1-3 (poor response)	No or very mild satisfaction with the treatment.
4-6 (moderate response)	Mild to moderate satisfaction with the treatment.
7-9 (good response)	Fair to good satisfaction with treatment.
10-12 (significant response)	Excellent to complete satisfaction with the treatment.



**Figure 1** Demographic data (n=50).

**Table 2** Distribution of patients by type of scar.

Type of scar	Number	Percentage
Ice-pick	42	84.0
Boxcar	39	78.0
Rolled scars	37	74.0
Pores	31	62.0

**Table 3** Comparison of visual score.

Session	Visual score		P value
	Mean	S.D	
Baseline	6.92	1.49	P<0.001
After treatment	10.1	1.37	

and after treatment showed statistically significant difference (p<0.001). No side effects were noted during the course of treatment.

## Discussion

Acne is prevalent in 80-90% of teenage population and can appear in any area with abundance of pilosebaceous glands. The inflammation which ensues may result in scarring during the healing process. About 1% of adults are reported to have persistent scarring.<sup>11</sup>

Acne scars are split into atrophic and hypertrophic scars, atrophic being more common. Topical, physical, and light therapy are used, alone or in concert, for treatment of atrophic scars with inconsistent results.<sup>3,12</sup> In our study, we used normal saline for atrophic acne

scars.

A study was conducted by Bagherani and Smoller on only 12 patients where they showed that after the first and fifth session, the mean response scores based on visual scoring were  $7.0 \pm 1.6$  and  $10.4 \pm 1.1$ .<sup>10</sup> The most common type of scars in their study was box car while in our study icepick scars were the commonest. There were more males in our study but our results were comparable with theirs. So, no difference in response to therapy was noted as regards type of scar or gender.

Subsequently, another study published in 2019, performed on 30 patients of mild to moderate acne scars, displayed saline therapy to be an effective and safe treatment modality.<sup>13</sup> Later, a study in 2020 showed similar results in mild to moderate scars with no considerable side effects.<sup>14</sup>

Our study demonstrated normal saline to be an effective and safe remedy for atrophic acne scars. The main limitations were limited number of sessions and no long term follow up of patients. More studies are needed to compare this modality with other existing treatments.

## Conclusion

In conclusion, the response to intralesional saline was convincing in all types of atrophic acne scars. The study demonstrated that saline can be an effective and safe therapeutic modality for all types of atrophic acne scars.

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