

Efficacy of Modified Jessner's Peel and 20% TCA versus 20% TCA Peel Alone for the Treatment of Acne Scars

Neerja Puri

Department of Dermatology, Punjab Health Systems Corporation, Ludhiana, Punjab, India

Address for correspondence: Dr. Neerja Puri, House No. 626, Phase II, Urban Estate, Dugri Road, Ludhiana, Punjab, India. E-mail: neerjaashu@rediffmail.com

ABSTRACT

Introduction: There is a paucity of studies on the use of chemical peels for acne scars among the Asian population. A trichloroacetic acid (TCA) and Jessner's combination chemical peel, originally described by Monheit, is said to be better than a TCA peel alone. **Aims:** The aim of the study was to compare the efficacy of 20% TCA and Jessner's solution versus 20% TCA alone for the treatment of acne scars. **Materials and Methods:** The patients were divided into two groups of 25 patients each. Chemical peeling was done in both the groups. In Group I, chemical peeling with Jessner's peel followed by 20% TCA was done and in Group II patients chemical peeling with 20% TCA peel alone was done. **Results:** In Group I (Jessner's peel and 20% TCA), mild improvement of acne scars was seen in 8% cases, moderate improvement in 32% cases and marked improvement of acne scars was seen in 60% patients. In Group II (20% TCA), mild improvement of acne scars was seen in 32% cases, moderate improvement in 40% cases and marked improvement of acne scars was seen in 28% patients. But, the difference in improvement of acne scars was not statistically significant in both the groups (P value > 0.05).

KEYWORDS: Acne scars, chemical peels, hyperpigmentation, Jessner's solution, trichloroacetic acid

REC Review:

Risk : 4.0	0 = maximum risk,	3 = least risk
Efficacy : 4.0	0 = minimum efficacy,	3 = maximum efficacy
Cost : 3.0	0 = very expensive,	4 = least expensive

INTRODUCTION

Treatment of acne scars remains a therapeutic challenge. Acne scars are polymorphic; therefore, it is important to assess and design treatment according to the types of scars, while also keeping in mind patient expectations. Acne scars are generally classified based on their morphology and are of three main types, namely rolling scars, boxcar or punched out scars and ice pick scars.^[1,2] Chemical peels, laser resurfacing, dermabrasion, and fractionated laser technology as well as fillers and subcision are commonly used modalities for acne scar therapy.

From a peel standpoint, patients with mild-to-moderate acne scarring may be treated.^[3]

Chemical peeling is a widely used procedure in the management of acne and acne scars, but the risk of hyperpigmentation is more in the Asian skin as they are more prone to developing hyper pigmentation.^[4] The Jessner's-trichloroacetic acid peel is a procedure developed by Dr Gary Monheit to produce a safe effective medium depth peel for the treatment of superficial acne scars. This combination of Jessner's solution with trichloroacetic acid (TCA) achieves a more uniform penetration and is an excellent peel with a low safe concentration of TCA.^[5] Jessner's peel has minimal side effects. However, its resorcinol and salicylic acid components have the potential to cause thyroid disease and salicylism, respectively. Some symptoms of salicylism are ringing in the ears, dizziness, confusion or disorientation. We used modified Jessner's solution which included lactic acid 17%, salicylic acid 17% and citric acid 8% in ethanol (95%) without resorcinol, in place of classical Jessner's solution to avoid allergic reaction and hyperpigmentation which may be created by resorcinol.^[6] Jessner's solution is available in one strength only, but the depth to which it penetrates the skin can be increased by applying several layers during

Access this article online

Quick Response Code:



Website:
www.jcasonline.com

DOI:
10.4103/0974-2077.155082

the peel. TCA is a well-studied and inexpensive peeling agent that can be used either as a superficial, medium depth or deep peel depending on the concentration used.

AIMS

The aim of the study was to compare the efficacy of 20% TCA and Jessner's solution versus 20% TCA alone for the treatment of acne scars.

MATERIALS AND METHODS

Inclusion criteria

- Patients older than 18 years of age.
- Patients having acne scars.
- Patients having mental capacity to give informed consent.

Exclusion criteria

The following patients were excluded from our study:

- Patients on isotretinoin.
- Patients with a history of hypertrophic/keloid scar formation.
- Pregnant women and patients with heart disease.
- Patients with recurrent herpes infection.

We selected 50 patients of acne scars for the study. The patients were randomly divided into two groups of 25 patients each. Chemical peeling was done in both the groups. In Group I, chemical peeling with Jessner's peel and 20% TCA was done and in Group II patients chemical peeling with 20% TCA peel alone was done. It was not possible to blind the two peeling agents because of the very characteristic odour and the absence of frost in the modified Jessner's solution. The patients were primed for 2 weeks with tretinoin cream 0.05% before the start of peeling sessions and the priming agent was stopped 2 days prior to the chemical peeling. In Group I patients, after cleaning and degreasing with acetone, Jessner's solution was applied first until the appearance of erythema. After the neutralisation of Jessner's solution, 20% TCA was applied until frosting appeared and then the patient was instructed to wash the face. In Group II, after cleaning and degreasing, 20% TCA was applied till uniform frosting was seen. The subjects were strictly instructed to apply sunscreen during and after the therapy. The peeling was done at an interval of 3 weeks and total six sessions of chemical peeling were done. Pre and post treatment photographs were taken at each visit. The grading of acne scars was done as mild, moderate and severe according to the severity of scarring. The improvement of the patients was categorised as follows: Marked improvement greater than 70%, moderate improvement of 40-70% and mild improvement less than 40%.

Maintenance was done with application of azelaic acid 20% for a period of 3 months and the patients were followed up for a period of 6 months.

RESULTS

The data was tabulated and the results were analysed statistically using standard deviation and Students *t* tests. Females outnumbered males and female: male ratio was 4:1. It was seen that maximum number (50%) of patients were in the age group of 21-30 years, followed by 30% patients in the age group of 31-40 years and 10% patients each in the age group of 11-20 and 41-50 years. In Group I (Jessner's peel and 20% TCA), mild improvement of acne scars was seen in 8% cases, moderate improvement in 32% cases and marked improvement [Figure 1a and b] of acne scars was seen in 60% patients. In Group II (20% TCA alone), mild improvement of acne scars was seen in 32% cases, moderate improvement [Figure 2a and b] in 40% cases and marked improvement of acne scars was seen in 28% patients. But, the difference in improvement of acne scars was not statistically significant in both the groups (*P* value > 0.05). Regarding the side effects in both the groups, erythema was seen in 8% patients in Group I and 12% patients in Group II, burning sensation was seen in 4% patients in Group I and 8% patients in Group II and hyperpigmentation was seen in 8% patients in Group I and 16% patients in Group II. Other side effects like itching, swelling and folliculitis were seen in 4% patients in the TCA group alone and in none of the patients of Jessner's peel with TCA.

DISCUSSION

Chemical peels are generally considered safe and effective, forming an important part of a dermatologist's arsenal. Chemical peels with increased depth of penetration have been used for the treatment of acne scars, either alone or in combination with other resurfacing procedures.^[9,10] Superficial chemical peels



Figure 1: (a) Acne scars in a 20 years old patient before treatment. (b) After six sessions of combination of Jessner's peel and 20% TCA



Figure 2: (a) Acne scars in a 23 years old girl. (b) After six sessions of 20% TCA

work on superficial acne scarring, whereas medium depth and deep peels and combination procedures show more promising results in treating deeper acne scars. Best results can be seen in rolling and boxcar scars.^[11,12] Also, it is seen that TCA is the most flexible of all chemical peels. When applied to the skin, TCA causes coagulation of epidermal and dermal proteins, and necrosis of collagen up to the upper reticular dermis with higher strengths. The clinical effects of TCA are due to the resultant increase in dermal volume of collagen, glycosaminoglycans and elastin. It is used in a variety of concentrations, starting from 10% to 50%. The higher the concentration is, the bigger the ablative injury, yet the greater the rejuvenative achievements. TCA peels with concentrations greater than 30% can have an effect on the dermis and epidermis of the skin and therefore are classified as medium-depth or deep chemical peels. In the past, 40-60% TCA peels was used for acne scarring treatments, but there were too many complications like scarring and post-inflammatory hyperpigmentation. Consequently, these highly-concentrated TCA peels are not in use anymore. TCA is a self-neutralising peel, therefore it is not absorbed systemically even if high concentrations are used. Immediately after the TCA peel, there will be mild to moderate swelling of the skin. This is a temporary condition and will resolve over 2 to 3 days. There is usually no discomfort after the peel, but, in case there is mild discomfort, pain medications can be provided. A pink or red discoloration of the skin may persist for 2-8 weeks and rarely up to 6 months after a TCA peel. The skin may be sensitive to the sun for approximately 2-8 weeks. The treated area may heal with increased or decreased pigmentation. In TCA peels, hot spots can occur where the TCA may penetrate deeper, with increased risk of hyperpigmentation. These hot spots are less troublesome with lower concentrations. Chemical peels show better results in treating acne scars on older patients. This is due to the less-elastic

condition of the skin in older individuals.^[13,14] Relatively low concentrations of TCA can cause deeper injury when combined with other exfoliants that enhance the penetration of TCA into skin.

An open-label study evaluated the combination of two peeling agents – TCA combined with Jessner's solution, a medium depth peel for treatment of acne scars.^[14] Improvement occurred in all except one patient who had mainly pitted scars and deep atrophic scars. They also noted that those who did not develop hyperpigmentation had lighter skin complexion than those who did. 20% TCA peel is a very minimal peel for facial skin improvement. Nevertheless, adding 20% TCA peel to Jessner's solution would yield better results than the TCA alone. Lower concentrations are useful for atrophic superficial boxcar scars or rolling scars while the CROSS method using 100% TCA is useful for ice pick scars that are difficult to treat.^[15] Compared to newer machine-based technologies for acne and acne scars, chemical peeling is affordable and with minimal downtime, that can be performed in any dermatologist's office. A long-term maintenance program will preserve the results of chemical peels in most patients. Patient participation and education is required, emphasising the importance of sun protection and the use of appropriate skin care regimens that include cleansing, toning, exfoliation, and moisturisers. Patients need to have realistic expectations and understand that achieving benefits from peels requires repeated procedures. If the peel regimen works well for the patient, clinicians should consider a maintenance protocol, which may be one peel per month for 6 months, then every 3 months thereafter depending on the need and the season. Patients who are willing to undergo continued treatment are likely to be the best candidates. Chemical peels are most effectively used in combination with a topical, at-home regimen, which, may include exfoliating or moisturising products, bleaching agents, or retinoids. Using peels less frequently but on a continuing basis is beneficial to help keep improvement ongoing, especially for superficial peels.

CONCLUSIONS

To conclude, Jessner's solution can be an adjuvant treatment with TCA in the treatment of acne scars, improving the results and minimising post inflammatory hyperpigmentation. Using modified Jessner's solution combined with 20% TCA, the risk of post inflammatory hyperpigmentation, which occurs in dark skinned persons after TCA peels, can be reduced. Finally, it is important for patients to maintain a good sun protection regimen to optimise the clinical results achieved with chemical peels. We recommend studies on combined peels using modified Jessner's and TCA using larger sample size.

REFERENCES

1. Strauss JS, Krowchuk DP, Leyden JJ, Lucky AW, Shalita AR, Siegfried EC, *et al.* Guidelines of care for acne vulgaris management. *J Am Acad Dermatol* 2007;56:651-63.
2. Handog EB, Macarayo MJ, Gabriel MT. Acne scars in Asian patients. In: Tosti A, De Padova M, Beer K, editors. *Acne Scars: Classification and Treatment (Series in Dermatological Treatment)*. 1st ed. UK: Informa Healthcare; 2009. p. 90.
3. Goodman G. Treatment of acne scarring. *Int J Dermatol* 2011;50:1179-94.
4. Al-Waiz MM, Al-Sharqi AI. Medium-depth chemical peels in the treatment of acne scars in dark-skinned individuals. *Dermatol Surg* 2002;28:383-7.
5. Monheit GD. The Jessner's-trichloroacetic acid peel. An enhanced medium-depth chemical peel. *Dermatol Clin* 1995;13:277-83.
6. Taub AF. Procedural treatments for acne vulgaris. *Dermatol Surg* 2007;39:1005-26.
7. Baumann L, Saghari S. Chemical Peels. In: Baumann L, editor. *Cosmetic Dermatology*. 2nd ed. New York: McGraw-Hill; 2002. p. 148-60.
8. Rubin MG. *Manual of Chemical Peels. Superficial and Medium Depth*. 1st ed. Philadelphia, PA: JB. Lippincott Company; 1995. p. 111.
9. Branham GH, Thomas JR. Rejuvenation of the skin surface: Chemical peel and dermabrasion. *Facial Plast Surg* 1996;12:125-33.
10. Monheit GD, Chastain MA. Chemical peels. *Facial Plast Surg Clin North Am* 2001;9:239-55, viii.
11. Brody HJ, Hailey CW. Medium-depth chemical peeling of the skin: A variation of superficial chemosurgery. *J Dermatol Surg Oncol* 1986;12:1268-75.
12. Coleman WP 3rd, Brody HJ. Advances in chemical peeling. *Dermatol Clin* 1997;15:19-26.
13. Landau M. Chemical peels. *Clin Dermatol* 2008;26:200-8.
14. Monheit GD. Medium-depth chemical peels. *Dermatol Clin* 2001;19:413-25, vii.
15. Bhardwaj D, Khunger N. An assessment of the efficacy and safety of CROSS Technique with 100% TCA in the management of ice pick acne scars. *J Cutan Aesthet Surg* 2010;3:93-6.

How to cite this article: Puri N. Efficacy of modified Jessner's peel and 20% TCA versus 20% TCA peel alone for the treatment of acne scars. *J Cutan Aesthet Surg* 2015;8:42-5.

Source of Support: Nil. **Conflict of Interest:** None declared.