

Efficacy of Subcision Alone and With 50% TCA Cross and Microneedling in the Management of Atrophic Acne ScarsNeena Kondapally¹, P. Ashwani²¹Assistant professor, Department of DVL, Ayaan Institute of Medical Sciences, Moinabad, Hyderabad/d, Telangana, India²Assistant professor, Department of DVL, Ayaan Institute of Medical Sciences, Moinabad, Hyderabad, Telangana, India

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Corresponding author: Dr. P. Ashwani

Conflict of interest: Nil

Abstract:

Introduction: Acne vulgaris is a persistent skin disorder, causes papules, cysts, and open and closed comedones. Atrophic scars can develop as a result of improper treatment selection or the presence of severe acne vulgaris. Subcision, microneedling, tissue augmentation, and ablative and non-ablative lasers are only a few of the therapy options. The present study was created to assess the effectiveness of subcision alone, microneedling, and subcision with 50% TCA CROSS and microneedling in the management of atrophic acne scars due to the paucity of research on combination therapy.

Material and methods: Forty-eight participants with grade II, III and IV atrophic acne scars aged between 18 to 40 years and grade II, III, and IV atrophic acne scars according to Goodman and Baron acne scar grade were included. Based on treatment, participants were randomly divided into subcision alone and subcision with 50% Trichloroacetic acid (TCA) CROSS groups. Pre and post treatment images were assessed for the effect of the treatment method.

Results: In group A, the overall patient satisfaction score was excellent in 3 cases, good in 8 cases and moderate in 13 cases. While in group B, satisfaction score was excellent in 4 cases, good in 10 cases and moderate in 10 cases.

Conclusion: The subcision with 50% TCA CROSS and subcision alone were exhibited comparable outcome. However, subcision with 50% TCA CROSS had gained better patient satisfaction with minimal side effects than subcision alone.

Keywords: Trichloroacetic acid, Subcision, microneedling, efficacy, atrophic acne scar.

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Introduction

Acne is a chronic polymorphic skin disorder that exhibit wide range of lesions including scars, nodules, sinuses, cysts, and pustules [1]. The prevalence of acne in adolescents is over 90% and it keep on into adulthood in 12-14% with psychosocial complications [2-4]. Scars is the most concerning unremitting sequelae of acne in 14% of cases that have negative impact on self-esteem, quality of life and is

psychologically distressing to the individual [5]. Acne scars occurred due to inflammatory lesions, degree, depth and duration of inflammation resolute the scar extension. Early management of acne vulgaris may decrease the incidence of scars. Acne scars are categorized in to atrophic, hypertrophic or keloidal scars. Atrophic acne scars are most prevalent type and further classified in to ice prick scar,

rolling scars, and box scars [6]. Several therapeutic choices including subcision, excision and elevation, chemical peeling with TCA, topical and systemic drug therapy, microneedling, ablative or non-ablative lasers have been evaluated with diverse outcome [7]. With subcision, the fibrous tissue that holds down the acne scar is severed by inserting a needle under the scar. Studies have shown remarkable outcome by using subcision combined with skin suctioning therapy [8]. Trichloroacetic acid is affordable and can be used in 10% to 20% for superficial peels, 35% for medium depth peels and above 35% is not recommended due to the variability in outcome [9, 10]. Due to the availability of multiple treatment options and lack of literature on the combination therapy and high concentration of TCA the present study was designed to evaluate the efficacy of subcision alone and microneedling and subcision with 50% TCA CROSS and microneedling in the management of atrophic acne scars

Materials and Methods

The present prospective randomized interventional study was conducted in the Department of Dermatology at Ayaan Institute of Medical Sciences, Moinabad, Telangana during June 2021 to March 2023. A total of 48 participants with grade II, III and IV atrophic acne scars attending outpatient department aged between 18 to 40 years were recruited. Participants of both

genders with grade II, III, and IV atrophic acne scars according to Goodman and Baron acne scar grade, and willing to participate were included. Participants with active acne lesions, keloidal scarring, history of anticoagulation therapy and corticosteroid therapy, pregnancy, lactation, cardiovascular complications, hypertension, and bacterial skin infections were excluded. Written informed consent was obtained from all the participants and study protocol was approved by the institutional ethics committee.

The study participants were randomly divided in to tow group. Group A (n=24) treated with subcision along with 50% TCA CROSS at the beginning, 6th and 12th week and microneedling at 3, 9, and 15 weeks. Group B (n=24) were treated with subcision alone at the beginning, 6th and 12th week and microneedling at 3, 9, and 15 weeks. Acne scar severity was graded according to Goodman and Baron acne scar grade [11]. Photographs of acne scars was collected at the beginning, and during every visit for the procedure. Participants were advised to avoid using benzoyl peroxide, retinoids, waxing and depilating creams seven days before the treatment procedure. After completion of treatment procedure, participants were followed up every month for a duration of 3 months. Photographs were collected during every follow up and were compared.

Results

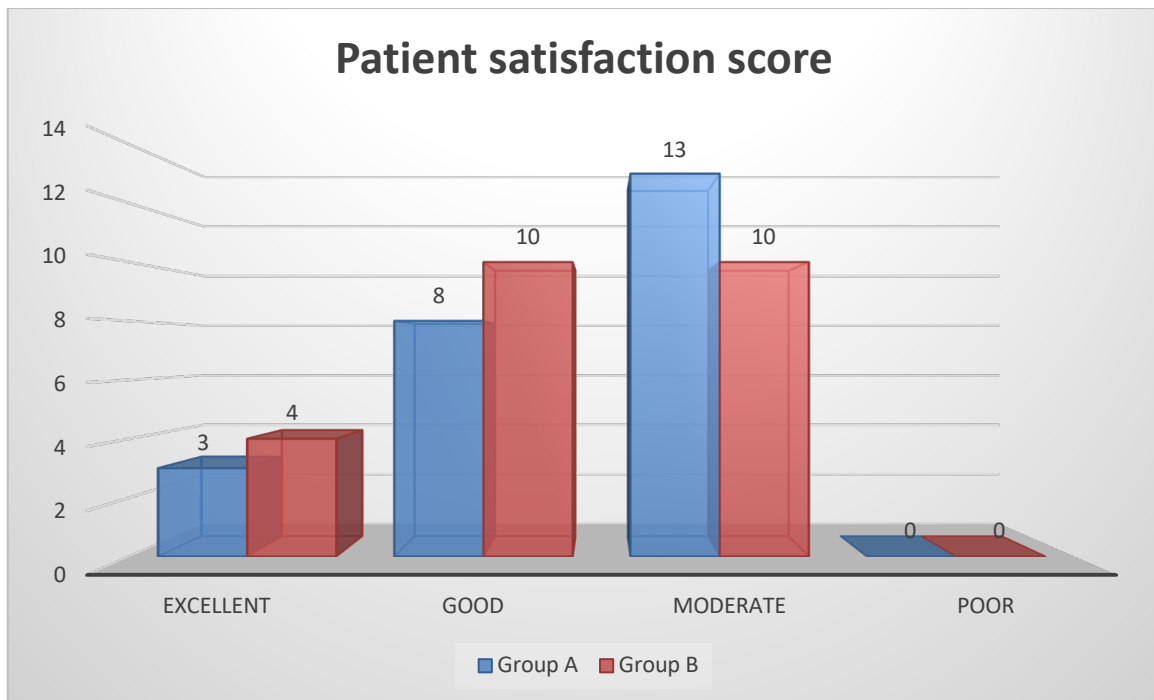
Table 1: Clinico-demographic details of study participants

Parameter	Group A (n=24)		Group B (n=24)	
	Frequency	Percentage	Frequency	Percentage
Age				
18-25	11	45.83%	10	41.66%
26-30	07	29.16%	06	25%
31-35	04	16.67%	05	20.83%
36-40	02	8.33%	03	12.5%
BMI (kg/m ²)	24.56		24.64	
Gender				
Male	14	58.33%	12	50%
Female	10	41.66%	12	50%

Occupation				
Unemployed	03	12.5%	01	4.16%
Student	11	45.83%	13	54.16%
Professional	09	37.5%	08	33.3%
Daily wage labour	01	4.16%	02	8.33%
Treatment method				
Topical	09	37.5%	07	29.16%
Surgical	02	8.33%	02	8.33%
None	13	54.16%	15	62.5%

Table 2: Acne scar grading during before and after treatment

Parameter	Before treatment		After treatment	
	Group A	Group B	Group A	Group B
Grade 1 (macular)	-	-	10 (41.66%)	12 (50%)
Grade 2 (Mild)	03 (12.5%)	05 (20.83%)	12 (50%)	11 (45.83%)
Grade 3 (Moderate)	13 (54.16%)	12 (50%)	02 (8.33%)	01 (4.16%)
Grade 4 (Severe)	08 (33.3%)	07 (29.16%)	-	-



Graph 1: Patient satisfaction score after treatment procedure

Table 3: Patient satisfaction score according to the grades

Parameter	Group A			Group B		
	Grade 2	Grade 3	Grade 4	Grade 2	Grade 3	Grade 4
Excellent	01	01	01	01	01	02
Good	01	03	04	03	04	03
Moderate	02	08	03	02	06	02
Poor	-	-	-	-	-	-

Discussion

Majority participants were aged between 18-25 years (45.83% in group A & 41.66% in group B), followed by 26-30 years (29.16% and 25%). Mean BMI was 24.56 kg/m² in group A and 24.64 kg/m² in group B. In group A, male participants (58.33%) were more than females (41.66%), but in group B similar numbers were participated from both genders (50% each). Majority participants were students, followed by professionals, unemployed and daily wage labour.

According to Goodman and baron qualitative scar grading, before treatment procedure, majority participants were showed grade 3 (54.16% in group A & 50% in group B) acne scars in both study groups followed by grade 4 (33.3% & 29.16%) and grade 2. None of the participants reported grade 1 scars in both study groups. After treatment, majority participants were exhibited grade 1 (41.66% in group 1 & 50% in group 2) and grade 2 scars (50% & 45.83%). None of the participants showed grade 4 scars in both study groups (Table 2). On 50 cases with atrophic scars, Garg et al., found 10 (62.5%) among the 16 patients with Grade 4 scars had improved to Grade 2, and 6 (37.5%) had improved to Grade 3. Out of 22 patients with Grade 3 scars, 2 (9.1%) improved to Grade 1 scars, 15 (68.2%) to Grade 2 and 5 (22.7% of patients) had no scars remaining. There were no scars on any of the 11 individuals (100%) who had Grade 2 scars [12]. Narayanan S et al., managed 30 patients with grade 2, 3 and 4 acne scars with subcision and microneedling with 50% of TCA cross had reported improvement of grade 4 scars by 2 grades in 64.3% and one grade in 35.7% of subjects, grade 3 scars by 2 grades improvement in 60% and one grade in 40% of subjects and all of the grade 2 scars showed 2 grades improvement [13]. In group A, the overall patient satisfaction score was excellent in 3 cases, good in 8 cases and moderate in 13 cases. While in group B, satisfaction score was excellent in 4 cases, good in 10 cases and moderate in

10 cases (Graph 1). The patient satisfaction score according to acne scar grading showed moderate and good outcome in grade 3 and grade 4 participants (Table 3). Garg et al., found overall satisfaction rate was excellent in all the cases with grade 2 scars, very good in 63.6% and excellent in 36.4% for grade 3 and very good in 75% and good in 25% of cases with grade 4 scars (12). Narayanan S et al., found overall patient satisfaction rate was very good and good in 57.1% and 42.9% of subjects with grade 4 scars. In cases with grade 3 scars, response rate was excellent in 60% and very good in 40% of subjects. In grade 2 scars, the response rate was excellent in all the subjects [13]. Dhamale SS et al., found good satisfaction rate in 85.7%, very good in 4.8% and poor in 9.5% in subcision alone group. While in subcision with 50% TCA found good outcome in 61.9% and very good outcome 38.1% [14]. Agarwal N et al., evaluated 70% of TCA on 53 cases found highly satisfactory outcome in 81.1% of subjects [15]. Kaur J et al., evaluated Subcision followed by 50% TCA CROSS in three sessions with four weeks interval on 10 female participants found excellent outcome in 60%, good in 30% and fair results in 10% of the subjects [16]. Priyanka Sharma et al., reported excellent improvement in 16% and 24%, moderate improvement in 48% and 60%, mild improvement in 36% and 16% of microneedling and TCA groups respectively [17]. The present study has limitations in terms of low sample size and evaluated less combination therapies. Further studies are required to assess subcision with 50% TCA CROSS combined with different treatment options in the management of atrophic acne scars.

Conclusion

The subcision with 50% TCA CROSS and microneedling and subcision alone were comparable in the management of atrophic acne scars in terms of outcome and patient satisfaction. However, subcision with 50% TCA CROSS and microneedling had

gained better patient satisfaction with minimal side effects than subcision alone.

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