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ORIGINAL ARTICLE

Comparison of Microneedling and Glycolic Acid Peels in the Management Acne Scar

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ABSTRACT

Aim: To compare the treatment efficacy of microneedling and glycolic acid peels for acne scar treatment.

Material and Methods: This randomized controlled trail was carried out at Liaquat University of Medical and Health Sciences, Hyderabad, Sindh during the Period from March, 2022 to August, 2022. We divided 60 patients equally in two groups using blocked randomization. Patients were treat with microneedling in group A while in group B patients were treated with 30% glycolic acid peels. Improvement was assessed by the Goodman and Baron Scale. Chi Square test was used for comparison of effectiveness of treatment in both groups.

Results: This study was conducted on 60 patients divided equally in two groups. The mean age in group was 28.57±6.765 years while 30.30±5.932 years in group B. In group A there were 21 (70%) females and 9 (30%) males while in group B there were 20 (66.7%) females and 10 (33.3%) male. In group A 21 (70%) patients were treated effectively while in group B 11 (36.7%) patients were treated effectively (P = 0.01)

Conclusion: From our study we conclude that microneedling is an effective treatment for acne scars as compared to glycolic acid peels.

Keywords: Acne, Scars, Microneedling, Glycolic acid peels

INTRODUCTION

Approximately 94% of people worldwide suffer from acne, making it the eighth most common medical condition. Studies of the prevalence of acne in different populations have consistently shown that adolescent males are disproportionately affected by the disease, especially when considering the prevalence of severe acne in males [1]. Acne affects approximately 15% of adolescents and young adults and approximately to 5% of adults. Scarring is a permanent consequence for some patients with a severe inflammatory response. It's possible for scars to alter the superficial and deep dermal textures [2].

Both patients and dermatologists face difficulties when attempting to treat acne scars. A wide variety of procedures, including laser surgery, radiofrequency assistance, chemical peels, chemical restoration of skin scars technique, dermabrasion, needling, subcision, punch techniques, fat transplantation, and other tissue augmenting agents, are available[3, 4]. Various kinds of scars have different structural origins, so treating them requires individualized care. Needling the skin is a common procedure for treating cutaneous scars and sun damage [5]. The skin is pricked with fine needles, which causes the dermis to produce more elastin and collagen, the dermis to remodel its collagen, and the epidermis and dermis to thicken [6]. There are now a variety of accessible, low-cost therapies for the treatment of acne scarring, including electronic and manual handheld skin needling devices [7]. Needling only punctures the epidermis, which quickly heals thanks to the needle's controlled mechanical stimulation of the healing process of wound. Initiation/inflammatory, proliferation, and remodeling are the three stages of wound healing [8].

Commercial micro-needling devices include the dermaroller, dermapen, and derma stamp. One potential problem with dermarollers is that the amount of pressure used varies from doctor to doctor. Along with regulating the depth to which micro-needles penetrate the skin, the unique shape of the Dermapen is intended to counteract these variations [9].

Glycolic acid (GA) is an alpha-hydroxy acid that encourages desquamation and epidermolysis by reducing corneocyte cohesion. As a result of its exfoliating qualities, it is commonly used as a peeling agent for the outermost layer of skin. Because of its antimicrobial action on P. acne, a study also found that GA peel reduces acne inflammation [10].Glycolic acid increases the IL6 secretion, which in turn up-regulates gene expression for hyaluronic acid and collagen in acne scar tissue. Treatment with glycolic acid (10-30%) for 3-5 minutes every two weeks has proven to be a safe and effective means of dealing with superficial scarring [11].

Acne scarring is a potential outcome of inflammatory acne lesions and can lead to significant emotional and psychological distress, lowering quality of life. For this purpose, a comparison of the results achieved by micro-needling and glycolic acid peels for acne scars was conducted.

MATERIAL AND METHODS

This randomized controlled trail was conducted at Liaquat University of Medical and Health Sciences, Hyderabad, Sindh during the Period from March, 2022 to August, 2022. After obtaining ethical certificate from the hospital's ethical board patients having age between 20 to 40 years both genders diagnosed with acne scars were enrolled in the study. Patients having active acne, pregnant, or have used isotretinoin within the last 6 months were excluded from the study. This will help to ensure that the study population is homogenous and that the results can be more easily generalized to other patients with similar characteristics.

Patients were divided in two equal groups using lottery method. Group A patients received microneedling treatment while group B received glycolic acid peel treatment. The interventions in the study will be microneedling and glycolic acid peels. Participants will be randomly assigned to receive either microneedling or glycolic acid peels on one half of their face. The other half of the face will serve as the control. Microneedling was performed using a dermaroller with a 0.5mm needle length, while glycolic acid peels was performed using a 30% glycolic acid solution. Both treatments were performed every two week for 5 months. This allowed for a direct comparison of the two treatments and provide an understanding of their relative effectiveness.

The primary outcome measure for the study was improvement more than one grade in acne scarring as assessed by the Goodman and Baron Scale. This scale is a validated, widely used tool for evaluating the severity of acne scarring and is considered the gold standard in the field.

Data was analyzed using appropriate statistical methods, including chi-squared tests for comparison of proportions. A p-value of <0.05 was considered statistically significant. This will allowed for the identification of any significant differences between

the two treatments and provide insight into which treatment is more effective.

RESULTS

This study was conducted on 60 patients divided equally in two groups. Group A received microneedling treatment while group B received glycemic acid peel treatment. The mean age in group was 28.57±6.765 years while in group B the mean age was 30.30±5.932 years. Majority of the patients in our study were females. In group A there were 21 (70%) females and 9 (30%) males while in group B there were 20 (66.7%) females and 10 (33.3%) male. Mean duration of acne in group A was 24.20±8.032 months while in group B the mean duration of acne was 23.73±7.547 months.

Regarding the type of scar, icepick was the most common type in group A, 16 (53.3%) patients had icepick scar, boxcar scar was seen in 9 (30%) patients while rolling scar was seen in 5 (16.7%) patients. In group B icepick scar was seen in 9 (30%) patients, boxcar scar in 10 (33.3%) patients and rolling scar was seen in 11 (36.7%) patients (Table 2)

Regarding the efficacy we observed that in group A 21 (70%) patients were treated effectively while in group B 11 (36.7%) patients were treated effectively (P = 0.01) (Table 3)

Table 1: Baseline characteristics

Variables		Group A (n = 30)	Group B (n = 30)
Age (years)		28.57±6.765	30.30±5.932
Duration of acne (Months)		24.20±8.032	23.73±7.547
Gender	Male	9 (30%)	10 (33.3%)
	Female	21 (70%)	20 (66.7%)

Table 2: Type of scar

		Type of scar			Total
		Icepick	Boxcar	Rolling	
Groups	Group A	16	9	5	30
		53.3%	30.0%	16.7%	100.0%
	Group B	9	10	11	30
		30.0%	33.3%	36.7%	100.0%
Total		25	19	16	60
		41.7%	31.7%	26.7%	100.0%

Table 3: Comparison of treatment efficacy between both groups

		Efficacy		Total	P value
		Effective	Not effective		
Groups	Group A	21	9	30	0.01
		70.0%	30.0%	100.0%	
	Group B	11	19	30	
		36.7%	63.3%	100.0%	
Total		32	28	60	
		53.3%	46.7%	100.0%	

DISCUSSION

Acne scarring can be a significant cosmetic concern for individuals who have experienced severe acne. There are several different types of acne scars, including icepick, boxcar, rolling, and hypertrophic scars. The treatment approach for acne scarring will depend on the type and severity of the scars.[12]

Acne scarring is a frequent and unwanted side effect of acne vulgaris, which accounts for roughly one-fifth of all dermatologist visits in Pakistan among patients between the ages of 13 and 35. It has been estimated that 91 percent of South Asian male adolescents and 79 percent of South Asian female adolescents have acne[13]. In a different epidemiological study comparing the prevalence of acne in various groups, Asian women were found to have clinical acne at a rate of 30% compared to Caucasian women at a rate of 24%. All racial groups also showed equal prevalence of the various forms of acne, with the exception of Asian women who were more likely to develop comedonal acne than inflammatory acne[14].

Microneedling and glycolic acid peels are two popular treatments for acne scarring. Both of these treatments aim to improve the appearance of acne scars by promoting collagen production and exfoliating the skin. However, they differ in terms of their mechanisms of action and potential side effects. Microneedling, also known as collagen induction therapy, is a minimally invasive procedure that involves making small, controlled injuries to the skin using fine needles. This creates a controlled injury that triggers the skin's natural healing process. As the skin heals, collagen is produced, which helps to fill in and smooth out acne scars. Microneedling can also help to improve the absorption of topical skincare products, making them more effective.[15]

Microneedling is considered a safe and effective treatment for all types of acne scars, including icepick, boxcar, rolling, and hypertrophic scars. It can also be used to improve the appearance of fine lines and wrinkles, skin texture, and overall skin tone. The procedure is relatively painless, with minimal downtime and recovery time. A series of treatments may be needed to see optimal results.[15]

Glycolic acid peels, on the other hand, are chemical peels that use glycolic acid to exfoliate the skin. The acid works by breaking down the bonds between dead skin cells, allowing them to be easily removed. This exfoliation process helps to improve the appearance of acne scars by promoting collagen production and revealing smoother, brighter skin. Glycolic acid peels can be effective in treating acne scars, particularly superficial scars, but the procedure may cause stinging or burning sensations during the treatment. It may also cause some redness and peeling of the skin afterwards. Additionally, glycolic acid peels can be more aggressive to the skin, and may not be suitable for individuals with sensitive skin.[16]

We compared acidic peel with microneedling, we found that the microneedling treatment for acne scars had significantly better efficacy as compared to the acidi peel group. We observed that the efficacy in microneedling group was 70% while in the acidic peel group as 36.7%. A study[17] from Pakistan reported that the efficacy of microneedling was significantly better than acid peel group, they found the microneedling treatment for acne scar was more effective (73.33%) than acid peel group (33.33%). Another study[18] from Pakistan also validates our findings as they concluded that microneedling is an effective treatment for managing acne scars.

The majority of the participants in our study were FST IV, V, and VI. According to a study[19], chemical peels can increase the risk of complications and prolonged recovery in people with darker skin. Dyspigmentation, further scarring, and suboptimal clinical outcomes are a few of these consequences. Because microneedling preserves a portion of the epidermis, which helps with healing and lowers the risk of infection, it may provide a safer safety profile in people with skin of colour. In contrast to other minimally invasive methods, such as fractional lasers, which are non-ablative but can thermally stimulate melanocytes, resulting in hyperpigmentation, microneedling may be a superior option. This is true even if they aren't compared to chemical peels. In a research, individuals with FST I to II, III to V, and VI had their acne and non-acne scars treated with microneedling. Notably, all groups experienced a considerable improvement in acne scars with comparable erythema side effects. Additionally, up to a year after final treatment, there were no complaints of hyperpigmentation in any of the groups. These findings not only concur with those of our study, which showed that FST IV, V, and VI patients had better results in the treatment of acne scars, but they also imply that microneedling might be a superior method for treating acne scars in patients with darker skin.[15]

Recent years have seen an increase in the popularity of microneedling as a therapeutic alternative because of how easy, affordable, and secure it is. However, there are other uses for microneedling besides treating acne scars. Numerous studies support its efficacy and safety for treating alopecia, melasma, photodamage, skin regeneration, hyperhidrosis, and other conditions. The most frequent response to microneedling is a

temporary erythema and postin ammatory hyperpigmentation. Negative effects of microneedling are extremely rare. Other uncommon adverse effects that have been observed include pruritus, milia, and tram-track scarring.[15]

CONCLUSION

From our study we conclude that microneedling is an effective treatment for acne scars as compared to glycolic acid peels. As a result, any practitioner who frequently treats patients with darker skin tones may find the beneficial results associated with microneedling in this population to be helpful. Our study yields preliminary but encouraging results, but more research on the variables and combination possibilities of microneedling is required before the procedure for acne scars may be routinely used.

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