

Efficacy evaluation of Endolift-based Subcision on acne scar treatment

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Abstract

Background: People with acne scar suffer from destruction to the surface of the skin. Treating acne scars is a challenge that might need several methods.

Aims: Subcision is a method that has been informed to be a useful method in treating rolling acne scars. While Subcision is a valued procedure, its effect is mild to moderate due to its high reappearance rate, and patients' dissatisfaction with some of the side effects such as inflammation after procedure.

Patients/Methods: In this pilot study, 9 rolling acne scar patients underwent Subcision with the Endolift (200-nm fiber) and followed up for 3 months. Outcomes were evaluated by 3 dermatologists (Blind). Also, the patients' satisfaction was assessed to compare with dermatologist's opinions.

Results: Our results indicated that Subcision with the Endolift displayed good and very good improvement in about 90% of patient with a good and very good satisfaction in the patients. Photographic data evaluation indicated 100% improvement in scar depth, topography, and total acne scar appearance. The average numbers of lesions before the treatment were 25.5 ± 12.1 , and after treatment, it was reduced to 11.4 ± 2.1 ($P < .05$).

Conclusion: Subcision with the Endolift seems to be a safe and effective method for acne scar treatment. It is done with a single perforation on each side (instead of several perforations), which reduces the pain and scar risk in the patients. Also, Endolift-based Subcision needs fewer surgical sessions and less recovery time with less inflammation and erythema.

KEYWORDS

acne scars, efficacy, Endolift, subcision, treatment

1 | INTRODUCTION

Acne scarring, a common complication of acne, affects people both emotionally and physically worldwide unrelatedly of age, sex, and origin.¹ While the best way to manage acne scars is to inhibit them by appropriate acne control, many acne cases go untreated. As a result,

these patients in the future develop atrophic ulcers, which are deforming and so that it can cause emotional suffering.² Treatment of acne scars comprises multiple modalities such as surgical procedures (punch excision, punch grafting, and Subcision), resurfacing methods (ablative laser treatment, dermabrasion, and chemical peels), nonablative laser treatment, injection of autologous fat, or dermal



FIGURE 1 A 27-y-old female patient before (A) and after (B) treatment

fillers.³ Subcision is a method first presented in 1995 and used commonly to improve depressed scars. Its purposes at freeing the fibrous attachments under the scar to lift it up. Also, Subcision stimulates the creation of connective tissue by normal physiological curing.⁴ Cannula or needle-based method can cause bruising, pain, and occasionally hematoma. Additionally, the infection risk or long-term pain is high. As an alternative to these methods, we evaluated the effect of Subcision with Endolift. This tool is safer than other previous tools with minimal side effects without hematoma and less recovery time and less inflammation and erythema. The highest purpose of this pilot study was to assess the efficiency of this method, side effects, treatment duration, and satisfaction of patient and physician after applying this tool as a needle or cannula replacement. We are seeking a tool by high performance and efficiency, minimal side effects, and low recurrence rate that is available and appropriate for patients and doctors. In the current pilot study, we tried to evaluate the efficacy of Endolift-based Subcision for treating atrophic acne. Endolift is based on diode laser (1470-nm diode laser).

2 | MATERIALS AND METHODS

The study was done in the Jordan Dermatology and Hair Transplantation Center, Tehran, Iran (2019). 9 patients, 4 males and 5 females, with rolling acne scars, were enrolled in the study. The mean age of the participants was 30 years. An informed consent was gained from patients before starting the treatment. Patients with history of diabetes, keloids, collagen disease, bleeding tendency, and neuromuscular disease and pregnant women were not included. The use of any treatment in the preceding 6 months was exclusion criteria. The area to be subcised (about 10 mm wide) was sterilized, outlined by a surgical marker, while the patients were sitting in a fixed and comfortable position. For this study, we used Endolift™ (LASEMAR1500™ machine from Eufoton s.r.l.). The Endolift-based Subcision (energy: 50-500 J, power: 2.5-3 watt, pulse: 25-50, fiber: 300 micron) was used for acne scar treatment without any incisions or anesthetic. The 300 micron was easily inserted under the skin

directly in the superficial dermis and passed via the subdermal plane parallel to the skin surface. Rapid repetitive back and forth motion of the fiber was done to scrape the underside of the dermis and disconnect scar sub-surfaces such as the base, walls, borders, and shoulders. After that, side-to-side fiber motion was also performed to completely release fibrous tissues. After the final step, ice compression was applied to the site of treatment for 20 minutes. Patient was instructed to apply antibiotic every 6 hours for 5 days after treatment. This procedure was performed one time. Patients were evaluated for results 1 month after the last procedure. Photographs of patients were taken using Vision-face before the start of treatment and after the final step of treatment. The results of Subcision procedures were measured by 3 board-certified dermatologists (blind). Patients' satisfaction was assessed at the end of the process of treatment. Patient graded their response to treatment as follows: poor: 0, fine: 1-3, good: 4-6, and very good: 7-9.

2.1 | Statistical analysis

The data on target were analyzed using the SPSS 18 software.

3 | RESULTS

All patients were enrolled in the study and underwent Subcision with the Endolift. After analyzing the results of photograph evaluation (were taken before and after the treatment) by dermatologist, the results showed good and very good improvement in about 90% of patient. The patient satisfaction results showed good and very good improvement in all of the involvements (100%). Photographic documents displayed a significant improvement in level of scar depth, topography, and overall acne scar appearance in all 9 patients (Figure 1 and Figure 2). Patients with mild active acne experienced a decrease in the development of scar after active phase of disease throughout the treatment and follow-up interval. The average numbers of lesions before the treatment were 25.5 ± 12.1 , and after treatment, it

FIGURE 2 A 29-y-old male patient before (A) and after (B) treatment



was decreased to 11.4 ± 2.1 ($P < .05$). Passing post-procedure mild inflammations were identified among the patients that were cleared wholly after 2 days of therapy. No sever swelling and bruising was observed in the cases of underexamined patients. Also, the evidence of skin infection was not reported. There was no evidence of hypertrophic scar or hyperpigmentation. The patients were followed up for 3 months, and they were not revealed any side effect or recurrence throughout the course of the study.

4 | DISCUSSION

Treatment of acne scar with a new base device is challenging. All surgical methods are continuously modified with the aim of reaching the best results through easier, convenient, and practical techniques to achieve the best final outcome with fast recovery and minimal complications. With a wide range of treatments, prominent skin scar depression can be significantly improved. To achieve the desired results, treatment design should be scheduled giving to the patient's conditions such as age, sensitivity, aesthetic needs, and predicted downtime.⁵ Subcision is an appreciated surgical procedure that can be used to reduce depressed scars, cellulite, wrinkles, striae, and boxer.⁵ This method is generally used to control depressed scars. As explained by S. Orentreich and N. Orentreich in 1995, the purpose of Subcision is to remove the fibrous components under the scar, in the subcutaneous stage. This helps to lift up scarring and connective tissue formation through normal physiological healing.⁴ It was performed by utilizing a Nokor or hypodermic needle (gauge of needle depends on the scar size). Recently, several adjustments to this surgical procedure have been prepared via many surgeons to make it more effective and easier. One of the modifications made by Al-Ghamdi was the use of a needle holder for the Nokor needle to preserve its horizontal direction without the need to remove from the entry point to visualize the orientation and change the direction of the needle.⁶ Another modification performed by N. Khunger and M. Khunger was the bending of the needle with a 90-degree angle

artery forceps to avoid skin penetration or damage to the dermis.⁷ Also, Nilforoushzadeh et al reported that Subcision with the Cannula is an acceptable alternative method for acne scar treatment.⁸ In another study by Nilforoushzadeh et al, the effect of cannula Subcision was compared to common needle method.⁹ In the present study, we evaluated all sides of the use of another special device (Endolift technique using a 1470-nm diode laser) for acne scar Subcision. We concentrated on the acne scar treatment through Subcision procedure with the Endolift to break up fibrous bands that cause rolling scars. Endolift is based on the diode laser and can remove the fibrous components under the scar, induce the creation of connective tissue, remodel the derma, and activate the collagen production. In our knowledge, this is the first time that Endolift was used for Subcision of the acne scars.¹⁰⁻¹⁴ We detected an effective cure rate data (more than 50% after 2 weeks). Hyperpigmentation, hypertrophic scar, swelling, inflammation, ecchymosis, and redness are common side effects among Subcision with common needle that are informed in 50% of patients (even up to 70%-80% of patients), but Subcision with the Endolift seems to be a safe technique with high efficacy for acne scar treatment and high patient's satisfaction. Another advantage of our new designed technique is that Subcision with Endolift has been done through single perforation in each side in place of multiple perforations that can decrease the patients' pain and risk of scars throughout and after the process. Additionally, Endolift-based Subcision compared with other Subcision techniques requires significant fewer sessions of surgery and also it needs less recovery time. Generally, all these useful tips increase patient satisfaction. However, more controlled trials should be performed to evaluate the efficacy and side effects of Endolift compared with needles and other techniques.

5 | CONCLUSION

Acne scars can be a significant cosmetic concern, and many individuals seek treatment for this common condition, but there is

limited research on their therapy. We showed that Subcision with the Endolift seems to be a safe technique with high efficacy for acne scar treatment and high patient's satisfaction.

5.1 | Study limitation

Even this study was performed for free, but the cost of this therapy is high, and it can be a problem for the patients.

ACKNOWLEDGEMENTS

We appreciatively acknowledge the colleagues and staffs in Skin and Stem Cell Research Center, Tehran University of Medical Sciences, Tehran, Iran.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTIONS

N.MA, F. T, H. AR, and H. S. performed the research. N. MA and T.H designed the research study. H-K.M analyzed the data. T.E collected the data. H-K. M wrote the paper.

ETHICAL STATEMENT

The authors state that the patients have given their informed consent for the photographs and details.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author.

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How to cite this article: Nilforoushzadeh MA, Fakhim T, Heidari-Kharaji M, Hanifnia AR, Hejazi S, Torkamaniha E. Efficacy evaluation of Endolift-based Subcision on acne scar treatment. *J Cosmet Dermatol*. 2020;00:1-4. <https://doi.org/10.1111/jocd.13876>