

MORPHOLOGICAL CHARACTERISTICS AND CAUSES OF ATROPHIC SCAR TREAT WITH SUBCISION AND PLATELET-RICH PLASMA AT THE CAN THO DERMATO-VENEREOLOGY HOSPITAL IN 2021-2023

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ABSTRACT

Background: Atrophic scars are the result of natural healing leading to the formation of replacement fibrous tissue. The atrophic scar is a common undesirable complication of acne, chickenpox, herpes, trauma, etc. Although the disease does not cause dangerous complications, due to the location of the lesions on the face, it causes great aesthetic and psychological obstacles, and the patient is less confident in communication, profoundly affecting the patient's quality of life. and labor productivity. The combination of subcision and platelet-rich plasma (PRP) in the treatment of atrophic scars is a new method applied in recent years. The morphological characteristics and causes of them may affect the results of subcision and platelet-rich plasma treatment. **Objectives:** To describe the clinical characteristics and causes of atrophic scars in patients at Can Tho Dermato-Venereology Hospital from 4/2021 to 6/2023. **Materials and methods:** A cross-sectional descriptive study was carried out on 30 patients with atrophic scars who were treated with subcision and platelet-rich plasma at Can Tho Dermato-Venereology Hospital in 2021 –2023. **Results:** the average age of onset of atrophic scars was 21.27 ± 4.085 years old, and the average duration of atrophic scars was 6.33 ± 4.31 years. The majority of patients had acne scars, accounting for 90%; only 6.7% had post-varicella scars; and 3.3% had traumatic scars. 70% with mixed scars, and the common rate of boxscar (83.3%). Scars on the cheek were 100%, and 80% of patients appear to have atrophic scars in multiple locations. Scars color as normal skin accounted for 66.7%. The most atrophic scar patients classified as grade 3 accounted for 66.7%, grade 4 accounted for 23.3%, and at least level 2 accounted for 10%. **Conclusions:** Facial atrophic scars are mainly the result of acne. Most of them have mixed scars, boxscar are common. Atrophic scars are mainly distributed on the cheeks and in multiple locations. And grade 3 accounts for the majority.

Keywords: atrophic scar, subcision, platelet-rich plasma.

I. INTRODUCTION

Scars result from a natural healing process that leads to the formation of fibrous tissue that replaces normal tissue destroyed by injury or disease [1]. Scar formation can result in keloid scarring due to increased fibrous tissue formation, but more commonly, atrophic scars are formed due to tissue loss or reduction at the site of injury [2]. Atrophic scars are common in patients with acne, chickenpox, trauma, and other skin diseases. Atrophic scars are classified into rolling, boxcar, and ice pick scars [3]. The rate of atrophic scars in Asians is not different from the global one. A study of 269 Filipinos from August to November 2008 showed that 80% of acne scars were atrophic, and 53% of patients needed scar treatment.

Although the disease does not cause dangerous complications, due to the location of the lesions on the face, it causes great aesthetic and psychological obstacles, and the patient is less confident in communication, profoundly affecting the patient's quality of life. and labor

productivity. Subcision is constantly evolving and has been proven to be an effective treatment for atrophic scarring alone. However, many subjects have been shown to benefit more from combinatorial treatments involving subcision than from subcision alone, and platelet-rich plasma (PRP) therapy is the most common treatment implemented with subcision [4].

Therefore, we conducted the research "Morphological characteristics and causes of atrophic scar treatment with subcision and platelet-rich plasma at the Can Tho Dermato-Venereology Hospital" with the goal of describing clinical features and causes of facial atrophic scars in patients who come for scar treatment by subcision combined with platelet-rich plasma at Can Tho Dermato-Venereology Hospital from 2021 to 2023.

II. MATERIALS AND METHODS

2.1. Study population and setting

Study patients: All patients came for examination and treatment of atrophic scars with subcision combined with PRP at Can Tho City Dermatology Hospital from April 2021 to June 2023.

Standards for selection:

All patients were diagnosed on a clinical basis as having clinically atrophic scars, which are pits or deep grooves lower than the surrounding healthy skin surface.

Patients are diagnosed with concave scars on the face, grade 2 or higher.

The patient consented to participate in the study.

Standards for elimination:

The patient is a pregnant or lactating woman.

The patient has a history of treatment for concave scars by filler injection in the last 12 months or by other methods in the last 6 months.

History of keloids.

Patients taking drugs to prolong bleeding time.

Patients with dysfunction syndrome, a low platelet count, and bleeding organs.

Skin cancer, warts, actinic keratosis, or any skin infection located on the face.

2.2. Study design: A cross-sectional study.

Sample size: the sample size is calculated with the following equation

$$n = \frac{Z_{1-\alpha/2}^2 p(1-p)}{d^2}$$

n: is the smallest sample size

Z = 95%; $Z_{1-\alpha/2} = 1.96$

p: the proportion of patients with moderate to good improvement when treated with subcision combined with platelet-rich plasma, according to Suyog S. Dhamale et al. (2020), was 95%, $p = 0.95$ [5].

d: is the tolerance allowed in the study 8%, $d = 0.08$.

Thus $n = 29$. In fact, we studied on 30 patients.

2.3. Study contents

General characteristics of research subjects: age group, gender.

Clinical characteristics of atrophic scars: skin type determined according to the Fitzpatrick scale, causes of scars, age at onset of scars, time of scarring, location of scars, atrophic scar classification, color of the scars, grade of atrophic scars determined according

to the Goodman and Baron scale (Grade 2: Mild atrophy or hypertrophy that may not be obvious at social distances of 50 cm or greater and may be covered adequately by makeup or the normal shadow of shaved beard hair in males or normal body hair if extrafacial; Grade 3: Moderate atrophic or hypertrophic scarring that is obvious at social distances of 50 cm or greater and is not covered easily by makeup or the normal shadow of shaved beard hair in males or body hair if extrafacial, but is still able to be flattened by manual stretching of the skin; Grade 4: Severe atrophic or hypertrophic scarring that is obvious at social distances of 50 cm or greater and is not covered easily by makeup or the normal shadow of shaved beard hair in males or body hair and is not able to be flattened by manual stretching of the skin) [6]

2.4. Statistical analysis: analyzing data with SPSS 20.0

2.5. Ethics Approval

Research subjects were informed, explained and agreed to voluntarily participate in the study. All personal information and illnesses were kept confidential through computerized encryption to ensure the privacy of study participants. Ensure fairness and objectivity during data collection and processing.

III. RESULTS

Among the 30 study subjects, women had a higher percentage than men, accounting for 53.3% and 46.7%, respectively. The mean age of the study sample was $27,53 \pm 6,996$, ranging from the youngest being 17 years old to the oldest being 44 years old. Which, in the age group of 21–30 years old, accounts for the highest percentage (50%).

Table 1. Skin type and etiologies of atrophic scars

Characteristics (n=30)		n	%
Skin type	Type III	24	80
	Type IV	6	20
Etiologies of scars	Post-varicella scar	2	6.7
	Acne scar	27	90
	Traumatic scar	1	3.3

Patients with type III skin accounted for a high rate of 80%; the rest had type IV skin and accounted for 20%. The majority of patients had acne scars, accounting for 90%; only 6.7% had post-varicella scars; and 3.3% had traumatic scars.

Table 2. Age of onset and duration of atrophic scars

Age of onset and duration of atrophic scars (n=30)	Age of onset	Duration of scar
Minimum	14	1
Maximum	29	18
Mean \pm Std. Deviation	$21,27 \pm 4,085$	$6,33 \pm 4,31$

The average age of onset of atrophic scars was $21,27 \pm 4,085$ years old; the lowest was 14 years old, and the highest was 29 years old. The average duration of atrophic scars was $6,33 \pm 4,31$ years; the highest was 18 years, and the lowest was 1 year.

Table 3. Location and morphology of atrophic scars

Characteristics (n=30)		n	%
Location	Cheek	30	100
	Forehead	18	60
	Chin	10	33.3
	Nose	7	23.3
	Temporal region	20	66.7
	Multiple locations	24	80
Morphology of scars	Ice pick	12	40
	Rolling	18	60
	Boxcar	25	83.3
	Mixed scars	21	70

80% of patients appear to have atrophic scars in multiple locations, in which the cheek area accounts for the highest percentage of 100%, followed by the temple area at 66.7%, the forehead area at 60%, and the lowest at 23.3% in the nose area. Most patients have many types of scars on the lesion area, accounting for 70%, of which boxcar scars account for 83.3%.

Table 4. Color of atrophic scars

Color of atrophic scars	n	%
Normal	20	66.7
Dark	3	10
Red	7	23.3

Scar lesions with normal color, such as skin color, account for 66.7%, red scars account for 23.3%, and dark scars account for 10%.

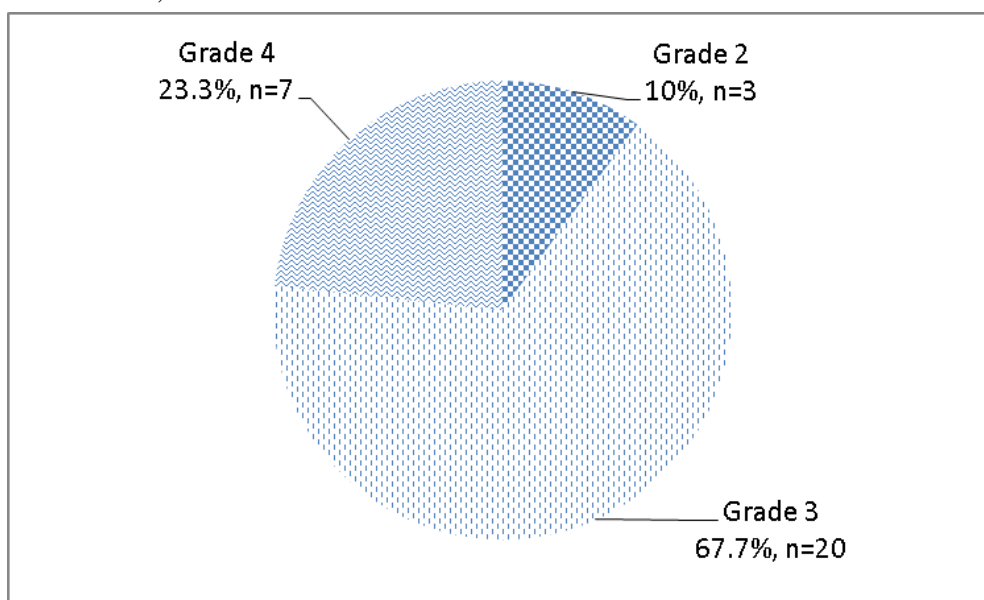


Figure 1. Distribution of patients with atrophic scars according to grade

The most atrophic scar patients classified as grade 3 accounted for 66.7%, followed by grade 4, which accounted for 23.3% of cases, and at least level 2 accounted for 10%.

IV. DISCUSSION

Skin type: in our study, patients with type III skin accounted for a high rate of 80%; the remaining patients with type IV skin accounted for 20%. This result is consistent with the study of Huynh Van Sang (2019), when the rate of type III patients accounted for 67.3%. However, this result is not consistent with the author, Deshmukh N. S. et al. (2019), who noted that the Fitzpatrick skin types of the subjects were Type IV 45%, Type V 30%, Type III 22.5%, and Type II 2.5% [7].

In our survey of the etiologies of scars, most patients had a history of acne leading to atrophic scars, accounting for 90%; only 6.7% of patients had post-varicella scars; and 3.3% had traumatic scars. According to Nouran Abd El, Aziz Abou Khedr, et al. (2017), the cause of atrophic scars is mainly acne, accounting for 80%, and chicken pox, accounting for 10%, 6% due to trauma, and 4% due to surgery [1]. Thus, the results of the above study are similar to ours. The results of medical histories related to indented scars also vary between studies. According to Jehad Alassaf et al. (2019), the causes of atrophic scars are: 27% are acne scars, 45% are traumatic scars, 13% are post-varicella scars (after chickenpox and after shingles), and 13% are surgical scars [8].

In terms of age of onset and duration of scarring, the results of our study recorded, The average age of onset of atrophic scars was 21.27 ± 4.085 years old; the lowest was 14 years old, and the highest was 29 years old. The average duration of atrophic scars was 6.33 ± 4.31 years; the highest was 18 years, and the lowest was 1 year. According to Huynh Van Sang (2019), the average age of atrophic scars is 18.7 ± 3.7 years old, and according to Le Thi Thu Hai, the average duration of atrophic scars is 10 ± 5.5 years [9], [10]. Thus, the results of the above studies are similar to ours.

According to our research, 80% of patients appear to have atrophic scars in multiple locations, with the cheek area accounting for the highest percentage at 100%, followed by the temple area at 66.7%, the forehead area at 60%, and the nose area at 23.3%. This result is similar to the authors Nguyen Thi Kim Cuc (2017) and Huynh Van Sang (2019); both authors noted that the occurrence of atrophic scars on the cheeks is the most frequent (15.87%, respectively, and 100%) [9], [11].

In our study, the majority of patients had mixed scars on the lesion area, accounting for 70%, of which the most common was boxcar scars, accounting for 83.3%. According to Nguyen Thi Kim Cuc and Pham Thi Lan (2017), the scar morphology observed was mainly boxcar and rolling scars (41.18% and 42.64%) [9]. According to Huynh Van Sang, the most common types of scars are boxcar scars (87.3%) and mixed scars (63.6%). So, this result is similar to our study.

Regarding the color of scars, in our study, normal-colored scar lesions such as skin color accounted for 66.7%, red scars accounted for 23.3%, and dark scars accounted for 10%. Our study is similar to that of author Nguyen Thi Kim Cuc (2017), noting that the majority of scars have normal skin color, and red and dark colors account for only 25% and 12.5%, respectively.

Regarding the grade of atrophic scar according to the Goodman and Baron scale, the most atrophic scar patients are classified as grade 3, accounting for 66.7%, followed by grade 4, accounting for 23.3% of cases, and the least grade of scarring is grade 2, accounting for 10%. A study by Nguyen Thi Kim Cuc and Pham Thi Lan (2017) recorded the highest percentage of grade 4 atrophic scars (74.2%). According to the Goodman and Baron

classification system, the severity of grade 4 atrophic scars is 70%, grade 3 is 20%, and grade 2 is 10% in the study of Deshmukh N. S. et al. (2019) [7]. Thus, the results of the author mentioned above are higher than those of our study. Our data gives us an overview of the diverse manifestations of atrophic scars.

V. CONCLUSION

Facial atrophic scars are mainly the result of acne. Most of them have mixed scars; boxscar are common. Atrophic scars are mainly distributed on the cheeks and in multiple locations. And grade 3 accounts for the majority.

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