

Atrophic acne scars, including scars less than 1.5 mm, may undergo spontaneous regression: A cohort study



To the Editor: Atrophic scarring is the most common subtype of acne scarring and results from poor wound healing in response to sebaceous follicle damage and collagen destruction caused by prolonged acne inflammation.^{1,2} Although acne scar grading classification systems exist, available data on the natural evolution of atrophic acne scars are sparse. In this retrospective study, we sought to address if the size of atrophic acne scars influences their ability to undergo spontaneous resolution over time.

High-quality, standardized digital photographs of untreated facial acne were obtained at baseline (week 0) and week 12 from a previous split-face pulsed dye laser acne treatment study.³ Participants with Leeds acne severity scale rating <2 (mild acne), history of oral retinoid use within 1 year prior to study enrollment, other acne treatment within 1 month of study entry, microdermabrasion within 3 months of study, a history of laser resurfacing, or use of nonsteroidal anti-inflammatory medications within 10 days prior to study were excluded.⁴ The study included 21 participants (6 female and 15 male) with a median age of 21 years. Six participants

identified their ethnicity as Asian and 15 identified as Caucasian. The average Leeds acne severity score of the cohort was 4.8.

A logistical regression with fixed effects was performed to determine the impact of initial scar size on spontaneous regression after 12 weeks. Spontaneous acne scar resolution was observed during the 12-week study period (Fig 1). A total of 24 (13%) scars resolved by week 12 (Table I). The relative proportion of the number of scars that spontaneously regressed by week 12 to the number of scars quantified at week 0 decreased as the size of the scar at baseline increased. We found that 47% of scars 0.5-0.9 mm, 11% of scars 1.0-1.5 mm, 3% of scars ≥ 1.5 mm resolved by week 12 (Table I). There was a statistically significant relationship between the size of an acne scar at outset and the odds that the scar would spontaneously regress after 12 weeks. Holding other variables constant, a 0.5 mm increase in scar size at baseline was associated with a significant change in the odds (9.6, $P < .001$), that the scar would be present after 12 weeks. No scar over the size of 1.5 mm spontaneously regressed.

Here we report that there appear to be some dynamic characteristics of atrophic scars, further countering the presumed notion that scars tend to be permanent.^{2,5} This retrospective study is inherently limited in that our study period was confined to



Fig 1. Spontaneous acne scar resolution in a study patient. The *circled areas* in (A) show atrophic scars at week 0, and those same areas are *circled* in week (B) to show resolution.

Table I. Identification and measurement of acne scars

Scar size	Number of scars at week 0	Number of scars at week 12	Resolved scars at week 12	% of scars resolved
<0.5 mm	0	24		
0.5-0.9 mm	30	16	14	47
1-1.4 mm	83	74	9	11
≥1.5 mm	66	65	1	3
Total scars	179	155	24	13

12 weeks, our evaluation was limited to clinical photographs rather than clinical examination of the patient, acne scar interpretation was subjected to inter-rater and intrarater reliability, and the small number of 0.5-0.9 mm scars (30). However, we do observe a correlation between acne scar size and scar resolution, adding to the sparse literature that acne scars are not inert and highlighting the importance of scar management in acne patients.

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Conflicts of interest

None disclosed.

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