

Adapalene 0.1% Gel in Combination With Microdermabrasion to Treat Acne

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Acne vulgaris is a disfiguring disease that typically affects adolescents and young adults. The treatment of acne can be difficult and often requires combination therapy. Microdermabrasion and topical retinoids are 2 approaches that have been widely used separately; however, conventional wisdom warns against the combination of these treatments. Adapalene 0.1% gel is a topical retinoid that has very few side effects and a favorable tolerability profile compared with other topical retinoids. Consequently, the authors challenged the conventional wisdom by testing the feasibility of combining adapalene 0.1% gel and microdermabrasion in a series of 6 teenage patients with moderately severe acne. In this group of patients, the combination of adapalene 0.1% gel and microdermabrasion was very well tolerated, resulting in a marked reduction in lesions during a 14-week period. These results suggest that the combination of microdermabrasion and a topical retinoid can be used as long as the retinoid has favorable tolerability.

Acne vulgaris is a dermatologic disease that affects both women and men, although those who suffer the most are teenagers. Acne can significantly influence an individual's quality of life and self-image because the condition has the potential to be emotionally debilitating. Moreover, it has been reported that having acne may have psychological ramifications leading to anxiety, depression, and suicide.¹ Proper treatment regimens can greatly enhance self-esteem, body image, and self-confidence.

The US Food and Drug Administration (FDA) has approved several agents to treat acne. Adapalene, tazarotene,

and tretinoin are topical retinoids that exhibit safe profiles for treating facial acne. Potential side effects from using retinoids are especially prevalent early in treatment. These side effects include peeling, erythema (abnormal redness of the skin), dryness, burning, and itching. However, side effects may be reduced by limiting use of moisturizers and exposure to sunlight and extreme temperatures.² Mild topical retinoids, such as adapalene, have been widely used by dermatologists to treat moderate to moderately severe facial acne. Adapalene 0.1% gel is a formulation that has been shown to be effective in treating acne and that has a low potential for skin irritation.³

Microdermabrasion has become a popular procedure in recent years for rejuvenating skin while improving the appearance of scars from acne, hyperpigmentation, photoaging, and stretch marks. It is a cosmetic procedure that uses abrasive substances, such as aluminum oxide crystals, to promote facial resurfacing.⁴ Several advantages of using aluminum oxide crystals instead of other particles

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TABLE 1

Patient Demographics in a Study of Moderate to Severe Acne Vulgaris Treated With Adapalene 0.1% Gel in Combination With Microdermabrasion

Characteristic	Patients, No. (%) (n = 6)
Age, y	
13	1 (17)
14	2 (33)
15	1 (17)
16	1 (17)
17	1 (17)
Sex	
Male	2 (33)
Female	4 (67)
Race	
Caucasian	5 (83)
African American	1 (17)
Fitzpatrick skin type	
I	2 (33)
II	2 (33)
III	1 (17)
VI	1 (17)

include less bleeding, fewer complications, better patient compliance, and no need for local anesthesia.⁵ Although few studies have reported its actual mechanism of action, microdermabrasion is performed in dermatology offices by trained aestheticians worldwide with positive results.⁶

Although microdermabrasion is well documented as being effective and safe, the general public has been slow to recognize and take advantage of this treatment option. Microdermabrasion may sometimes result in temporarily sensitized skin, which may increase the potential for skin irritation with topical therapies for acne, hyperpigmentation, and other preexisting conditions. It is for this reason that many dermatologists and aestheticians will avoid using retinoids in combination with microdermabrasion. This study evaluates the effectiveness and tolerability of topical retinoid therapy in combination with microdermabrasion to treat moderate to severe acne.

METHODS

Six new patients presenting to Dermatology & Skin Health, Dover, NH, with moderate to severe acne were invited to participate in a 14-week study. The patients ranged in age from 13 to 17 years (Table 1). Two patients were male; 4 were female. Five patients were Caucasian; 1 patient was African American. Fitzpatrick skin types I, II, III, and VI were represented. All patients were diagnosed with moderate to severe acne at the beginning of the study. Parental consent was obtained since all subjects were younger than 18 years.

All patients were provided with Cetaphil® Gentle Skin Cleanser for daily cleansing and Cetaphil Moisturizing Cream to use as needed. Adapalene 0.1% gel was initiated once nightly, as described in the package insert, for 14 days before the first microdermabrasion treatment (week 2). Additional microdermabrasion treatments were given every other week through week 12, and adapalene 0.1% gel was continued once nightly for the entire 14-week study.

Patients were followed for 14 weeks and seen at 2-week intervals. Total acne lesion counts were obtained at baseline and at each 2-week visit. Investigator rating of tolerability (erythema, peeling or scaling, dryness, and stinging or burning) was graded at each 2-week visit before microdermabrasion. Erythema was defined visually as background facial skin redness not involving lesions. Peeling or scaling was defined as a visual flaking of the skin. Dryness was assessed by facial skin palpation. Presence of stinging or burning was assessed by patient self-report. Frontal and side views of the face were photographed before microdermabrasion treatment at weeks 4, 6, 8, 10, and 12 and at week 14.

Six microdermabrasion procedures were performed during the study (weeks 2, 4, 6, 8, 10, and 12) under the supervision of Dr. James L. Campbell, Jr, and according to the manufacturer's operating guidelines for the microdermabrasion unit. The only compensation patients received was the skin care products provided and the microdermabrasion treatments. The primary outcomes of interest were reduction in acne lesion counts and tolerability.

RESULTS

All patients successfully completed the study. Three reported mild stinging or burning at week 2. One patient reported dry skin at week 3, although clinical signs of dryness were not noted. No patient experienced skin irritation severe enough to request stopping treatment. All patients demonstrated progressive improvement over the 14-week study (Table 2). A decrease in inflammatory and noninflammatory lesions was observed. The results for each patient are shown in Figures 1 through 6. With this treatment of once-daily adapalene 0.1% gel in combination with microdermabrasion every 2 weeks,

TABLE 2

Total Lesion Counts in Patients With Moderate to Severe Acne Vulgaris Treated With Adapalene 0.1% Gel in Combination With Microdermabrasion

Patient	Baseline	Week 8		Week 14	
	Lesions, No.	Lesions, No.	Change from baseline, %	Lesions, No.	Change from baseline, %
1	168	96	−43	81	−52
2	260	202	−22	134	−48
3	139	52	−63	38	−73
4	154	100	−35	36	−77
5	92	46	−50	8	−91
6	84	66	−21	26	−69

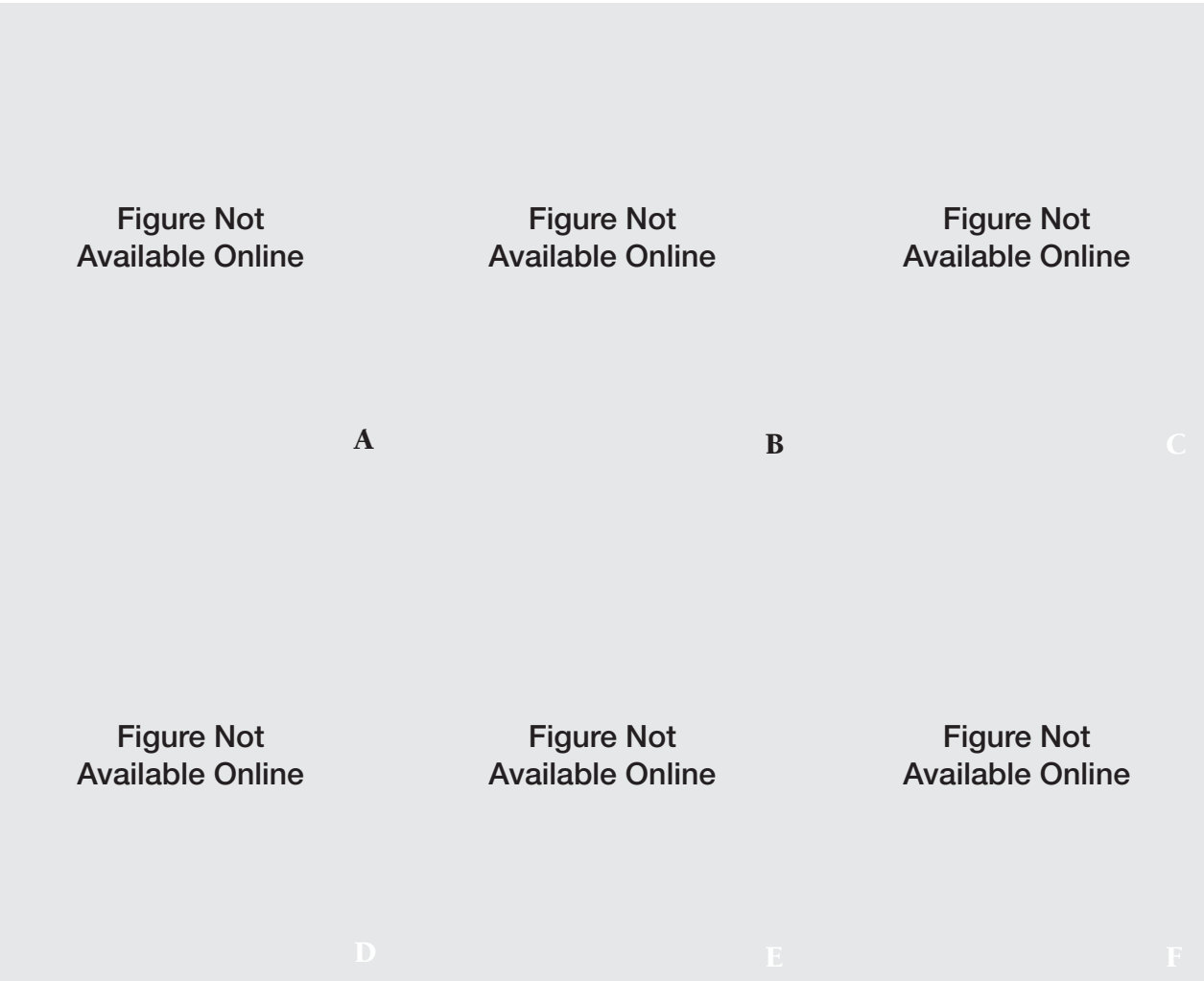


Figure 1. A 14-year-old patient (Fitzpatrick skin type II) with acne vulgaris being treated with adapalene 0.1% gel in combination with microdermabrasion at weeks 4 (A–C) and 14 (D–F) of a 14-week study.

the most noted improvements were in skin texture and appearance.

CONCLUSION

Adapalene 0.1% gel is currently among the most effective topical agents for treating acne.^{7,8} Furthermore, it has a rapid onset of action (within 1 week) and a tolerability

profile that is particularly important for patient compliance.⁹⁻¹¹ One clinical trial reported that adapalene 0.1% gel demonstrated statistically significantly ($P<.001$) less skin irritation after repeated applications under occlusive conditions than other retinoids, such as tretinoin 0.025% cream or tretinoin microsphere 0.1% gel.¹² Adapalene 0.1% gel was chosen to be used in combination with

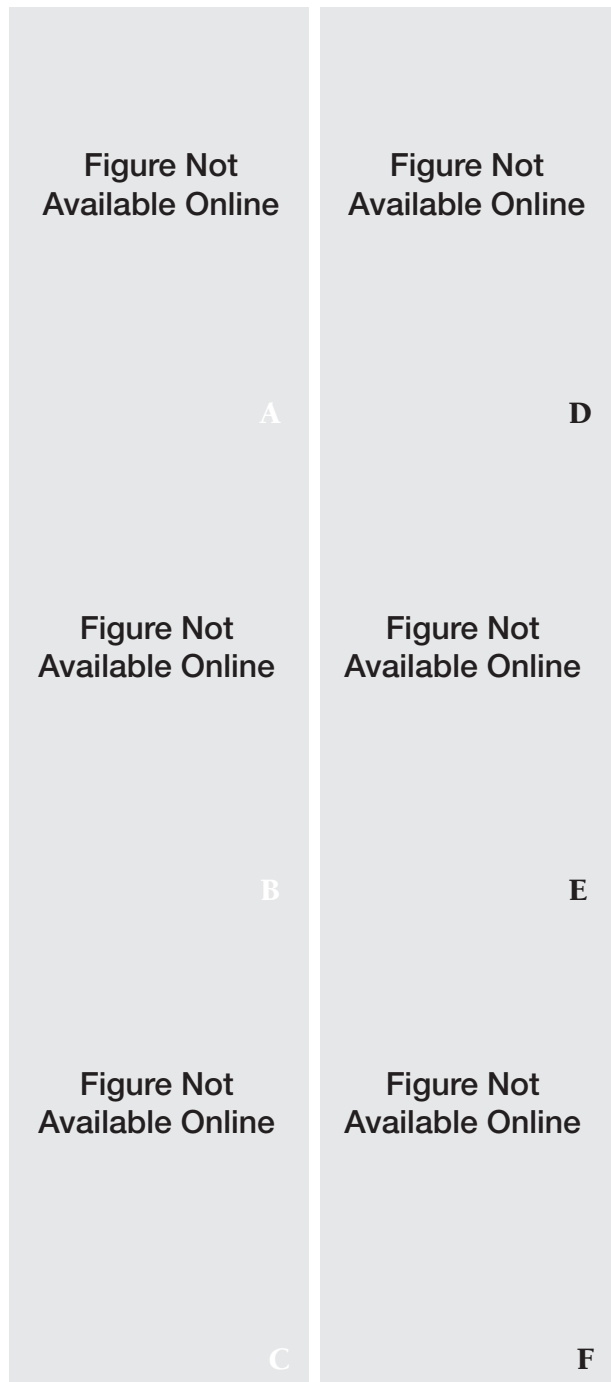


Figure 2. A 15-year-old patient (Fitzpatrick skin type I) with acne vulgaris being treated with adapalene 0.1% gel in combination with microdermabrasion at weeks 4 (A–C) and 14 (D–F) of a 14-week study.

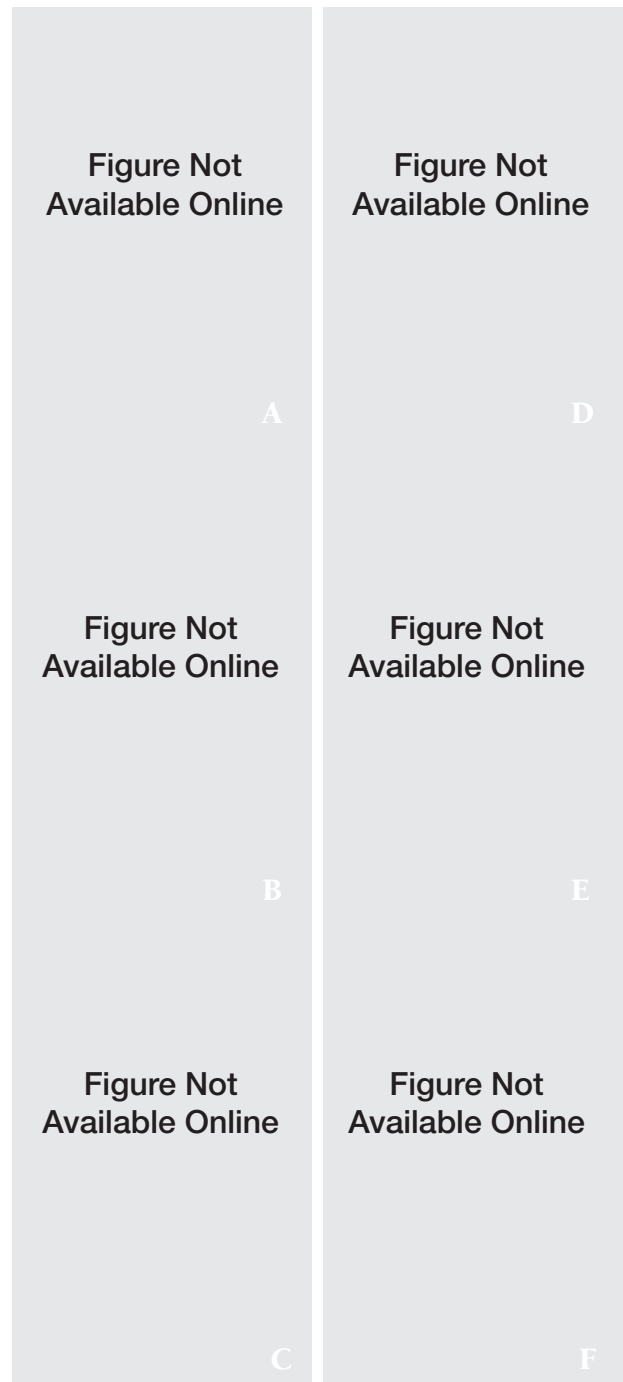


Figure 3. A 16-year-old patient (Fitzpatrick skin type I) with acne vulgaris being treated with adapalene 0.1% gel in combination with microdermabrasion at weeks 4 (A–C) and 14 (D–F) of a 14-week study.

microdermabrasion because of its mild nature. Other retinoids have greater potential for skin irritation and may not be as suitable for application with facial resurfacing techniques such as microdermabrasion.^{13,14}

Microdermabrasion is a powerful tool used in dermatologic practices to manage unwanted facial skin abnormalities such as acne scarring, fine lines, wrinkles,

and photoaged skin.¹⁵ The stereotype of this procedure is that it often leaves the skin too sensitive to treat in combination with topical retinoids. On the contrary, this study reports that 3 out of 6 patients treated with once-daily adapalene 0.1% gel for acne in combination with microdermabrasion every 2 weeks experienced only mild dryness or stinging or burning early in treatment,

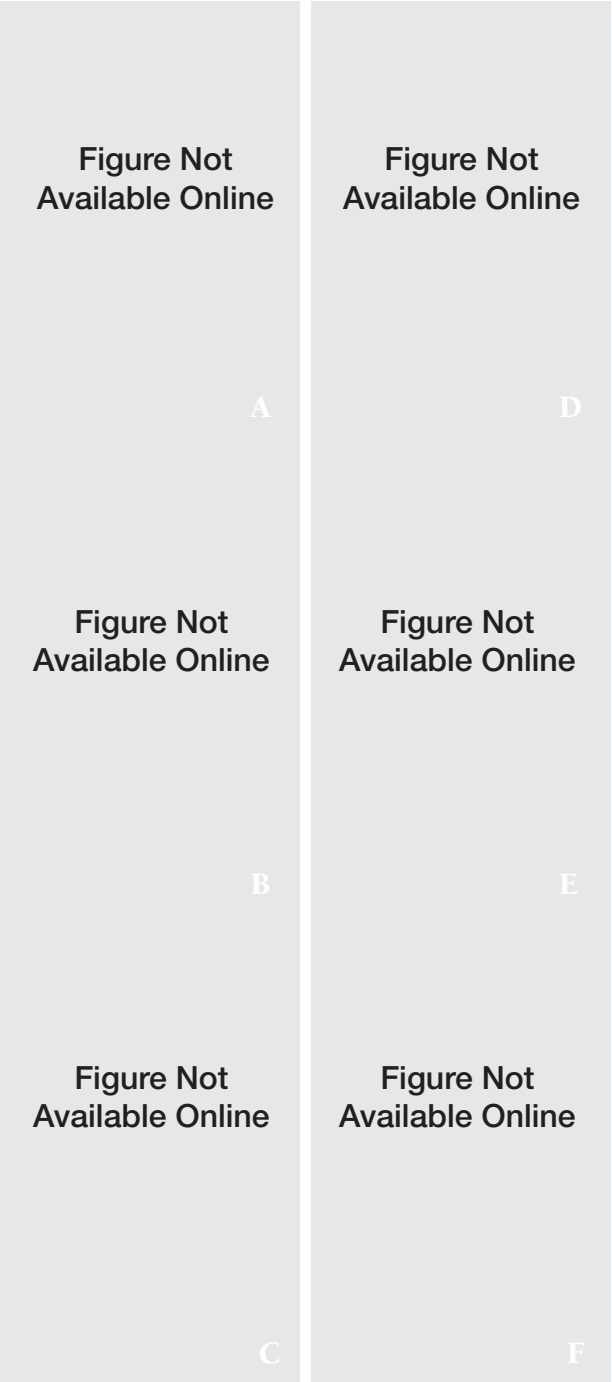


Figure 4. A 13-year-old patient (Fitzpatrick skin type VI) with acne vulgaris being treated with adapalene 0.1% gel in combination with microdermabrasion at weeks 4 (A–C) and 14 (D–F) of a 14-week study.

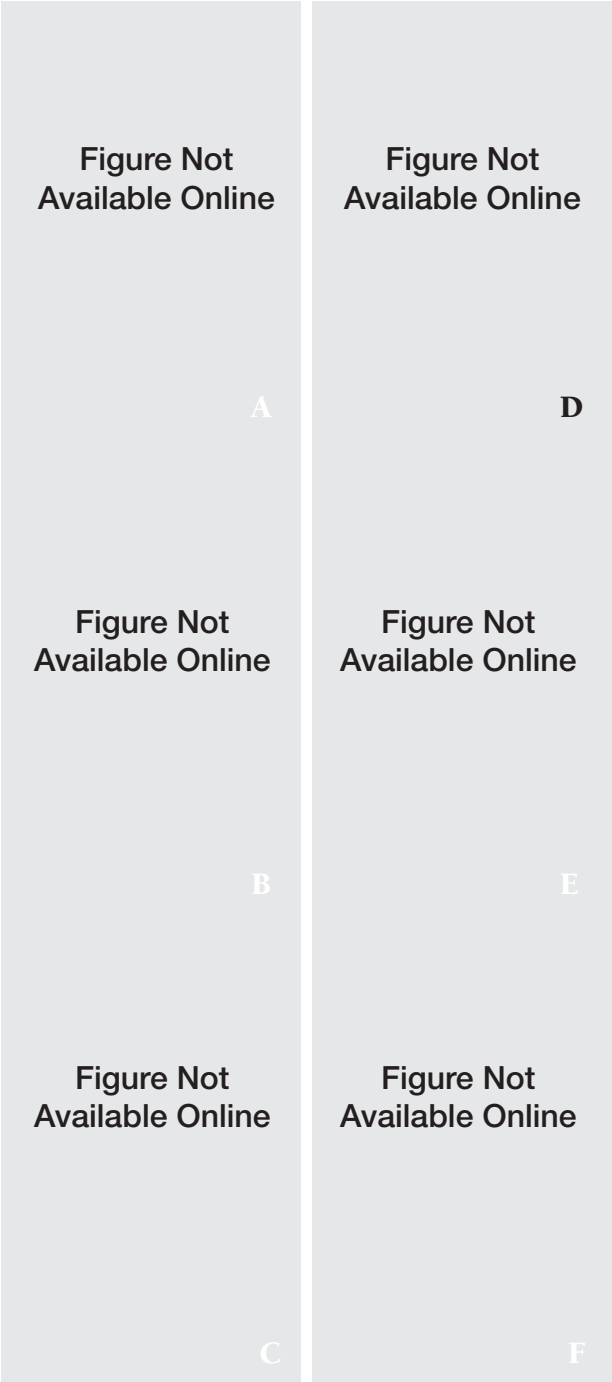


Figure 5. A 17-year-old patient (Fitzpatrick skin type III) with acne vulgaris being treated with adapalene 0.1% gel in combination with microdermabrasion at weeks 4 (A–C) and 14 (D–F) of a 14-week study.



Figure 6. A 14-year-old patient (Fitzpatrick skin type II) with acne vulgaris being treated with adapalene 0.1% gel in combination with microdermabrasion at weeks 4 (A–C) and 14 (D–F) of a 14-week study.

up to week 4. More important, all patients reported progressive improvements, especially in skin texture and appearance, throughout the 14-week study. This study contributes promising data to support topical adapalene 0.1% gel therapy in combination with microdermabrasion to treat acne.

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