doi:10.36849/JDD.15470

 ORIGINAL ARTICLE

Real-World Use of Topical Tranexamic Acid Serum in Patients With Hyperpigmentation

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ABSTRACT

Hyperpigmentation and pigmentary alterations are common dermatologic concerns that remain difficult to treat. The modernized topical tranexamic acid serum (TNXA-SHOT) is a novel, patent-pending serum that contains 5% tranexamic acid, 1% amino acid, and 3% endophytol, which have been shown to mediate various biological pathways of the mechanism of action involved in the pigment production process. These three active ingredients aim to fight key hyperpigmentation triggers: inflammation, hormonal imbalance, and environmental pollution. The following real-world case series aims to demonstrate the use of TNXA-serum under real-world conditions in a split-face, integrated skincare regimen with a procedure. Eight expert dermatologists shared their experience pairing the new serum with pigment-targeting procedures (eg, non-ablative laser, microneedling, and salicylic acid peel) to improve patient pigmentary outcomes. The real-world cases demonstrate that application of TNXA-serum to the face after in-office procedures may accelerate improvement in dyspigmentation while offering added benefits of improved skin texture and radiance. These real-world cases serve as a valuable guide for patients and dermatologists to help form targeted, effective, and safe pigment-targeting integrated skincare plans.

J Drugs Dermatol. 2026;25:4(Suppl 1):s3-10.

INTRODUCTION

Hyperpigmentation and dyschromia are amongst the most common dermatologic concerns for patients seeking care.[1] They can affect patients of all skin types and ages, and most commonly occurs after inflammation or injury to the skin. Hyperpigmentation that occurs as a sequela of inflammatory lesions, such as acne or atopic dermatitis is termed postinflammatory hyperpigmentation (PIH).[2] PIH disproportionately affects patients with skin of color (SOC), with one study citing that 65.3% of African Americans, 52.7% of Hispanics, and 47.4% of Asians were affected by acne-induced PIH.[3]

Hyperpigmentation and/or PIH results from an overproduction of melanin or an irregular distribution of melanin pigment in the skin.[2] Dyspigmentation results from excessive ultraviolet (UV) exposure and subsequent photodamage, environmental pollution, hormonal influence, and sequelae from inflammatory skin conditions.[2,4] Furthermore, hormonal shifts can stimulate melanin production and contribute to melasma and hyperpigmentation. Inflammatory cytokines in the setting of acne or atopic dermatitis can stimulate melanocyte activity, which also leads to increased production of melanin and its subsequent transfer to surrounding keratinocytes.[2] Air pollution can induce pigmentation by penetrating the skin to activate aryl hydrocarbon receptors that promote reactive oxygen species and oxidative stress that trigger melanocyte stimulation and hyperpigmentation.[5] Frequent UV exposure can also lead to melanin production and can exacerbate hyperpigmentation. Dermal hyperpigmentation may also result from inflammation-induced damage to basal keratinocytes, causing the release of melanin into the dermis and its subsequent uptake by macrophages.[2] Dermal hyperpigmentation is often refractory to treatment.

Effective management of epidermal hyperpigmentation should emphasize sun protection with sunscreen as well as treatment of underlying inflammatory conditions. Topical depigmenting agents such as hydroquinone, azelaic acid, kojic acid, glycolic acid, thiamidol, melasyl, licorice extract, and retinoids can be useful to help reduce the severity of hyperpigmentation in the skin.[2,6,7] Patients requiring additional treatment beyond topical therapy and sun protection can be offered systemic oral agents such as tranexamic acid, as well as chemical peels and laser/light therapy.[4] Chemical peels such as glycolic acid, salicylic acid, trichloroacetic acid, and Jessner's solution can also be used to help lighten dark spots, as well as energy-based devices such as fractional photothermolysis, Nd:YAG laser, microneedling, and intense pulsed light (IPL). However, hyperpigmentation can remain difficult to remove and

TABLE 1.

Tranexamic Acid Serum Ingredients	
Ingredients	**Action**
Tranexamic Acid	Anti-inflammatory tyrosinase inhibitor
α-Amino acid	Fights hormonal hyperpigmentation
Endophytol	Anti-pollution inhibits a trigger AHR

may require several rounds of treatments with maintenance to achieve skin evenness. Topical treatments have varying efficacy, and many have limits on time of use, such as hydroquinone. Thus, hyperpigmentation and dyschromia remain an important and difficult-to-treat dermatologic concern for many patients.

The TNXA-SHOT is a modernized tranexamic acid serum containing 5% tranexamic acid, 1% α-amino acid, and 3% endophytol (Table 1). The topical serum aims to reduce discoloration as monotherapy or in combination with laser/light-based treatments. Tranexamic acid (TXA) works primarily by inhibition of plasminogen activation. Plasminogen is activated by UV light, which causes inflammation and pigment production. In addition, TXA has also been shown to compete with tyrosinase activity, a key step in melanin production; thereby, decreasing melanin synthesis.[8] These active ingredients target the three key triggers of persistent discoloration: inflammation, pollution, and hormonal imbalances.

Here, we present six real-world patient cases to demonstrate the use of the TNXA-serum in hyperpigmentation.

MATERIALS AND METHODS

Aim of the Project

This real-world case series highlights aesthetic procedures integrated with the TNXA-SHOT serum and Mineral UV Defense SPF 50 in targeting skin dyspigmentation. The cases demonstrate how expert dermatologists integrate the TNXA-serum in their real-world practices for the appropriate patients. Expert panelists' clinical reasoning and rationale are detailed in the following patient cases to serve as a guide for dermatologists and healthcare providers seeking to apply integrated skincare practices in their patients.

Steps in the Process

The real-world cases were compiled and selected in the following steps: 1) project definition and expert panel selection, 2) data collection and preparation of patient cases, 3) patient case discussion and selection for publication, 4) literature review to support selected cases, and 5) drafting, review, and finalization of the manuscript.

Role of the Panel

An expert panel consisting of 8 board-certified dermatologists was selected to share patient cases using the TNXA-serum. Selected dermatologists had extensive experience in cosmetic and medical dermatology and represented clinical practices from across the United States and Canada. Panelists were selected based on their experience in treating diverse patient populations to provide a greater understanding of integrated skincare practices in a wider variety of patients and skin types. Panelists met on September 7th, 2025, in Austin, Texas, during the Science of Skin Summit to share and discuss patient cases using the TNXA-serum in combination with pigment-targeting therapies.

The panel used the following template to gather insight through a case-based approach:

1) Evaluation of dyspigmentation concerns and etiology
2) Pigment-Targeting Procedure Selection & Treatment Plan
3) Postprocedure Treatment Continuation and Maintenance with TNXA-SHOT serum
4) Physician Clinical Assessment
5) Patient Self-Assessment
6) Special Considerations and Key Takeaways

Each panelist shared one or two cases for a total of 9 cases that were presented during the meeting. In a collaborative effort, the panel selected 6 cases to be presented in this publication. The selected cases demonstrate the ability of the modernized topical TXA serum to enhance patient outcomes and correct dyspigmentation.

TNXA-SHOT Serum Integrated Skincare Regimen, Split-Face Protocol

Patients were instructed to apply the TNXA-SHOT serum (SkinCeuticals, New York, NY) twice daily to the right side of the face, starting the evening after a full-face pigment-targeting procedure. Thereafter, patients were recommended to apply the TNXA-serum twice daily to the right side of a cleansed and dry face. In addition, all patients were recommended to apply daily sunscreen (Mineral UV Defense SPF 50, SkinCeuticals, New York, NY) daily in the morning with reapplication during the day as needed. The recommended usage protocol given to patients and healthcare providers is highlighted in Table 2. The recommended hyperpigmentation treatment protocol was evaluated over 4 weeks, with patients returning for visits at week 1, 2, and 4 postprocedures.

Data Gathering and Outcome Measures

Suggested information to present included patient demographics, Fitzpatrick skin type, and the pigment-targeting procedure selected. Patients were followed for 4 weeks with visits at baseline, week 1, week 2, and week 4. At each visit, physician assessment scores were recorded for the split-face (right side, left side) in the following facial attributes: dark spots, hyperpigmentation, uneven skin tone, skin texture, and radiance. The scores were determined using the 10-point modified Griffiths scale for photodamage (0 = none, 1–3 = mild, 4–6 = moderate, 7–9 = severe), using facial photodamage and repair as a surrogate for pigmentation repair. Physicians also rated overall appearance using the 5-point global aesthetic improvement scale (GAIS) (1=very much improved, 2=much improved, 3=improved, 4=no change, 5=worse) at weeks 1, 2, and 4 for the right and left sides of the face. Lastly, discomfort/tolerability, erythema, and dryness were noted at each visit. Erythema and dryness were rated on a 5-point scale from (0=none to 4=severe) comparing the right and left sides of their faces. Qualitative responses were also collected from patients at each follow-up visit in a self-assessment questionnaire. Patients were asked to rate 14 statements on a 5-point

TABLE 2.

TNXA Serum Case Regimen			
Usage Instructions: Please do not use any other topicals or cosmetics other than those described in the protocol below.			
In Clinic Regimen (To be aligned with HCP)		At Home Regimen (To be aligned with HCP)	
Cleanse	Cleanse prior to procedure	Cleanse	Use personal cleanser twice daily to cleanse the full face before TNXA-SHOT and SPF
Treat	Non-energy/non-ablative laser and microneedling	Treat	None
--	--	Correct	Only on the right side of the face apply TNXA-SHOT apply 3-5 drops twice daily AM and PM to the clean and dry right side of the face
Protect	Future UV Mineral Defense SPF 50	Protect	Future UV Mineral Defense SPF 50 to be applied once daily (AM) to full face reapply as needed

TABLE 3.

Physician Assigned Scoring Template																		
Dark Spots	Hyperpigmentation		Uneven Skin Tone		Skin Texture		Radiance		Overall Appearance		Discomfort/ Tolerability		Erythema		Dryness			
Panelist ID: Age: FITZPATRICK: Gender (F/M): Skin Type: Procedure:	Modified Griffith's Scale 0-9 (10 point scale) 0=None (Best Possible Condition) 1-3=Mild 4-6=Moderate 7-9=Severe (Worst Possible Condition)							GAIS (5 point scale:1-5) 1=Very Much 2= Much Improved 3=Improved 4=No change 5=Worse					Yes or No If Yes, explain			5 point Scale: (0-4) 0=None 1=Minimal 2=Mild 3=Moderate 4=Severe			
	Score (0-9) Right	Score (0-9) Left	Score (0-9) Right	Score (0-9) Left	Score (0-9) Right	Score (0-9) Left	Score (0-9) Right	Score (0-9) Left	Score (0-9) Right	Score (0-9) Left	Score (1-5) Right	Score (1-5) Left	Score (Yes or No) Right	Score (Yes or No) Left	Score (0-4) Right	Score (0-4) Left	Score (0-4) Right	Score (0-4) Left
Visit 1 : Baseline/ Pre-Procedure*																		
Visit 3: Week 1*																		
Visit 4: Week 2*																		
Visit 5: Week 4*																		

TABLE 4.

Patient Questionnaire Template								
TNXA-SHOT Questions 1-12	Visit 1 (Post-Procedure) Right	Visit 1 (Post-Procedure) Left	Visit 2 Right	Visit 2 Left	Visit 3 Right	Visit 3 Left	Visit 4 Right	Visit 4 Left
1. Product has a pleasant texture	--	--			--	--		
2. Skin looks healthier	--	--			--	--		
3. Skin looks younger	--	--			--	--		
4. Skin looks more supple	--	--			--	--		
5. Dark Spots look reduced/minimized	--	--			--	--		
6. Hyperpigmentation looks reduced/minimized	--	--			--	--		
7. Skin looks brighter/more radiant/vibrant	--	--			--	--		
8. Skin Tone looks more even.	--	--			--	--		
9. Skin Texture looks smoother/more refined	--	--			--	--		
10. Skin looks more even	--	--			--	--		
11. Overall, appearance of skin is improved	--	--			--	--		
12. Overall, how satisfied are you with the product	--	--			--	--		
UV MINERAL DEFENSE Questions 13-14	Visit 1 (Post-Procedure) Right	Visit 1 (Post-Procedure) Left	Visit 2 Right	Visit 2 Left	Visit 3 Right	Visit 3 Left	Visit 4 Right	Visit 4 Left
13. Product has a pleasant texture	--	--			--	--		
14. My skin feels protected	--	--			--	--		

TABLE 5.

Summary of Real-World Patient Cases				
Case #	**Demographics**	**Concerns**	**Procedure**	**Key Features**
1	65M FST 2	Solar Lentigo Hyperpigmentation Skin Redness	Tixel®	Improvement in dark spots and overall pigmentation
2	44F FST 6	Hyperpigmentation Dry Skin	SylfirmX Radiofrequency microneedling	Unable to tolerate hydroquinone; TNXA- serum provided an effective, non-comedogenic option
3	39F FST 3	Lentigos Hyperpigmentation on cheeks	M22 IPL 590 nm	Naïve to cosmeceuticals and cosmetic procedures
4	77F FST 5	Uneven, Dull, Photoaged Skin, Dark spots, Dyschromia	Salicylic Acid 20% Peel	"Clearer", more even skin tone with TNXA-serum use by week 4
5	63F FST 4	Skin Discoloration Multiple Dark Spots/Sunspots	Thulium Laser (non-ablative fractional)	Longstanding melasma
6	32F FST 6	Uneven skin texture	SkinPen Microneedling	Improvement in skin tone and evenness

Likert scale (5=strongly agree, 4= agree, 3=neutral, 2=disagree, and 1=strongly disagree). Twelve statements referred to the TNXA-serum, and 2 questions referred to patient experience with the Mineral UV Defense. Examples of the physician assessment and subject assessment templates can be found in Tables 3 and 4, respectively.

Real-World Cases

Six split-face cases were selected by the expert panel to illustrate the use of the TNXA-serum after pigment-targeting procedures under real-world conditions and are summarized in Table 5. These cases were selected to illustrate the wide application of the serum in patients with varying skin types and hyperpigmentation etiologies. In general, a notable improvement in dark spots and hyperpigmentation on the right face with TNXA-serum application occurred at week 2 postprocedure compared to no serum treatment on the left side of the face (Figure 1). The TNXA serum also appeared to improve skin texture and radiance scores (Figure 1).

FIGURE 1. Average Physician-Assigned Scores for Right and Left Face for Six Patients Across 4 Weeks.

Case 1. Tixel with Tranexamic Acid Serum

A 64-year-old male (FST 2) presented with concerns of solar lentigos and dyspigmentation on his forehead and cheeks. The patient had significant sun damage from years of playing tennis outdoors. At baseline, the patient had scores of 5, 5, 5, 3, and 3 for dark spots, hyperpigmentation, uneven skin tone, skin texture, and radiance on the right side of his face, and scores of 6, 6, 6, 3, and 5 for the left side of his face for the same categories, respectively. To target dark spots, the patient and dermatologist elected to use full face Tixel®, a thermomechanical resurfacing procedure that promotes cell turnover to improve skin discoloration. To better understand if TNXA-serum could support this effect postprocedure, the patient was instructed to apply the TNXA-serum that evening to the right face, with no treatment on the left side of the face. Thereafter, the patient continued with twice-daily TNXA-serum application only on the right side of the face, leaving the left side of the face untreated, in conjunction with daily full-face sunscreen. After one week, the patient noticed no change in the appearance of the number of hyperpigmented or dark spots. However, at week 2 postprocedure, the patient began noticing a decrease in dark spot intensity and an improvement in his skin tone on the serum-treated right side of the face compared to the untreated left side of the face. By week 4, the dermatologist observed the patient's scores of 2, 2, 2, 1, and 2 in dark spots, hyperpigmentation, uneven skin tone, skin texture, and radiance for the right face following daily TNXA-serum treatment, respectively; when compared to the scores of 4, 4, 4, 2, and 4 for the same attributes on the left face. The patient also saw a decrease in skin erythema and dryness on the right side of his face with TNXA-serum application compared to the untreated left face (Figure 2). Additionally, there was a clear overall improvement in dyspigmentation and a decrease in facial redness when the procedure was combined with daily serum treatment. The patient reported that the pairing of procedure and TNXA-serum took a few weeks to take effect; however, by week 4, the patient strongly agreed that his skin looked healthier and more even with a notable reduction in hyperpigmentation. The GAIS score for the serum-treated right face was 2, much improved compared to the untreated left face, with a GAIS score of 3, improved by week 4.

Case 2. SylfirmX Radiofrequency Microneedling with Tranexamic Acid Serum

A 44-year-old female (FST 6) presented with dry, uneven skin. She had a long history of treatment for skin discoloration and PIH for which she had used hydroquinone. While the hydroquinone led to transient improvements, she could not use the hydroquinone long-term, and it often led her to have acne breakouts. After discussions with the expert dermatologist, the patient was treated with one session of SylfirmX radiofrequency microneedling (RFMN). RFMN treatment combined with TNXA serum would promote exfoliation of discolored cells and stimulate cellular renewal. At baseline, the patient had scores of dark spots (6), hyperpigmentation (5), uneven skin tone (6), skin texture (7), and radiance (5) for the right face; respectively. While pre-procedure on the left face, the physician assessed scores for dark spots (5), hyperpigmentation (5), uneven skin tone (6), skin texture (6), and radiance (6); respectively. At her one-week postprocedure follow-up, the patient began seeing a mild reduction in dark spots, hyperpigmentation, and improvement in skin texture with TNXA-serum treatment compared to her untreated left side of the face. By week 4, the patient had a GAIS score of 2, much improved, and saw a 2-point reduction in dark spot score on her right face treated with TNXA-serum compared to only 1 point reduction on the untreated left side (Figure 3). The patient started to notice a noticeable change after 2 weeks and felt an improvement in skin quality with the TNXA-serum. She felt that the skin on her right face felt softer and more supple following 4 weeks of serum treatment than the untreated skin on the left half of the face.

FIGURE 2. Case 1. Tixel with TNXA-Serum.

Photo Courtesy of Vivian Bucay MD

FIGURE 3. Case 2. SylfirmX Radiofrequency Microneedling with TNXA-Serum.

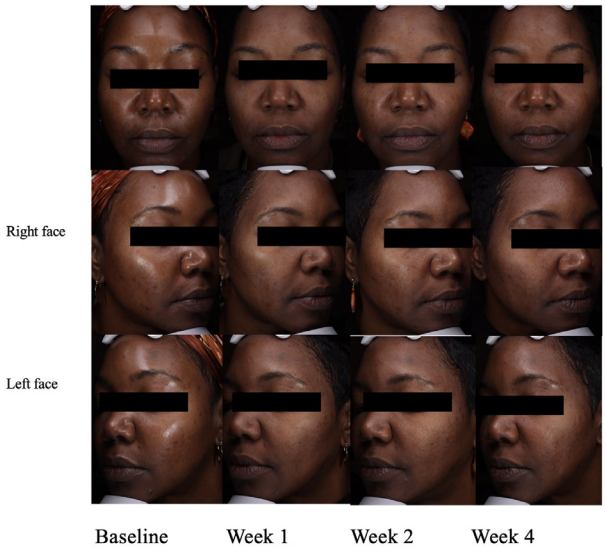

Photo Courtesy of Cheri Frey MD

Case 3. M22 Impulse Dye Laser with Tranexamic Acid Serum

A 39-year-old female (FST 3) presents for evaluation of sunspots on her cheeks and face. She had never previously had any cosmetic procedures; however, she was primarily concerned with the increased dark spot appearance. The physician chose a session of M22 Impulse Dye Laser (IPL) 590 nm integrated with TNXA-serum to help reduce dark spot intensity and hyperpigmentation. This combination was hypothesized to provide synergistic melanin reduction results. At baseline, the patient's right face had scores of 4, 4, 3, 3, 3, and her left face had scores of 4, 4, 3, 3, and 3 for dark spots, hyperpigmentation, uneven skin tone, skin texture, and radiance, respectively. At 2 weeks postprocedure, with TNXA-serum treatment, the right face appeared to have slightly more improvement in dark spots and hyperpigmentation compared to the skin on the untreated left side of the face. At her 4-week follow-up, she had a GAIS score of 2, much improved for both the left untreated and right serum sides of the face. The patient also agreed that her face felt healthier and younger postprocedure. While she only experienced slight improvement in her dark spots and hyperpigmentation, she felt that her overall skin tone and skin evenness had improved with the serum (Figure 4) compared to no treatment. She also strongly agreed that she was satisfied with the TNXA-serum product.

Case 4. Salicylic Acid Peel with Tranexamic Acid Serum

A 77-year-old female (FST 5) presented for continued treatment of refractory hyperpigmentation (PIH) secondary to melasma and age-related photodamage. Extremely difficult to manage with a monotherapy approach, remarking she had tried "everything on the market" for hyperpigmentation, including topical hydroquinone, retinoids, chemical peels, and lasers. Based on this history, the expert dermatologist elected to pair a 20% salicylic chemical peel with TNXA serum to address both discoloration conditions without aggravating the underlying PIH by increasing cellular renewal and exfoliation of discolored cells. At baseline, the patient had a score of 7 for both sides of her face across all the attributes of dark spots, hyperpigmentation, uneven skin tone, skin texture, and radiance, respectively. After 2 weeks postprocedure, she felt that the treatment TNXA serum helped improve her skin appearance and dyspigmentation faster when applied on the right side compared to no serum on the left half of the face. The patient reported that she only began to see noticeable changes after two weeks of serum use postchemical peel use with the most significant improvement on the skin around her right temple. At week 4, her GAIS score was 3 for improved, and her scores for dark spots, hyperpigmentation, uneven skin tone, skin texture, and radiance were 5 for her right and left face (Figure 5).

Case 5. 1927nm Thulium Laser with Tranexamic Acid Serum

A 63-year-old Hispanic female (FST 4) presents with longstanding melasma. She had undergone multiple rounds of laser and topical treatments with only moderate improvement in pigment reduction and skin evenness. At her baseline visit, she had severe scores for hyperpigmentation and dark spots on the right and left sides of the face (7 and 8, respectively). Similarly, the patient also had identical scores of 7, 5, and 4 for uneven skin tone, skin texture, and radiance, respectively, for both the right and left sides of the face at baseline. After discussing, the physician developed a treatment plan using a fractional 1927 nm Thulium laser skin resurfacing laser which is a safe option in Fitzpatrick IV-VI skin types with daily TNXA serum over a 4-week period. At week 1, she returned to her dermatologist and saw worsening of her dark spots and hyperpigmentation (score of 8 for both sides) regardless of application of TNXA serum; this was likely related to the effects of laser treatment. However, by week 4 postprocedure, it was evident that with serum treatment, the right side of the face saw a moderate improvement in dark spots (5) and hyperpigmentation (4); compared to the untreated

FIGURE 4. Case 3. M22 Impulse Dye Laser with TNXA-Serum.

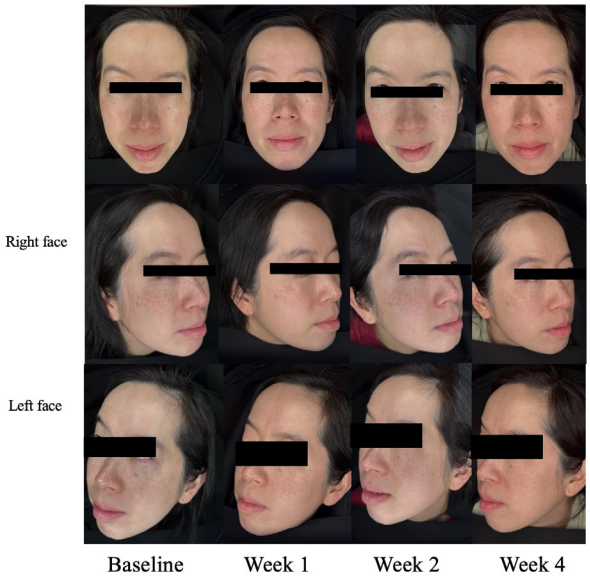

Photo Courtesy of Jenny Liu MD

FIGURE 5. Case 4. Salicylic Acid Peel with TNXA-Serum.

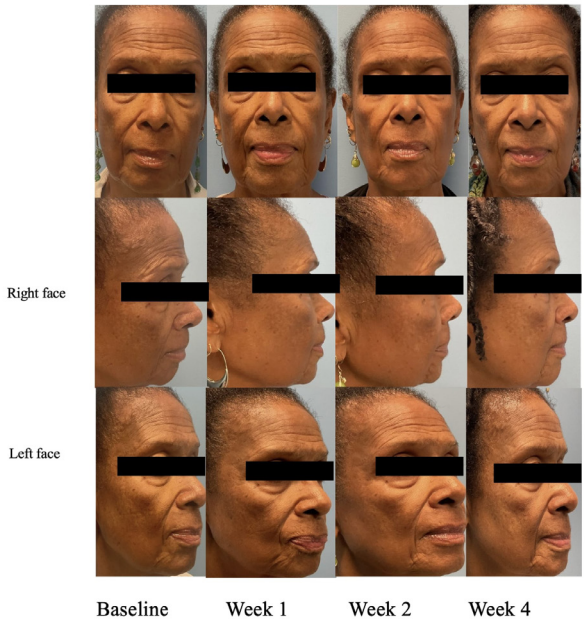

Photo Courtesy of Heather Woolery-Lloyd MD

FIGURE 6. Case 5. 1927nm Thulium Laser with TNXA-Serum.

Photo Courtesy of Jill Waibel MD

FIGURE 7. Case 6. SkinPen Microneedling with TNXA-Serum.

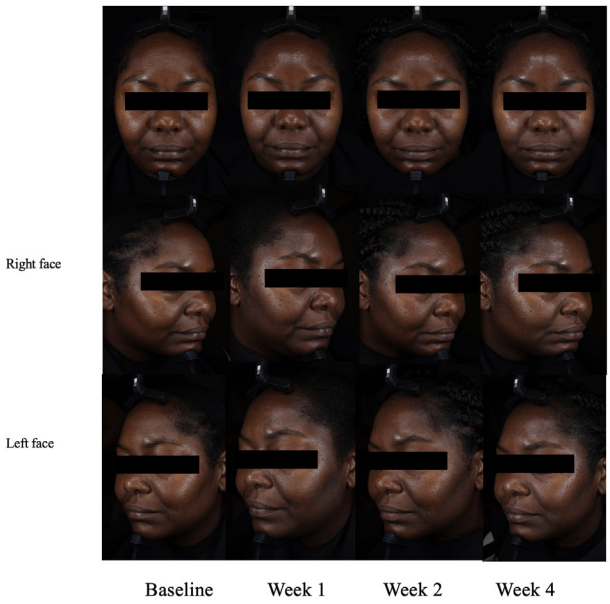

Photo Courtesy of Ted Lain MD

left side of the face (dark spots score 6, and hyperpigmentation score 6). Her GAIS score at week 4 with serum treatment was 2 (much improved) compared to improved (3) on the left side of the face. Additionally, for both sides of the face, she saw improvement in overall erythema and dryness over the treatment period. (Figure 6). The patient reported that the serum had a pleasant texture and strongly agreed that her skin looked brighter and more vibrant.

Case 6. SkinPen Microneedling with Tranexamic Acid Serum

A 32-year-old female (FST 6) presented for uneven skin tone and a desire to improve her overall skin quality. At baseline, the patient had scores of 6, 7, 6, 4, and 5 for dark spots, hyperpigmentation, uneven skin tone, skin texture, and radiance on her right face, respectively. On the left face, the physician evaluated her scores of 6, 7, 5, 3, and 5 for dark spots, hyperpigmentation, uneven skin tone, skin texture, and radiance, respectively. The expert dermatologist developed a treatment plan combining one session of microneedling with TNXA serum to increase cellular exfoliation and renewal to reduce hyperpigmentation and dark spots. After 2 weeks postprocedure of daily application of TNXA serum to the right half of the face, the patient did not feel that there was a significant difference between either the right or the untreated left side of her face. At 2 weeks postprocedure, the physician rated the serum-treated right face with scores of 5, 6, 5, 2, and 2 compared to scores of 6, 7, 6, 2, and 2, the untreated left side of the face across the attributes of dark spots, hyperpigmentation, uneven skin tone, skin texture, and radiance, respectively. At 4 weeks postprocedure, her GAIS score was 4 (no change) for the right face and 3 (improved) for the left face. The patient did report that her overall skin texture had improved, and the physician attributed this to daily sunscreen application. In the subject questionnaire, the patient strongly agreed that her skin felt healthier and was satisfied with the product texture and application (Figure 7).

DISCUSSION

Hyperpigmentation remains an important dermatologic challenge for many patients and dermatologists. The TNXA-serum appears to be an effective adjunct treatment for patients undergoing pigment-targeting procedures in the office. In this case series, the TNXA serum was used in integrated skincare regimens in a variety of patients and diverse skin types. The TNXA-serum contains patent-pending 5% tranexamic acid, 1% α-amino acid, and 3% endophytol. Together, this advanced complex of ingredients aims to address persistent discoloration.

Oral tranexamic acid has long been effectively used in practice to treat melasma. It is a plasmin inhibitor and decreases melanin synthesis through antiplasmin activity. Given its mechanism of action, the oral form of tranexamic acid may not be an option in many patients with a history of thromboembolism, blood disorders, or oral contraceptive use. However, topical tranexamic acid has been studied as it may be more suitable for the wider population. Topical tranexamic acid has been shown to be effective in reducing hyperpigmentation in a randomized double-blinded clinical trial performed on 60 women suffering from melasma. The results of this case series demonstrated that topical tranexamic acid was as effective as topical 2% hydroquinone.[9] Ebrahimi et al also demonstrated that in a split-face study, topical tranexamic acid was as effective as hydroquinone and dexamethasone over 2 weeks.[10]

Alternatively, trans-epidermal and intradermal administration of tranexamic acid has been studied in subjects with melasma and has

shown promising therapeutic effects in small-scale studies. Saki et al demonstrated in a split-face controlled trial that intradermal injection of tranexamic acid had a better therapeutic outcome for melasma when compared to topical hydroquinone cream.[11] Further, a one-year study on 40 patients with facial melasma demonstrated that oral tranexamic acid (250 mg twice daily for 12 weeks) and transepidermal delivery of tranexamic acid solution via a dermaroller (every 2 weeks for 12 weeks) had similar efficacy. Thus, these data suggest that topical transepidermal tranexamic acid may be a safer, effective therapy for certain patients who are not candidates for oral tranexamic acid therapy.

The TNXA-serum provides a comprehensive tranexamic acid-containing solution that may be used in combination with energy-based procedures to enhance and accelerate pigment removal. Using the TNXA-serum in combination with microneedling may offer synergistic effects by combining the skin-renewing effects of microneedling while offering the ability to deliver the TNXA-serum trans-epidermally during the treatment. Thus, the TNXA-serum is an effective, safe option for patients with refractory pigmentation or for those who are not candidates for oral tranexamic acid. The serum may also be used as prevention for patients who have PIH-prone skin and may provide a proactive solution for patients wanting to reduce their PIH burden after acne or other inflammatory skin disease flares. Further, the serum may also provide a topical option for use between cycles of hydroquinone use or other topical therapy that may not be used on a continuous basis.

In the six presented cases, the TNXA serum appeared to take effect after 2 weeks of application. Longer split-face studies will be necessary to evaluate the full effect of the serum. Overall, the TNXA-serum was well tolerated and an effective addition to hyperpigmentation treatment regimens for use in a variety of skin types across a wide range of clinical practice settings.

Limitations

This is a real-world case series that demonstrates expert dermatologists' use of the TNXA-serum under real-world conditions. The data collected is based on perceived physician-reported and patient-reported outcomes. Thus, the results presented do not represent rigorous data from a controlled clinical trial environment. The split-face design aimed to help patients compare the rate of hyperpigmentation improvement with serum treatment; however, at-home application makes it difficult to ensure that TNXA-serum was strictly applied to the right side. Further, the right side application was arbitrarily chosen for uniformity across patients; however, the severity of dyspigmentation was often different on the patients' left and right faces; thereby potentially skewing ratings. In addition, the short follow-up period may have failed to capture the full effect of the serum. Hyperpigmentation can take many months to resolve; thus, longer studies with the serum may reveal more significant changes. Lastly, full face application of daily Mineral UV Defense sunscreen (SPF 50) also likely significantly contributed to improvement in skin pigmentation and tone, which added to the perceived effects of the TNXA-serum. Despite these limitations, these cases share expert opinion, clinical experiences, and insights on how to integrate a pigment-targeting serum into clinical practice and in combination with other energy-based procedures.

CONCLUSION

The TNXA-serum contains 5% tranexamic acid, 1% α-amino acid, and 3% endophytol, which target key pigmentary triggers: inflammation, pollution, and hormonal imbalances. The presented real-world cases demonstrate a potential benefit of TNXA-serum when used in combination with pigment-targeting procedures to enhance and accelerate hyperpigmentation treatment. In this case series, the serum was used in combination with microneedling, non-ablative laser, thermomechanical device, and chemical peels in a split-face regimen, which demonstrated enhanced pigment-targeting effects compared to the procedure alone. The serum was suitable for all skin types (2–6) without any reported adverse effects. Patients were highly satisfied with the serum and reported overall improvement in skin texture with the product. The TNXA-serum is an important addition to the arsenal of pigment-targeting agents for skin types prone to PIH and hyperpigmentation, as well as for patients who are not candidates for systemic agents. Future studies will examine the serum effects over a longer time and compared to other standard lightening agents such as hydroquinone.

DISCLOSURES

The authors have no other conflicts of interest to declare.

Funding: This real-world case series supplement to JDD was supported by an unrestricted educational grant from SkinCeuticals International-L'Oréal Groupe.

ACKNOWLEDGMENT

The authors thank Sophie Guenin MD for help with the preparation and writing of this manuscript.

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