International Journal of Medical and Pharmaceutical Research

Online ISSN-2958-3683 | Print ISSN-2958-3675
Frequency: Bi-Monthly
Available online on: https://ijmpr.in/

Original Article

Comparative Clinical and Dermoscopic Findings of Patients With Topical Steroid Damaged Face (TSDF): A Cross-Sectional Observational Study

Dr Ketaki Shaha[1], Dr Vrinda Sahai[2], Dr K S Dillon[3], Dr Mohd Rafiq Tilwani[4]

[1,2]Post graduate scholar department of dermatology TMMC & RC moradabad UP
[3]Professor Dermatology, TMMC & RC Moradabad UP
[4]Associate professor dermatology Kashmir medical collage srinagar JK

OPEN ACCESS

Corresponding Author:

Dr Mohd Rafiq Tilwani
Associate professor dermatology
Kashmir medical collage srinagar JK

Received: 01-06-2026
Accepted: 20-06-2026
Available online: 30-06-2026

ABSTRACT

Topical steroid damaged face (TSDF) has emerged as a major dermatological concern because of irrational and prolonged use of topical corticosteroids over facial skin. The present cross-sectional observational study was conducted to evaluate the clinical and dermoscopic features of TSDF and to analyze their association with duration and potency of topical corticosteroid use. A total of 86 patients clinically diagnosed with TSDF were included in the study. Detailed clinical history, cutaneous examination, and dermoscopic evaluation were performed. The mean age of patients was 27.62 ± 7.21 years, with female predominance (70.9%). Daily topical corticosteroid application was observed in 69.8% of patients, while fairness enhancement was the most common indication for misuse (30.2%). Erythema (76.7%) and acneiform eruptions (66.3%) were the predominant clinical findings. Dermoscopically, red diffuse areas (86.0%) and polygonal vessels (55.8%) were the most frequent findings. Significant association was observed between prolonged duration of steroid use and polygonal vessels ($p=0.0007$), white structureless globules ($p=0.0023$), and linear brown/red wavy streaks ($p<0.001$). No significant association was observed between steroid potency and polygonal vascular pattern. The present study highlights the utility of dermoscopy as a valuable non-invasive tool in identifying characteristic vascular and structural changes associated with chronic topical corticosteroid misuse and emphasizes its role in early diagnosis and assessment of disease severity in TSDF.

Keywords*: Preterm neonates, respiratory distress syndrome, CPAP, NIPPV, HFNC, mechanical ventilation, neonatal outcomes.*

INTRODUCTION

Topical corticosteroids (TCS) are among the most frequently prescribed medications in dermatological practice because of their potent anti-inflammatory, immunosuppressive, and vasoconstrictive properties. When used appropriately under medical supervision, they are highly effective in the management of various inflammatory dermatoses. However, irrational and prolonged use of topical corticosteroids, particularly over the face, has emerged as a significant dermatological concern, especially in developing countries such as India. [1, 2]

In recent years, misuse of fixed-dose combinations containing corticosteroids, antifungals, and antibiotics has increased substantially due to their easy over-the-counter availability, lack of regulatory control, and aggressive marketing practices.[3] Social and cultural emphasis on fair complexion, along with the desire for rapid cosmetic improvement, has further contributed to indiscriminate use of topical corticosteroids among young individuals, particularly females.[4] This widespread misuse has led to an increasing burden of steroid-modified dermatoses in routine clinical practice.

Topical steroid damaged face (TSDF), also referred to as topical steroid-dependent face, is characterized by semi-permanent or permanent facial skin damage resulting from inappropriate, prolonged, or unsupervised use of topical corticosteroids. [5] These agents are commonly misused for conditions such as acne, melasma, hyperpigmentation,

fairness enhancement, and other undiagnosed facial dermatoses.[6] Chronic use of topical corticosteroids may lead to a spectrum of adverse effects including erythema, acneiform eruptions, telangiectasia, hyperpigmentation, atrophy, hypertrichosis, xerosis, and photosensitivity, significantly impairing patients' quality of life. [2, 7]

The pathogenesis of TSDF is multifactorial and involves rebound vasodilatation following withdrawal of corticosteroids, epidermal barrier dysfunction, dermal atrophy, and local immunosuppression. [1] Prolonged corticosteroid application results in persistent vascular instability and connective tissue damage, which clinically manifests as erythema, telangiectasia, burning sensation, acneiform eruptions, and photosensitivity. [2]

Diagnosis of TSDF can be challenging as its clinical presentation often mimics other inflammatory facial dermatoses, particularly rosacea. Furthermore, many patients fail to disclose a history of topical steroid use, making diagnosis difficult based on clinical examination alone. [8] Dermoscopy has emerged as a valuable non-invasive diagnostic modality that enables visualization of characteristic vascular and structural changes associated with topical steroid misuse. Dermoscopic features such as polygonal vessels, diffuse erythema, tortuous telangiectasia, white structureless areas, follicular plugging, and demodex tails have been increasingly described in patients with TSDF. [5, 6, 9]

Recent studies have highlighted the utility of dermoscopy not only in confirming the diagnosis of TSDF but also in differentiating it from other causes of facial erythema and in assessing disease severity. [5, 9] However, literature regarding the clinicodermoscopic profile of TSDF remains limited, and only a few studies have evaluated the association between dermoscopic findings and duration or potency of topical corticosteroid use. Therefore, the present study was undertaken to evaluate the clinical and dermoscopic features of patients with topical steroid damaged face and to analyze their association with duration and potency of topical corticosteroid use.

METHODOLOGY

Study Design

This cross-sectional observational study was conducted in the Department of Dermatology, Venereology and Leprosy at Teerthanker Mahaveer Medical College and Research Centre, Moradabad, Uttar Pradesh, over a period of six months after obtaining approval from the Institutional Ethics Committee and College Research Committee. (IEC approval number: TMU/IEC/2025/FACULTY/050)

Study Population

A total of 86 patients clinically diagnosed with topical steroid damaged face (TSDF) were enrolled in the study using a convenience sampling technique. Patients aged more than 18 years with a history of topical corticosteroid application over the face for continuous 7 days or intermittent use for 15 days or more and presenting with clinical features suggestive of TSDF were included after obtaining informed written consent.

Patients with pre-existing facial dermatoses such as rosacea, seborrheic dermatitis, atopic dermatitis, and contact dermatitis prior to initiation of topical corticosteroid use were excluded from the study. Patients with endocrine disorders including Cushing syndrome, thyroid disorders, and polycystic ovarian disease, those receiving systemic corticosteroids, and pregnant or lactating females were also excluded.

Data Collection and Clinical Evaluation

A detailed clinical history was obtained from all participants, including demographic details, indication for topical steroid use, source of recommendation, frequency and duration of application, and potency of topical corticosteroid used. Clinical examination was performed to assess symptoms and cutaneous findings associated with TSDF.

Dermoscopic Evaluation

Dermoscopic examination was performed using a handheld polarized dermoscope (DermLite DL5). The dermoscopic parameters evaluated included vascular patterns such as linear, tortuous, polygonal, fine, and arborizing telangiectasia along with follicular plugging, diffuse erythema, white structureless globules, demodex tails, desquamation, pustules, brown globules, and linear brown/red wavy streaks. Clinical and dermoscopic photographs were obtained after informed consent.

Statistical Analysis

The collected data were collected and analyzed using appropriate statistical methods. Quantitative variables were expressed as mean ± standard deviation, whereas qualitative variables were represented as frequency and percentage. Chi-square test was applied to evaluate the association between duration and potency of topical corticosteroid use with various dermoscopic findings. Statistical analysis was performed using SPSS software. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Demographic Profile

A total of 86 patients with topical steroid damaged face (TSDF) were included in the present study. The mean age of the study population was 27.62 ± 7.21 years. Females constituted the majority of cases, accounting for 61 (70.9%) patients, while 25 (29.1%) patients were males (Table 1).

Table 1. Demographic Profile of Patients with TSDF

Variable	Value
Mean age (years)	27.62 ± 7.21
Female	61 (70.9%)
Male	25 (29.1%)

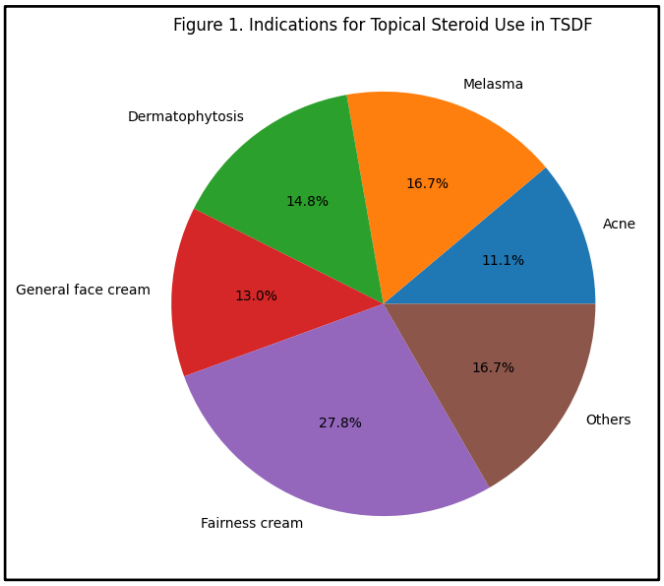
Pattern of Topical Steroid Misuse

Daily application of topical corticosteroids was observed in 60 (69.8%) patients, while 18 (20.9%) patients reported application 2–3 times per week. The duration of topical steroid use ranged from less than 6 months to more than 12 months, with maximum patients [32 (37.2%)] reporting steroid use for 6–12 months (Table 2).

Potent topical corticosteroids were the most commonly abused preparations. Class 3 steroids were used by 26 (30.2%) patients followed by Class 2 steroids in 21 (24.4%) patients. Fairness enhancement was the most common indication for topical steroid use, reported by 26 (30.2%) patients, followed by acne in 22 (25.6%) and melasma in 18 (20.9%) patients. Pharmacists constituted the most common source of recommendation or procurement of topical corticosteroids, accounting for 30 (34.9%) cases, followed by non-dermatologists in 17 (19.8%) patients (Table 2, Figure 1).

Table 2. Pattern of Topical Steroid Misuse among Patients with TSDF

Variable (Frequency of application)	Frequency
Daily	60 (69.8%)
2-3 times/week	18 (20.9%)
Occasionally	8 (9.3%)
Duration of application	
<6 months	24 (27.9%)
6–12 months	32 (37.2%)
>12 months	30 (34.9%)
Potency of topical steroid used	
Class 1 (Superpotent)	8 (9.3%)
Class 2 (Potent)	21 (24.4%)
Class 3 (Potent)	26 (30.2%)
Class 4 (Midstrength)	18 (20.9%)
Class 5 (Midstrength)	9 (10.5%)
Class 6 (Mild)	3 (3.5%)
Class 7 (Least potent)	1 (1.2%)
Indication for steroid application	
Fairness cream	26 (30.2%)
Acne	22 (25.6%)
Melasma	18 (20.9%)
Dermatophytosis	9 (10.5%)
General face cream	7 (8.1%)
Others	4 (4.7%)
Source of steroid recommendation	
Pharmacist	30 (34.9%)
Non-dermatologist	17 (19.8%)
Friends	13 (15.1%)
Relative	9 (10.5%)
Dermatologist	5 (5.8%)
Others	12 (14.0%)



Clinical Presentation and Cutaneous observations

Redness was the most common presenting complaint, observed in 63 (73.3%) patients, followed by burning sensation in 58 (67.4%) patients and acne in 49 (57.0%) patients. Pigmentation was reported by 42 (48.8%) patients, while itching and photosensitivity were observed in 36 (41.9%) and 24 (27.9%) patients, respectively (Table 3).

On cutaneous examination, erythema was the predominant clinical finding, present in 66 (76.7%) patients, followed by acneiform eruptions in 57 (66.3%) and telangiectasia in 49 (57.0%) patients. Hyperpigmentation was observed in 41 (47.7%) patients. Scaling and xerosis were noted in 29 (33.7%) and 24 (27.9%) patients, respectively, whereas atrophic changes were identified in 18 (20.9%) patients (Table 3).

Table 3. Chief Complaints and Cutaneous Findings in Patients with TSDF

A. Chief Complaints	
Complaints	**Frequency (%)**
Redness	63 (73.3%)
Burning Sensation	58 (67.4%)
Acne	49 (57.0%)
Pigmentation	42 (48.8%)
Itching	36 (41.9%)
Photosensitivity	24 (27.9%)
Swelling	16 (18.6%)
Striae	5 (5.8%)
B. Cutaneous Finding	
Finding	Frequency
Erythema	66 (76.7%)
Acneiform eruption	57 (66.3%)
Telangiectasia	49 (57.0%)
Hyperpigmentation	41 (47.7%)
Scaling	29 (33.7%)
Xerosis	24 (27.9%)
Atrophy	18 (20.9%)
Hypertrichosis	14 (16.3%)
Hypopigmentation	10 (11.6%)
Wrinkles	8 (9.3%)
Striae	4 (4.7%)
White hair	3 (3.5%)
Tinea incognito	3 (3.5%)

Dermoscopic Findings

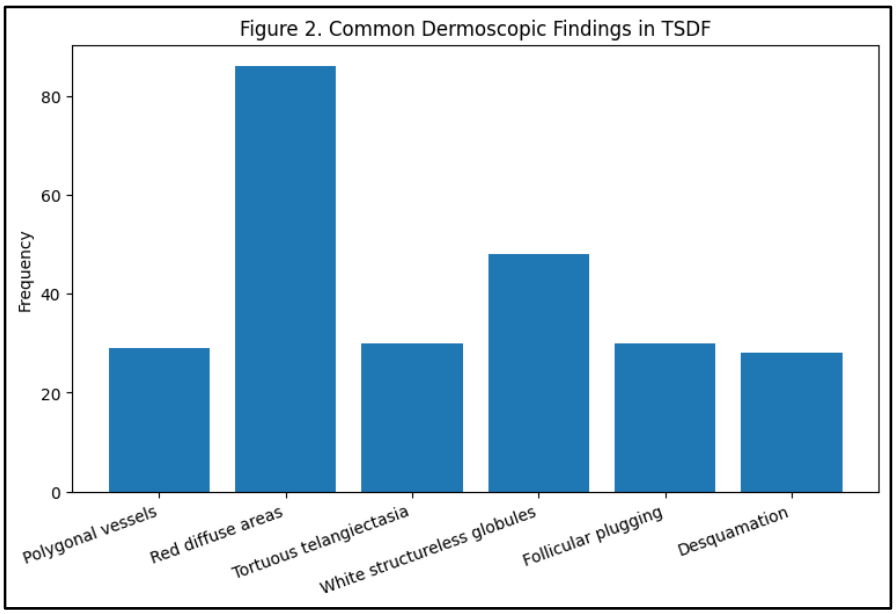
Dermoscopic examination revealed red diffuse areas as the most common finding, observed in 74 (86.0%) patients. Polygonal vessels were identified in 48 (55.8%) patients, followed by tortuous telangiectasia in 39 (45.3%) and fine

telangiectasia in 27 (31.4%) patients. White structureless globules suggestive of atrophic changes were observed in 25 (29.1%) patients (Table 4).

Other notable dermoscopic findings included follicular plugging in 22 (25.6%) patients, desquamation in 20 (23.3%), and demodex tails in 19 (22.1%) patients. Linear brown/red wavy streaks were observed in 17 (19.8%) patients, whereas arborizing vessels and pustules were seen in 12 (14.0%) and 11 (12.8%) patients, respectively (Table 4, Figure 2).

Table 4. Dermoscopic Findings in Patients with TSDF

Dermoscopic Finding	Frequency (%)
Red diffuse areas	74 (86.0%)
Polygonal vessels	48 (55.8%)
Tortuous telangiectasia	39 (45.3%)
Fine telangiectasia	27 (31.4%)
White structureless globules	25 (29.1%)
Follicular plugging	22 (25.6%)
Desquamation	20 (23.3%)
Demodex tails	19 (22.1%)
Linear brown/red wavy streaks	17 (19.8%)
Arborizing vessels	12 (14.0%)
Pustules	11 (12.8%)
Brown globules	10 (11.6%)
White hairs	5 (5.8%)



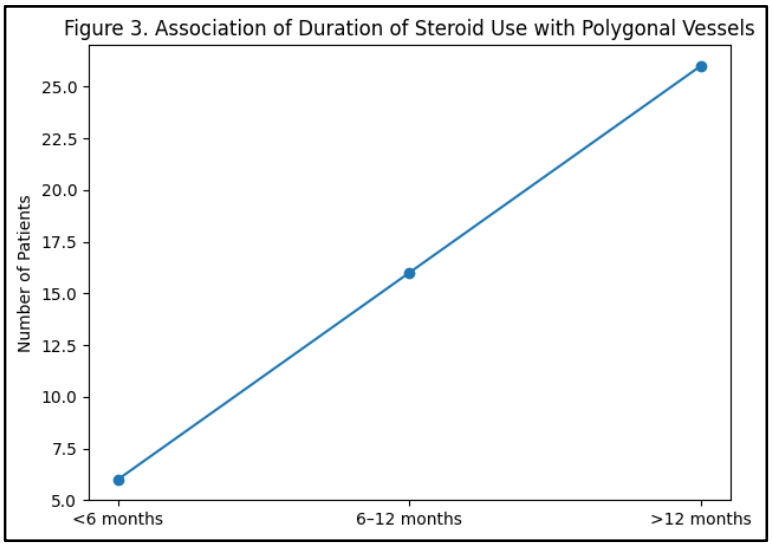
Association between Duration of Steroid Use and Dermoscopic Findings

Statistical analysis demonstrated a significant association between prolonged duration of topical corticosteroid use and characteristic dermoscopic vascular as well as atrophic changes. Polygonal vessels were significantly more common among patients with longer duration of steroid use ($p = 0.0007$). Similarly, white structureless globules and linear brown/red wavy streaks showed statistically significant association with prolonged topical corticosteroid application ($p = 0.0023$ and $p < 0.001$, respectively) (Table 5, Figure 3).

However, no statistically significant association was observed between potency of topical corticosteroid use and polygonal vascular pattern ($p = 1.000$).

Table 5. Association between Duration of Topical Steroid Use and Dermoscopic Findings

Dermoscopic Finding	<6 months	6–12 months	>12 months	p-value
Polygonal vessels	6	16	25	0.0007
White structureless globules	3	8	14	0.0023
Linear brown/red wavy streaks	1	5	11	<0.001



DISCUSSION

Topical steroid damaged face (TSDF) has emerged as an increasingly common dermatological problem due to widespread and irrational use of topical corticosteroids over facial skin. The present study evaluated the clinical and dermoscopic profile of patients with TSDF and analyzed the association between dermoscopic findings and duration of topical corticosteroid use. The study demonstrated female predominance, frequent misuse of potent topical corticosteroids for cosmetic indications, characteristic vascular dermoscopic patterns, and significant association of chronic steroid use with progressive dermoscopic changes.

In the present study, the mean age of patients was 27.62 ± 7.21 years, with female predominance accounting for 70.9% of cases. Similar demographic trends have been reported in previous Indian studies by Sethi et al., Kushwah et al., and Goel et al., where young females constituted the majority of affected individuals. [5,6] The increased prevalence among females may be attributed to greater cosmetic concerns, particularly related to fairness enhancement, acne, and pigmentation disorders.

Daily application of topical corticosteroids was the most common pattern of misuse observed in the present study. Fairness enhancement and acne were the predominant indications for steroid application. Similar findings were reported by Prabhu et al. and Kushwah et al., who observed fairness creams and acne treatment as major reasons for topical steroid misuse. [2, 8] Pharmacists and non-dermatologists constituted the most common sources of steroid recommendation in the present study, reflecting the widespread over-the-counter availability and unsupervised use of topical corticosteroids reported in previous Indian studies. [5]

Redness and burning sensation were the most common presenting complaints in the present study, while erythema and acneiform eruptions were the predominant cutaneous findings. Similar observations have been documented by Hameed et al., who also identified erythema, acneiform eruptions, and telangiectasia as common manifestations of steroid-induced facial dermatoses.[6] Chronic topical corticosteroid application can induce persistent erythema and burning sensation through inflammatory and vascular changes associated with steroid misuse. [1,7]

Dermoscopic examination in the present study demonstrated red diffuse areas and polygonal vessels as the most frequent findings. Similar dermoscopic patterns have been reported by Sethi et al. and Prasad et al., who identified polygonal vessels, diffuse erythema, and tortuous telangiectasia as characteristic dermoscopic features of TSDF. [5, 9] Polygonal vessels are believed to result from persistent vasodilatation and dermal vessel prominence secondary to prolonged steroid-induced skin atrophy. [5] White structureless globules observed in the present study likely correspond to atrophic changes within the dermis caused by chronic corticosteroid exposure. [9]

An important finding of the present study was the statistically significant association between prolonged duration of topical corticosteroid use and dermoscopic vascular as well as atrophic changes. Polygonal vessels, white structureless globules, and linear brown/red wavy streaks were significantly more common among patients with longer duration of steroid abuse. Similar observations have been described by Sethi et al., who reported that dermoscopy may help predict the approximate duration and severity of topical steroid misuse. [1] These findings suggest that dermoscopy may serve as a useful non-invasive tool not only for diagnosis but also for assessment of disease progression and severity.

Interestingly, no statistically significant association was observed between steroid potency and polygonal vascular pattern in the present study. This finding may indicate that chronicity of application plays a more important role than potency

alone in determining dermoscopic vascular damage. However, larger multicentric studies are required to further evaluate this association.

The present study has certain limitations. Being a single-centre cross-sectional study with a relatively small sample size, the findings may not be generalizable to the broader population. In addition, histopathological correlation was not performed. However, the study also possesses important strengths, including comprehensive clinicodermoscopic evaluation and analysis of the association between dermoscopic findings and duration of steroid use.

Overall, the present study highlights the growing burden of TSDF and emphasizes the utility of dermoscopy as a valuable non-invasive diagnostic adjunct in identifying characteristic vascular and structural changes associated with topical corticosteroid misuse. Early recognition of dermoscopic patterns may aid in prompt diagnosis, differentiation from other facial dermatoses, patient counseling, and prevention of irreversible cutaneous damage.

CONCLUSION

Dermoscopy is a valuable non-invasive diagnostic modality for identifying characteristic vascular and structural changes associated with topical steroid-damaged face. Characteristic findings such as polygonal vessels, diffuse erythema, and white structureless globules showed significant association with prolonged duration of topical corticosteroid misuse. Early recognition of these dermoscopic patterns may aid in prompt diagnosis, differentiation from other facial dermatoses, patient counseling, and prevention of irreversible cutaneous damage.

REFERENCES

1. Tatu AL. Topical steroid induced facial rosaceiform dermatitis. Acta Endocrinol (Buchar). 2016;12(2):232-3.
2. Hameed AF. Steroid dermatitis resembling rosacea: a clinical evaluation of 75 patients. ISRN Dermatol. ; 2013:491376.
3. Coondoo A, Phiske M, Verma S, Lahiri K. Side-effects of topical steroids: a long overdue revisit. Indian Dermatol Online J. 2014;5(4):416-25.
4. Saraswat A, Lahiri K, Chatterjee M, et al. Topical corticosteroid abuse on the face: a prospective multicenter study. Indian J Dermatol Venereol Leprol. 2011;77(2):160-6.
5. Sethi S, Chauhan P, Jindal R, Bisht YS. Dermoscopy of topical steroid-dependent or damaged face: a cross-sectional study. Indian J Dermatol Venereol Leprol. 2022;88(1):40-6.
6. Kushwah S, Namdeo C, Bhatia K. Study of clinicodermoscopic features of topical steroid damaged face patients. Int J Res Dermatol. 2023;9(5):226-32.
7. Goel A, Mahendra A, Gupta S. Clinical and dermoscopic evaluation of patients with topical steroid damaged faces (TSDF). Cureus. 2024;16(11):74624.
8. Prabhu N, Anandarama RK, Sangolli PM. A cross-sectional study to characterise the topical steroid dependent face by dermoscopy at a tertiary care centre. IP Indian J Clin Exp Dermatol. 2024;10(4):461-8.
9. Prasad B. Dermoscopic assessment of topical steroid-dependent damaged face: an observational study. Int J Curr Pharm Rev Res. 2023;15(9):150-4.