



Case Study

A PATIENT-CENTRIC APPROACH OF INTEGRATED MANAGEMENT OF SCLERODERMA

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ABSTRACT

Systemic sclerosis (SSc) is a chronic autoimmune connective tissue disorder characterized by progressive fibrosis, vascular abnormalities, and functional impairment. In Ayurveda, the clinical presentation of SSc can be correlated with *Vatarakta* involving vitiation of Vata and Rakta along with deeper tissue involvement. This case report describes the integrative management of a 42-year-old female diagnosed with systemic sclerosis presenting with skin tightening, hyperpigmentation, polyarthralgia, dysphagia, restricted oral aperture, and gait difficulty. Baseline investigations revealed positive ANA and anti-Scl-70 antibodies with moderate skin involvement and severe functional limitation. The patient was managed on the line of treatment of *Vatarakta* through a stage-wise integrative approach combining conventional therapy with Ayurvedic *Shamana* medications, *Panchakarma* procedures including *Basti* and *Abhyanga-Swedana*, and physiotherapy. Progressive improvement was observed in pain, skin flexibility, oral aperture, dysphagia, gait, and hand function. Modified Rodnan Skin Score improved from 14/51 to 9/51 with significant functional recovery. This case highlights the potential role of integrative Ayurvedic management in improving quality of life in systemic sclerosis.

INTRODUCTION

Systemic sclerosis (SSc), also known as scleroderma, is a chronic autoimmune connective tissue disorder characterized by progressive skin thickening, microvascular damage, and excessive collagen deposition resulting in fibrosis of the skin and, in some cases, internal organs. The disease involves complex interactions between immune dysregulation, vascular abnormalities, and fibroblast activation, ultimately leading to tissue fibrosis and functional impairment.^[1] Current management strategies are primarily aimed at controlling symptoms and slowing disease progression, as a definitive cure remains elusive.

From an Ayurvedic perspective, the clinical manifestations of systemic sclerosis share similarities

with *Vatarakta*, a condition characterized by the vitiation of *Vata dosha* along with involvement of *Rakta dhatu*, which subsequently affects *Tvak* and *Mamsa dhatus*.^[3] The pathological process may be understood in terms of deranged dosha-dhatu interaction leading to impaired microcirculation, tissue degeneration, and structural changes.

The present case report describes the clinical course of a patient diagnosed with systemic sclerosis who was managed through an integrative treatment approach involving both Ayurvedic and conventional modern therapies. This case is noteworthy as it highlights the potential benefits of combining Ayurveda with standard medical management in improving clinical symptoms, functional status, and overall quality of life in a condition that remains challenging to manage with conventional therapies alone.

Case Presentation

A 42-year-old female presented to the outpatient department (OPD) with complaints of bilateral hand discoloration, skin tightness and hardening, polyarthralgia, dysphagia, reduced oral

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aperture, difficulty in walking with an antalgic gait, and increased frequency of defecation since 8 months. She remained asymptomatic until 2022, when she developed a gradual onset of pain and swelling in both ankle joints, which temporarily subsided with symptomatic treatment. From June 2023 onward, she experienced progressive worsening of symptoms and was subsequently diagnosed with systemic sclerosis in June 2023. She is a known case of hypothyroidism for the past three years. There is no history of diabetes mellitus, hypertension, or any other significant systemic or surgical illness apart from hypothyroidism. Her family history is significant for hypothyroidism in her mother.

Personal H/O

On personal history evaluation, the patient reported a reduced appetite, while her sleep pattern was sound and undisturbed. Bowel habits were characterized by an increased frequency of defecation, with no associated complaints of constipation or diarrhoea. Bladder function was normal without any urinary disturbances.

Drug History

Prior to presentation at the OPD, the patient had been prescribed allopathic medications including Tab. Folictrax 15mg once weekly, Tab. Tadact 10mg once daily, Tab. Unikamin one tablet every alternate day, Cap. Calcidrum 60K once every 15 days, and Tab. Rabinor DSR SOS for the management of systemic sclerosis-related symptoms. Following the initiation of Ayurvedic treatment, the dosage and frequency of the concomitant modern medications were gradually tapered according to the patient's clinical improvement. Subsequently, only Tab. Folictrax 7.5mg once weekly and Tab. Tadact 10 mg once daily were continued as part of the integrative treatment approach.

General examination

On general examination at the time of presentation to the OPD, the patient was moderately built and moderately nourished, with mild pallor present. There was no evidence of icterus, cyanosis, clubbing, lymphadenopathy, or oedema. Her general condition was fair. The pulse rate was 72 beats per minute and regular in rhythm, blood pressure was 120/70 mmHg, and body temperature was 97.2°F.

Systemic Examination

Systemic examination revealed that the patient was conscious, cooperative, and well oriented to time, place, and person. Respiratory system examination showed bilateral normal vesicular breath sounds without any added sounds. Cardiovascular examination revealed normal S1 and S2 heart sounds with no audible murmurs. The abdomen was soft and non-tender, with no organomegaly detected.

Integumentary Examination

On examination, the patient exhibited symmetrical involvement of the bilateral hands, forearms, thighs, forehead, and perioral region, characterized by marked thickening, hardening, and induration of the skin consistent with sclerosis and fibrosis. The affected areas showed blackish hyperpigmentation with a rough surface texture. The skin appeared tight with restricted mobility. Oral cavity examination demonstrated decreased oral aperture with a two-finger mouth opening, suggestive of perioral skin involvement. Hair and nails were normal. Sensory examination was intact. The local temperature of the affected areas was 97.2°F.

Locomotor Examination

On locomotor system examination, the patient complained of polyarthralgia and difficulty in walking. Moderate tenderness (Grade 2) with mild swelling was present around multiple joints. Joint movements were moderately restricted due to skin tightness and stiffness, leading to functional limitation. Gait assessment revealed an antalgic gait pattern. No obvious joint deformity or muscle wasting was noted. Muscle tone and sensory examination were within normal limits.

Diagnostic Assessment

Baseline laboratory investigations supported the diagnosis of systemic sclerosis with autoimmune involvement. Antinuclear antibody (ANA) and anti-Scl-70 antibodies were positive. Erythrocyte sedimentation rate (ESR) was elevated, indicating ongoing inflammatory activity. Liver function tests showed mildly deranged transaminase levels. Thyroid profile revealed elevated TSH, consistent with underlying hypothyroidism. Other routine parameters, including renal function and blood glucose, were within or near normal limits. Baseline laboratory investigations are presented in Table 1 and Multiple validated clinical tools were used to assess disease severity are presented in Table 2.

Table 1: Baseline Laboratory Investigations (20/06/2023)

Constituents	Detected Values	Normal Range
ANA	Positive	Negative
Scl70	Positive	Negative
ESR	22 mm/hr	0 -12

SGOT	49.12 u/L	5 – 31
SGPT	32.41 U/L	5 – 32
S. creatinine	0.56 mg/dl	0.6 – 1.40
TSH	6.48 uIU/ml	0.27 – 4.20
CRP	3.34 mg/L	< 5
FBS	61.60 mg / dl	74 – 106

Table 2: Baseline Assessment Scores (3/08/2024)

S.No	Assessment Parameter	Tool Used	Baseline Value	Interpretation
1	Skin thickness	Modified Rodnan Skin Score (mRSS) ^[4]	14/51	Moderate skin involvement
2	Pain intensity	Visual Analog Scale (VAS) ^[5]	7/10	Severe pain
3	Hand function	Functional hand assessment	Unable to make fist	Significant functional limitation
4	Oral aperture	Finger breadth method	2-finger mouth opening	Restricted mouth opening.
5	Dysphagia	Clinical severity grading	Moderate	Difficulty in swallowing solids
6	Functional ability	HAQ–Disability Index (HAQ-DI) ^[6]	Severe disability	Impaired daily activities

Asthavidh pareeksha^[7]

On Ayurvedic clinical evaluation through *Ashtavidha Pareeksha*, the patient exhibited a *Kaphaja Nadi*, suggestive of *Kapha* predominance with possible association of *Vata*. *Mutra* was *Prakrut* (normal), with a frequency of 5–6 times during the day and 1–2 times at night, indicating normal urinary function. *Mala* was *Prakrut* (normal) in consistency; however, the patient reported increased frequency of defecation, with no associated difficulty. *Jivha Pareeksha* revealed a *Lipta Jivha* (coated tongue), indicating the presence of *Ama*. *Shabda* and *Drik* were within normal limits. On examination of *Sparsha*, the skin was noted to be *Ruksha* (dry), consistent with *Vata* involvement. The patient had a *Madhyama Akroti* (moderate body build). These findings collectively indicate *Vata-Kapha* predominance associated with the presence of *Ama* and *Agnimandya*, contributing to the disease pathology.

Therapeutic intervention

A staged integrative treatment protocol was implemented, beginning with the continuation of conventional disease-modifying therapy, followed by an integrative approach combining modern medicine with Ayurvedic management. Ayurvedic *Shamana* formulations were administered to address cutaneous fibrosis and systemic inflammation. Inpatient management incorporated *Panchakarma* procedures, including *Basti* therapy and *Abhyanga-Swedana*, along with adjunct physiotherapy to improve joint mobility and functional status. Subsequent maintenance therapy emphasized *Rasayana* therapy along with anti-inflammatory Ayurvedic interventions. Progressive symptomatic and functional improvement was observed over successive follow-ups. Detailed drug formulations, dosages, and duration are provided in Table 3.

Table 3: Integrative Treatment Protocol

S.No	Phase	Clinical Condition	Intervention		Dose/Duration
1	June 2023-24	Onset of symptoms	Allopathic Management	Ayurvedic Management	
			Tab. Folitrax	-	15mg once weekly
			Tab. Tadact	-	10 mg HS daily
			Tab. Unikamin	-	1 tab every 2 days
			Cap Calcitrum 60K	-	Once every 15 days
			Tab Rabinor DSR	-	SOS
2	12 June 2024	Hand discoloration polyarthralgia	Tab. Folitrax	<i>Shadadharan Yoga</i>	5 g BD before food

		skin tightness dysphagia reduced oral aperture antalgic gait. Increased frequency of bowel			
			Tab. Tadact	<i>Dhanyak Panchak Kwath</i>	40 ml BD before food
				<i>Dadimashtak Churna</i>	3 g BD before food
				<i>Praval Panchamrita Rasa</i>	250 mg
				<i>Shankha Bhasma</i>	500 mg
				<i>Bilwa Churna</i>	2 g
				<i>Nagarmotha Churna</i>	3 g
3	3 Aug 2024	Persistent stiffness and systemic involvement	Tab. Folitrax 7.5mg once weekly	<i>Amrutadi Guggulu</i>	4 tabs after food
			Tab. Tadact 10 mg HS	<i>Chopchini Churna + Suranjan</i>	3 g + 2 g
				<i>Shilajatwadi Lauha</i>	500 mg
				<i>Dashmoola Kwatha (with Madhu & Saindhava)</i>	40 ml BD
				<i>Pinda Taila & Ksheerbala Taila (Local Application)</i>	10 ml BD
				<i>Giloya + Dhaniya + Shunthi (Sadhita Jala)</i>	5 g + 5 g + 2 g
				<i>Tikta Ksheera Niruha Basti</i>	30 days
				<i>Ksheerbala Taila Anuvasana Basti</i>	15 days
				<i>Sarvanga Abhyanga Swedana</i>	15 days
				Physiotherapy	30 days
4	18 Jan 2025	Recurrence of generalized tightness	Tab. Folitrax 7.5 mg once weekly	<i>Panchatikta Guggulu Ghrita</i>	5ml BD with milk
			Tab. Tadact 10 mg HS	<i>Maharasnadi Kwath</i>	40 ml BD
				<i>Chopchini + Suranjan</i>	3 g + 3 g
				<i>Giloya Satva</i>	1 g
				<i>Rasmanikya</i>	125 mg
				<i>Dashmool Tail (Local)</i>	As directed
				<i>Giloy + Shunthi + Dhaniya</i>	5 g + 3 g + 5 g
5	12 April 2025	Significant improvement	Tab. Folitrax 7.5mg once weekly	Continued above regimen	—
			Tab. Tadact 10mg HS		

Follow-Up and Outcomes

Second follow-up on 9 December 2024, the patient reported significant reduction in bowel frequency and generalized body stiffness, indicating marked symptomatic improvement following inpatient Ayurvedic management. Functional mobility showed improvement, and the patient expressed subjective relief in daily activities.

Third follow-up on 18 January 2025, there was recurrence of increased generalized skin tightness, associated with difficulty in opening of mouth, along with throat pain during swallowing. In view of these findings, the treatment regimen was modified with emphasis on anti-fibrotic and Rasayana-based formulations.

Fourth follow-up on 12 April 2025, the patient demonstrated significant relief in major complaints. Clinical examination revealed improved skin flexibility, reduction in dysphagia, better oral aperture, and improvement in gait pattern. Overall functional status showed sustained improvement compared to baseline. The follow-up findings and treatment outcomes over time are detailed in Table 4, demonstrating progressive clinical improvement.

Table 4: Follow-Up and Clinical Outcomes

S.No	Follow-Up Date	Clinical Status	Outcome
1	9 Dec 2024	Significant reduction in bowel frequency and stiffness at face, bilateral thigh and hand region.	Marked symptomatic improvement
2	18 Jan 2025	Increased skin tightness, difficulty in opening of mouth.	Modified treatment regimen
3	12 April 2025	Relief in major complaints.	Improved skin flexibility, reduced dysphagia, improved gait

Assessment Tools and Outcome Measures (Combined)

The overall therapeutic response was evaluated through a combined assessment of clinical parameters, and the consolidated findings reflecting symptomatic and functional improvement are presented in Table 5 and Table 6.

Table 5: Comparative Laboratory Investigations

S.No	Parameter	Before Treatment	After Treatment (19/01/2026)
1.	ANA	Positive	Positive
2.	Scl70	Positive	Positive
3.	ESR	22 mm/hr	25
4.	SGOT	49.12 u/L	-
5.	SGPT	32.41 U/L	-
6.	S. creatinine	0.56 mg/dl	-
7.	TSH	6.48 uIU/ml	13.51
8.	CRP	3.34 mg/L	55.98 mg / dl

Table 6: Combined Assessment of Clinical Improvement

Parameter Assessed	Assessment Tool	Baseline (Before Treatment)	After 16 Weeks	Outcome
Pain intensity (joints & stretching pain)	Visual Analog Scale (VAS)	7/10 (severe pain)	3/10 (mild pain)	Significant pain reduction
Skin thickness & tightness	Modified <i>Rodnan</i> Skin Score (mRSS)	14/51 (moderate skin involvement)	9/51 (mild skin involvement)	Improvement in skin fibrosis
Hand function	Functional hand assessment	Unable to make fist due to skin tightening	Able to make fist comfortably	Improved hand function
Oral aperture	Finger breadth method	2-finger mouth opening	3-finger mouth opening	Improved mouth opening
Dysphagia	Dysphagia	Moderate	Mild dysphagia	Reduced swallowing

	severity grading	dysphagia		difficulty
Functional ability & daily activities	HAQ-Disability Index (HAQ-DI)	Severe functional limitation	Mild functional limitation	Improved quality of life

In addition to the assessment scores, the clinical improvement was also supported by comparative before-treatment and after-treatment photographs Figure 1 and 2, which demonstrate reduction in hyperpigmentation and improvement in oral aperture. The clinical improvement was further supported by comparative before-treatment and after-treatment photographs (Figure 1 & Figure 2), demonstrating reduction in hyperpigmentation and improvement in oral aperture.

Timeline

The chronological progression of the patient's disease course and treatment timeline is summarized in Table 3.

Table 3: Timeline of Clinical Course

S.No	Date	Event
1	2022	Onset of ankle pain
2	June 2023	Diagnosed with systemic sclerosis; allopathic treatment started
3	12 June 2024	Initiation of Ayurvedic OPD treatment
4	3 Aug 2024	IPD admission and Panchakarma
5	9 Dec 2024	Significant symptomatic improvement
6	18 Jan 2025	Recurrence; regimen modified
7	12 April 2025	Sustained clinical improvement

DISCUSSION

Systemic sclerosis (SSc) is a chronic autoimmune connective tissue disorder characterized by immune dysregulation, vasculopathy, and progressive fibrosis. The presence of positive ANA and anti-Scl-70 antibodies, along with clinical manifestations such as skin tightening, hyperpigmentation, dysphagia, polyarthralgia, and reduced oral aperture, supported the diagnosis of SSc in this patient.^[8] From an Ayurvedic perspective, the condition can be correlated with *Vatarakta* and advanced involvement of *Vata*-predominant *Tridosha* pathology affecting *Tvak*, *Rakta*, *Mamsa*, and *Meda dhatus*, leading to *Srotorodha* and progressive *Stambha* (stiffness) and *Kathinya* (hardening).

The management strategy adopted in this case focused on *Agnideepana*, *Amapachana*, *Vata-shamana*, *Rakta-prasadana*, and *Srotoshodhana*, along with external therapies and rehabilitation.

The combined analysis of laboratory parameters and clinical assessment tools (Table 5 and Table 6) demonstrates a notable difference between biochemical findings and clinical outcomes in the present case. While autoimmune markers such as ANA and anti-Scl-70 antibodies remained positive, which is expected in chronic autoimmune disorders like systemic sclerosis, the patient showed considerable clinical improvement in functional and symptomatic parameters. Assessment using validated tools revealed a significant reduction in pain intensity (VAS score reduced from 7/10 to 3/10) and improvement in skin thickness as reflected by a decrease in Modified Rodnan Skin Score from 14 to 9, indicating reduction

in cutaneous fibrosis. Functional parameters also improved, with the patient regaining the ability to make a fist comfortably, suggesting better hand mobility. Improvement in oral aperture from two-finger to three-finger mouth opening indicated reduced perioral skin tightness, while the severity of dysphagia decreased from moderate to mild, reflecting improved swallowing function. Additionally, HAQ-Disability Index scores demonstrated improvement from severe to mild functional limitation, indicating enhanced ability to perform daily activities and improved quality of life. The ESR showed a slight increase from 22mm/hr to 25mm/hr, suggesting ongoing low-grade inflammatory activity commonly associated with the disease. The rise in TSH levels observed during follow-up may be attributed to the patient's irregular intake of hypothyroidism medication, rather than progression of the primary disease condition. Additionally, the elevated CRP value indicates the presence of systemic inflammatory activity at the biochemical level. Despite these laboratory variations, the patient demonstrated significant clinical improvement in clinical parameters such as pain intensity, skin thickness, oral aperture, hand function, and overall functional ability. Overall, the findings highlight the importance of correlating laboratory parameters with clinical outcomes in chronic autoimmune disorders like systemic sclerosis. Despite persistence of autoimmune markers, the observed improvement across multiple validated clinical assessment tools indicates a clinically meaningful response to the therapeutic regimen,

reflected by reduction in pain, decreased skin fibrosis, improved functional mobility, and better performance of daily activities. The observed clinical improvement was also corroborated by photographic evidence, which demonstrated visible reduction in cutaneous hyperpigmentation and improvement in oral aperture, supporting the objective assessment findings.

Role of Shamana Therapy

The initial presentation included increased bowel frequency and impaired digestion, indicating *Agnimandya* and possible *Aama* involvement.^[9] Formulations such as *Shadadharana Yoga*, *Dhanyapanchaka Kwatha*, and *Dadimashtaka Churna* were prescribed to enhance digestive fire (*Deepana-Pachana*), reduce systemic inflammatory load and restore metabolic balance. This step was essential before initiating deeper tissue therapies.^[10]

Anti-inflammatory and immunomodulatory formulations such as *Amrutadi Guggulu* and *Guduchi (Giloya)* were used to regulate aberrant immune responses. *Guduchi* is known for its *Rasayana* and immunomodulatory properties, potentially beneficial in autoimmune conditions.^[11]

Chopchini Churna and *Suranjan* were administered for their anti-inflammatory, analgesic, detoxifying, and *Vata-Kapha* balancing properties. These formulations are traditionally indicated in conditions associated with joint stiffness, musculoskeletal pain, chronic inflammation, swelling, and skin involvement. In scleroderma, they may help reduce rigidity, alleviate pain and inflammation, improve functional mobility, and support tissue metabolism and connective tissue health.^[12,13]

Dashmoola Kwatha and *Maharasnadi Kwatha* provided significant *Vata*-pacifying and anti-inflammatory action, improving joint mobility and reducing stiffness.^[14]

Panchatikta Guggulu Ghrita, introduced during exacerbation, was particularly relevant in managing fibrosis. Its *Tikta* (bitter) components act on deeper tissues, while the *Ghrita* base facilitates penetration and nourishment of *dhatu*, helping counteract dryness and rigidity.^[14]

Mineral preparations such as *Shilajatwadi Lauha*, *Praval Panchamrita Rasa*, and *Rasamanikya* were used cautiously for their *Rasayana*, metabolic supportive, and chronic inflammatory modulating properties.^[15]

Collectively, *Shamana* therapy addressed immune imbalance, inflammation, fibrosis progression, and metabolic dysfunction in a stepwise manner.

Role of Panchakarma

Given the predominance of *Vata* and systemic involvement, *Tikta Ksheera Niruha Basti* with *Ksheerbala Taila Anuvasana Basti* was the central

therapeutic intervention. *Basti* is considered the prime treatment for systemic *Vata* disorders and has a systemic regulatory effect. In this case, it likely contributed to reducing stiffness, improving bowel regulation, enhancing tissue nutrition, and modulating systemic inflammation.^[16]

Sarvanga Abhyanga and *Swedana* improved peripheral circulation, softened indurated tissues, reduced dryness, and enhanced joint flexibility. Oleation countered the *Ruksha* (dry) and *Khara* (rough) qualities associated with fibrosis.^[17]

Panchakarma thus addressed both systemic inflammation and tissue rigidity, complementing internal medications.^[18]

Role of Physiotherapy

Physiotherapy was essential in preventing contractures and maintaining functional independence. Regular range-of-motion and stretching exercises improved joint mobility and prevented deformities, particularly in the hands and ankles. Gait training reduced antalgic walking patterns. Facial and oral exercises likely contributed to improvement in reduced oral aperture and swallowing difficulty.

Importantly, physiotherapy enhanced the benefits of *Abhyanga* and *Swedana* by maintaining tissue elasticity and preventing relapse of stiffness.^[19]

Clinical Outcome

The patient demonstrated progressive symptomatic improvement, particularly in bowel irregularity, stiffness, gait difficulty, and overall functional status. Although a transient exacerbation occurred, therapeutic modification led to subsequent relief.

This case suggests that a structured, stage-wise Ayurvedic protocol integrating *Shamana* therapy, *Panchakarma*, and physiotherapy may help modulate inflammation, slow fibrosis progression, and improve functional outcomes in systemic sclerosis. While larger studies are required, the present case highlights the potential role of integrative Ayurvedic management in chronic autoimmune connective tissue disorders.

Patient Perspective

The patient reported that before initiating Ayurvedic management, she experienced progressive skin tightening, joint pain, difficulty in walking, discoloration of hands, and swallowing difficulty, which significantly affected her daily activities and quality of life. She expressed concern about the gradual worsening of symptoms despite ongoing conventional treatment.

After undergoing Ayurvedic treatment including internal medications, *Panchakarma* procedures, and physiotherapy, she perceived gradual improvement in stiffness, bowel irregularity, gait difficulty, and overall comfort. She particularly noted

improvement in mobility, reduction in joint pain, and better ability to perform routine household activities independently. During follow-up visits, she expressed satisfaction with the integrative treatment approach and reported improved physical and psychological well-being.

CONCLUSION

This case demonstrates that a structured, stage-wise integrative management approach involving concurrent Ayurvedic and conventional modern treatment may contribute to significant symptomatic relief and functional improvement in a patient with systemic sclerosis. Although the patient was already receiving conventional modern therapy, comparatively greater clinical and functional improvement was observed after the addition of Ayurvedic interventions alongside ongoing modern treatment.

The Ayurvedic regimen incorporated *Shamana* therapy, *Panchakarma* procedures particularly *Basti* and *Abhyanga-Swedana* and physiotherapy, while conventional management was continued in parallel throughout the treatment course.

The improvement was not only evident clinically and functionally but was also visually appreciable in the comparative photographs. The integrative therapeutic regimen systematically addressed immune dysregulation, inflammation, fibrosis, pain, and mobility restriction.

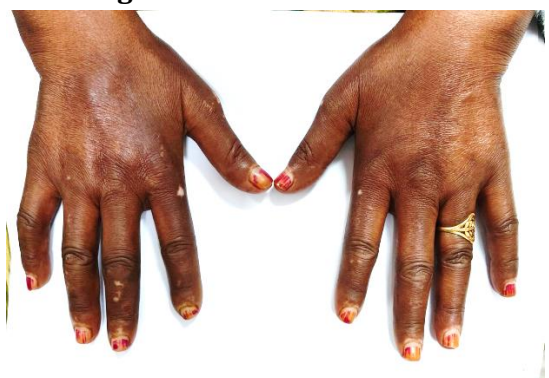
Although systemic sclerosis remains a chronic autoimmune disorder with variable prognosis, integrative Ayurvedic management in this case was associated with clinical improvement and enhanced quality of life. Further controlled clinical studies are required to substantiate these findings and to evaluate long-term outcomes.

Informed Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying clinical details. The patient was informed that her identity would remain confidential and that no personal identifiers would be disclosed.

FIGURES

Figure 1: Before Treatment



(A) Hyperpigmentation over affected areas

(B) Reduced oral aperture (2-finger opening)

Figure 2: After Treatment



(A) Reduction in hyperpigmentation

(B) Improved oral aperture (3-finger opening)

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