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# IMPROVEMENT OF MICROANGIOPATHY IN A SYSTEMIC SCLEROSIS PATIENT FOLLOWING HYSTERECTOMY FOR LEIOMYOMA: A POTENTIAL ROLE OF NEOPLASIA

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## ABSTRACT

*Background:* Systemic sclerosis (SSc) is a complex autoimmune disease characterised by vascular alterations, immune dysregulation and fibrosis. Microangiopathy is a hallmark of SSc and can be assessed non-invasively using nailfold videocapillaroscopy (NVC).

*Case description:* This is a case of a 50-year-old Caucasian woman with anticentromere-positive SSc, experiencing Raynaud's phenomenon and hand oedema. She met the 2013 ACR/EULAR classification criteria for SSc. Despite stable nifedipine therapy, her vasospastic episodes were only partially controlled. In March 2024, she underwent a total hysterectomy for a symptomatic uterine leiomyoma. Postoperatively, there was a marked improvement in Raynaud's phenomenon and NVC findings.

*Discussion:* This case suggests a potential link between neoplastic processes and exacerbation of SSc-related microangiopathy. It is hypothesised that tumour-derived factors, such as inflammatory cytokines and angiogenic mediators, may contribute to endothelial dysfunction and worsen vascular impairment. The observed microvascular improvement following tumour removal supports the hypothesis that neoplasms may act as disease-modifying factors in SSc. Further studies are needed to determine whether systematic malignancy screening in selected SSc patients may help identify modifiable triggers of microangiopathy.

## KEYWORDS

Systemic sclerosis, microangiopathy, neoplasia, Raynaud's phenomenon, capillaroscopy

## LEARNING POINTS

- Observation of clinical and microvascular improvement in a systemic sclerosis patient is recommended following the removal of a uterine leiomyoma.
- The potential aggravating role of neoplastic processes in systemic sclerosis-associated microangiopathy.
- The importance of timely identification and management of neoplasms in systemic sclerosis patients to modulate disease progression.

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## INTRODUCTION

Systemic sclerosis (SSc) is a multifactorial autoimmune disease characterised by progressive fibrosis, vascular injury and immune system dysregulation[1]. Vascular involvement is an early and integral feature of SSc, often manifesting initially as Raynaud's phenomenon and evolving into persistent microangiopathy. These vascular changes can be visualised through nailfold videocapillaroscopy (NVC), which detects abnormal capillary morphologies including giant capillaries, microhaemorrhages and architectural disorganisation[2,3].

Emerging evidence suggests an increased risk of malignancies in SSc patients, possibly due to shared pathogenic mechanisms involving chronic inflammation, immune activation and vascular damage[4,5]. However, the exact nature of this relationship, particularly concerning SSc-associated microangiopathy, remains insufficiently understood.

## CASE DESCRIPTION

A 50-year-old Caucasian, non-smoking housewife with a five-year history of anticentromere-positive SSc presented with Raynaud's phenomenon and hand oedema. She fulfilled the 2013 ACR/EULAR classification criteria for SSc. Imaging studies, including high-resolution computed tomography and echocardiography, as well as pulmonary function tests, showed no internal organ involvement. NVC revealed an active scleroderma pattern *(Fig. 1)* characterised by giant capillaries, microhaemorrhages and architectural disorganisation[2,3]. Despite two years of stable nifedipine therapy (20 mg/day), her vasospastic episodes were only partially controlled. In March 2024, she underwent a total hysterectomy for a symptomatic uterine leiomyoma, histologically confirmed as benign.

Postoperatively, the patient reported a significant reduction in the frequency and severity of Raynaud's episodes. Three months after surgery, follow-up NVC showed notable improvements: absence of microhaemorrhages, reduced architectural disorganisation and a decrease in the number and size of giant capillaries compared to previous examinations *(Fig. 2)*.

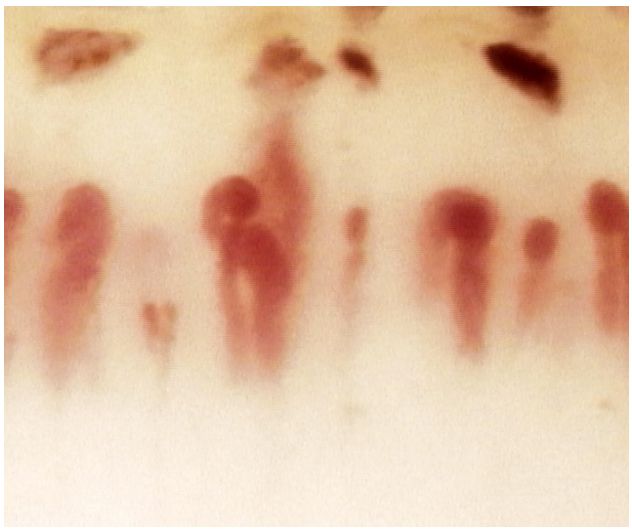


*Figure 1. Nailfold videocapillaroscopy image from 2022 showing an active scleroderma pattern characterised by giant capillaries, microhaemorrhages and evident architectural disorganisation.*



*Figure 2. Nailfold videocapillaroscopy image from March 2024, three months post-hysterectomy, showing a marked improvement in the microvascular pattern, characterised by the absence of microhaemorrhages and fewer giant capillaries, which are also reduced in size.*

## DISCUSSION

This case highlights a potential link between the presence of a benign neoplasm and the exacerbation of SSc-associated microangiopathy. Neoplastic cells may release inflammatory mediators, growth factors or cytokines that worsen endothelial dysfunction, amplifying the vascular injury characteristic of SSc. Additionally, the immune response against the neoplasm could enhance the autoimmune milieu, further compromising microvascular integrity[4,5]. The observed improvement following tumour removal suggests that neoplastic processes may act as perpetuating factors in SSc-related vascular damage. Although this is a single case, it prompts further investigation into whether timely detection and treatment of neoplastic lesions can modulate disease severity in SSc. Prospective studies on larger patient cohorts are needed to confirm these findings, elucidate underlying pathophysiological pathways and determine if systematic screening for malignancies in selected SSc patients is warranted[6].

## CONCLUSION

In this patient with anticentromere-positive SSc, hysterectomy for a benign uterine leiomyoma was followed by a striking improvement in both clinical symptoms (Raynaud's phenomenon) and microvascular parameters (NVC findings). These observations suggest a possible role of neoplastic processes in exacerbating SSc microangiopathy. Further research is required to clarify the relationship between neoplasia and vascular injury in SSc, potentially opening new avenues for early intervention and improving disease outcomes.

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