

# Adiposo-venous ulcer – a therapeutic challenge

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## Keywords

Obesity, leg ulcers, chronic venous insufficiency, foam sclerotherapy

## Summary

**Background:** The causal therapy of a venous leg ulcer is a therapeutic challenge in obese patients.

**Method:** Based on a case report, the procedure is demonstrated: Sourcing can be used to detect ulcer-relevant varices even in severe obesity and to successfully foam-sclerose them.

**Results:** The successful sclerotherapy of the sourcing-relevant varices has no effect on ulcer healing.

**Conclusion:** Stigmata of chronic venous insufficiency are found in obese patients as a result of obesity, so that weight loss can be considered a causal therapy. In our case, one can speak of an ulcer adiposo-venosum.

## Schlüsselwörter

Adipositas, Ulcus cruris, chronische venöse Insuffizienz, Schaumsklerosierung

## Zusammenfassung

**Hintergrund:** Die kausale Therapie eines Ulcus cruris venosum stellt bei adipösen Patienten eine therapeutische Herausforderung dar.

**Methode:** Anhand eines Fallberichts wird die Vorgehensweise demonstriert: mittels Sourcing kann auch bei schwerer Adipositas eine ulkusrelevante Varize detektiert und erfolgreich schaumsklerosiert werden.

**Ergebnisse:** Die erfolgreiche Schaumsklerosierung der im Sourcing relevanten Varize hat keinen Effekt auf die Ulkusheilung.

**Schlussfolgerung:** Stigmata der chronischen venösen Insuffizienz finden sich bei adipösen Patienten als Folge eben der Adipositas, so dass eine Gewichtsreduktion als kausale Therapie gelten kann. In unserem Fall kann von einem Ulcus adiposo-venosum gesprochen werden.

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## Das Ulcus adiposo-venosum – eine therapeutische Herausforderung

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## Medical history

A 54-year-old female patient presented in the Department of Dermatology, Venerology and Allergology of the Schleswig-Holstein University Hospital, Lübeck Campus due to an intractable venous leg ulcer. The patient has been suffering from recurrent venous leg ulcer of the left medial malleolus for more than 12 years. She has also gained weight continuously over the 12 years. She can now only move around with difficulty using a rollator. The patient is

cared for by a home nursing service and wears ulcer compression stockings consistently. In addition, she regularly performs intermittent compression therapy in her home environment.

On presenting in the phlebology department, the patient had severe swelling of the left proximal lower leg and extensive distal dermatosclerosis. Above the external malleolus was a fibrin-coated ulcer measuring 7 x 2 x 1 cm, which was surrounded by sclerotic tissue. (► Fig. 1). The foot pulses were bilaterally palpable. The ankle-bra-

chial index was 1.1 on the right side and 1.06 on the left side. The patient was 1.82 m tall and weighed 220 kg, corresponding to a body mass index (BMI) >60.

In this case, duplex ultrasound examination to clarify the venous status was only possible under extremely difficult examination conditions. Bilateral examination of the great and small saphenous veins was possible and showed each to be competent. The deep veins could only be visualised in the area of the inguinal and popliteal fossae and showed no occlusion or relevant reflux.

The extreme swelling of the legs resulted in unfavourable sonographic conditions in the calf area (► Fig. 2). Nevertheless, a varicose condition of haemodynamic relevance to the ulcer was detected in the left lower leg. Using the sourcing technique (1, 2), a clear relationship was established between this varicose vein and the ulceration.

## Relevant concomitant diseases

The patient also had diabetes, arterial hypertension and depression that was controlled with medication.

## Clinical course

Based on the duplex ultrasound findings, the indication was determined for foam sclerotherapy of the insufficient varicose veins of the left lower leg.

The foam sclerotherapy was performed without complications in two sessions with an interval of one week between each. In the first session, 2% polidocanol foam (Äthoxysklerol, Chemische Fabrik Kreussler, Wiesbaden) was used, prepared in a 1+4 ratio using the double syringe system (DSS) technique. In the second session, it became evident that the varicose vein was



**Fig. 1** Ulcer cruris on the left lateral malleolus in dermatoliposclerotic environment

not completely occluded, so that a second foam sclerotherapy was performed, again using 2% polidocanol. 5 mL foam was applied in each case using ultrasound-guided direct puncture.

At the follow-up examination four weeks later, the varicose vein was completely occluded. No further varicose veins were detected on duplex ultrasound examination. However, the ulcer showed no relevant healing tendency.

## Discussion

At the clinical examination of obese patients, varicose veins or dermatological symptoms are often apparent on the lower legs and are indicative of chronic venous disease. In view of the generally increasing number of overweight patients, the treatment of obese patients with venous complaints or symptoms is assuming ever greater importance in the routine treatment of venous disorders.

Persons with a BMI >25 kg/m<sup>2</sup> are considered to be overweight. Current figures from the Robert Koch Institute in Berlin suggest that the number of overweight and obese people in Germany is increasing markedly. In 2013, approximately 2% of the population were already suffering from morbid obesity (grade III) with a BMI >40 kg/m<sup>2</sup> (3).

It is easily conceivable that severe obesity can lead to a relevant impairment of venous outflow with subsequently relevant venous hypertension in the lower limbs. There are indications that an association exists between being overweight and chronic venous insufficiency (CVI) (4, 5). The Bonn Vein Study shows that the risk of CVI is significantly increased with a BMI >30, with an odds ratio of 6.5 for men and 3.1 for women (6). A further study shows a positive correlation between a BMI >30 and the presence of varicose veins in postmenopausal women with an odds ratio of 5.8 (7). By contrast, other studies describe the presence of typical stigmata of CVI without any pathological correlate in the

venous flow path in obesity (8), even at a BMI >25 (9).

In the present case, it was initially unclear whether the existing, extremely intractable ulceration should primarily be considered to be a consequence of the obesity or whether the relevant varicose vein determined in sourcing justifies interpretation as a venous ulcer resulting from chronic venous insufficiency. In this case, both factors, i.e. the obesity and the crural varicose vein, are certainly of aetiological relevance. However, as duplex ultrasound examination showed bilateral sufficiency of the saphenofemoral junction, the saphenopopliteal junction and the great saphenous vein, it is worth considering whether the obesity is playing the leading role here. Nevertheless, targeted occlusion of the varicose vein was indicated in this case. Possible treatment options included targeted phlebectomy under local or tumescent local anaesthesia or ultrasound-guided foam sclerotherapy of the relevant vascular segment. The obesity imposes certain limits on possible surgical procedures: not only the surgical position itself, but also the duration of the procedure compared with foam sclerotherapy and the increased risk of wound healing disturbances should all be considered.

In our patient's case, due to the anatomy of her severe obesity and the existing dermatosclerosis, ultrasound-guided foam sclerotherapy was considered as the means of obliterating the varicose vein. Because of the particular nature of the obesity in the present case, the foam sclerotherapy could only be performed with the patient in a seated position (► Fig. 3). The patient could not lie flat, as she otherwise experienced very severe shortness of breath, and she could only place one leg onto the examination couch. The foam sclerotherapy was performed in two sessions. The relevant varicose vein detected with sourcing was successfully obliterated. However, this had no significant effect on the ulcer healing. As the patient reliably performs consistent compression therapy, the question arises in the present case as to whether the body weight, particularly the excess weight, actually promotes or perhaps even causes the symptoms of venous stasis. This is also suggested by the fact that, after the foam scler-



**Fig. 2** Positioning of the patient for duplex sonography, this is due to the extent of obesity, neither standing nor lying down feasible



**Fig. 3** Foam sclerotherapy of the ulcer-relevant varix under ultrasound control

rotherapy, no further varicose veins were detectable on ultrasound examination. The theory that increased abdominal pressure alone, as is present in obesity, triggers a relevant venous stasis and an increase in intravenous pressure in the femoral vein could be impressively demonstrated in an in-vivo study (10). In addition, the same working group showed that venous haemodynamics in patients with a BMI >30 without signs of CVI are markedly altered compared with healthy subjects with a BMI <25 (11).

Our case clearly demonstrates that severe obesity can cause CVI symptoms,

without it being possible to ascertain any definite venous incompetence in the affected limbs. Many studies also show a clear association between the BMI value and the C grade of the CEAP classification (12, 13). Furthermore, it was shown that a BMI >30 correlates with a higher diurnal leg volume increase (14).

In summary, it can be postulated that the stigmata of CVI, including lower leg ulcers, can occur as a result of obesity. In such cases, the ulcer should perhaps be referred to as an adiposo-venous ulcer.

### Conflict of interest

The author declares that no conflict of interest exists.

### Ethical guidelines

The study was prepared in compliance with all national guidelines and the current Declaration of Helsinki. The patient's informed consent has been obtained.

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