

# Survey about liquid sclerotherapy of lower limb varicose veins

## *Pesquisa sobre escleroterapia líquida em varizes dos membros inferiores*

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### Abstract

**Introduction:** Sclerotherapy is one the most frequent procedures performed by Brazilian vascular surgeons and vascular medicine physicians. Its basic principle is the elimination of varicose veins by destroying their internal wall. In Brazil, sclerotherapy involves a range of practices, such as the choice of sclerosing agent, associated use of laser, wearing or not gloves during the procedure, recommended resting time, and exposure to sunlight, practice of physical activities and use of compression after treatment. **Objective:** To collect data about various practices and techniques for sclerotherapy, a treatment modality widely used by Brazilian vascular medicine physicians. **Methods:** This survey was carried out in a universe of about 3,000 Brazilian vascular medicine physicians, members of the Brazilian Society of Vascular Medicine and Surgery – SBACV. The physicians answered a multiple choice questionnaire about techniques and indications of sclerotherapy of varicose veins of the lower limbs in Brazil. The link ([www.iniciacaocientifica.com.br/pne](http://www.iniciacaocientifica.com.br/pne)) was made available by email. **Results:** The questionnaire was answered by 232 physicians. Gloves were worn during the procedure by 79.74% of the physicians; compression was used by 52.59%; 46.12% of the physicians did not restrict physical activity after sclerotherapy, and 52.59% approved exercise after 1-3 days; pain reduction during the procedure was used by 43.53% of the respondents; 75% glucose, used by 35.34% of the respondents, was the most frequent sclerosing agent; the most frequent systemic complication was faintness (7.76%), and the most frequent local complication was hyperchromia (66.38%); regarding sun exposure after the procedure: 28.02% allowed exposure to sunlight with sunscreens after sclerotherapy, 24.57% only after 15-30 days, and 25.43% after up to 15 days. **Conclusion:** Although sclerotherapy is widely used by Brazilian vascular medicine physicians in their daily practice, the survey has shown little agreement in relevant points, such as the use of compression, restriction of physical activities and exposure to sunlight.

**Keywords:** varicose veins; sclerotherapy; sclerosing agent.

### Resumo

**Introdução:** A escleroterapia é um dos procedimentos mais realizados pelos angiologistas e cirurgiões vasculares brasileiros. O princípio básico é eliminar a veia varicosa, destruindo a sua parede interna. No Brasil, há uma diversidade de condutas que envolvem este tratamento, principalmente quanto ao tipo de esclerosante, associação com laser, uso de luva durante o procedimento, tempo recomendado de repouso, exposição ao sol, prática de atividade física, uso de compressão pós-escleroterapia, entre outros. **Objetivo:** conhecer as mais variadas condutas e técnicas desta modalidade terapêutica, muito praticada entre os angiologistas brasileiros. **Método:** A pesquisa foi realizada entre angiologistas membros da Sociedade Brasileira de Angiologia e Cirurgia Vascular - SBACV, que responderam um questionário sobre as técnicas e indicações da escleroterapia em varizes dos membros inferiores no Brasil. O link ([www.iniciacaocientifica.com.br/pne](http://www.iniciacaocientifica.com.br/pne)) foi disponibilizado com questões de múltipla escolha. **Resultados:** Duzentos e trinta e dois médicos responderam ao questionário proposto. Luvas durante o procedimento são usadas por 79,74% dos médicos; a compressão é utilizada por 52,59%; quanto à atividade física pós-escleroterapia, 46,12% não restringem e 52,59% liberam após 1 a 3 dias; mecanismos para diminuir a dor durante o procedimento são utilizados por 43,53% dos entrevistados; a glicose 75% foi o esclerosante mais utilizado em 35,34%; a complicação sistêmica mais frequente foi a lipotimia com 7,76% e o local mais frequente foi a hiperchromia com 66,38%; em relação à liberação para sol depois do procedimento: 28,02% liberam após a escleroterapia com filtro solar, 24,57% liberam após 15 a 30 dias e 25,43% liberam com menos de 15 dias. **Conclusão:** A pesquisa revelou que, apesar da escleroterapia ser amplamente utilizada na prática diária do angiologista brasileiro, há pouca concordância em pontos relevantes, como, por exemplo, o uso de compressão, liberação para atividade física e exposição ao sol.

**Palavras-chave:** varizes; escleroterapia; soluções esclerosantes.

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The study was approved by the Research Ethics Committee of Hospital Santa Catarina de Uberlândia (MG), Brazil.

## ■ INTRODUCTION

Liquid sclerotherapy for telangiectasias and reticular veins is one of the most frequent procedures performed by Brazilian vascular medicine physicians and vascular surgeons. Its basic principle is the elimination of varicose veins by injecting a sclerosing substance into the vessel to destroy the endothelial layer, and lead to fibrosis of the vessel and its disappearance.<sup>1</sup>

In Brazil, different procedures are adopted for this treatment, and differences are most marked in type of sclerosing agent, wearing or not gloves during the procedure, resting time, exposure to sunlight, physical activities and compression after sclerotherapy.

This study evaluated different liquid sclerotherapy procedures to provide an overview of how this treatment is performed in Brazil.

## ■ METHOD

A 19-item survey about liquid sclerotherapy was prepared with multiple choice questions for which respondents could choose only one alternative.

The invitation to answer the questionnaire was e-mailed to vascular medicine physicians that are members of the Brazilian Vascular Medicine and Vascular Surgery Association (*Sociedade Brasileira de Angiologia e Cirurgia Vascular – SBACV*) from November 2011 to January 2012. The email had a link to the site [www.iniciacaocientifica.com.br/pne](http://www.iniciacaocientifica.com.br/pne), and the recipient could accept or refuse to answer the questionnaire.

This study was approved by the Ethics Committee of Hospital Santa Catarina of Uberlândia, Brazil, in accordance with the Declaration of Helsinki.

## ■ RESULTS

Two hundred and thirty-two physicians accepted to participate and answered the 19-item questionnaire. Table 1 shows the questions and their possible answers.

## ■ DISCUSSION

Varicose vein sclerotherapy in Brazil has been studied by, among others, two great specialists in the field: Amélio Pinto Ribeiro<sup>2</sup> and Hiroshi Miyake.<sup>3</sup>

**Table 1.** Questions and answers of questionnaire made available to physicians in the Internet

<b>1. For what type of varices do you use liquid sclerotherapy?</b>	
Telangiectasias	40.09%
Reticular veins (> 3 mm)	1.72%
Telangiectasia and reticular veins (> 3 mm)	58.19%
Other types	0
<b>2. Do you wear gloves when performing sclerotherapy?</b>	
Yes	79.74%
No	20.30%
<b>3. Do you use a magnifying lens during sclerotherapy?</b>	
Yes	28.45%
No	71.55%
<b>4. What product do you use for sclerotherapy?</b>	
75% glucose	35.35%
Ethanolamine oleate	8.19%
Polidocanol and glucose	14.66%
Ethanolamine oleate and glucose	12.50%
<b>5. Do you use transdermal laser to treat telangiectasias or reticular veins?</b>	
Yes	15.09%
No	84.91%
<b>6. Do you combine sclerotherapy with any other therapeutic procedure? Which?</b>	
No	18.54%
Laser sclerotherapy	4.39%
Surgical sclerotherapy and transdermal laser therapy	8.74%
Sclerotherapy and surgery	66.81%
Sclerotherapy and radiofrequency therapy	1.52%

Table 1. Continued...

<b>7. Do you use any procedure to reduce pain during sclerotherapy?</b>	
Cold air	13.66%
Cold roller	13.49%
EMLA cream	4.03%
Oral analgesics before procedure	0.98%
Ice packs	3.90%
Other	18.57%
Nothing	45.37%
<b>8. Do you use any type of compression for sclerotherapy of telangiectasias or reticular veins?</b>	
Elastic stockings	11.71%
Elastic bandage	40.98%
Micropore tape or dressing at puncture site	36.59%
Nothing	10.24%
<b>9. How long do you use compression after sclerotherapy of telangiectasias?</b>	
Less than 12 h	63.36%
12 to 24 h	13.68%
1 to 3 days	7.53%
1 week	13.18%
More than one week	2.15%
<b>10. In addition to the clinical examination, what other device do you use to examine the patient that will undergo sclerotherapy?</b>	
Duplex Scan	31.03%
Venoscope	27.05%
Duplex Scan and venoscope	22.41%
Veinviewer or Accuvein	8.76%
Other	10.75%
<b>11. Do you photograph the patient's legs before and after treatment?</b>	
Yes	14.66%
No	85.34%
<b>12. What is your recommendation about exposure to sunlight after sclerotherapy?</b>	
No restriction on exposure to sunlight	11.84%
Allow exposure in up to 15 days	25.43%
Allow exposure after 15 to 30 days	24.57%
Allow exposure after 30 days	11.64%
Allow exposure, but recommend wearing sunscreen	28.02%
<b>13. Physical activity after sclerotherapy</b>	
No restriction	46.12%
Allow physical activity after 1 to 3 days	52.59%
Allow physical activity after 7 days	1.29%
Allow physical activity after 30 days	0.00%
<b>14. In the case of hyperchromia after sclerotherapy, do you administer any medication?</b>	
Thioglycolic acid	12.50%
Retinoic acid	14.66%
Hydroquinone	45.16%
Intense pulsed light	7.40%
Other	20.28%
<b>15. How do you charge a session of telangiectasia treatment?</b>	
Time	33.62%
Injected volume	56.03%
Number of punctures	9.03%
Number of laser pulses	1.32%

Table 1. Continued...

<b>16. How much do you charge for a treatment session for telangiectasias and reticular veins?</b>	
From R\$ 40 to R\$ 99.00	32.33%
From R\$ 100 to R\$ 199.00	56.47%
From R\$ 200 to R\$ 299.00	9.05%
From R\$ 300 to R\$ 499.00	1.0%
From R\$ 500 to R\$ 1,000.00	1.15%
More than R\$ 1,000.00	0%
<b>17. What is the most frequent type of complication that you have had after sclerotherapy of telangiectasias or reticular veins?</b>	
Hyperchromia	45.16%
Chemical phlebitis	8.19%
Ulcer	5.60%
Deep vein thrombosis	1.08%
More than one of the types above	21.83%
Other	18.04%
<b>18. In liquid sclerotherapy, what type of systemic complication is the most frequent?</b>	
No complication	73.12%
Hypotension	5.6%
Allergic reaction	4.31%
Dyspnea	0%
Faintness	9.6%
Tachycardia	2.07%
Stroke	0%
Chest pain	0%
More than one of the types above	5.30%
<b>19. Do you have cardiac resuscitation equipment in your clinic in case there is an emergency with your patient during sclerotherapy?</b>	
Yes	25.5%
No	74.5%

In 1967, Pinto Ribeiro published a description of the Medeiros and Pinto-Ribeiro formula, which consisted of the dilution of 50% glucose and ethanolamine oleate, and his experience along the years set a standard in this field. Hiroshi discussed sclerotherapy in numerous lectures and workshops in his clinic and has left us great lessons as he explained the reason why post-procedure ulcers occur. Currently, several authors<sup>4-8</sup> associate technologies, such as cryo-sclerotherapy, laser, venoscopy and VeinViewer<sup>®</sup>, to improve the results of this procedure.

Sclerotherapy of lower limb varicose veins is performed all over the world. In the United States, expenses with this procedure are estimated at about 70 million dollars per year, a figure based on the fact that 1.7 million patients undergo sclerotherapy every year.<sup>9</sup>

In Brazil, there are no data about the number of sclerotherapy procedures. Although often conducted by vascular medicine physicians, there are many different ways to perform sclerotherapy. This study

described common and divergent routines used for this procedure in the sample collected.

Common routines were:

- Wearing gloves during the procedure;
- Combining sclerotherapy with the surgical treatment of varicose veins;
- Not using any mechanism to reduce pain;
- Not photographing the veins to be treated;

Also, the most common complication was hyperchromia, the most frequent medication to treat hyperchromia was hydroquinone, and most physicians did not report systemic complications or have cardiac resuscitation equipment in their offices.

The most divergent findings were:

- Exposure to sunlight;
- Reducing the temperature of the skin;
- Compression after sclerotherapy;
- Type of sclerosing agent;
- Physical activity restrictions;
- Charges for a sclerotherapy session.

Some of the controversial procedures are discussed below.

There were five divergent opinions about exposure to sunlight: allow exposure sometime up to 15 days after the procedure, between 15 to 30 days, after 30 days, immediately after the procedure but with sunscreen, and no restriction to exposure (10%). Right or wrong, all had successful cases in their offices, and the question remains: Is sunlight exposure a complicating factor? There are many different choices and no studies in the literature provide data to compare the choices identified in our study.

Pain is the greatest fear and the factor that makes patients delay the procedure. Tarcisio Rivello,<sup>10</sup> one of the pioneers in skin cooling during sclerotherapy in Brazil, reported that:

“the analgesic effect starts when the skin temperature is reduced to about 13.6 °C. This is achieved 1.45 minutes after ice is applied and stops about 3 minutes after its removal”.

Currently, the market offers advanced options to use cold air and cold rollers, which attenuate the pain of needle puncture by cooling the skin during sclerotherapy. This study found that almost 50% of the physicians interviewed still do not use any mechanism to reduce pain. But the dissemination of these methods to reduce pain will result in the patients demanding that their doctors use these resources to make the procedure more comfortable.

Compression after sclerotherapy of telangiectasias and reticular veins is not consensual in the literature. A systematic Cochrane review<sup>11</sup> found that the degree, type and duration of post-sclerotherapy compression did not affect the result of the procedure. In contrast, the group in favor of compression argues that it helps to collapse the treated vessels, improves the local action of medication and reduces the chances of recanalization and hyperchromia.<sup>12</sup> Results were divided, with about 50% of the respondents using some type of compression (bandages or elastic stockings) and the other 50% not using any. Their answers raised another important question: would the use of compression change the results of the procedure?

There are basically three types of sclerosing agents<sup>13</sup>: Detergents, of which polidocanol is the best known; ethanalamine oleate, sodium tetradecyl sulfate and sodium morrhuate. The first two are often used in Brazil, but osmotic sclerosing agents, of which hypertonic glucose is the best known, and chemical sclerosing agents, such as chromium glycerin, are not. In this study, the sclerosing agent most often used among respondents was 75% glucose, followed by ethanalamine, polidocanol and associations of

these agents. Experience reported by the interviewees varies greatly and show that, in Brazil, 75% glucose, ethanalamine oleate and polidocanol are frequently used, even though physicians seem to have developed different skills in the use of these sclerosing agents in daily practice, with good results.

The analysis of the question about physical activity revealed that 48% of the respondents did not restrict it and that the other half allowed it 1 to 3 days after the procedure. No studies in the literature have investigated physical activity and liquid sclerotherapy of small vessels. The procedures adopted by respondents showed differences that raised the question of whether the 48% that allow physical activity in the short term have worse results. Another question raised was whether the practice of physical activities might worsen or not affect the results of liquid sclerotherapy.

The way physicians charge for sclerotherapy also differed greatly. Some charged according to the time that the procedure lasted, the amount injected, or the number of punctures. This finding did not affect results, but confirmed that there are several ways to perform sclerotherapy.

Although sclerotherapy is often performed by vascular medicine physicians, few medical services have residence programs in Vascular Medicine and Vascular Surgery that offer specific training, such as well-directed theoretical and practical classes for residents. The procedures are learned among residents, and the experienced residents transmit their knowledge to the novices. Fortunately, as they join the market, these residents have the chance to acquire more knowledge in conferences, articles and textbooks or by attending specialized clinics. We found that we, vascular medicine physicians, established that sclerotherapy should only be performed in our medical specialty, but do not teach our students.

In conclusion, the purpose of this study was not to standardize the variable sclerotherapy procedures, but to disseminate techniques and add value to the methods used by Brazilian vascular medicine physicians. Further studies with more objective designs should be conducted to define procedures in sclerotherapy.

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