

## Radiofrequency and Telangiectasias

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### Abstract

**Introduction:** The treatment of telangiectasias represents a main place of demand of aesthetic legs. The spider veins localized on lower limbs, in relation with pathology of the venous tissue, raises mainly a problem of cosmetic order. These fine dilations of the superficial venous network are not still of easy achievement and the results are sometimes uncertain, connected to the quality of the operator and also to the requirement of the patient. The radiofrequency uses a current of the order of 4 MHz and offer on these small vessels of the interesting therapeutic perspectives. The aim of this prospective study is to measure efficiencies of radio frequency in only one session treatment.

**Methods:** 30 patients, 25 at 63 old aged, present lower limbs reticular veins and telangiectasias. The CEAP classification is C1 A SE p As 1, pn. The Fitzpatrick photo type is 1 at 4. 8 treatment areas are identified. 250 impulsions by session are useful used. Patients are visited at 15 D and 60 D. We observed the efficiency of the radio frequency after a single session on telangiectasias of small diameters, following the treated area.

**Results:** We consider positive results a total disappearance of vessel. One treatment session is necessary to treat some areas like ankles, feet (85% of positive outcomes) legs is also a good indication for 75% positive results. One the other hand, knee and thigh area is more resistant. It has 30% good results.

**Conclusion:** Knowing that a number of high sessions are oft en necessary with the micro sclerotherapy the classic treatment of telangiectasias, to obtain satisfactory results. The obtained results are very encouraging.

**Keywords:** Telangiectasias, Treatment, Thermocoagulation, Radiofrequency

### Introduction

Telangiectasias are the most common expression of superficial venous disease. According to studies 60 to 80 % women are affected. The aesthetic aspect explains the strong demand for treatment [1]. The usual treatments are based on microsclerotherapy and laser. These 2 treatments have side effects and limits of effectiveness. Hence the interest of thinking about a third therapeutic way. This is the interest of radiofrequency also known as thermocoagulation. It seemed important to evaluate its efficiency and to identify its indications .This is the object of this work.

### What We Know About Telangiectasias?

#### CEAP Classification [2]

The C classification of CEAP grades venous conditions in order of increasing severity.

Grade Description

C 0. No evidence of venous disease.

C 1. Superficial spider veins (reticular veins) only Telangiectasia

is a vein under 1 mm in diameter and reticular varicose vein is a cutaneous vein under less than 3 mm in diameter.

C 2. Simple varicose veins only

C 3. Ankle oedema of venous origin (not foot oedema)

C 4. Skin pigmentation in the gaiter area (lipodermatosclerosis)

C 5. A healed venous ulcer

C 6. An open venous ulcer

### Pathogenesis [3]

Their origin is still not known and different opinions have been published

Reticular venous reflux

Density of dermal

Dysplasia

Arteriovenous fistula

Inflammation

### Relationship Varicose Veins and Telangiectasias

51 % of the patients having many telangiectasias haven't varicose veins In Criqui study, C1 have not any more reflux in duplex scan than C0 Varicose veins and telangiectasias seems independent.

## Relationship Telangiectasias and Reticular Veins [4]

A reticular varicose vein is a vein under cutaneous less than 3 mm in diameter.

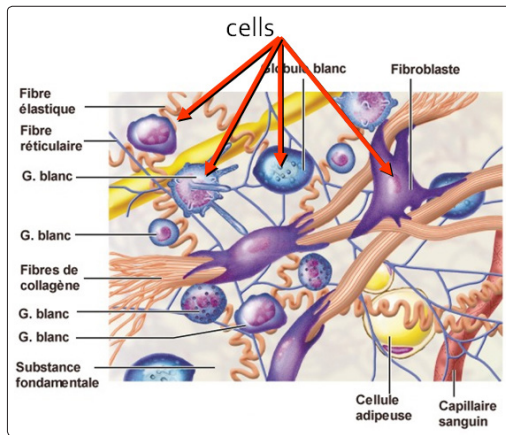
The connection between haemodynamic and telangiectasia isn't very clear.

The reflux in a reticular vein can explain some telangiectasia.

But the presence of reticular veins near telangiectasias is not a proof that there is a cause and effect relationship.

## Dermal Density

There is an arrow relation between the dermic connective tissue and the wall of micro-veins. The connective tissue thanks to its collagen has a role of resistance and exercises one against pressure on the of the small vessels h modynamic having a precarious wall.



We know that people presenting only telangiectasias, 89.7% were women have a finer dermis.

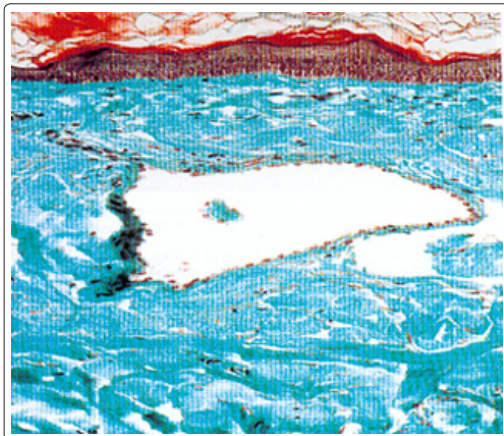
There is a linear correlation between the rate of exposure to the sun and the presence of telangiectasias.

The sun pulls a degradation of collagens fibers and elastic fibers localized around the telangiectasias.

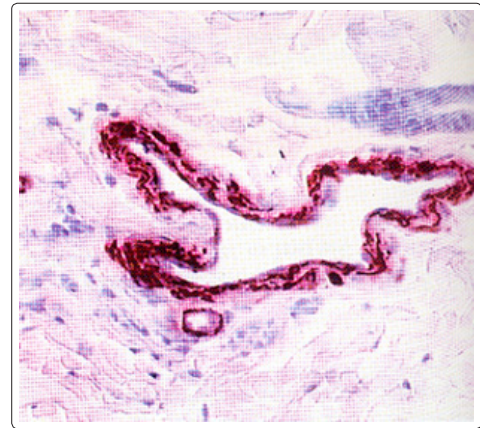
## Anatomopathology Study [5,6]

It emerges that there is:

1. Telangiectasias with reflux is simple dilated vessels telangiectasias in touch with a reflux has not enough structural change And thus would be in a reversible state if the reflux disappeared.



2. Telangiectasias without reflux present changes them being similar in angiodyplasy



So, one can consider approximately 2 clinical situations: Venous reflux and isolated telangiectasias

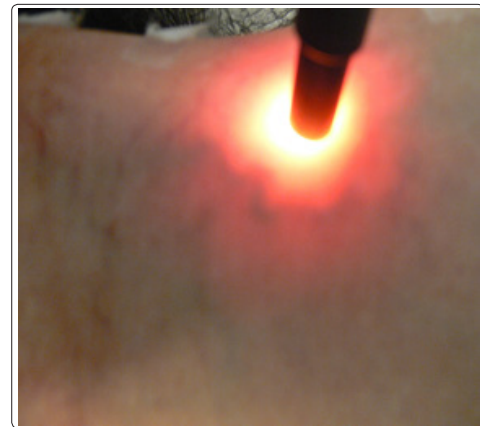
## Treatment Strategy [7,8]

Telangiectasia in close relation with reticular varicose vein, you have to treat at first venous reflux with microsclerotherapy. And second one telangiectasia Isolated telangiectasia are directly treated. So before to treat you need an investigation: The trans illumination [9].

This aim of this investigation is to know are telangiectasias isolated or depend of reticular veins. Tran's illumination projects the shadow of reticular veins on the skin after reflection of light on the fascia.

The Trans illumination has to bring us visual data in particular on the possible feeder veins.

We used the DTO Classification.



## DTO Classification [10]

Classification:

- Step 0 no visual vein
- Step 1 straight reticular vein and little dark colour
- Step 2 Sinuous vein and little dark colour
- Step 3 increased the dark colour into the vein
- Step 4 Sinuous vein and enhancing of dark colour

We treat only 3 and 4 step

## Which Treatments? [11].

Microsclerotherapy is the reference treatment [12,13].

Injection sclerotherapy is a technique for destruction of abnormal

veins by injection of a medication that in some manner destroys the vein endothelium, leading to occlusion and subsequent fibrosis of the target vessel.

But microsclerotherapy limits are:

- Experience
- Side effects
- Allergy
- Diameter > 0.3 mm

The laser (14,15) photocoagulation represents another way. Mainly in case of allergy, if unexperienced physicians, and if very small diameter.

But laser also presents difficulties;

- Uncertain outcome
- Expensive
- Side effects

### Methods

The pioneered of this technic is Dr. Chardonneau which is about 7000 treatments and 19885 lesions. This treatment is used in many centers over the world.

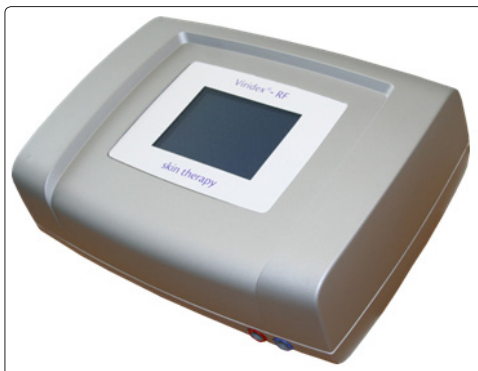
The radio-frequency (thermocoagulation) is electromagnetic waves with a wavelength between 0.3 and 10 MHz transform electrical energy into heat in the human body.

The natural resistance of the tissues to this movement of electrons (the current changes polarity from 300,000 to 10 million times / second) then generates heat. It's a minimally invasive technic. It's a technical device for the treatment of small varicose veins, telangiectasia, and rosacea.

We use The VIRIDEX. It raises the temperature by administering an energy pulse. This pulse is a 4 MHz radio pulse of exact amplitude and duration. The pulse is send by an isolated needle to be precisely on the place the coagulation is wanted.

### The VIRIDEX has 2 main components:

1. The generator: The power and duration of the pulse can be precisely controlled to achieve an optimal energetic effect while avoiding the risk of necrosis.
2. The needle is an insulating sheath isolates and protects the untreated area. Only the vessel is treated, the epidermis isn't reached.
3. The friction of the molecules in the venous wall causes the immediate collapse of the vein.



### Treatment Procedure

1. Fall perpendicularly in the skin
2. The area to be treated should be horizontal
3. Clean regularly the needle with a sterile compress
4. Impulse every 3-4 mm
5. To be very superficial
6. To adapt the diameter of needle



Small veins on the legs (or on face) are treated with a needle holder in combination with specially designed thermocoagulation needles: The K3i needle with a diameter of 0.075mm (most often used for facial treatment)

The K6i needle with a diameter of 0.150mm (most often used for leg treatment)



The sessions last 15mn. In average 200 at 300 impulses per session are necessary.

It needs 2 or 3 sessions.

The lasting between 2 sessions is 4 weeks.

### Contra Indications

- Nickel allergy
- Pace Maker
- Cutaneous infection
- Long Sun exposition

### Results

#### Clinical Studies

Clinical trials have been done in different countries.

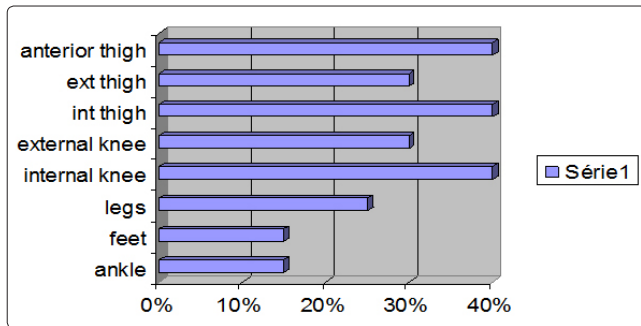
Turkey – Belgium – Japan – Poland – France

- Pr. FABIANI Georges Pompidou Hospital (Paris)
- Angiology News 2000 JL Richard
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La thermocoagulation [16,17]: 6 years of treatment for varicose veins 1620 patients J.M. Chardonneau Journal of AFME 2005.

A study en France is very interesting. It shows the recovery percentages of the lesions according to their localizations after, one treatment 50 patients are included.





Of the 8 areas observed, we find that:

- The thigh area is a fairly resistant area: 40% of negative answer.
- The knees react in the same way. 30 to 40% resistance.

On the other hand, 2 regions respond very favorably to treatment: Ankles and feet, with only 15% resistance at the first session, this means that a single treatment session in this area removes 85% of telangiectasia. The legs are also an area of good efficacy with a favorable response in 75% of cases.

The laws of diffusion of an energetic wave crossing a tissue can give us an explanation. In case of significant hydration the energy wave will tend to diffuse (the water is conductive) and to be less effective on the target, which is the case for regions such as the inner knees and thighs.

If hydration is low, efficacy is more focused and gives better results. (Ankles - feet - legs except in case of lipoedema or lymphedema). The hydration of the tissues crossed seems to explain the resistant zones encountered.



### Treatment Evolution

J0: micro-oedema

J8: very small crusts

This is gradually going to disappear

J30: Total disappearance



### Adverses Effects

Very few effects are found: Some transitory pigmentation.

### Discussion

As microsclerotherapy, it is an operator-dependent treatment. The setting of the parameters, the operating protocol is variable from one center to another.

In chess, 80% of shots are too deep and 20% of side shots. It is imperative, considering this result respect the therapeutic protocol. The results are very satisfactory on small telangiectasia.

Depending on the areas treated, the effectiveness is more or less good. Edematous areas (knee-thighs) are more resistant to treatment and often require several sessions and the result isn't always very satisfying.

Conversely, the "dry" areas (feet - ankles - legs) are very receptive and frequently only one session is sufficient.

The photo type is not a selective parameter. Does not treat feeder veins and telangiectasias of medium caliber results in variable efficacy. We obtain also very good result on rosacea.

#### Advantages for Practitioner

- Neither complications nor incidents
- Simple to use
- Instantaneous disappearance
- No allergy
- No pigmentation
- No burns
- No secondary effects
- Very efficient on all kinds of varix  
All body parts

#### Advantages for Patients

- No pain, minor discomfort
- No bandages.
- Instant Results
- Permits sun exposure

#### Conclusion

The reference treatment of telangiectasias is microsclerotherapy. Laser is alternative procedure. But these 2 treatments have some side effects and need experienced physicians. Radiofrequency is an efficient treatment for telangiectasia. Mainly fine telangiectasias. It can be used on all kinds of skin. The radio-frequency represents a new way, a third way. It is simple to use. There's no complication (except some transient pigmentation). The best indication is the small telangiectasias in feet and ankle.

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