

# THERMO COAGULATION OF THE VARICOSITES: 6 YEARS OF RETREAT

## INTRODUCTION

Varicosities are permanent dilations of the micro veins located in the surface derma under papillary. They are at a depth which varies from 0.08 mm with 0.2 mm (80 to 200 microns).

In the lower part, one finds the reticular derma with the veins of the same name.

They are mainly found on the level of the lower limbs: thigh - knee – leg – ankle and foot. They are of color bluish or purple (those here are smaller)

It is not simple to measure the diameter of the varicosities precisely.

But it is reasonable to assume that the very great majority have a diameter lower than 500 microns.

They can be associated the varicose disease, but not necessarily. More than 50 % of the patients having varicosities don't have a varix. And 15 % of the patients having advanced varixes do not have telangiectasies.

Their physiopathology remains still quite dubious. Many factors are likely to support them: Dilated veins of drainage - cellulitic infiltration - hormonal treatment - corticotherapy - systemic disease - motionless upright prolonged station - heat - compression...

This aesthetic embarrassment suffered by many patients explains the increasing request for treatment of the varicosities. Various suggested treatments have a more or less happy success. It is thus of abrasion under dermis and the micro-phlebectomy. Both have, due to their traumatic action, problems of pigmentation, and even of matting.

The laser, under the pressure of the industry, tried to flood this "market". The results, in spite of different generations off laser and wavelengths, are far from being what was hoped for. Its elective indication is the treatment of the small red varicosities. The laser is responsible for considerable side effects.

Under these conditions, the micro-sclerosis is the treatment of choice of the varicosities. It has its limits however. It cannot treat the varicosities smaller than 0.3 mm (dimension of the smallest needle). 50 % of the varicosities have a diameter smaller than 0.3 mm. It requires a long training. And is not without risk of potential side effects.

## **THERMOCOAGULATION**

Because of the insufficient results with previous mentioned treatments and in the hope to improve the effectiveness of the treatment of the varicosities, we have used the technique of thermocoagulation. for more than 5 years.

### **1 - PRINCIPLE**

Thermocoagulation is based on the eradication of the varicosities by temperature. This thermal damage is produced by a radio frequency wave of about 4 MHz; The radio waves have a frequency located between 3 and 30 MHz. The thermocoagulation is to be differentiated from the electrocoagulation which acts by a chemical phenomenon (with release of soda).

### **2 - SOURCE**

is a generator, the TC 3000. These last years technological progress allowed a noticeable improvement of high frequency generators. The currents used have a very weak variations in time, which allows a progressive burn of fabrics, and avoids the risk of carbonization and thus any scarring risk.

### **3 - TARGET and MODE Of ACTION**

Target it is the varicosity: the action is targeted on plasmatic proteins and the denaturizing of the proteins of the wall. The temperature reaches 75 to 80 °. The mechanism of interaction between the HF wave and the fabric is still insufficiently known but should make it possible to work out optimal parameters of treatment. Besides, this term of thermocoagulation is unsuitable, since it is not a question only of simple coagulation of intravascular proteins, but of destruction of proteins of the venous wall as well.

### **4 – PARAMETERS**

energy (power) is usable 20 to 100% of 3 Watts.

We frequently use 30%

The time of impulse is variable 1/10 ° of second to 8/10 ° of second.

Usually, we give the preference to 2/10 °.

## **RETROSPECTIVE STUDY OF MARCH 99 A JANUARY 2005**

The retrospective study of the treatment of the varicosities using the technique of thermocoagulation is carried out between March 1999 and January 2005. It invites us to propose a documented analysis of this treatment.

The clinic where we practice is mainly directed towards the esthetic phlebology of the legs: varices and varicosities. Many clinics, in the whole world, use thermo coagulation to deal with the problem of the varicosities. The protocols often vary from one expert to another. Each one evolving/moving with sometimes its own parameters and its usage rules.

6 years of experiment authorizes us to propose common rules of procedure.

The purpose of this one is to avoid the possible failure and side effects.

### **POPULATION**

We treated 1620 patients having varicosities at the level of the lower limbs.

99% of the patients are women.

The great majority have been re-examined after 3 months then after 1 year for

The average age of the patients is 44 years with the extreme ones going from 19 to 78 years.

They on average had 5 sessions each. What represents 7600 meetings in total.

### **PROTOCOL OF USE**

The parameters retained on the level of the generator are respectively 0.2 second for the pulse time and 30% for the power

We used isolated Ballet needles with a diameter of 0.075 mm (K3)

We followed the advised protocol.

### **CRITERIA of INCLUSION**

All the phototypes were retained. There is a majority of clear phototype (classification of Fitzpatrick 1 to 3) - a great number of phototype 4 and 3 phototype 5.

All the types of varicosities profited from the treatment.

All the areas of the lower limbs were treated: hollow poplity – knees – thighs – feet – legs – ankles.

## **CRITERIA OF EXCLUSION**

Patients presenting:

- an important varicose in the vicinity
- a post-phlebitic disease
- an allergy to chromium or nickel
- patients carrying Pace Maker

were not retained

## **TRANSILLUMINATION**

We observed in transillumination the state of the reticular veins subjacent with the treated varicosities.

In this population 50% have dilated reticular veins.

What means that 1 in 2 varicosities are not related to dilated reticulars.

## **DIAMETER OF THE TREATED VARICOSITES**

To measure the varicosities, we compare them with the needles at our disposal 0.3 – 0.4 – 0.5 mm and the needles Ballet (0.15 in particular).

They are rather reliable criteria.

The diameter of the varicosities treated is < or equal to 0.4 mm.

What represents more than 80% of the varicosities

Many varicosities have a diameter between 0.1 and 0.3 mm.

## **RESULTS**

The results are very satisfactory. But are very dependant on the protocol used.

A respect of the advised protocol yields results higher than 80% on all zones with varicosities of small gauge.

3 studies carried out between 2000 and 2004 give similar results.

According to the treated zones, the effectiveness is more or less good.

The cellulitic or oedémateuses areas (knees – thighs) are more resistant to the treatment and often require 2 or 3 meetings.

The “dry “ (areas feet – ankles – legs) are very receptive and frequently only one meeting is enough.

The phototype is not a selective criterion.

## **EVOLUTION OF THE TREATMENT**

Erythema immediately after which persists a few hours.

Microphone-oedemas in the hours which follow and blur rather quickly

Maximum microphone-crusts with the 4<sup>o</sup> day and disappearing at the end of approximately 4 weeks.

## **LIVED BY THE PATIENT**

Those which have a needle or blood phobia will be comfortable with this technique. As a whole, the meeting is well supported on the pain plan; and is same discomfort as the micro sclerosis.

The more the rate/rhythm is supported, the more the sensitivity is felt.

In the sensitive patients, it is advised to lengthen time between 2 impulses and not to exceed 200 impulses per meeting.

What is appreciable, it is the absence of pain or embarrassment immediately after the meeting.

No bandage or compression is necessary.

The satisfaction of the patients is very good.

## **SIDE EFFECTS**

No, if respect of the protocol.

The described side effects are always transitory:

Pigmentation (too much delivered energy or too brought closer impulses)

Burn (even etiologies) with aspect of bubbles or erythema

## **COUNTER-INDICATIONS**

Allergy to chromium and nickel

Pacemaker

Cutaneous infection

## **ADVANTAGES**

Very powerful result

No the side effect

Comfortable for the patient: no the bandage – not of pain post-intervention

Can be practiced all the year (to avoid the solar exposure in the 48 hours)

## **DISADVANTAGES**

Is an independent operator and must require a respect strict of the protocol.

Microphone-crusts which persist a few weeks

## DISCUSSION

Many centers use this innovative treatment.  
Some with great success, others with more random results.

Why?

We specified it in introduction, the adjustment of the parameters, the protocol of use varies at different clinics

Those which respect the advised protocol do not have a concern.

In the failures, one notes 80% of too major shootings and 20% of side shootings.

It is imperative, taking this result into account:

- to apprehend under the best conditions these varicosities what means GOOD VISION. For that to place themselves perpendicular to the treated zone (which it is on a plan horizontal) and to use powerful magnifying glasses (minimum enlargement of 6).

- not to be inserted while pricking, but lightly hit the surface.  
We must forget the feeling of our needles penetrating the skin, for a treatment which should not cross the skin but only to compress it moderately.

It is the test of impulse of the protocol.

Can one decrease the duration of the microphone-crusts?

We currently test the Gold needles in this finality.

They have the reputation to minimize the cutaneous reactions.

Can one treat varicosities?

If diameter of the varicosities is higher than 0.5 mm, the power must be increased to 60%.

But prudence is essential, because such an amount of energy consequently causes an inflammatory reaction with erythema persisting several weeks.

In the event of resistance of a varicosity (< 0.4 mm) located in a cellulitic zone, it is preferable to increase the time of impulse to 5/10 ° of second.

Many prospects open with the thermocoagulation.

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## **CONCLUSION**

The thermocoagulation is a treatment of a great effectiveness on the varicosities. It avoids the pitfalls of the other treatments as well on the effectiveness plan on the side effects.

Clinical studies carried out since 5 years and the experimental follow-up made at the Pompidou hospital consolidates in this selective treatment of the varicosities.

It is necessary for us now to harmonize our working methods and to respect the advised protocol.

It is while following this way that the thermocoagulation should become the treatment of choice and first intention of the varicosities.