Translation of French: Dr. Jules Marthan – Vauvert, AFMEaa, pp. 23 – 27, October 2009

Meso-lipolysis

A combination of minimally invasive techniques is used to optimise the results obtained.
Lipolysis based on mesotherapy and shock waves [injection of a biolytic compound, shock wave application (AWT: acoustic wave therapy) to the treatment areas, meso-drainage].

Pathologic elements are: an increase in the adipocyte volume, compression of the circulatory system, waste product and toxin accumulation, fibrosis and loss of cutaneous elasticity as well as cellulite areas with orange-peel skin appearance, which is caused by subcutaneous fat cells bulging upwards through the wide-meshed connective tissue towards the skin surface.

Abdominal lipodystrophy predominantly caused by inadequate and unhealthy nutrition: this type of lipodystrophy reacts to a limited extent to an appropriate diet (the longer the symptoms persist, the more difficult the treatment will be and the longer it will take to restore the cutaneous elasticity, if this is possible at all without an abdominoplasty surgery).
Genetic lipodystrophy: this type of lipodystrophy (appearing on thighs, hips and inner knee regions) cannot be treated by diets and will hardly be influenced by physical exercise, it is easily fibrous.

Mechanical compression of drainage pathways

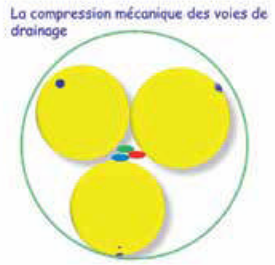

Photo 1

The results achieved can be optimised provided certain criteria are observed: while the maximum BMI is kept between 24 and 27, the maximum total fat mass is limited to 30%.
A protein diet during the first two weeks (when starting lipolysis) and regular physical exercise (for min. 45 minutes, three times per week: continuous physical activity sufficient to break a sweat and to mobilise large muscle masses) as well as a treatment of major venous insufficiency.
Meso-lipolysis is suitable for treating local lipodystrophy, but absolutely not for the treatment of excess weight.

MESOTHERAPY

Introduced as early as in 1950, this method has already successfully demonstrated its therapeutic effect in the treatment of microcirculation problems. Mesotherapy allows different substances to be injected into the subcutaneous fat tissue in order to produce lipolysis combined with an improved microcirculation and higher subcutaneous connective tissue and derma quality.
Due to the progressive prohibition of injectables as per pharmacopoeia, the list of substances that may be used for this purpose is rather limited.
According to the VIDAL Drug Compendium as last amended, the following injectables are still available: Conjonctyl (silicon), caffeine, Dicynone (etamsylate), procaine, injectable laroscorbine (vitamin C), becozyme (vitamins of the B-group), sterile distilled water (PPI) and physiological saline.
Injectables not included in VIDAL: phosphatidylcholine prepared in vials or ampoules of 5 ml containing 250 mg of phosphatidylcholine and 125 mg of deoxycholate.

Current legislation:

According to the MA marketing authorization – in stricto sensu – none of these substances is can be applied by mesotherapy.
In general, mesotherapy is not complying with the prerequisites for market authorization as all substances are intended for intravenous or intramuscular injection or to be administered by infusion and are not indicated for local treatment of lipodystrophy or any other pathology. In addition, none of these substances is indicated to be injected into the derma.

The treating therapist is thus entirely responsible for the injection as well as for disputes with unsatisfied patients (problem to be discussed with the professional indemnity insurance: negotiation or reimbursement?).
Mesotherapy is one field within the concept of meso-lipolysis.
This method does not advocate the use of a particular cocktail, but leaves the choice of the suitable compound to the therapist and to his personal experience as to which compound has achieved the most satisfying results.
The difference lies in the application of acoustic waves.

SHOCK WAVES

Shock waves have an effect on the stimulation of local vascularisation and cicatrisation processes within the connective tissue. A stimulation of local vascularisation and cicatrisation processes within connective tissues is likely to be obtained.
The term "shock waves" generally refers to acoustic waves. An acoustic wave is characterised by transitional and abrupt variation of high-amplitude pressure within very short time. In the broader sense, this term is used to designate mechanical waves that are transmitted from a point of impact.

Devices using ultrasound technology deliver so-called focussed waves that are released at a precise distance from the emitting lens. In contrast to this, shock wave devices based on direct shock application deliver radiating – also called **radial** – shock waves that are released directly upon contact with the transmitter head. Both wave types are extracorporeally generated (1).

History

The term "shock wave" first appeared in medicine in the 1980s within the frame of the treatment of urinary calculosis. This was the introduction of extracorporeal ultrasonic lithotripsy – soon followed by intracorporeal lithotripsy techniques based on direct shocks applied to the calculus by urinary tract catheterisation.
Combining their development efforts, therapists have studied possible mechanical effects of shock waves on the consolidation of pseudoarthrosis (with a certain success) and on tendinous calcification as well as on non-calcifying tendinopathies. The treatment of these widely spread indications is currently being evaluated. The first publications about focussed shock waves and radial shock waves were issued in German by Dahmen and Rompe in 1992 and in 1996, respectively.

Shock waves

10 to 15 MHz frequency and 2.4 to 4 bar pressure (possibly higher, provided the local tolerance is sufficient), a pulse number of 6 to 8000 pulses per region depending on the time required until skin erythema is formed. While shock waves are usually painful when applied on muscle-tendon junctions in sports medicine, the treatment of Lipodystrophic regions is painless or almost painless, except in cases where shock waves are applied in regions close to bone structures.

Technology evaluation

Shock wave effects:
the most important effect of shock waves is the elimination of fibrosis. They act like a profound "super" transverse massage as applied within the frame of rehab measures. The entire process is similar to the creation of a microscopic neo-lesion, which facilitates subsequent cicatrisation. To achieve the desired cicatrisation, the tendinous tissue is stimulated. Hyper-vasculation can be observed at the end of a single session (confirmed by colour Doppler echo), which is likely to enhance the local metabolism. Animal tests have also shown an improved capillary net after shock wave treatment of both muscle-tendon junctions and after tendon traumatism.
The extended physiopathologic knowledge in terms of local lipodystrophy and new findings about shock waves have quite naturally led to intensified research efforts in this sector.

When used for the treatment of cellulite, shock waves produce a fibrosis-eliminating and drainage-enhancing super-massage effect. They quite naturally complement mesotherapy ensuring efficient drainage, improved microcirculation and reduced fibrosis. Shock waves are thus ideally suited for successive handling of the individual pathologic factors of lipodystrophy within a minimum of time and with reproducible constants in a relatively comfortable condition (no pain and no known side effects) when treating cellulite accompanied by adipocyte hypertrophy or oedematous and even fibrous cellulite. Provided with the CE mark for medical devices, the device is equipped with two hand pieces supplying either vibration waves or shock waves.

VIBRATION WAVES

Minor frequencies (8 to 10 MHz), pressures of up to 5 bar, larger-sized head – these waves are intended for a surface massage mobilising the entire skin like a manual massage with direct pressure being exerted on the epidermis.

SHOCK WAVES

Higher frequencies (15 MHz), pressures ranging between 2.4 and 3.4 bar, 6 to 8000 pulses per region to be treated. These waves may reach up to the hypodermis and the fascia superficialis when arranged at standard depth.
The following results are obtained: improved lymphatic circulation, intensified arteriovenous microcirculation leading to an improved drainage of the treated lipodystrophic areas and above all to a reduced fibrosis (improvement of the connective tissue quality and reduction of the orange-peel appearance).
The innovation lies in the combination of both minimal invasive technologies, i.e. mesotherapy and shock waves.

REPRODUCIBLE MEASUREMENTS

The only possible means of measuring the treatment efficiency is the measuring tape. However, this method is only reliable on condition that is it based on fixed and easily traceable reference values measured on the same person during each treatment session.

My suggestion as to the measuring positions:

For the waistline: at the lower margin of the eleventh rib.
For the abdomen: the front measuring point should be arranged at 6 cm below the upper edge of the navel, as the lower edge is often insufficiently defined.
The rear reference point should be arranged at the height of the sacral dimples. If they are hard to determine due to the tissue layer thickness, the posterior superior iliac spine may be used as a reference.
For the thighs: follow the posterior gluteal fold.
The measurements can be taken at the same reference points on the same patient during the individual treatment sessions with precise evaluation of the circumference reduction achieved in the treated zones.

Reference points
- *Waistline*
- *Abdomen circumference*
- *6 cm below the upper edge of the navel at the front*

Photo 2

Rear reference points: sacral dimples

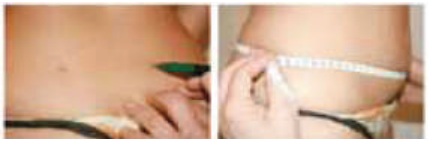

Photo 3

Thigh circumference
- Following the gluteal fold

Photo 4

POSSIBLE COMPOUNDS

25 mg of caffeine (biolytic):
2 ml + 2 ml 2%-procaine + 5 ml Conjonctyl + 2 ml Dycinone.
This biolytic compound is vaso-trophic and antifibrogenic.
It is to be applied once per week over a period of approximately eight weeks, and then every two weeks during the following two months.

Technique

Injection of 0.2 ml each per cm in lines arranged at a distance of one cm. It is possible to use up to two syringes of this compound in one treatment session (however, utmost care is required when treating patients that are sensible to caffeine or persons with rhythmic pathology).
One ampoule of 2 ml Cooper caffeine contains 50 mg of caffeine.
Compare: one cup of espresso contains 80 mg of caffeine.

Directly upon injection

Photo 5

HYPOOSMOTIC MESO-DISSOLUTION (BONNET, MARTHAN, PASQUINI, PERRIN)

Compound of distilled water and calcitonin thiocolchicoside, vitamin C (administered as indicated for the previous compound).

PPC (PHOSPHATIDYLCHOLINE)

Polyunsaturated phosphatidyl-choline is a phosphoglyceride (phospholipide derivative from glycerol) or soya lecithin.

Suggested compound:

For a 10 ml syringe: 5 ml of PPC (250 mg + 125 mg of deoxycholate).
(All PPC ampoules available on the market have this composition, which enhances the biolytic effect.) + 4 ml of sterile physiological saline + 1 ml of 2% xylocaine adrenaline (this share is sufficient to avoid pain caused by the PPC injection).
Treatment is to be performed under medical supervision.

MESOTHERAPEUTIC TREATMENTS TO IMPROVE CUTANEOUS AND VASCULAR TROPHICITY

At present, injectable artery vasodilating agents are no longer available on the French market (disappearance of Torental, Pentoxyphiline, Fonzylane, Praxilène).
Only Dicynone and Procaine (which have known vasoactive properties) are still available at present.

Dicynone

VIDAL indication for Dicynone in tablet form: used for symptoms of veno-lymphatic insufficiency (heavy legs, pain, primo-decubitus restlessness).
Additionally applied for the treatment of symptoms of functional disorders involved in capillary fragility.
VIDAL indication of Dicynone in the form of injections: bleeding due to capillary fragility.
Will be maintained due to the veno-lymphatic trophic properties.

Suggested compound:
2 ml of Dicynone + 5 ml Conjonctyl + 1 g 1 ml of laroscorbine + 2 ml 2%-procaine. One session every two weeks, applied to the skin surface treated by PPC and by shock waves to enhance the cutaneous effect.

SHOCK WAVE PROTOCOL

After having applied a neutral gel, shock waves are introduced into the skin using a shock transmitter, while no pressure is exerted and attention is paid in order not to affect any bone structures. The treatment is continued until an even skin erythema can be observed over the entire treatment area. Depending on the skin quality, about 6 to 8000 shocks are applied to each region.
A frequency of 15 mHz is used.
The initial pressure of 2.4 bar is progressively increased up to a value of 3 bar.

D-Actor gel application

D-Actor shock wave application (abdomen)

D-Actor shock wave application (hips)

Photos 6, 7, 8

RESULTS

One injection every 1.5 cm

Photo 9

Results

Photo 11

Results (please note the restored cutaneous elasticity)

Photo 13

Results three months upon treatment
2 PPC sessions + shock waves + 3 trophic compound treatments + two weeks of diet

Photo 10

3 PPC sessions + 12 shock wave treatments + 4 trophic compound treatments

Photo 12

Results after 2 sessions performed at an interval of two months + shock wave treatments

Photo 14

CONCLUSION

This still limited test series is rather interesting in view of the average results obtained.

Except for the direct reactions and the known and foreseeable consequences in the first 3 days upon PPC injection, there were no immediate or subsequent undesired effects observed. No problems occurred with patients treated with different compounds either.

It goes without saying that the sustainability of the result substantially depends on the lifestyle, on keeping a total fat mass of below 27% and a BMI of maximum 25 as well as on constant 45-minutes physical exercise three times a week and/or regular physical training.

This treatment can be considered as optimum alternative to more invasive methods, provided reasonable results are expected to be achieved and only local lipodystrophy is treated.

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Improvement in skin elasticity and dermal revitalization in the treatment of cellulite and connective tissue weakness by means of Extracorporeal Pulse Activation Therapy: EPAT
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