Q&A

We speak to **Dr Miguel Montero** about treating leg veins with laser

Aesthetic Medicine: What are the various types of leg veins and why do they grow to appear more prominent?
Dr Miguel Montero: We have a superficial and a deep system of veins which carry the blood back to the heart. They communicate via the perforator veins. 90% of the blood returns via the deep system. The blood travels upwards, moving against gravity: as we walk or move the muscles, they squeeze the veins thus mobilising the blood. There are valves which allow blood movement towards the heart, and prevent the movement back towards the feet or legs when we sit or relax.

The pathological veins that we are concerned about are part of the superficial system, and are:

- **Varicose veins** – The largest veins, thick and tortuous, with a diameter larger than 3mm. They can be symptomatic, causing aching and skin changes.
- **Reticular veins** – Blue or red, often part of a visible network. Size between 1-3mm.
- **Telangiectasia** – Veins less than 1mm in diameter, blue or red, forming clusters. Often called spider or thread veins, causing only cosmetic problems.

There are no reliable statistics about the amount of people with varicose veins, but 3% of adults is often mentioned. Most people with varicose veins do not have any underlying disease, they occur for no apparent reason. There are circumstances where the risk of developing them is increased: pregnancy, increasing age, being overweight, family history, jobs which involve standing for long hours. There are some health problems which increase the risk of developing varicose veins, like a previous DVT, presence of pelvic tumours and congenital problems like Klippel-Trenaunay Syndrome.

The underlying mechanism of production is fully understood, but it is thought that a section of the wall of the vein becomes weak, widens and becomes more prominent. If this happens near a valve, then it leaks, increasing the pressure in that sector of the vein. This in turn will cause more widening, more leaking valves and the increased accumulation of blood will make the vein stand out.

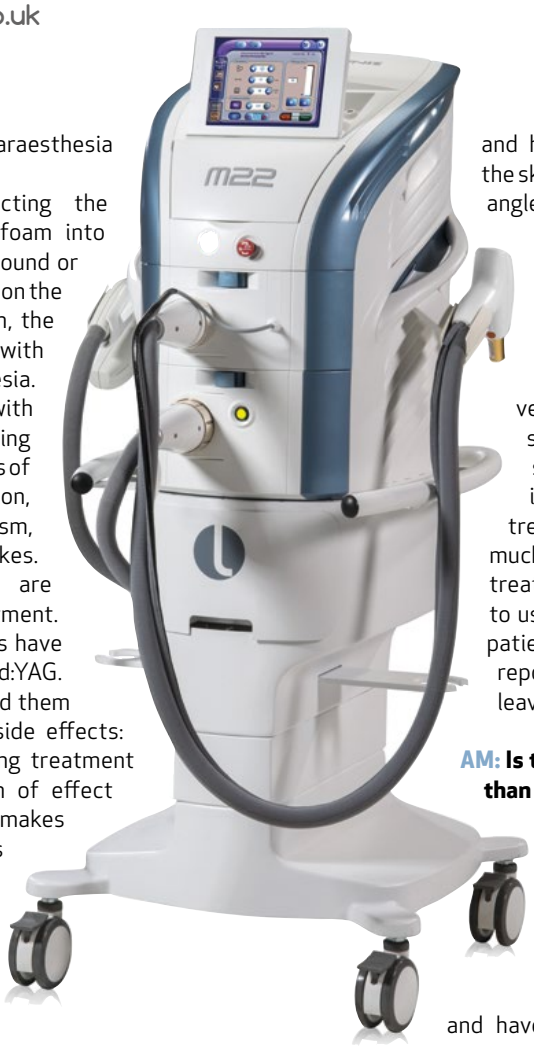
AM: What options are available for treatment?
MM: Most people don't need any treatment if the veins are not symptomatic. This will be the recommendation on the NHS, and as more people are being denied treatment for asymptomatic veins, they seek help privately for purely cosmetic reasons.

The most basic treatment option are compression stockings. Compression stockings may help relieve the pain, discomfort and swelling caused by the varicose veins, in the short term. However, it's not known whether the stockings help prevent the varicose veins getting worse, or if they prevent new varicose veins appearing. They are not a long term treatment option, unless no other form of treatment can be used. The most commonly used forms of treatment are:

- Endovenous ablation: a catheter is passed into the vein guided by ultrasound, which delivers heat in the form of either radiofrequency or laser, to damage the vein wall, closing the vein. Usually local anaesthesia is used. Compression stockings need to be worn for a few weeks

afterwards. Bruising and paraesthesia are common side effects.

- Sclerotherapy: either injecting the liquid sclerosing agent or foam into the veins, guided with ultrasound or transillumination. Depending on the size of the vein and location, the treatment maybe carried out with or without local anaesthesia. Treatment of larger veins with high concentration of sclerosing agent or foam carries the risks of DVT, skin ulcers, pigmentation, and rarely pulmonary embolism, TIA, visual problems or strokes. Compression stockings are needed for a week after treatment.
- Laser: different light sources have been used: KTP, PDL, IPL, Nd:YAG. I use IPL and Nd:YAG as I find them effective, with only minor side effects: short lived discomfort during treatment and bruising. The limitation of effect to veins of up to 2-3mm makes comparison with other forms of treatment difficult, but I find it as effective as microsclerotherapy (injection of sclerosing agent to treat veins up to 3mm in diameter).



and hand piece: perpendicular touching the skin for deep veins and crossroads, 45° angle shots for reticular or visible veins, touching or not the skin depending on the approximate depth of the vein. Nd:YAG will penetrate deep into the skin, so separating the light guide 2-3mm from the skin will help with treatment of more superficial veins. After that, I treat the red and superficial telangiectasia with IPL. I start the treatment deep and finish it more superficially, as I find that treatment with IPL first causes too much erythema which makes any further treatment very difficult. I find essential to use air cooling for the comfort of my patients and everyone without exception reports a normal skin sensation on leaving the treatment room.

AM: Is there a patient profile better suited than others for this treatment?

MM: So long as there are no contraindications for the use of laser, most patients are good candidates. It is essential that any varicosities larger than 3mm are treated first by any means to improve the longevity of the results and have more guarantees of success as

- Surgery: the most invasive and effective treatment for large varicosities involves ligation and stripping (usually reserved to the saphenous vein in the thighs) and multiple avulsions for the lower legs. Often involves a general anaesthetic, and compression bandages for one to two weeks after the treatment. Complications involve pain, bruising, nerve damage and rarely DVT.
- A new form of treatment is transilluminated powered phlebectomy, where an endoscopic transilluminator is placed under the skin through a small incision to find out which veins need to be cut, following which the fragments are removed using suction through the same incision. It is done under general or local anaesthesia. The main risks are bruising and bleeding. It is not a treatment recommended by NICE for treatment of normal veins unless there are particular benefits for a given case.

AM: How do you use M22's Nd:YAG module when treating veins?

MM: I ask the patients to stand up throughout the assessment and treatment as the veins need to be full of chromophore (Haemoglobin) for a most effective treatment. I use two devices to visualise the veins and the networks: transillumination with VeinLite, and infrared mapping with Accuvein. It is important to identify the feeder veins as well as the visible superficial ones. I mark the networks with white pencil, treating first the connections ('crossroads' if you will), following with the reticular veins, and the last thing I treat are the telangiectasia and capillaries. I will discuss the settings later. I use different positions of the light guide


Leg before


Leg after

Leg veins before

Leg veins after

laser treatment is only suited to treat the smaller, more superficial veins. Most of my patients are keen to have the veins removed and are happy to avoid sun or UV exposure to maximise the effect of the treatment.

I have treated several patients who have suffered DVTs in the past without any problems and although the deep system which should take over the function of the superficial one is not going to be working as well, I have achieved very pleasing results on them. With all patients I have a detailed consultation to manage their expectations and to avoid disappointment: I would expect usually around 80% improvement, and with patients with a history of DVT's, 40-50%.

AM: What type of settings do you use and why?

MM: Using Nd:YAG, I treat first the 'crossroads', followed by the reticular feeders, then any visible blue veins. I use the preset parameters in the M22 for the 6mm spot size (which is my favourite), which offers a double pulse for medium depth veins up to 1-2mm, and triple pulse for deeper, larger veins up to 3mm. After that, I use IPL, again guided by the system presets, usually 560nm filter, with a double pulse to treat the red telangiectasia and capillaries.

If patients can tolerate it, I do a double pass with IPL. The presets will vary depending on the target and the skin type, so it is difficult to summarise them here. With more experience treating veins you can adjust the parameters, making the pulses longer for treatment of larger veins for example, or increasing the fluence. These basic settings are effective and safe, and a good starting point for anyone not familiar with this sort of treatment. For most patients, four to five treatments are needed to achieve the desired outcome.

The interval between treatments is six to eight weeks on average, as we need to wait for any bruising or inflammation to subside. The settings are usually adjusted to adapt to the changing targets on every treatment.

AM: What caused the vein to disappear or reduce in appearance?

MM: I quote to my patients up to 80% improvement in appearance. This is due to different reasons: larger veins will never close down completely, deeper veins will be out of reach of the laser, some feeders will continue to pump blood regardless of treatment. The smaller veins will likely disappear completely, while the larger ones may or may not for the above reasons. I have not had to repeat treatment on the same vein on any of my patients in 8 years, so I have to presume that most people are happy with the outcomes and the longevity of the results.

AM: How does laser compare to sclerotherapy for leg veins?

MM: It is a debate that will continue for a long time. My initial answer may be obvious, but the best treatment is the one that makes the veins disappear! In my hands I get about 80% clearance with laser, and this is similar to the figure quoted more often for sclerotherapy, around 80%.

There are no reliable, evidence based figures for either of them. There are cases where sclerotherapy is contraindicated, like patients with a pre-existing DVT, and only laser can be used safely on them. There are cases where sclerotherapy is the only possible treatment, like treatment just after sun exposure, or if skin cancer precludes the use of laser. If you only have a hammer, all you see are nails.

For the last year I have used both, after re-training in microsclerotherapy and in many cases I start with this to reduce the size of the reticular and feeder veins, thus making the laser treatment more comfortable for the patients. There are complications of microsclerotherapy like pigmentation and matting which respond very well to IPL, so anyone combining both modalities of treatment will very likely have the best of both worlds to offer their patients.

I think that offering comfortable, effective and safe treatments is very important and I feel very privileged to be able to offer this to my patients. **AM**

Dr Miguel Montero holds a Post Graduate Diploma in Cosmetic Medicine from the University of Leicester. He is a member of the European Laser Association, British Medical Laser Association, British Medical Acupuncture Society and British College of Aesthetic Medicine. He is also on the lecture team at UCLAN teaching doctors and dentists on various aspects of aesthetic medicine and works closely with and presents for Lumenis. He is also a medical advisor for Energist Medical's NeoGen Skin Regeneration treatment and is a speaker at aesthetic medicine conferences worldwide as well as contributing to industry publications.