Tumescent anesthesia is one of the most critical components of EVL ablation. Tumescent anesthesia provides a more effective and safer anesthesia for patients [3]. Perivenous anesthesia allows veins of any diameter or length to be treated by EVLT but it is usually necessary to ensure that large diameter veins are adequately compressed [10]. The placement of large volumes of dilute anesthesia in a perivascular position (tumescent anesthesia) under the direction of duplex guidance serves several purposes.

It protects perivascular tissues from the thermal effects of intravascular energy by serving as a heat sink.

It decreases the diameter of the treated vein to allow for better absorption of energy by the target chromophore and thus secondarily reduces intravascular blood for non-specific coagulation. Use of general/regional anesthesia or intravenous sedation and preferred tumescent anesthesia may reduce the pain for the EVLT procedure. Our study showed that using the tumescent technique permits immediate post-treatment ambulation for preventing DVT. Thromboembolic complications can occur with any treatment for varicose veins. Serious complications following EVLT are uncommon [11]. DVT is rare with a reported incidence of < 8% [12, 13]. Van Rij and colleagues documented deep vein thrombosis in 5.3% of limbs after varicose vein surgery although most were localized to the tibial veins [8].

In our series no thromboembolic complication was seen. Through statistical analysis it was observed that the mean level of pain score for the patients who received classical tumescent anesthesia showed a higher level (P = 0.003) and gender and age did not influence the severity of pain for the EVLT procedure. Our study showed that using the combined technique for the administration of tumescent anesthesia may reduce the pain for the EVLT procedure.

It may sometimes be very difficult to gauge the correct amount of tumescent solution needed to compress the vein and still leave some intraluminal blood (necessary for the mechanism of action). If too much tumescence is used and hemoglobin is eliminated there can be charring of the inner wall of the vein with resulting pain and failure of vein occlusion [14]. To prevent using too much tumescence, administering the solution by the combined technique with the help of ultrasonography guidance may be beneficial. Ultrasonographic guidance is also important so the needle does not perforate the vein and damage the laser fiber.

We used a spinal anesthesia needle (Spinocan 0.53 × 88 mm/25 G × 3.05) and an intravenous solution device to apply tumescent anesthesia during the procedure. The tumescent needle should touch the outer surface of the vein without perforating it. In this position the injected local anesthetic goes just around the saphenous vein and the surrounding soft tissues are pushed away. If the tumescent solution is given at a distance from the vein these tissues are not pushed away but are attached to the vein wall and thus may be exposed to some degree of heat damage [14]. It is important to inject tumescent solution just outside the vein wall along its entire course so that it provides local anesthesia, compresses the vein and isolates it from the surrounding structures. We believe that spinal anesthesia needle is an appropriate instrument for applying ideal tumescent anesthesia administration.

6. Conclusions

EVLT is an effective and safe for the treatment of saphenous vein insufficiency and the combination technique of administering tumescent anesthesia before ablation and continuously during the EVLT procedure may be an alternative way to reduce the patients peroperative pain and discomfort.

References


eComment: Risks of combination technique

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We have read with interest the article by Memetoglu et al. regarding the management of pain and discomfort during endovenous laser treatment [1]. The combination technique used by the authors seems very effective for
peroperative pain. We have a few comments about the procedure. We know that veins have a tendency to spasm during endovenous procedure. Touching the outer surface of the vein without perforating it can cause spasm of the vein [2]. This can also be the reason for hemoglobin elimination in the vein lumen because of too much tumescent compression. We agree with the authors concerning the surrounding tissue; however, spasm of the vein can also cause direct contact with the laser fiber and may result with perforation and pain with hematoma. Secondly, the combination technique seems to need more puncture side with the spinocan needle than group A. The length of the saphenous vein in the above-knee position is nearly 30–35 cm and it is impossible to give tumescent anesthesia with one puncture [2]. The combination technique seems effective in the peroperative period. However, increase in the puncture number might lead to an increase in pain and infection risk in the postoperative period.

References