

Thermal expansion and contraction of the VSM using the endovenous Radio frequency (EVRF®) and monitoring using the endoscopic video-assisted Crosseclipping (EVCC) and the open crossectomy.

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Case study

The application of radiofrequency as endovenous ablation therapy of the VSM has meanwhile established itself as a method for minimal invasive treatment of venous/arterial insufficiencies. Since the insufficient saphenous vein is not also treated in the process, we wanted to investigate how extensive the heat generation of the probe tip is and whether there is a possibility to also treat those insufficient veins endovenously without damaging the Vena femoralis.

Method

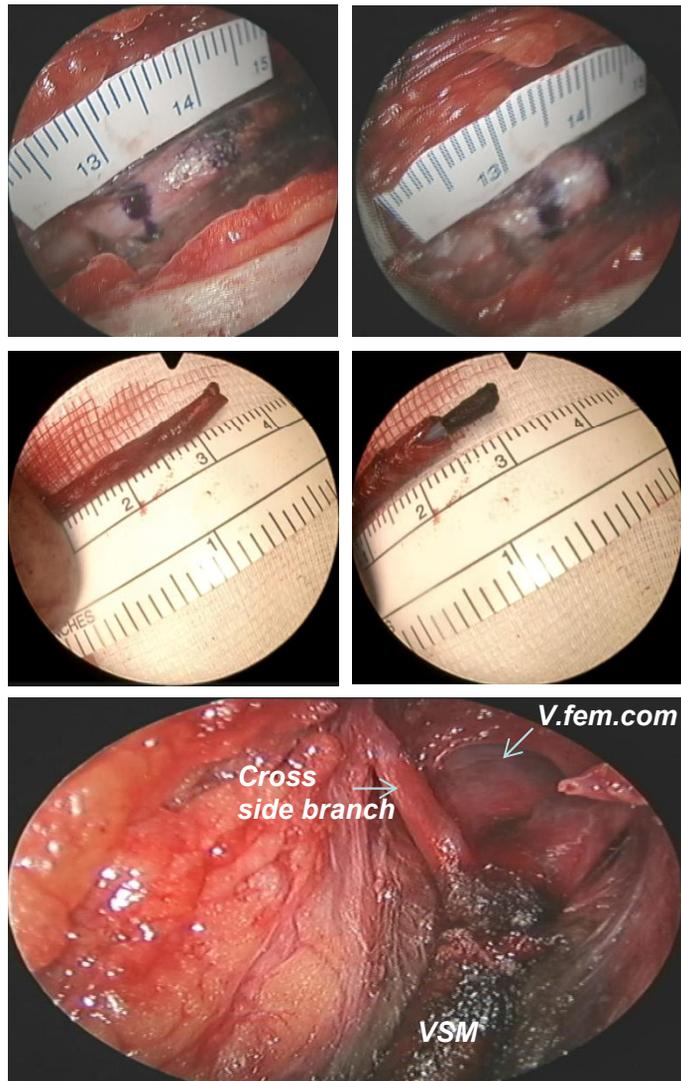
On six patients we have performed an endovenous treatment of the VSM using **EVRF®** (Endo Venous Radio Frequency, F Care Systems). The probe used (CR 45i) has an uninsulated tip of 5 mm. With patient nr. 3, we have also carried out an open crossectomy and partial resection of the proximal VSM which we ablated ex vivo. Three patients underwent an endoscopic video-assisted clipping (EVCC).

Results

All veins and VSM were sufficiently deactivated/disconnected. The application of the probe performed ex vivo showed both proximal and distal ablation of up to 10 mm in each direction from the probe tip with a clear longitudinal shrinkage. The patients who underwent endoscopic video-assisted clipping (EVCC), in contrast, only had a proximal and distal ablation of the GSV from the probe tip to a maximum of 3 mm. Therefore, an extensive longitudinal shrinkage could not be verified.

Conclusion

The placement of the probe (CR 45i) in the proximal VSM without a safety distance of 2 cm to the vein, is permissible in some circumstances, because in vivo, low thermal expansion of the probe tip to the proximal end, will most probably not damage the Vena femorales. This effect would have the concomitant elimination of the insufficient saphenofemoral junction by thermal ablation. The ex vivo longitudinal shrinkage of the vein shows the nonlocalized limitation of energy at the probe tip, of which the dispersion is probably supported by the absence of the perivascular tissue support.



Summary:

It is proven that the heat generation when using the **EVRF®** probe is not limited to the probe tip. This should be considered when placing it in the saphenofemoral junction to avoid damaging the Vena femoralis. Under endoscopic control or applying open vein treatment the probe can be placed more precisely in the area of insufficient saphenofemoral junction or ditto vein, without expecting to damage the Vena femoralis since the ablation is controlled visually.