

New Monopolar Radiofrequency Ablation for Incompetent Saphenous Veins Compared with Conventional Bipolar Catheter

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Enter Objectives / Purpose Statement:

The conventional radiofrequency ablation (RF) uses a bipolar catheter which limits heat dissipation just around the heat-generating tip. The newly developed RF system uses a monopolar catheter without a neutral electrode. The aim of this study is to evaluate the clinical efficacy and safety of the monopolar RF compared with the bipolar RF.

Method:

This retrospective study included 40 patients for treating the incompetent great saphenous veins. The monopolar RF catheter (4 MHz) was used in 20 legs for the monopolar RF group (MRF), while the bipolar RF catheter (460 kHz) was used in 20 legs for the bipolar RF group (BRF). In the MRF group, a power of 25 W was delivered continuously and the monopolar catheter (CR45i) was retracted by 0.5 cm every time it became stuck by vein shrinkage. In the BRF group, the first proximal segment was ablated by 2 cycles, while the remained distal segments were ablated by 1 cycle. The catheter tip was placed 2 cm distal from the superior epigastric vein junction and ablation was commenced. Patients were followed for 3 months, and the occlusion rate, the proximal vein shrinkage rate, EHIT and adverse effect were evaluated as well as AVVQ and VCSS.

Results:

In both groups, the average age of patients was 57 years old, and the gender ratio and preoperative CEAP classification was similar in both groups. Truncal vein diameter was 6.8 ± 1.1 mm in the MRF group and 6.3 ± 1.4 mm in the BRF group respectively. Occlusion rate was 100 % in both groups, although thrombotic occlusion at the proximal end was apparent in the BRF group. Vein wall thickness was more apparent in the MRF group. Truncal vein outer diameter after 3 months was 2.9 ± 1.2 mm in the MRF group and 4.3 ± 1.3 mm in the BRF group respectively. There was no EHIT of Class 2 or over in either group, although EHIT Class 1 was observed in 4 legs in the BRF group. There were no adverse effects such as bruising, phlebitis, paresthesia and severe pain which would require analgesic medication. These procedures improved the AVVQ and VCSS in both groups.

Conclusions:

Since MRF with a high radiofrequency acts as a radio wave which oscillates water molecules, heat dissipation from the catheter would be more widespread than with BRF. MRF is likely to provide more effective thermal degeneration without adverse effects.

Categories:

SUPERFICIAL VENOUS INTERVENTION - Endovenous Ablation

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Yes