

## Is Radiofrequency Ablation Better than Venous Stripping for Management of Chronic Venous Insufficiency?

Reynaldo Halomoan,\* Leonard Christianto Singjie,\*  
Jonny Setiawan\*\*

\*Faculty of Medicine, Atma Jaya Catholic University of Indonesia, Jakarta, Indonesia

\*\*Department of Surgery, Atma Jaya Catholic University of Indonesia, Jakarta, Indonesia

### Introduction

Chronic venous insufficiency (CVI) is a disease of the vein due to valve dysfunction, venous obstruction, or both. This results in increased vein pressure and related to disruption in the vein system.<sup>1</sup> The incidence is relatively high. Globally, the incidence of CVI is about 63.9% and more common in women compared to men.<sup>2</sup> The sign and symptoms may vary from heaviness sensation, leg pain, telangiectasia (spider veins), reticular veins, varicose veins, edema, lipodermatosclerosis, and venous ulcer.<sup>3</sup> For an extended period, CVI may decrease the quality of life of the patient because of immobility and symptoms that patients experience.<sup>4</sup> The treatment strategy for CVI has been established, and there are several strategies depends on the severity of the disease. Conservational methods, such as pharmacological therapy and compressive stocking therapy could be given. However, it's not the definitive treatment. Another therapy option is by surgical therapy such as

vein stripping but it requires hospitalization.<sup>5</sup> Development of CVI therapy has resulted in more advanced endovenous therapy with good efficacy and reduced complication. Radiofrequency ablation (RFA) is a promising minimal invasive therapy for CVI patients.<sup>6</sup>

### Radiofrequency Ablation And Venous Stripping

The treatment for CVI is based on the severity of the disease, assessed by the CVI staging. The well-known classification for CVI is the Clinical-Etiological-Anatomical-Pathophysiological (CEAP) classification. For decades, treatment using surgical ligation and stripping of the great saphenous vein had been the gold standard for CVI.<sup>7</sup> However, this technique caused several complications ranging from neovascularization (exceeds 30%) and injury of the saphenous nerve.<sup>8,9</sup>

To optimize the outcome and prevent serious complications, newer technique

Korespondensi: **Reynaldo Halomoan**

E-mail: [reynaldo\\_siregar@hotmail.com](mailto:reynaldo_siregar@hotmail.com)

has been developed. Radiofrequency ablation (RFA) is a minimal-invasive endovenous heat-based procedure in treating CVI that shows promising result. The endovenous method has some benefits, such as fewer complications post procedure compared to venous stripping.<sup>10</sup> The procedure of RFA is done by using a catheter electrode guided by ultrasound. This catheter electrode will deliver a radiofrequency with high-frequency, which leads to venous spasm, collagen shrinkage, and physical contraction.<sup>11</sup> To determine the efficacy of RFA, there are three factors that can be assessed, venous occlusion, recanalization, and absence of recurrent reflux. RFA showed a good occlusion rate in less than three months, about 97%. A study by Proebstle et al. showed a 100% occlusion rate after the initial procedure and a 95% occlusion rate after five years of follow up.<sup>12,13</sup> There was also a shorter hospitalization, reduced postoperative pain, and improvement in the quality of life after the patient underwent RFA procedure.<sup>14</sup>

Compared to the gold standard, RFA is auspicious. The success rate from venous stripping-ligation and RFA are slightly different.<sup>13-16</sup> However, in a randomized clinical trial study by Mendes et al. there is a 20% difference in the primary success rate of the venous stripping-ligation method (100% primary success rate) and RFA method. (80% success rate).<sup>10</sup> The complication in the vein stripping-ligation is more apparent than in RFA. Neovascularization and nerve injury are the most common complications that can be found after vein surgery (up to 30% in vein stripping-ligation), and saphenous nerve injury is less found in RFA. However, most of the symptoms of this injury don't affect the patient's quality of life.<sup>11,14</sup>

RFA also has a better cosmetic result because it only needs a small incision for insertion of the device. The patient who underwent the RFA method also has a higher early recovery rate and quickly returns to work. There was also a shorter hospitalization and reduced postoperative pain. A study in Canada showed that the patient could work as early as two days after the RFA procedure. It was also noted that 69% of the patients did not need any analgesia agents.<sup>11</sup> Subramonia et al. evaluated the pain that the patients experienced during the first week after the procedure. Patients who underwent RFA procedure had less pain in the first week compared to the vein-stripping method (1.7 vs 4). Although RFA has several benefits, it has a higher cost when compared to vein stripping-ligation.

The cost of RFA could range 4-5 times more than the cost for stripping-ligation.<sup>17</sup>

## **Conclusion**

CVI is a common vein disease due to valve dysfunction. As a gold standard for CVI therapy, the conventional method surgery (vein stripping - ligation) has a lower cost and shorter procedure length compared to RFA. However, RFA has a lower complication rate, better cosmetics result, early recovery rate, quicker return to work, shorter hospitalization, and reduced postoperative pain. Both methods have a high success rate and long term result. In conclusion, both methods can be used as therapy, taking into account the advantages and disadvantages, which is more beneficial for the patient.

## **Acknowledgement**

None.

## **Disclosure**

The authors report no conflicts of interest in this work.

## **Funding**

None

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