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N-butyl Cyanoacrylate Embolization in Venous Insufficiency

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DESCRIPTION

Chronic Venous Insufficiency (CVI) is seen in one third of the general population and mostly affects the lower extremities. Although it is rarely life-threatening, over time it can lead to serious clinical conditions such as venous ulcers and venous thromboembolism in the patient [1]. Open surgery often causes significant morbidity [2].

For more than two decades, varicose vein treatment has changed drastically, and Endovascular Thermal Ablation Techniques (EVTA) have become first-line treatment options for Great Saphenous Vein (GSV) insufficiency [3,4]. Although it allows avoiding general anesthesia, provides faster recovery, and improves the patient quality of life, the EVTA technique uses thermal applications that require tumescent infiltration and therefore poses a potential risk of thermal damage, particularly for superficial nerves [5]. On the other hand, n-butyl cyanoacrylate (NBCA) embolization methods used since the early 2010s were found to be non-inferior to EVTA in terms of effectiveness [6]. These methods do not require tumescent anesthesia and compression stockings. Processing times are short and application is easier [7]. NBCA, which is a biodegradable adhesive, embolization methods have been started to be widely used in the treatment of varicose veins [8].

NBCA is generally applied to patients between C2 and C6, based on the Clinical, Etiology, Anatomy and Pathophysiology (CEAP) classification. NCBA rapidly solidifies through a polymerization reaction that produces an inflammatory reaction that causes fibrosis of the vessel wall, resulting in permanent vascular occlusion [9]. After NBCA treatment, non-occlusion/recanalization of <5 cm is considered treatment success, non-occlusion of 5 cm-10 cm is considered subtotal recanalization, and non-occlusion of >10 cm is considered treatment failure [10].

Among commercial products, VenaBlock® (Invamed/Turkey) and VenaSeal® (Medtronic/USA) are the most well-known devices that use NBCA worldwide. However, VenaSeal® is the only commercial product approved by the US Food and Drug Administration (FDA) [7]. Despite the similarities in the basic features of the devices, there are some differences in the applications of the VenaBlock® and VenaSeal® systems [6]. The main differences are related to some technical details such as the viscosity of the adhesive, application patterns, catheter type, and the positioning of the tip at the saphenofemoral junction (SFJ). NBCA used by VenaBlock® is at least 60 times less viscous (20-cPs vs >1200-cPs), meaning it polymerizes faster (5 seconds vs 20 seconds after contact with blood) [7]. Due to the reported extension of the thrombus when placed 3 cm-4 cm away, the catheter tip is placed 5 cm distal to SFJ and NBCA is delivered with segmental pullback in VenaSeal®. This distance is 3 cm in VenaBlock® and NBCA is delivered with continuous pullback [7,11]. For higher echogenicity and better visibility under ultrasonography, the catheter used by VenaBlock® also has a laser guide at its tip and a marker every 2 cm [8].

In a comparative study, we found that both VenaBlock® and VenaSeal® were effective in terms of occlusion with a rate of more than 90% at 60 months of postoperative follow-up. Effectiveness rates were found to be statistically similar. Both systems significantly improved the Venous Clinical Severity Score (VCSS) and quality of life (QoL) scores. When the two methods were compared, statistical analysis showed that VenaBlock® improved both VCSS and QoL better. In the evaluation of complications, it was reported that the most common complication was mild and self-limiting phlebitis. Serious side effect related to the procedure such as deep vein thrombosis, pulmonary embolism, or paresthesia is extremely rare. In this sense, both products have acceptable side effect rates [8,10].

NBCA-based approaches, specifically here VenaBlock®, are very effective, safe, and feasible methods in the treatment of lower extremity venous insufficiency. NBCA treatment provides very high comfort for the patient and the patient returns to daily activities in a very short time. With the NBCA procedure, patients' desire to be free of additional surgery or other procedures can be met. It can be applied even under outpatient clinic conditions.

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CONFLICT OF INTEREST

None.

REFERENCES

1. Beebe-Dimmer JL, Pfeifer JR, Engle JS (2005) The epidemiology of chronic venous insufficiency and varicose veins. Ann Epidemiol 15: 175-184.
2. Lurie F, Creton D, Eklof B (2003) Prospective randomized study of endovenous radiofrequency obliteration (closure procedure) versus ligation and stripping in a selected patient population (EVOLVeS Study). J Vasc Surg 38: 207-214.
3. Dinc R (2023) ThermoBlock® endovenous RFA effectively and safely treats great saphenous vein reflux. Surg Innov 30(3):408
4. Jia W, Liu J, Cheng Z (2022) Clinical efficacy of endovenous Radiofrequency Ablation (RFA) for superficial varicose veins of the lower extremities. Dis Markers 2022: 1673588.
5. Beyaz MO, Oztas DM (2022) Preliminary results of a new illuminated radiofrequency ablation catheter for the treatment of great saphenous vein reflux disease. Surg Innov 29: 234-240.
6. Guo J, Zhang F, Guo J (2021) A systematic review and meta-analysis comparing the efficacy of cyanoacrylate ablation over endovenous thermal ablation for treating incompetent saphenous veins. Phlebology 36: 597-608.
7. Parsi K, Roberts S, Kang M (2020) Cyanoacrylate closure for peripheral veins: Consensus document of the Australasian College of Phlebology. Phlebology 35(3): 153-175.
8. Dinc R (2023) Catheter-guided endovenous cyanoacrylate closure is effective and safe in chronic venous insufficiency of the lower extremity: A comparative analysis. Research Square.
9. Bozkurt KA, Lawaetz M, Danielsson G (2020) European college of phlebology guideline for truncal ablation. Phlebology 35: 73-83.
10. Shah RA, Bedi VS, Yadav AR (2022) Indian venaseal™ experience study outcomes of nonthermal and nontumescent endovenous glue ablation for treatment of truncal reflux in varicose vein disease: An Indian perspective. Indian J Vasc Endovasc Surg 9:145.
11. Yavuz T, Acar AN, Aydın H, Ekingen E (2018) A retrospective study of a new n-butyl cyanoacrylate glue ablation catheter incorporated with application guiding light for the treatment of venous insufficiency: Twelve-month results. Vascular 26(5): 547-555.