

Lymphatic Fistula and Granuloma in Vein Glue VenaSeal®

Ulf Th.Zierau*, Lilia Martel, Wolfgang Lahl

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ABSTRACT

Lymph fistula and granuloma: All catheter-based procedures for the treatment of varicose veins can result in injuries to the lymphatic system

when the vessel is punctured and the catheter is inserted. This leads to the development of a lymph fistula in approx. 2-4% of the therapeutic cases. Lymphatic water is pressed through a small opening in the wound to the surface of the skin.

Key Words: *Lymphatic fistula, Vein glue, Lymphatic fistula*

INTRODUCTION

We have been using the vein glue VenaSeal® since August 2012. In the last 98 months we have ablated 2836 varicose veins in 1474 patients with the vein glue. In 26 ablated veins (0.9%) we saw a postoperative lymphatic fistula, in 4 cases a granuloma (glue pimple) had to be removed after 10 months-12 months [1-3].

All catheter-based procedures for the treatment of varicose veins can result in injuries to the lymphatic system when the vessel is punctured and the catheter is inserted. This leads to the development of a lymphatic fistula in approx. 2%-4% of the therapeutic cases. Lymphatic water is pressed through a small opening in the wound to the surface of the skin. We also saw lymph fistulas in the vein glue VenaSeal® after puncturing the vessel.

CASE STUDY

These were additionally promoted by glue granulomas residues remaining in the tissue. It is therefore important, particularly when using the vein glue, to ensure that the puncture site is worked properly and that the sealing maneuver is individually defined for the patient (Figure 1).

Lymphatic fistulas and granulomas in vein glue: The lymphatic fistula

The lymphatic fistula mostly occurs as a complication after surgery. The frequency is around 2%-4%. A lymph fistula can form, especially during operations in body regions with many lymphatic vessels. Lymphatic fluid is increasingly secreted via the injured lymphatic system, which can then escape through the wound. Lymphatic fluid emerges from the fistula. The amount of liquid can increase, especially in the warm season. Germs can enter the body through the lymph fistula, causing erysipelas-a bacterial infection of the lymphatic system-to form. Disinfection and sterile covering of the lymph fistula is therefore very important as a first measure. Since protein is also lost through the lymphatic fistula the primary goal is to close the fistula [4-6].

The escaping lymph is difficult to handle for the patient in many cases and is associated with a loss of quality of life. Wound healing is also delayed. The treatment options for a lymph fistula in vein glue and other catheter procedures are versatile. They range from a tight compression bandage to prophylactic adhesive bonding and surgical refurbishment to radiation therapy (especially for lymph fistulas in the groin region). Also, the glue granuloma must be removed in any case, since it is often the cause of the wound healing disorder [7].

Lymphatic fistulas and granulomas in vein glue: The granuloma

Granulomas ('granules') are nodular in medicine-or granular accumulation of the phagocytes of the immune system (macrophages). A granuloma can contain other cells: epithelioid cells and multinucleated giant cells are descendants of the macrophages and accompanying immunologically active lymphocytes, granulocytes and fibroblasts can be involved in the formation of granulomas. Some granulomas develop a connective tissue capsule (fibrosis) others have necrosis (dead tissue) in their center. Granulomas develop when the macrophages are unable to break down poison or a foreign substance (e.g. bacteria, parasites or foreign bodies), which causes chronic inflammatory irritation. The purpose of granuloma is to encapsulate the intruder foreign to the body and this prevent it from spreading further. In addition, pathogens or foreign substances can be controlled more effectively by locally concentrating enzymes and bactericidal substances [8].

The clinical picture is characterized by local inflammatory redness and tenderness to pressure. Wounds cannot heal, bloody or lymphatic fluid is secreted. We opened and completely cleared out all 4 granulomas. We had the tissue material examined pathologically and histologically-after 10-14 months no more vein glue residues were found. The vein walls could no longer be identified, remnants of muscle fibers of the vein walls as well as many leukocytes, lymphocytes, granulocytes and macrophages could be made visible (Figure 2).



Figure 1) *Lymph fistula and granuloma: A lymph fistula on the big toe with pronounced varicosis*

Saphenion Vein Care Center, Berlin, Germany

Correspondence: Ulf Th Zierau, Vascular Surgeon, Phlebologist, Endovascular Specialist Artery, Saphenion Vein Care Center, Berlin, Germany, Email: dr.zierau@yahoo.de

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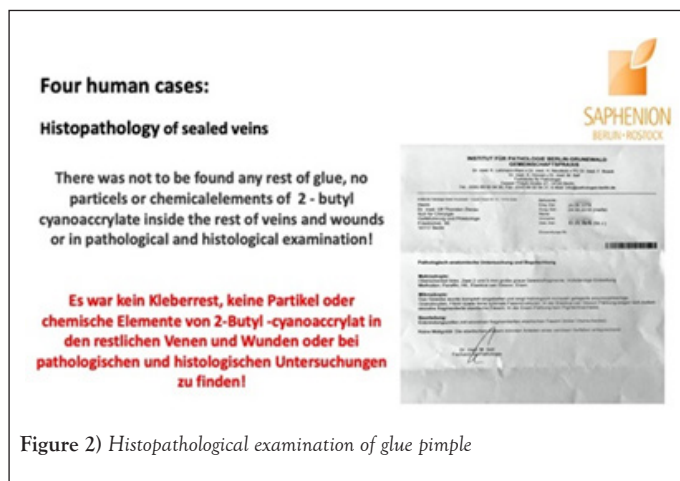


Figure 2) Histopathological examination of glue pimple

RESULTS AND DISCUSSION

Lymphatic fistula and granuloma in vein glue

The two described side effects with vein glue are avoidable: As can be clearly seen in the image below of a VenaSeal®-catheter and has also been marked by us, there is a black marking point on the Teflon glue catheter. This is intended to mark the maximum point at which the glue can be dispensed into the container. The only problem is that the distance between skin and vessel is not 2.5 cm for every patient [9].

Particularly strong patients, obese patients and also lymphedema patients often have much greater distances from the skin to the blood vessel. Means: The surgeon has to decide individually for each individual patient up to which catheter length a glue injection is possible. This extensive individualization of the therapy almost certainly prevents the glue from being incorrectly released into the tissue, with the subsequent formation of lymphatic fistula [10-13].

Furthermore, the last dispensing of glue has to be modified in such a way that it waits until the glue has polymerized (approx. 30 sec), and then the catheter is removed vigorously, quickly, and in one go. So, there is no glue thread between the skin ends of the puncture site (Figure 3).

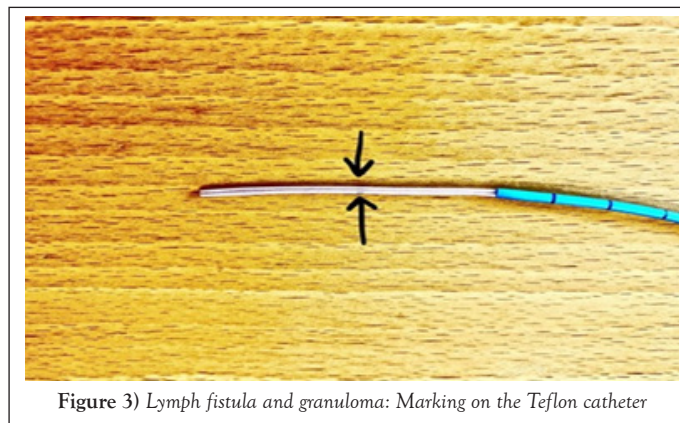


Figure 3) Lymph fistula and granuloma: Marking on the Teflon catheter

Lymphatic fistula and granuloma in vein glue

The first point: After removal of the Teflon catheter the tip has vein glue deposits, which should actually remain in the container. Furthermore, it becomes clear that pulling back the Teflon catheter into the vascular lock (blue) on the one hand pushes the vein glue (which remains in the tissue), but on the other hand, glue is also pulled into the lock. The second point, in particular, is extremely important! Pulling the glue into the introducer sheath creates a tight seal on this catheter within 15 seconds. This means that it can no longer be used. The picture below clearly shows that the soft catheter can no longer pass through the lock and there is a kink closure. The result is an unusable sheath and an unusable Teflon catheter (Figure 4).

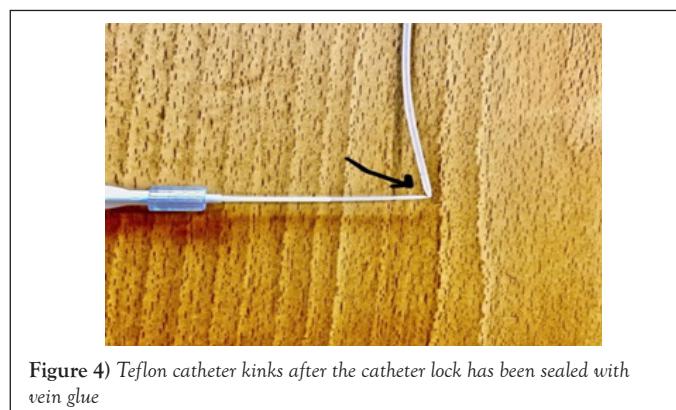


Figure 4) Teflon catheter kinks after the catheter lock has been sealed with vein glue

CONCLUSION

This means that the surgeon has to open a new catheter for the next vein another € 1200 is wasted. In addition to the risk of the described side effects of lymphatic fistula and granuloma due to residues of vein glue, there is also a completely unnecessary consumption of a new catheter system. And the change in the technical processes that the manufacturer is considering the retraction of the catheter into the sheath still in the vein being treated does not change here. The glue also adheres to the outer skin of the lock and is deposited as lumps when pulled out into the tissue.

You can see this also at youtube-channel of Saphenion®-<https://youtu.be/liXce6pA7BE>.

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DISCLOSURE

There is no any potential conflict of interests

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