Open revision in combination with a 2-layer dressing for therapy of postoperative seroma after inguinal crossectomy

Franziska Maria Wigbers, Jasmin Woitalla-Bruning, Guido Bruning

Zentrum für Venen- und Dermatochirurgie, Krankenhaus Tabea GmbH & Co. KG, Hamburg

Introduction

Seroma, the postoperative accumulation of wound fluid, is one of the most common postoperative complications in primary closed wounds in both dermatosurgery and venous surgery. According to Bruning et al, clinically relevant postoperative seroma, confirmed by sonography and puncture, occurs in 3.8% of cases after inguinal crossectomy. At 8.4%, the risk for phlebologic recurrences is significantly higher [1].

Seroma formation is influenced by the surgical technique [2]. Here, intraoperative injury to lymph vessels or incised lymph nodes play a major role [3]. In addition, excessive electrocoagulation compared to ligation of single vessels as a factor for seroma formation is a matter of debate [4]. It also remains to be clarified whether blunt/atraumatic dissection is associated with lower risk compared to sharp dissection.

Whereas smaller seromas are not usually treated and are spontaneously absorbed, larger ones often lead to complaints, for instance of pain or restricted mobility. Therapeutic measures include sterile puncture drainage of the seroma fluid and application of a compression bandage. However, this is often associated with recurrences, so that after repeated frustrated punctures, a different therapy should be considered. In addition to the use of various sclerosing agents [5] Redon drainage using a puncture technique has been suggested [6].

In our clinic, open wound revision has proven effective in puncture-resistant, persistent cases. A problem here is exudate management, which, especially in the first days after opening, is often considerable. This is where a 2-layer dressing comes in, which although not yet mentioned in scientific discourse on therapeutic options for seromas, has been used in our clinic for years to treat postoperative seromas after inguinal crossectomies.

Technique

Surgical revision of the seroma is usually performed under tumescent anesthesia. First, the seroma cavity is opened over a length of two to three centimeters. The wound cavity is then cleaned by flushing. 0.9% NaCl solution or Ringer’s solution is suitable for this purpose. Additionally, an antiseptic solution containing polyhexanide approved for flushing wound cavities can be used [7]. Experience has shown that no additional removal is necessary, since a pseudocapsule only forms for seromas that have been present for a longer time.

A piece of latex, for example from the finger or palm of a sterile glove, is then inserted into the wound as a flap (Figure 1). Alternatively, a gauze tamponade containing iodine can be used. Cutaneous attachment of the flap using

Figure 1 Use of a glove flap: The basis is a piece of a sterile conventional glove. The use of such a piece has the advantage that the corresponding surface is smooth, and secretions are less likely to accumulate.
sutures is not necessary. Due to its surface properties, the glove material has the advantage of being less adhesive and thus less likely to cause a buildup of secretions.

The next step is the application of the 2-layer dressing. First, skin protection is applied: Since skin irritation often occurs under the dressing, spray plasters or acrylate terpolymer film are suitable for skin protection (Figure 2).

The first layer of the dressing is a conventional sterile compress (Figure 3a), which is placed over the wound and tightly sealed with a dense, adhesive gauze bandage (Figure 3b). A hole is cut in the center of the gauze (Figure 4) to allow for continuous drainage of secretions.

The second layer is an absorbent compress (Figure 5), which is loosely attached with an adhesive strip. The patient later has the option of replacing this “overflow” dressing pad alone when required, without risk of contact with the sterile area or the inserted flap.

Whereas the absorbent pad can be changed daily by the patient as needed, the flap requires replacing only every two to three days until secretion stops. In our experience, complete wound healing is achieved after an average of 14 days (Figure 6).

Discussion

Postoperative complications such as seroma formation can significantly impact the course of disease. Revision of a seroma with subsequent application of the 2-layer dressing may resolve the restrictions on patient mobility and allow for safe clearing of the seroma. Prophylactic treatment for thrombosis or antibiotics are usually not necessary.

The absorbent dressing can be replaced independently by the patient. Initially, it should be changed several times a day, but with time this may be reduced to once or twice a day as the amount of drainage fluid decreases. The patient is informed in detail about the procedure and risks beforehand.

Figure 2 Skin protection with spray plaster. Adhesive bandages often affect the surrounding skin in particular. The spray-on plaster is applied protectively. Alternatively, an acrylate terpolymer layer can be used for skin protection.

Figure 3 The sterile dressing provides optimal protection of the wound surface and acts as the first layer of the dressing (a). The adhesive gauze seals the first layer of the 2-layer dressing after application of the sterile compress (b).

Figure 4 The central hole in the adhesive gauze ensures that the seroma fluid can be removed.
These include skin irritation and a possible contamination, with an increased risk of infection due to the opening. To keep complications to a minimum, follow-up appointments are usually made twice a week to “change the flap” and for wound assessment.

A follow-up appointment after conclusion of treatment can be made as required on an individual basis. Experience has shown that healing rates are very good. With a total number of approximately 7500 phlebological (including dermatosurgical) operations, an average of 25 seromas per year are treated openly in our clinic. In this context, in the last five years we recorded no residual seromas or lymphatic fistulas. Only skin irritations, which are treated locally, can occur. Here, the wound area is protected by spray plasters or acrylate terpolymer film. In case of secondary infection of the wound cavity, an antibiotic therapy should be administered.

We have been using the post-revision bandaging technique with great success for several years. With its use of simple and inexpensive materials and easy handling, the 2-layer dressing provides an affordable, therapeutic concept for the sustainable treatment of seromas.

Acknowledgements
Open access funding enabled and organized by Projekt DEAL.

Conflict of interest
None.

Correspondence to
Dr. med. Guido Bruning
Zentrum für Venen- und Dermatochirurgie
Krankenhaus Tabea GmbH & Co. KG
Kösterbergstraβe 32
22587 Hamburg
Deutschland
E-mail: gbruning@tabea-krankenhaus.de

References
1 Bruning G, Donath M, Buhr JK. Varizenchirurgie bei Adipositas. Phleb 2018; 47(02): 71–4.
2 Janis J E, Khansa L, Khansa I. Strategies for postoperative seroma prevention: a systematic review. Plast Reconstr Surg 2016; 138(1): 240–52.
3 Persa O, Knuever J, Rose A et al. Predicting risk for seroma development after axillary or inguinal sentinel lymph node biopsy in melanoma patients. Inter J Dermatol 2019; 58(2): 185–9.
4 Skillman JM, Venus MR, Nightingale P et al. Ligating perforators in abdominoplasty reduces the risk of seroma. Aesthetic Plast Surg 2014; 38 (2): 446–50.
5 Sood A, Kotamarti V, Therattil P et al. Sclerotherapy for the management of seromas: a systematic review. Eplasty 2017; 17: e25.
6 Baltzer A, Brehmer F, Forkel S et al. Perkutane Ultraschallgesteuerte Durchstichdrainage therapierefraktärer Serome nach Lymphknotenexzision. J Dtsch Dermatol Ges 2016; 14 (8): 850–2.
7 Kramer A, Dissemend J, Kim S et al. Consensus on wound antisepsis: update 2018. Skin Pharmacol Physiol 2018; 31(1): 28–58.