

Managing Seromas Following Skin Graft Placement in Dermatologic Surgery

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PRACTICE POINTS

- If seromas are identified early (within 24 to 48 hours postoperatively), prompt drainage with a small incision can prevent complications, such as fibrosis or nodule formation, and improve patient comfort.
- For larger or recurrent seromas, multiple small slits or a surgical window should be created to ensure continuous drainage and prevent reaccumulation. Manual compression with moist gauze also can aid in fluid removal.
- If fibrosis develops and leads to nodule formation, early excision of the fibrotic tissue with local anesthesia is essential for resolution. This approach typically requires a single treatment, with secondary intention healing.

While conservative methods such as compression dressings for managing seromas initially can be effective, some may require interventional strategies. Management should be guided by the size and duration of the seroma as well as the presence of fibrosis to ensure optimal outcomes and minimize patient discomfort. We outline the management strategies for primary, recurrent, and late-stage seromas occurring after the placement of split- and full-thickness skin grafts in dermatologic surgery.

A seroma is a collection of serous lymphatic fluid that forms in an anatomic or surgically created dead space—a void left between tissue layers, such as between the skin and underlying tissue, where fluid

can accumulate. Seromas represent possible postoperative complications in many types of procedures, including general, oncologic, reconstructive, and dermatologic surgeries.¹⁻³ While seroma formation following dermatologic surgery generally is uncommon, associated procedures include placement of split- or full-thickness skin grafts or liposuction.^{4,5} Many seromas follow a self-limited course. In some cases, seromas may cause discomfort, recur, or possibly become infected. Surgical techniques for prevention of seroma formation have been described in the dermatologic literature, but discussion of seroma management, particularly in dermatology, is not well documented. In this article, we describe a management approach for primary, recurrent, or late-stage seromas following placement of split- and full-thickness skin grafts in dermatologic surgery.

Practice Gap

To minimize the risk for seroma formation, attention should be paid to reducing dead space during graft placement. Small slits may be created in the skin graft after placement if the graft is larger than 2 to 3 cm in diameter to facilitate fluid drainage.⁶ Additionally, a tie-over bolster dressing that provides sustained even pressure over the entire graft should be applied and left in place for 1 week.⁷ Adjunctive measures, such as the use of fibrin sealants or quilting sutures, may further reduce the likelihood of fluid accumulation.^{7,8} Factors such as obesity, smoking, limited mobility, and inadequate elevation of the extremities undergoing surgery also should be addressed preoperatively to optimize outcomes of skin grafts.

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Although these preventive strategies can be used during skin graft placement, seromas still can occur. Seromas typically manifest during the postoperative period after the removal of the protective dressings, including the bolster. The characteristic finding is the formation of a fluid-filled bulla under the graft. The associated serous lymphatic collection usually is yellow-tinged but may appear violaceous if bleeding has occurred beneath the graft. If the patient presents within 24 to 48 hours of seroma formation, the bulla may be tense or slightly tense; however, if days to weeks have passed since the seroma formed, the lesion may undergo fibrosis with thickening of the overlying tissue. If untreated, fibrosis may progress for several weeks, eventually resulting in nodule formation. Chronic seromas with retained fluid will persist for months. Seromas are more likely to develop under larger skin grafts (typically those exceeding 5-10 cm in diameter) or grafts placed in dependent positions, such as areas below the level of the heart where fluid pooling is more likely, especially on the arms and legs with associated movement.

The Technique

Our approach to seroma management is based on the timeline at presentation and whether the seroma is primary or recurrent or demonstrates late fibrosis. Successful management of primary seromas is centered on prompt drainage. Complete drainage using a #11 surgical blade may be accomplished with a single puncture to create a 2- to 3-mm opening for smaller seromas. Larger or multiple seromas under larger skin grafts may require creating multiple small punctures or small slits (ie, 5-10 mm) to allow for adequate drainage and reduce the incidence of seroma reaccumulation. Once successful drainage has occurred, a pressure dressing consisting of a thin layer of petroleum-based ointment, a nonadherent dressing, gauze, and secure tape can help reduce the risk for reaccumulation.

Infrequently, seromas will reaccumulate under a skin graft. If this occurs, the graft may appear fibrous with lumps and loculations of seroma fluid separated by intact graft tissue, resulting in a “bound down” appearance (eFigure 1). This may require creating adequate slits for drainage in the graft. Multiple slits should be created if the seroma is larger (typically more than 3-4 cm in diameter) or loculations are present. If the fluid continues to reaccumulate and the drainage slits reseal, the next step is to cut a small hole in the graft to allow for uninterrupted drainage (eFigure 2). Manual digital pressure with moist gauze can assist in decompressing the seroma and removing residual fluid and gelatinous contents, promoting continuous drainage and preventing further fluid buildup (eFigure 3). These openings heal by secondary

intention (eFigure 4). Local care during this time also is achieved with a thin layer of ointment, a nonstick pad, gauze, and secure tape. Dressings should be changed every 1 to 2 days until healing is complete.

Seromas that lead to fibrotic nodule formation—typically occurring within several weeks to months if untreated—require additional steps for resolution. Once fibrosis occurs, these nodules can be managed by (1) placing adequate local anesthesia, (2) tangentially excising the nodules using either a skin biopsy blade or a #10 or #15 surgical blade, (3) using a handheld heat cautery or electrocautery device to achieve hemostasis, and (4) performing local care, as with any shave or tangential biopsy, until healing is complete. Typically, this requires a single treatment.

Practice Implications

While conservative management with continued compression dressings can be considered for postoperative seroma formation, interventional management sometimes is required. The size and duration of the seroma often guide management. For small seromas (typically less than 2-3 cm in diameter), a small slit incision with a #11 surgical blade may be performed at the dependent point of the seroma. Gentle pressure with a cotton-tipped applicator or moist gauze can be useful to express serous fluid; however, care should be taken not to disrupt adherence of the graft. Recurrent seromas or those with late fibrosis benefit from creation of a surgical window to allow uninterrupted drainage and removal of fibrous components, then can be left to heal by secondary intention with conservative local care.

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APPENDIX



eFIGURE 1. Recurrent seroma with late fibrosis at 4 weeks following a full-thickness skin graft. Note the fibrotic and “bound down” appearance as related to the remainder of the graft.



eFIGURE 3. Overlying fibrotic tissue was removed and gelatinous seroma contents were expressed using manual digital pressure and moist gauze.



eFIGURE 2. Sharp dissection was used to create a surgical window for expression of a recurrent seroma and uninterrupted drainage.



eFIGURE 4. Long-term follow-up of graft showed a well-healing scar.