

# “No Drain, No Gain”: Simultaneous Seroma Drainage and Tissue Expansion in Pre-pectoral Tissue Expander-Based Breast Reconstruction



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**Abstract** Seromas represent the most frequent complication following immediate breast reconstruction surgery, in particular when acellular dermal matrix or synthetic meshes are used to add coverage to implants. Little information regarding breast seroma management is available in the literature. When seroma becomes clinically significant, current methods for its management consist of repeated needle aspiration. We report a fast, efficient, easy and riskless technique to perform serum aspiration in patients who underwent breast reconstruction with a tissue expander that allows simultaneous drainage and expansion of the implant at once. This procedure is safe, painless, does not need special supplies or additional costs and can be easily performed in ambulatory setting to manage breast seromas. *Level of Evidence V* This journal requires that authors assign a level of evidence to each article. For a full description of these evidence-based medicine ratings, please refer to the Table of Contents or the online Instructions to Authors [www.springer.com/00266](http://www.springer.com/00266).

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## Introduction

Immediate breast reconstruction (IBR) is fundamental for the psycho-physical wellbeing of patients undergoing mastectomy, but complication rates are still high [1]. Seromas are serous fluid collections in dead spaces representing the most frequent complication following breast surgery, with an incidence that varies from 15 to 81% [2].

It is a well-known complication in sub-pectoral as well as pre-pectoral IBR, in particular when acellular dermal matrix (ADM) or synthetic meshes are used to add coverage to implants. The etiology is multifactorial: Skin flaps and underlying muscle shearing, the presence of dead space, the diathermy technique and tissue inflammation are implied [3]. Furthermore, a partial or total lack of integration of the ADM or mesh with the mastectomy flap is implied in the onset of fluid collection and inflammation, leading to seroma formation and permanence [4].

Seromas can lead to local complications such as pain and discomfort or even more impacting issues resulting in delays of chemotherapy or radiotherapy onset. A dangerous triad of mastectomy flap ischemia, fluid collection, and infection is well defined, but little information regarding seroma management after breast reconstruction is available in the literature [5], especially when subcutaneous or partial retro-pectoral placement of breast temporary expanders (TE) in concurrence with an ADM or synthetic mesh is performed.

Prevention is fundamental, and several techniques such as drainage positioning, external compression and quilting are available to the surgeon [3].

Regardless of whether drains are removed too early or on time, whenever a seroma is suspected or becomes clinically significant, it should be aspirated [6].

Current methods for its management consist of repeated needle aspiration, defined as Hypodermic Syringe Needle Aspiration (HSNA) [6], performed freehand or under ultrasound guidance in an ambulatory setting. HSNA can be tricky especially when a breast tissue expander (TE) is present: Echoscapy is not always possible or available and it can be challenging for the surgeon to work “freehand” with high risk of device rupture [7, 8]. We report a fast, efficient, easy and riskless technique to perform serum aspiration in patients who underwent breast reconstruction with retro and pre-pectoral TE.

First, the TE injection port is identified with the finder magnet. A 20-cc syringe with a sterile butterfly needle is inserted deeply until the hardback wall of the port is reached. Identification of the injection port site is the key, because it offers the surgeon a “safe area” for performing simultaneous tissue expansion and serum aspiration, while preventing accidental ruptures. Limpid saline solution or methyl blue-colored liquid (when present) confirms the intra-implant position. It is sufficient to slowly move upwards the needle from the TE port until a lower resistance is felt, to be able to drain serum located between the implant and surrounding tissues. When the drainage is completed, a new sterile needle is put back into the TE and the implant is expanded with sterile saline solution to fill the dead space previously occupied by seroma, reducing or avoiding its recurrence. In this way, simultaneous drainage and expansion are performed at once, allowing for immediate identification and management of the adverse event and prevention of its evolution into further complications that may lead to infection and implant loss (Video 1).

This procedure is indicated when there is clinical evidence or suspicion of seroma in patients who underwent tissue expander-based breast reconstruction, either in a

retro-muscular or in a pre-pectoral fashion. It is safe, painless, does not need special supplies or additional costs and can be easily performed in any ambulatory setting to manage breast seromas. It may avoid complications related to stagnation especially when ADM or synthetic mesh are used in subcutaneous or partial retro-pectoral TE breast reconstruction, avoiding the risk of incidental damage or rupture of the device.

#### Compliance with Ethical Standards

**Conflict of interest** The authors declare that they have no conflict of interest.

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