

# Simple-safe-sure Fluid Drainage Just above Breast Tissue Expander using 18-Gauge Blunt Cannula

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**Summary:** The presence of seroma after breast tissue expander (TE) insertion for a long duration can cause infection and purulency; thus, obvious fluid collection around TEs should be drained as early as possible. However, due to the risk of puncture, it may not be possible to completely drain the fluid if it is located above the TE. To manage such cases, we used an 18-gauge blunt cannula and achieved good results. Among 98 cases in which breast reconstruction was performed with a TE, 5 patients had symptoms of infection with fluid collection just above the TE. In all 5 cases, resolution of the infection was observed in an outpatient setting without the removal or puncture of the inserted TE, by performing a drainage technique using an 18-gauge blunt cannula. An 18-gauge blunt cannula minimized the risk of expander rupture during drainage and enabled the complete aspiration of fluid, even when it was located just above the TE; thus, the resolution of infection with the preservation of the expander was possible in cases that would otherwise have been impossible to treat without the removal of the TE. This drainage procedure using an 18-gauge blunt cannula is considered to be simple, safe, and sure, with benefits that exceed the risk; thus, there should be no reason to hesitate in performing this drainage procedure, even in cases involving slight fluid collection around the TE. (*Plast Reconstr Surg Glob Open* 2018;6:e1983; doi: 10.1097/GOX.0000000000001983; Published online 16 October 2018.)

## INTRODUCTION

Seroma is a relatively frequent postoperative complication that is associated with breast tissue expander (TE) insertion. A small amount of seroma is usually spontaneously absorbed by the surrounding tissue; however, the prolonged presence of seroma can cause infection and purulency<sup>1,2</sup>; thus, the removal of the TE cannot be avoided in some cases. For this reason, obvious fluid collection around a TE should be drained as soon as possible. However, TEs are extremely fragile to sharp-edged instruments, and even the slightest of false puncture can easily break them.<sup>3,4</sup> As such, it may not be possible to completely drain fluid that is located just above the TE. To manage such cases of fluid collection just above the TE, we performed drainage using an 18-gauge blunt cannula, and achieved good results.

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We herein report the utility of our method in which an 18-gauge blunt cannula was used for the simple, safe, and sure drainage of fluid around TEs.

## PATIENTS AND METHODS

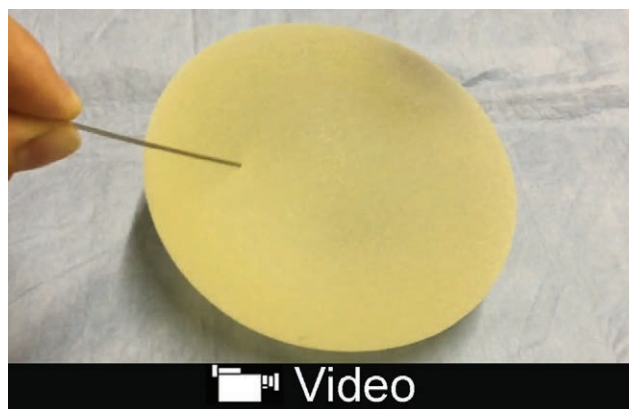
We used an 18-gauge blunt cannula (ReactSystem Co., Higashi-Osaka, Japan) to drain fluid around breast TEs from April 2017; the cannula was utilized for all the cases of fluid drainage among 98 breast reconstructions using TEs to March 2018. A Natrelle (Allergan Co.) textured surface-type TE was used in all cases.

### Drainage Technique

We performed a preliminary experiment in which a TE was pricked using an 18-gauge blunt cannula to ensure the safety of this procedure. The test revealed that even repeated and hard pricks did not break the expanded TE. [see video, Supplemental Digital Content 1, which displays the procedure for draining fluid around a TE using an 18-gauge blunt cannula (including preliminary test).

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**Video Graphic 1.** See video, Supplemental Digital Content 1, which displays the procedure for draining fluid around a TE using an 18-gauge blunt cannula (including preliminary test). This video is available in the “Related Videos” section of the Full-Text article at PRSGlobalOpen.com or at <http://links.lww.com/PRSGO/A904>.

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Before the procedure, fluid collection was confirmed and the puncture site was determined using ultrasonography. Only the skin and dermis were penetrated using the tip of an 18-gauge needle; an 18-gauge blunt cannula was then inserted via the hole. The cannula was advanced into the collected fluid directly touching the TE so that the fluid just above expander was able to be aspirated completely (Supplemental Digital Content 1).

## RESULTS

Among 98 cases in which breast reconstruction was performed with a TE, 5 patients had symptoms of infection with fluid collection just above the TE. We did not necessarily perform ultrasonography in the follow-up

examination; thus, we possibly overlooked several cases of subclinical seroma, and the total number of seroma cases was not precisely determined. Fluid drainage was performed and antibiotics were administered as necessary in an outpatient setting. In all 5 cases, the resolution of the infection was observed at 7–35 days after the start of treatment without the removal or puncture of the inserted TE (Table 1).

### Case Description (Patient 2 in Table 1)

A 41-year-old woman with right breast cancer underwent right breast mastectomy and reconstruction with TE. Her postoperative course during hospitalization was uneventful. At the outpatient ward on postoperative day (POD) 17, slight redness was observed on her right breast and ultrasonography revealed slight fluid collection just above the TE. However, these findings were not considered severe; thus, antibiotics were prescribed, and conservative observation was performed. One week later, on POD 24, the redness had drastically worsened, and a marked increase in the fluid volume around the TE was noted (Fig. 1). Fluid drainage was performed using an 18-gauge blunt cannula, and purulent fluid collection was observed. Two additional rounds of fluid drainage were performed in the outpatient setting, with the antibiotics changed according to the culture results. Finally, the complete suppression of infection was observed on POD 50. Thereafter, the condition of the infected area was uneventful, except for slight postinflammatory hyperpigmentation (Fig. 2).

## DISCUSSION

An 18-gauge blunt cannula minimized the risk of expander rupture during drainage and enabled the complete aspiration of fluid, even just above the TE, so that resolution of infection with the preservation of the expander was possible in cases that would otherwise have been impossible to treat without the removal of the TE.

**Table 1. Patient List and Detail**

Patient No.	Age	First Observation of Infection	TE Size	Fluid Drainage (Volume, Characteristic, Procedural Timing)	Antibiotics	Final Diagnosis of Settle Down of Infection
1	50	18 POD	700 cc	1: 40 ml, Serous, 18 POD	Cefaclor 750 mg × 14 days (18–32 POD)	39 POD
2	41	17 POD	250 cc	1: 17 ml, Purulent, 24 POD 2: 6 ml, Seropurulent, 28 POD 3: 20 ml, Serous, 40 POD	Cefaclor 1000 mg × 7 days (17–24 POD) Cefaclor 1500 mg × 7 days (24–31 POD) Minomycin 200 mg × 14 days (31–44 POD)	50 POD
3	58	26 POD	300 cc	1: 30 ml, Prulent, 26 POD 2: 28 ml, Prulent, 27 POD 3: 15 ml, Seropurulent, 28 POD 4: 13 ml, Seropurulent, 33 POD 5: 7 ml, Serous, 40 POD	Cefaclor 1500 mg × 21 days (26–47 POD)	61 POD
4	37	17 POD	400 cc	1: 5 ml, Serous, 17 POD	Cefaclor 750 mg × 3 days (17–20 POD)	29 POD
5	54	26 POD	500 cc	1: 3 ml, Serous, 26 POD	Cefaclor 1500 mg × 7 days (26–33 POD)	33 POD

POD, postoperative day.



**Fig. 1.** The findings of the right breast (TE inserted) on POD 24. Obvious signs of infection and purulent drained fluid were observed.



**Fig. 2.** The findings of the right breast (TE inserted) at 4.5 months after treatment for infection. The signs of infection had completely vanished, but slight postinflammatory hyperpigmentation was observed.

The placement of a percutaneous drainage tube is sometimes considered when hospitalization is available; however, the present procedure achieved the resolution of infection with fluid collection in the outpatient setting.

In the case of patient 2, conservative treatment was initially considered possible; however, the infection subsequently worsened (Table 1; Figs. 1, 2). Based on this experience, when we encountered patients 4 and 5, drainage of a slight amount of fluid around the TE was performed when it was first observed, even though the signs of infection and fluid collection were not severe (Table 1). As a result, the infection resolved early in these 2 patients.

Patient 3 had the most severe infection among the 5 cases that were encountered (Table 1). Although the infection was completely suppressed, thinning of the skin envelope occurred later, and the inserted TE was nearly exposed; thus, reconstruction was ultimately performed using a latissimus dorsi myocutaneous flap rather than a silicone implant. Even if the infection resolves without the removal of the TE, such severe and long-lasting inflammation can cause thinning or contracture of the skin; thus, it may be better to remove the TE early in some cases of severe infection.

Several reports<sup>5-8</sup> have described methods of achieving fluid drainage around a TE; however, no methods have been decisive. Two articles<sup>9,10</sup> described the drainage of seroma using a blunt tip cannula. The 2 articles used the hard inner unit of the blunt tip to penetrate the skin and the soft outer unit was set into the seroma. In contrast, the present method uses the hard blunt tip directly and it is possible to move the tip to search for fluid in a blinded manner, and to touch the surface of the TE to suction the fluid completely. The procedure is usually performed in a blinded manner, with ultrasonography simply used to confirm the existence of fluid collection; however, ultrasound guidance is sometimes useful for drainage of small amounts of fluid.

The present drainage procedure using an 18-gauge blunt cannula is considered to be simple, safe, and sure, with the benefits that exceed the risk. There should be no reason to hesitate in performing this drainage procedure, even in cases involving slight fluid collection around the TE.

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