Seroma formation in surgical wounds negatively affects wound healing and increases morbidity to patients. Seroma formation has an incidence of 1.7–6.3% in breast reconstruction cases and 10–45% in abdominoplasties. In addition to discomfort, persistence of seromas can lead to capsular contracture, infection, and shoulder dysfunction; less serious complications, though undesirable, include additional office visits, transportation problems, expense, and anxiety.

In addition to a wide array of preventive strategies, current seroma treatment strategies include percutaneous needle aspiration, percutaneous suction drainage, and injection of sclerosants, with doxycycline and bleomycin being among the most common agents. The literature in breast surgery, vascular surgery, and surgical oncology is mixed on whether drain placement be paired with sclerosing agents.

Needle aspiration of seromas around permanent implants carries a risk of injury to the device and often relies upon manual suction through the use of multiple syringes. Here, we present a novel, simple, and safe percutaneous technique for thorough and rapid seroma drainage in the outpatient setting.

The authors’ technique expands the concept of using an angiocatheter to access the seroma. For a number of years, the authors have used insertion of a 14-gauge angiocatheter with vacuum suction for thorough evacuation of seromas. Supplies before starting include a 14-gauge angiocatheter, 2 10-mL Luer lock syringes, suction cannister (wall-mounted in many clinics), and suction tube along with alcohol swabs, gauze, and ethyl chloride/numbing spray (optional).

The skin is prepped at the chosen site of aspiration. A numbing spray such as ethyl chloride mist spray may be used. With the first 10-mL syringe connected to the 14-gauge angiocatheter, the angiocatheter is inserted while aspirating on the syringe, analogous to using a finder needle in central line placement. Once seroma fluid is aspirated into the syringe, the catheter is advanced into the seroma and the needle and syringe withdrawn. A
second 10-mL syringe with the plunger removed is connected to the angiocatheter. The suction tubing is inserted into the barrel of the syringe, and low continuous suction is applied until the seroma is completely evacuated. In our experience, this typically takes less than a minute. The suction tube may be partially withdrawn from the tip of the barrel to intermittently break suction if it is felt that the catheter is stuck against the wall of the seroma cavity. Manipulation of the seroma pocket and implant can be performed without concern for puncture of the implant. The fluid in the first finder syringe may be sent for culture if clinically warranted. Once the seroma is completely drained, the catheter is removed and gentle pressure is held, and a simple dressing with antibiotic ointment and a bandage is placed.

ACKNOWLEDGMENTS
The article does not contain clinical studies. This study was exempt from institutional review board exemption because no patient, physician, or hospital identifiers were examined.

REFERENCES
1. Bullocks J, Basu CB, Hsu P, et al. Prevention of hematomas and seromas. Semin Plast Surg. 2006;20:233–240.
2. Colwell AS, Tessler O, Lin AM, et al. Breast reconstruction following nipple-sparing mastectomy: predictors of complications, reconstruction outcomes, and 5-year trends. Plast Reconstr Surg. 2014;133:496–506.
3. Israeli R, Funk S, Reaven NL. Comparative analysis of 18-month outcomes and costs of breast reconstruction flap procedures. Plast Reconstr Surg. 2012;130:74.
4. Say CC, Donegan W. A biostatistical evaluation of complications from mastectomy. Surg Gynecol Obstet. 1974;138:370–376.
5. Hurewitz AN, Lidonicci K, Wu CL, et al. Histologic changes of doxycycline pleurodesis in rabbits: effect of concentration and pH. Chest J. 1994;106:1241–1245.
6. Patz EF, McAdams HP, Erasmus JJ, et al. Sclerotherapy for malignant pleural effusions: a prospective randomized trial of bleomycin vs doxycycline with small-bore catheter drainage. Chest J. 1998;113:1305–1311.
7. Sartori S, Tassinari D, Ceccotti P, et al. Prospective randomized trial of intrapleural bleomycin versus interferon alfa-2b via ultrasound-guided small-bore chest tube in the palliative treatment of malignant pleural effusions. J Clin Oncol. 2004;22:1228–1233.
8. Rice DC, Morris SM, Sarr MG, et al. Intraoperative topical tetracycline sclerotherapy following mastectomy: a prospective, randomized trial. J Surg Oncol. 2000;73:224–227.
9. Kuroi K, Shimozuma K, Taguchi T, et al. Evidence-based risk factors for seroma formation in breast surgery. Jpn J Clin Oncol. 2006;36:197–206.
10. Shermak MA, Rotellini-Colvet LA, Chang D. Seroma development following body contouring surgery for massive weight loss: patient risk factors and treatment strategies. Plast Reconstr Surg. 2008;122:280–288.