Breast reconstruction represents one of the most common operations performed by plastic surgeons in the United States. In 2013, nearly 100,000 breast reconstruction operations were performed with almost 80% utilizing implant-based techniques. As our experience with this technique continues to increase, reconstruction is being offered to progressively comorbid patients. With these trends, other surgical specialties have likely been increasingly exposed to patients with a history of implant-based breast reconstruction, which may impact surgical approaches. In this case report, we describe a fluid collection around a breast implant from the migration of a ventriculoperitoneal shunt catheter. The goal of this case report is to present an unusual case of breast swelling and improve awareness of this potential problem.

**CASE REPORT**

The patient is a 47-year-old woman who previously underwent an immediate, 2-stage breast implant reconstruction for low-stage breast cancer. The patient underwent a right total mastectomy with sentinel lymph node biopsy in early 2011 with placement of a subpectoral Inamed 133MV 500cm³ tissue expander (Allergan, Santa Barbara, Calif.) and AlloDerm (LifeCell Corp, Bridgewater, N.J.) placement. After successful tissue expansion, the patient underwent exchange to an Inamed style 20 600cm³, smooth, round implant several months later. Unfortunately, the patient subsequently was diagnosed with left lung adenocarcinoma with lymph node involvement. Because of worsening headaches, a work-up was initiated, which revealed metastatic lesions in the brain in April 2015. Under the care of a neurosurgeon, the patient underwent a right total mastectomy with sentinel lymph node biopsy in early 2011 with placement of a subpectoral Inamed 133MV 500cm³ tissue expander (Allergan, Santa Barbara, Calif.) and AlloDerm (LifeCell Corp, Bridgewater, N.J.) placement. After successful tissue expansion, the patient underwent exchange to an Inamed style 20 600cm³, smooth, round implant several months later. Unfortunately, the patient subsequently was diagnosed with left lung adenocarcinoma with lymph node involvement. Because of worsening headaches, a work-up was initiated, which revealed metastatic lesions in the brain in April 2015. Under the care of a neurosurgeon, the patient underwent a right total mastectomy with sentinel lymph node biopsy in early 2011 with placement of a subpectoral Inamed 133MV 500cm³ tissue expander (Allergan, Santa Barbara, Calif.) and AlloDerm (LifeCell Corp, Bridgewater, N.J.) placement. After successful tissue expansion, the patient underwent exchange to an Inamed style 20 600cm³, smooth, round implant several months later. Unfortunately, the patient subsequently was diagnosed with left lung adenocarcinoma with lymph node involvement. Because of worsening headaches, a work-up was initiated, which revealed metastatic lesions in the brain in April 2015. Under the care of a neurosurgeon, the patient underwent a right total mastectomy with sentinel lymph node biopsy in early 2011 with placement of a subpectoral Inamed 133MV 500cm³ tissue expander (Allergan, Santa Barbara, Calif.) and AlloDerm (LifeCell Corp, Bridgewater, N.J.) placement. After successful tissue expansion, the patient underwent exchange to an Inamed style 20 600cm³, smooth, round implant several months later. Unfortunately, the patient subsequently was diagnosed with left lung adenocarcinoma with lymph node involvement. Because of worsening headaches, a work-up was initiated, which revealed metastatic lesions in the brain in April 2015. Under the care of a neurosurgeon, the patient underwent a right total mastectomy with sentinel lymph node biopsy in early 2011 with placement of a subpectoral Inamed 133MV 500cm³ tissue expander (Allergan, Santa Barbara, Calif.) and AlloDerm (LifeCell Corp, Bridgewater, N.J.) placement. After successful tissue expansion, the patient underwent exchange to an Inamed style 20 600cm³, smooth, round implant several months later. Unfortunately, the patient subsequently was diagnosed with left lung adenocarcinoma with lymph node involvement. Because of worsening headaches, a work-up was initiated, which revealed metastatic lesions in the brain in April 2015. Under the care of a neurosurgeon, the patient underwent a right total mastectomy with sentinel lymph node biopsy in early 2011 with placement of a subpectoral Inamed 133MV 500cm³ tissue expander (Allergan, Santa Barbara, Calif.) and AlloDerm (LifeCell Corp, Bridgewater, N.J.) placement. After successful tissue expansion, the patient underwent exchange to an Inamed style 20 600cm³, smooth, round implant several months later.
subsequent hydrocephalus. A ventriculoperitoneal shunt was placed to relieve her increased intracranial pressure from a right frontal craniotomy with tubing tunneled from the right neck to the subxiphoid and placed intraperitoneal in the right subcostal area.

The patient was discharged to a rehabilitation facility and noted gradual swelling of her right breast 2 weeks later (Fig. 1). Because of progressing pleuritic chest pain and shortness of breath, the patient presented to the Emergency Department for evaluation. An ultrasound of the right breast demonstrated a 2.4 transverse × 0.6 anteroposterior × 3.8-cm cranio-caudal collection superior to the breast implant, and a computed tomograph of the chest showed a malpositioned shunt catheter coiled around the right breast implant with the tip in the anterior chest wall (Fig. 2). This was likely because of ventriculoperitoneal shunt placement through the breast pocket into the peritoneal cavity, followed by migration of the shunt into the breast pocket. The patient went to the operating room for revision of the ventriculoperitoneal shunt, and the existing catheter was used to aspirate the cerebrospinal fluid before removal and a new catheter was tunneled to the left of the midline and placed intraperitoneal from the left subcostal area. The patient had improvement in her symptoms and recovered uneventfully without further breast swelling or infection of the implant.

**DISCUSSION**

Ventriculoperitoneal shunts are a common neurosurgical procedure for the treatment of hydrocephalus but are unfortunately associated with a high complication profile. Over 30,000 shunts are placed by neurosurgeons in the United States each year. Commonly, these shunts are tunneled subcutaneously from the craniotomy site through the thorax and ultimately secured into the intraperitoneal cavity. Revision rates have been reported to be approximately 50%, according to retrospective reviews, with shunt malfunction cited as the most common etiology. Multiple case reports have described the migration of the distal shunt catheter into the bowel, chest, pulmonary artery, and heart.

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