Anaplastic large cell lymphoma is a rare disease associated with breast implants. We present the case of a woman who had breast augmentation and multiple revisions over a period of 13 years and presented with recurrent fluid collections. The cause was determined to be anaplastic large cell lymphoma, which required removal of the implants, capsulectomy, and evaluation by a medical oncologist. The patient was not found to have metastatic disease on imaging studies. Breast implant–associated anaplastic large cell lymphoma is a poorly understood disease entity, and optimal treatment is unclear.

Breast implant–associated anaplastic lymphoma kinase (ALK)-negative large cell lymphoma (BIA-ALCL) is a rare clinical entity, with fewer than 400 reported cases in the literature, most of which are case reports. It was first described in 1997 (1) and has a suspected incidence of 0.3% per 100,000 women per year (2). This may be a gross underestimation, given the number of breast augmentation and reconstructive procedures performed worldwide, and could reflect the difficulty in establishing a diagnosis. This case report describes a 60-year-old woman with BIA-ALCL.

**CASE STUDY**

A 60-year-old white woman with no significant past medical history presented to her plastic surgeon with a grossly distorted, swollen, and enlarged left breast without evidence of a mass (Figure 1). There was no history of trauma or systemic symptoms. She previously had breast augmentation with multiple revisions; the first procedure took place when she was 43 years old. The procedure used polyurethane implants in the subglandular location. The patient subsequently had three further revisions of her augmentation secondary to recurrent fluid accumulation on the left breast.

At age 59, the patient began to have increasing firmness and tenderness of the left breast, which was associated with yet another fluid collection requiring implant exchange. The plastic surgeon performed further workup for this fluid accumulation prior to performing another revision of her augmentation. A diagnostic mammogram and ultrasound revealed only a small amount of fluid around the left implant in the 12 o’clock position. A computed tomography scan of the chest without contrast revealed an asymmetric undulating contour of the left breast prosthesis with mass effect from fluid of variable densities, with no evidence of implant rupture, but an inflammatory, infectious, or lymphoma etiology could not be ruled out. A discussion ensued with the patient concerning these findings; ultimately, she elected to have her implants removed without replacement until the etiology could be identified. The patient underwent bilateral implant removal with capsulectomies, which was uneventful on the right side. Fluid was evacuated on the left side and revealed a capsule that was thickened with a plaque-like mass and mucoïd material associated with capsule posteriorly. This could not be entirely resected, as it adhered to the underlying chest wall beneath the pectoralis major muscle. The remaining mass was debrided with a scratch pad, drains were placed, and the wounds were closed. The patient healed well postoperatively.

Final pathology of the capsules revealed atypical infiltrate consistent with ALK-negative ALC associated with a breast implant. Hematoxylin and eosin studies (Figure 2a) were...
and has an excellent prognosis in comparison to mass-forming disease or systemic ALK-negative ALCL, which may have more aggressive courses and worse prognoses (5).

To date, there is no consensus on the implant substance contributing to disease, but more cases have been reported with textured versus smooth implants. This may indicate that the inflammatory response is causative in disease formation, but that hypothesis has not been proven.

The differential diagnosis for BIA-ALCL is broad and includes dissemination from systemic ALCL, classical Hodgkin lymphoma, other primary breast lymphoma, misinterpretation of triple-negative breast carcinoma, seroma formation from trauma, and double capsule formation (2, 4, 5). Treatment options to date consist of surgical therapy including implant removal and capsulectomy versus surgical and systemic therapy with or without radiation, typically indicated if the patient has classic B symptoms (2, 4, 6). The FDA recommends reporting all confirmed cases to improve the understanding of this rare disease.