To cite this article: Ozdemir A, Kahraman S, Bayraktar S, Demirhan R. A rare complication of hydrophilic gel filler: intrathoracic migration. Curr Thorac Surg 2025;10(3):184-186.

Case Report

A rare complication of hydrophilic gel filler: intrathoracic migration

Attila Özdemir[1]*, Selime Kahraman[2], Saliha Bayraktar[1], Recep Demirhan[1]

[1]Department of Thoracic Surgery, Kartal Dr. Lutfi Kirdar City Hospital, Istanbul, Turkey
[2]Department of Thoracic Surgery, Dr. Siyami Ersek Thoracic and Cardiovascular Surgery Training and Research Hospital, Istanbul, Turkey

ABSTRACT

Hydrophilic gel fillers are associated with late complications, including migration. We present a rare case of intrathoracic migration in a 32-year-old female, seven years after bilateral breast augmentation. Despite multiple prior extrathoracic migrations, a new right paracardiac cystic lesion was identified on computed tomography. The lesion was successfully excised via video-assisted thoracoscopic surgery, and pathology confirmed filler material. This case underscores the potential for distant migration of hydrophilic gels and the need to consider this etiology in patients with mediastinal masses and a history of augmentation.

Keywords: hydrophilic gel filler, intrathoracic migration, mediastinal mass, breast augmentation, video-assisted thoracoscopic surgery

Corresponding Author*: Attila Ozdemir, Department of Thoracic Surgery, Kartal Dr. Lutfi Kirdar City Hospital, Istanbul, Turkey.
E-mail: dr.attilaozdemir@gmail.com Phone: +90 5320575686
Doi: 10.26663/cts.2025.033
Received 14.07.2025 accepted 04.12.2025

Introduction

Hydrophilic gel filler (Aquafilling ®) is a polyacrylamide hydrogel based soft tissue filler containing 98% saline and 2% cross-linked polyamide. It was first developed for soft tissue contouring in 2005, and its use has become increasingly widespread since 2008 in applications such as breast and gluteal region augmentation [1]. However, in recent years, reports of late complications associated with hydrophilic gel fillers have been increasing. Serious adverse effects such as chronic inflammation, foreign body reaction, abscess formation, filling migration, tissue necrosis, and even sepsis have been described in the literature [2]. In this study, the case of mediastinal migration occurring 7 years after hydrophilic gel filler application is presented and discussed in comparison with the literature.

Case Report

A 32-year-old female patient who had undergone bilateral breast hydrophilic gel filler injections for aesthetic purposes seven years ago had undergone multiple (8 times) surgical interventions at various times due to hydrophilic gel filler migration to different regions, including the neck, hand, forearm, and posterior chest wall. The patient had no history of trauma or strain that would cause such frequent migration of the hydrophilic gel filler.

On follow-up, thoracic computed tomography (CT) revealed a hypodense mass lesion measuring approximately 41 × 32 mm in the right hemithorax, in the paracardiac region, and it was interpreted as a paracardiac cyst in the CT report of the lesion (Figure 1). In these migration stories, which were seen without trauma or strain in the patient, the 9th migration was to the mediastinum.

The patient, who had no known history of chronic disease, was admitted to our clinic for planned surgery. Exploration was performed via right video-assisted thoracoscopic surgery (VATS). A dense fluid was aspirated from the cystic structure observed in the mediastinal pleura, and the cystic tissue was completely cleared (Figure 2). The patient was discharged in good condition on the 2nd day without any complications. Final pathological evaluation of the surgically excised lesion reported it as granular, acellular material consistent with a foreign body.

Written informed consent was obtained from the patient and her relatives for publication of this case report and any accompanying images.

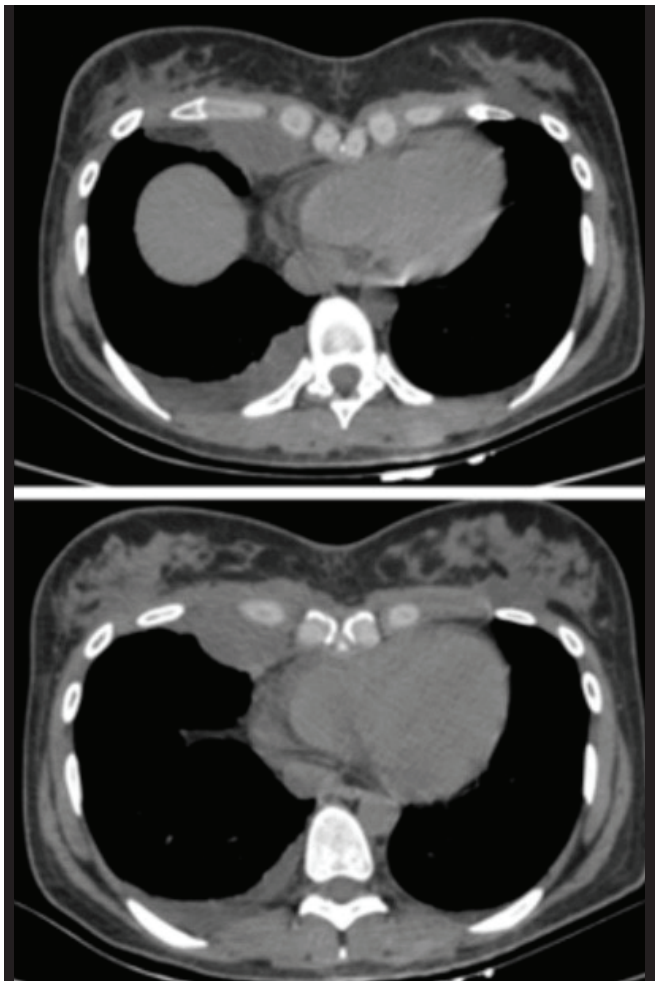

Figure 1. Thoracic CT scan showing a hypodense mass lesion in the right hemithorax, paracardiac region.

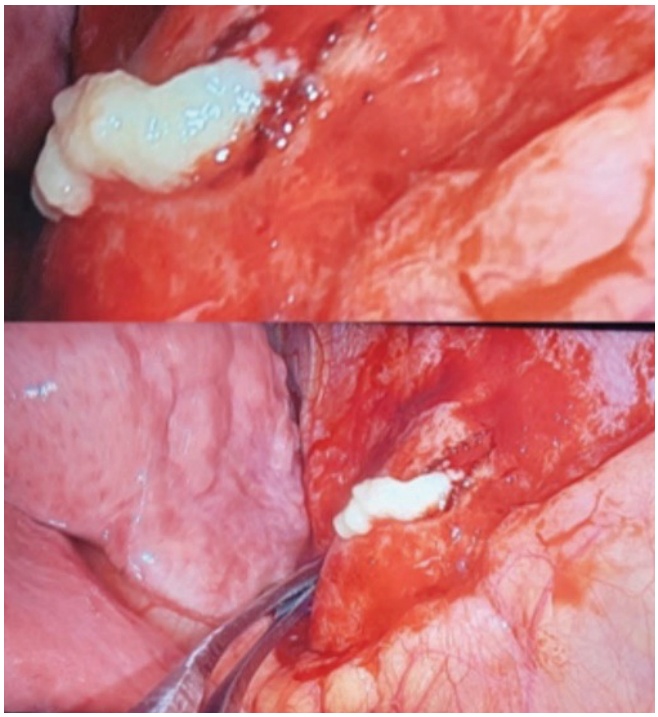

Figure 2. Intraoperative view of the white colored foreign object in the mediastinum during VATS.

Discussion

Although hydrophilic gel filler migration following filler injection has been the subject of only a limited number of case reports, the number is gradually increasing [2,3]. Migration of hydrophilic gel filler to the mediastinal region is a rare complication that has not been directly reported in the literature to date. Especially, the continuous migration of the filler material makes the phenomenon more interesting. This case demonstrates that the filling material in question can reach deep thoracic structures by overcoming anatomical barriers.

Hedström et al reported filler migration in 27 cases in a systematic review of 196 cases [3]. In the case we presented, migration was observed 8 times, and the 9th migration was to the mediastinum. In addition to local areas such as mammary gland tissue, subcutaneous adipose tissue, and pectoralis muscle, hydrophilic gel filler filling migration has been reported to occur in the inguinal area, abdominal wall, thoracic wall, back, upper extremity, and distant areas, including the hand. Similarly, in another case reported by Seyednejad et al, the filler was shown to spread from the chest wall to the retroperitoneal area and vulva, leading to an inflammatory response and tissue degradation secondary to this migration [4].

These cases indicate that hydrophilic gel filler can be transported from the injection site to distant regions through gravity, pressure gradients, weakened tissue planes, and inflammatory processes [5].

In the presented case, the migration of hydrophilic gel filler into the mediastinum can be explained by the interaction of multiple factors such as the anatomical plane of the injection, the volume administered, muscle activity in the region, and potential inflammatory processes. Additionally, differences in the application technique of the hydrophilic gel material can also cause migration, such as injecting into an inappropriate fascial plane or improperly adjusting the amount of gel material.

Migration into the mediastinum may present clinically with a variety of findings, including respiratory symptoms, dysphagia, or the presence of a mediastinal mass, and diagnosis is most often made by radiological methods. In our case, thoracic CT revealed a lesion in the anterior mediastinum; however, due to the patient's history of hydrophilic gel filler injection and previous filler migration, migration was considered the most likely diagnosis.

This case once again highlights the need to consider not only local but also systemic complications that may arise from hydrophilic gel filler applications.

In conclusion, mediastinal migration following hydrophilic gel filler injection is a rarely reported complication in the literature. In cases of newly detected mediastinal lesions, particularly in patients with a history of filler application, filler migration should be considered as a differential diagnosis.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support.

Authors' contribution

Concept and Design: AÖ, SK; Data Collection: SB, RD; Analysis and Interpretation: AÖ; Drafting the Manuscript: AÖ, SK; Critical Revision: RD.

References

1. Kayadibi Y, Karagoz SH, Kargin OA, Kurt SA, Kocer N. A rare cause of breast swelling in lactating women: Aquafilling® gel injection. Sisli Etfal Hastan Tip Bul 2023; 57: 552-6.
2. Toyama S, Akiyama G, Ono S, Nukaga S, Yokobori S, Ogawa R. Sepsis 6 years after breast augmentation with aquafilling: a case report and literature review. Plast Reconstr Surg Glob Open 2025; 13: e6798.
3. Hedström K, Falk-Delgado A, Sackey H. Complications after breast augmentation with dermal fillers containing copolyamide: a systematic review. JPRAS Open 2024; 40: 19-31.
4. Seyednejad H, Asilian A, Dehghani Z. Vulvar migration of aquafilling gel after breast injection: a case report. Iran J Radiol 2021; 18: e63468.
5. Gierej P, Radziszewski M, Miłoński P, Noszczyk B. Distal hand migration of polyacrylamide gel after breast augmentation: a case report and review of the literature. Indian J Plast Surg 2022; 56: 178-81.