

# Bilateral Hematoma Following Air Travel after Breast Augmentation: A Cautionary Tale and Literature Review

Ioannis Kyriazidis, MD\*  
 Antonios Antoniou, PhD\*  
 Efterpi Demiri, PhD\*  
 Leonidas Pavlidis, PhD\*  
 Athanasios Papas, PhD\*†

**Summary:** In this study, we report a rare incidence of bilateral hematoma following air travel in a patient who had recently undergone breast augmentation surgery. The case underscores the potential risks associated with flying shortly after such procedures. Through a literature review, we aimed to explore the incidence rates and highlight the need for further research in this area. This case report aims to raise awareness among healthcare professionals and patients about the need for cautious post-surgical travel planning to mitigate the risk of similar complications. (*Plast Reconstr Surg Glob Open* 2024; 12:e5639; doi: [10.1097/GOX.0000000000005639](https://doi.org/10.1097/GOX.0000000000005639); Published online 1 March 2024.)

**B**reast augmentation, a prevalent cosmetic procedure, involves enhancing breast size and shape using saline or silicone gel-filled implants. Despite its many advantages, it is not without risk.

Hematoma, a known postoperative complication, typically arises within the first 3 days following the breast augmentation,<sup>1</sup> with incidence rates reported to be between 2% and 10% in this initial postoperative period.<sup>2</sup> Late complications such as capsular contracture and implant rupture are more common, but late hematomas are rare with unclear etiology. This report explores a presumed first case of bilateral hematoma post breast augmentation, triggered by air travel.

## CASE PRESENTATION

A 47-year-old woman with no medical history presented with progressive, slow swelling of bilateral breasts. She had undergone a bilateral breast augmentation procedure using 340 cc Motiva Ergonomix Demi implants on March 24, 2023. [Figure 1](#) illustrates her preoperative status. The surgical approach involved dual-plane implant placement, employing both monopolar and bipolar

diathermies for meticulous tissue dissection and hemostasis and ultrasound-guided pectoral nerve block, for optimal analgesia.

Postsurgery, the patient was discharged with analgesic medication (paracetamol and dihydrocodeine) and given postoperative guidelines in line with reputable bodies, such as the American Society of Plastic Surgeons (ASPS), which caution against strenuous activities to avert hematoma.<sup>3</sup> Postoperative edema significantly diminished by the sixth-day postoperative follow-up, marking a smooth recovery.

On the subsequent day, she undertook a 55-minute domestic flight. Adhering to postoperative protocol, she avoided lifting, with her spouse handling all luggage. That night, she observed sudden bilateral breast swelling, with no accompanying symptoms. After a return flight the day after, wherein the swelling was exacerbated, she sought medical care. Upon examination, clinicians noticed bilateral breast enlargement ([Fig. 2](#)). A CT scan revealed tissue edema in the vicinity of the breast prostheses, and although no clear hematoma was evident, the possibility of an evolving pathological process could not be excluded. ([See Video \[online\]](#)), which displays the preoperative condition of the patient's breasts, highlighting tissue edema surrounding the breast prostheses. Notably, although the video reveals no overt signs of hematoma, it underscores the subtleties in radiological findings that necessitated further investigation through MRI.)

From the \*Department of Plastic Surgery, School of Medicine, Faculty of Health Sciences, Aristotle University of Thessaloniki, Papageorgiou General Hospital, Thessaloniki, Greece; and †School of Medicine, European University Cyprus, Nicosia, Cyprus.

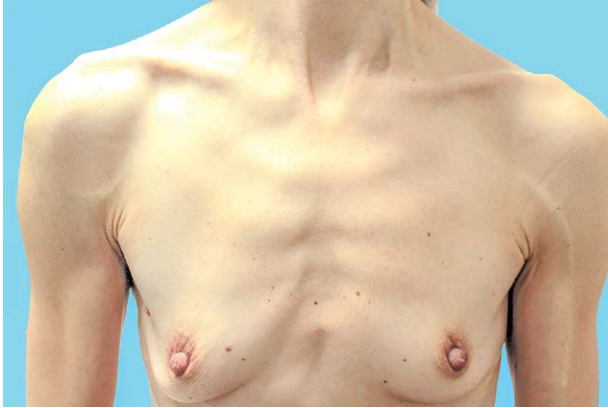
Received for publication August 17, 2023; accepted January 17, 2024.

Copyright © 2024 The Authors. Published by Wolters Kluwer Health, Inc. on behalf of The American Society of Plastic Surgeons. This is an open-access article distributed under the terms of the [Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 \(CCBY-NC-ND\)](https://creativecommons.org/licenses/by-nc-nd/4.0/), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

DOI: [10.1097/GOX.0000000000005639](https://doi.org/10.1097/GOX.0000000000005639)

Disclosure statements are at the end of this article, following the correspondence information.

Related Digital Media are available in the full-text version of the article on [www.PRSGlobalOpen.com](http://www.PRSGlobalOpen.com).



**Fig. 1.** Preoperative photograph of the patient.

The next day, she arrived at our hospital for a clinical assessment. The examination revealed significant breast enlargement, more pronounced on the right. No discernible mass or crepitus was detected. Moreover, no skin infection signs or active bleeding from the incisions were present. The patient reported no respiratory distress or pleuritic pain. She also adhered to postoperative guidelines, avoiding sexual activity preceding the incident.

Laboratory tests indicated a drop in hemoglobin to 10.5 g/dL and a hematocrit level of 32.3% and no bleeding diathesis. Given the patient's symptom progression and the inconclusive CT findings, which did not rule out a developing complication, a subsequent MRI scan was warranted to provide further clarity. The MRI scan (Fig. 3) revealed a possible partial implant rupture and

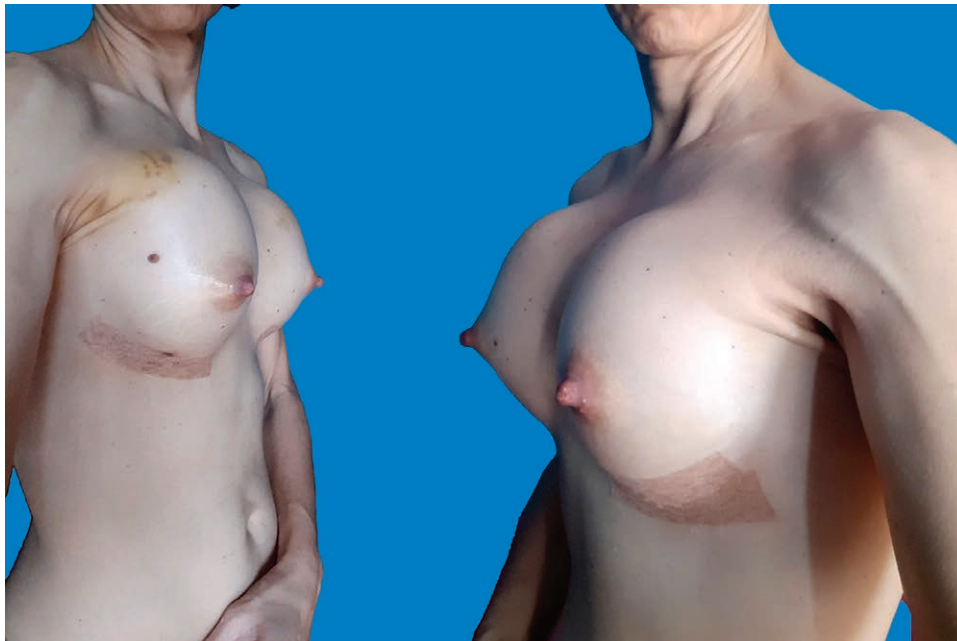
leakage alongside hematoma, necessitating exploration and immediate implant removal.

Surgical exploration found no primary vessel bleeding, only localized faint oozing. A substantial hematoma, around 300 mL, was evacuated from each side (Fig. 4). The implants were intact, with no rupture or leakage. The pockets were cleaned, and new implants were inserted, employing aseptic techniques. The patient's postoperative journey was uneventful, leading to her discharge on the third postoperative day. The 2-week follow-up revealed no alarming findings and showcased an excellent aesthetic outcome.

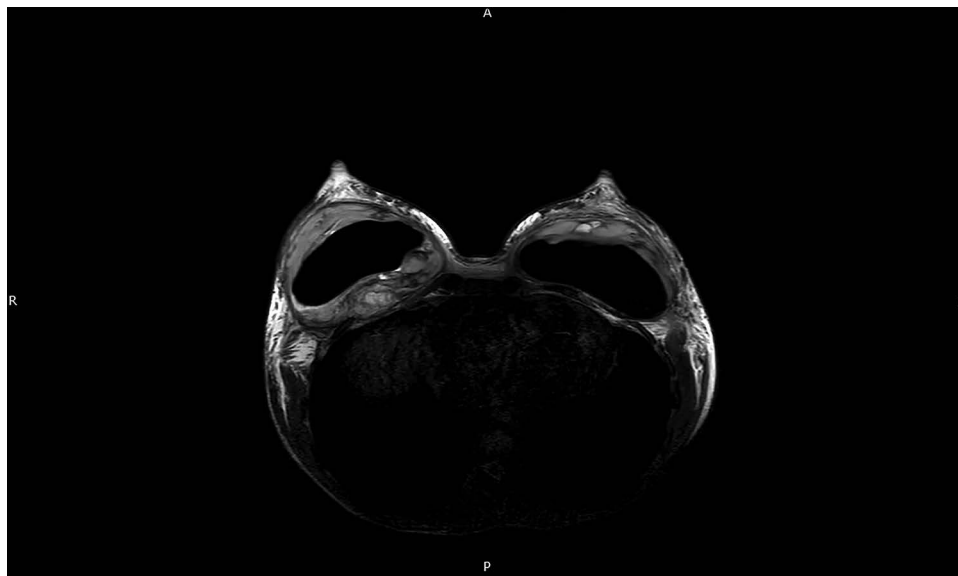
## LITERATURE REVIEW

A review of the literature suggested that hematoma is a possible complication of breast augmentation surgery, with a reported incidence ranging from 0.5% to 3% in one study,<sup>4</sup> 1% in another<sup>5</sup> and 1.5%–10.3% in others.<sup>1,6</sup> On the contrary, delayed hematomas represent an infrequent complication associated with breast augmentation, with evidence of their occurrence limited to a relatively small number of published case reports, typically ranging between 15 and 20.<sup>7</sup> However, to our knowledge, there are no specific reports on hematoma occurring after a flight following breast augmentation surgery, indicating a significant gap in existing literature.

A search of PubMed and Google Scholar was performed to identify similar cases of hematoma following breast augmentation surgery and air travel. The keywords used were “breast” AND (“hematoma” OR “hematoma”) AND (“air flight” OR “airplane”) AND (“augmentation” OR “implants”).



**Fig. 2.** Photograph of the patient taken upon her arrival at the emergency department, displayed in two views. The images illustrate a significant enlargement of the patient's breasts, with a more pronounced condition on the right side, corresponding to the onset of hematoma development that necessitated medical attention.



**Fig. 3.** Slide of the MRI scan of thorax that revealed bilateral silicone implants that appear relatively flattened yet maintain their form. Notable observations include a heterogeneous signal material surrounding the implants, suggestive of an intermix of hematoma and fluid collection. Additionally, diffuse subcutaneous and interstitial glandular edema is observed around the implants and within the axillary cavities.



**Fig. 4.** Intraoperative photograph showing the amount of hematoma evacuated successfully from the right breast pocket.

Our search revealed no relevant studies on this topic. Hence, this article describes the first case of hematoma formation on an otherwise uncomplicated surgery, occurring after a domestic flight.

## DISCUSSION

Breast augmentation surgery, although beneficial, poses potential complications such as hematoma,<sup>5</sup> the understanding of their mechanisms remains elusive, necessitating further exploration. Hematomas usually manifest in early postoperative days due to persisting breast tissue swelling and pressure.<sup>1,6</sup> A literature review by Grippaudo et al<sup>8</sup> underscored a mere 31 documented cases of delayed hematomas post cosmetic augmentation mammoplasty, highlighting the challenges in understanding such phenomena. The bilateral hematoma occurrence postflight in our case raises a concern on the safety of air travel following breast augmentation surgery.

A potential implant expansion or rupture during air travel is a concern. A systematic review<sup>9</sup> uncovered limited evidence of a causal relationship between air travel and breast implant complications, although transient changes in augmented or reconstructed breasts during flights have been reported. The effect of low atmospheric pressure on implants, especially during takeoff and landing, remains ambiguous. Despite the absence of reported or recollected events that could have elevated blood pressure, such as significant stress during the flight—which the patient categorically denies—we cannot entirely dismiss these as contributing factors to the development of the hematoma.

The literature lacks precise guidelines or official recommendations regarding postsurgery air travel. Anecdotal suggestions advocate a 1- to 2-week waiting period before flying postsurgery. The ASPS recommends a 5- to 7-day waiting period post body procedures such as liposuction and breast augmentation, and 7–10 days post facial cosmetic procedures,<sup>10</sup> underscoring the potential



risk augmentation due to the amalgam of surgery and air travel, especially with the concerning rise of medical tourism.

This case report serves to introduce a potential risk associated with air travel postsurgery. However, it is important to note that our findings are not conclusive and should prompt further research rather than being interpreted as definitive evidence. Ensuring safe air travel timing postsurgery necessitates stronger evidence-based guidelines. Patients must be thoroughly educated about the associated risks and engage in detailed consultations with their plastic surgeon before planning surgery and subsequent air travel.

### CONCLUSIONS

Though rare, late hematomas do occur. The etiology still remains uncertain and needs to be elucidated through further research and studies. In this case report, we presented the case of a woman who developed bilateral breast hematoma 1 week after she had aesthetic breast augmentation following air travel. Considering the unique aspects of this case, we suggest that surgeons, on a case-by-case basis, consider advising a longer waiting period before air travel postsurgery, similar to other operations, as outlined in the ASPS air travel guidelines (eg, rhinoplasty and eyelid surgery), although this suggestion currently stands on anecdotal evidence rather than robust clinical studies. This advice is tentative and should be validated through further research, aimed at understanding the effects of air travel post breast augmentation surgery and developing evidence-based guidelines for safe air travel postsurgery to improve patient safety and outcomes. Plastic surgeons should be aware of the possibility of hematoma following air travel after breast augmentation surgery and carefully consult and monitor patients for any signs or symptoms of complications. Further research is urgently needed to delineate the relationship between air travel, atmospheric pressure changes, and hematoma development post breast augmentation surgery.

**Ioannis Kyriazidis, MD**

Department of Plastic Surgery  
School of Medicine, Faculty of Health Sciences  
Aristotle University of Thessaloniki  
Papageorgiou General Hospital  
Agiou Pavlou 76, Pavlos Melas 564 29  
Thessaloniki, Greece  
E-mail: [jkyriazidis@gmail.com](mailto:jkyriazidis@gmail.com)  
[@yannis\\_kyriazidis](mailto:@yannis_kyriazidis)

### DISCLOSURE

*The authors have no financial interest to declare in relation to the content of this article.*

### REFERENCES

1. Handel N, Cordray T, Gutierrez J, et al. A long-term study of outcomes, complications, and patient satisfaction with breast implants. *Plast Reconstr Surg*. 2006;117:757–767; discussion 768.
2. Hsiao HT, Tung KY, Lin CS. Late hematoma after aesthetic breast augmentation with saline-filled, textured silicone prosthesis. *Aesthetic Plast Surg*. 2002;26:368–371.
3. Salemy S. Breast augmentation recovery—what you need to know. *Am Soc Plast Surg*. 2018. Available at <https://www.plastic-surgery.org/news/blog/breast-augmentation-recovery-what-you-need-to-know>. Accessed July 14, 2023.
4. Iwuagwu FC, Frame JD. Silicone breast implants: complications. *Br J Plast Surg*. 1997;50:632–636.
5. Christodoulos K, Julian W, Varun G, et al. Incidence and risk factors for major hematomas in aesthetic surgery: analysis of 129,007 patients. *Aesthet Surg J*. 2017; 37:1175–1185.
6. Gabriel SE, Woods JE, O’Fallon WM, et al. Complications leading to surgery after breast implantation. *N Engl J Med*. 1997;336:677–682.
7. Kim L, Castel N, Parsa FD. Case of late hematoma after breast augmentation. *Arch Plast Surg*. 2018;45:177–179.
8. Grippaudo FR, Renzi L, Costantino B, et al. Late unilateral hematoma after breast reconstruction with implants: case report and literature review. *Aesthet Surg J*. 2013;33:830–834.
9. Co M, Ng J, Kwong A. Air travel safety in postoperative breast cancer patients: a systematic review. *Clin Breast Cancer*. 2018;18:e813–e817.
10. American Society of Plastic Surgeons. Briefing paper: cosmetic surgery tourism. Available at <https://www.plasticsurgery.org/news/briefing-papers/briefing-paper-cosmetic-surgery-tourism>. Accessed June 30, 2023.