

Overview of Reported Breast Implant–Related Reactions After COVID-19 Infection or Vaccination

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We have read with great interest the case report entitled “Development of Acute Seroma Around Breast Implants Following Administration of COVID-19 Vaccination” by Mak et al.¹ By sharing their case, the authors have added another important piece of data to an overlooked and underreported topic. Among the vast numbers of people vaccinated globally in the fight against SARS-CoV-2 (COVID-19), reports of adverse effects are plentiful. This also affects patients in the field of plastic surgery. Although reports of immune reactions to dermal fillers after COVID-19 vaccination were described in the early clinical trials of the vaccines,² the first cases of potential reactions to breast implants were published after they passed clinical trials.^{3–5} Due to different clinical manifestations and lack of awareness by physicians, the total number can only be estimated. After reporting a series of cases with similar symptoms and medical histories as the current case report, we aimed to give an overview of the available cases found in the literature.⁶ Since then, several new reports about similar cases after vaccination or COVID-19 infections have appeared.^{1,7,8} Although these are rare occurrences considering the number of women with implants who received COVID-19 vaccines, the increasing number of case reports shows that despite the number of reported cases, it still is a novelty for the majority of physicians and surgeons. We agree with the authors that a direct causation of an inflammatory reaction to the virus or vaccine can be challenging to prove and some of the reported cases might simply be due to statistical chance as a consequence to the sheer number

of administered vaccines. The temporal sequence and symptoms similar to other reports are nevertheless a strong indicator of an inflammation-triggered response. Due to the increasing number of cases, certain similarities can be seen regarding clinical presentations.

To help other surgeons we have updated our overview of reported cases found in the literature (Table 1). The limited data available show that patients with breast implants presenting with sudden onset of unilateral or bilateral swelling and discomfort of the breast should be interviewed thoroughly regarding recent vaccinations or infections with COVID-19. If other symptoms are present, a test for an ongoing COVID-19 infection is advised. Seroma, swelling, and pain were the most common symptoms in the reported cases and ultrasound of the breast to confirm the diagnosis is recommended. The existing cases indicate that symptoms occur unrelated to the timing of the initial surgery. With respect to the collected cases shown in Table 1, it may be of interest that nearly all immunologic reactions occurred in patients older than 45 years of age and no cases for patients under the age of 30 have been reported to date. There is no

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Table 1. Reported Cases Found in the Literature

Citation	Age (years)	Implant size/ texture	Time since implant surgery (years)	Vaccine (dose)	Infection	Onset (days)	Symptoms	Treatment
Weitgasser et al ⁵	55	620 cc/smooth	0.2	AstraZeneca, Cambridge, UK (1)	–	2	Pain and seroma	Surgery
	76	360 cc/textured	5	Pfizer-BioNTech, New York, NY and Mainz, Germany (1)	–	2	Pain and swelling	Conservative
	52	250 cc/smooth	1.5	Pfizer-BioNTech (1)	–	2	Pain and redness	Conservative
	52	Unknown	0.7	J&J, New Brunswick, NJ	–	3	Pain	Conservative
Restifo ⁴	34	440 cc/smooth	0.5	Pfizer-BioNTech (2)	–	6	Pain and LAP	Surgery
Kayser et al ³	48	Textured	5	Pfizer-BioNTech (2)	–	10	Pain and swelling	Conservative
Mak et al ¹	49	350 cc/smooth	17	AstraZeneca (1)	–	4-5	Pain and swelling	Surgery
Martínez Núñez et al ⁷	44	Microtextured	5	–	Yes	4	Swelling and redness	Seroma puncture
	48	Unknown	8	–	Yes	–	Pain and swelling	Surgery
Mahrhofer et al ⁶	48	Unknown	12	Pfizer-BioNTech (2)	–	19	Pain and swelling	Surgery
Van Wert et al ⁸	50	Unknown	7	–	Yes	–	Sterile abscess	Surgery

J&J, Johnson & Johnson; LAP, lymphadenopathy.

indication so far of a correlation with the implant texture. Conservative treatment of the symptoms with anti-inflammatory drugs and drainage of the seroma, if present, has been shown to be effective in cases that involved undamaged implants. Collectively, these case reports show that these reactions occur to both the virus and the vaccine. Because symptoms can be similar to breast implant-associated anaplastic large cell lymphoma, immunohistochemistry and flow cytometry should be used to rule out malignant cause.

More studies are needed to help us understand more precisely the biochemical mechanisms involved. Moreover, patients and surgeons should be made aware of possible inflammatory reactions and their treatment. We want to thank the authors for sharing their experience and shedding more light on this important topic and hope that others are encouraged to report their findings.

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REFERENCES

- Mak C, Graham S, Deva A. Development of acute seroma around breast implants following administration of COVID-19 vaccination. *Aesthet Surg J*. 42(6):NP440-NP442. doi: [10.1093/asj/sjab412](https://doi.org/10.1093/asj/sjab412)
- Polack FP, Thomas SJ, Kitchin N, et al. Safety and efficacy of the BNT162b2 mRNA COVID-19 vaccine. *N Engl J Med*. 2020;383(27):2603-2615. doi: [10.1056/NEJMoa2034577](https://doi.org/10.1056/NEJMoa2034577)
- Kayser F, Fourneau H, Mazy OC, Mazy S. Breast implant seroma: a SARS-CoV-2 mRNA vaccine side effect. *J Clin Ultrasound*. 2021;49(9):984-986. doi: [10.1002/jcu.23056](https://doi.org/10.1002/jcu.23056)
- Restifo RJ. A case report of capsular contracture immediately following COVID-19 vaccination. *Aesthet Surg J Open Forum*. 2021;3(3):ojab021. doi: [10.1093/asjof/ojab021](https://doi.org/10.1093/asjof/ojab021)
- Weitgasser L, Mahrhofer M, Schoeller T. Potential immune response to breast implants after immunization with COVID-19 vaccines. *Breast*. 2021;59:76-78. doi: [10.1016/j.breast.2021.06.002](https://doi.org/10.1016/j.breast.2021.06.002)
- Mahrhofer M, Weitgasser L, Schoeller T. Observations of a potential immune response to breast implants after immunization with COVID-19 vaccines. *Aesthet Surg J Open Forum*. 2021;3(4):ojab035. doi: [10.1093/asjof/ojab035](https://doi.org/10.1093/asjof/ojab035)
- Martínez Núñez P, Pérez González M, Juárez Cordero A. Late seroma of the breast in association with COVID-19 infection: two case reports. *Eur J Plast Surg*. 2021;1-4. doi: [10.1007/s00238-021-01898-y](https://doi.org/10.1007/s00238-021-01898-y)
- Van Wert M, Ghio M, Graham C, Smetherman D, Sanders R, Corsetti R. Multicentric breast abscesses in a patient who had COVID-19. *Ochsner J*. 2021;21(4):402-405. doi: [10.31486/toj.21.0095](https://doi.org/10.31486/toj.21.0095)