

# Sensitivity and specificity of ultrasound to establish breast prosthesis rupture in a patient with transoperative diagnosis of symmastia and contralateral implant migration. A case report

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Case Report

Plastic Surgery



## Background

Breast augmentation surgery with implants is the most performed cosmetic surgical procedure in the world. The most common local complications after breast implant surgery using silicone implants are capsular contracture and implant rupture. In this article we present the case of a patient with unilateral prosthetic rupture and symmastia with migration of silicone gel and implant shell to the contralateral breast.

Although breast symptoms and abnormal physical examination can lead to the diagnosis of breast implant rupture, neither represents a reliable predictive value. Ultrasound has variable sensitivity and specificity, ranging from 54-67% and 64-92% respectively.

The evolution of silicone implants has improved the safety of the implants and of the patients, however the durability and the need for replacement is still a controversial issue. Taking into account that the cases of implant rupture have been increasing with time due to different etiologies, one of them obviating the necessary replacement, we must consider the use of breast ultrasound as the cornerstone for the study of the same.

**Keywords:** Breast augmentation, symmastia.

The breast harbors significant concentrations of Breast augmentation surgery with implants is the most performed cosmetic surgical procedure in the world(1).

Cronin and Gerow developed the first silicone prosthesis in 1961 and performed the first breast augmentation in 1962. The first silicone breast implants were made of a silicone rubber shell filled with silicone gel of various consistencies. Since then, silicone implants have been developed in 5 generations. (2) The introduction of highly cohesive silicone gel implants was heralded as having an aesthetic and safety advantage over the standard cohesive gel implant. These included greater durability in overall shape with respect to upper pole volume and reduced incidence of folding of the outer shell. The safety profile also improved with the higher viscosity grade by limiting locoregional migration and spread of the silicone gel and after implant shell compromise (3).

The most common local complications after breast implant surgery using silicone implants are capsular contracture and implant rupture. The

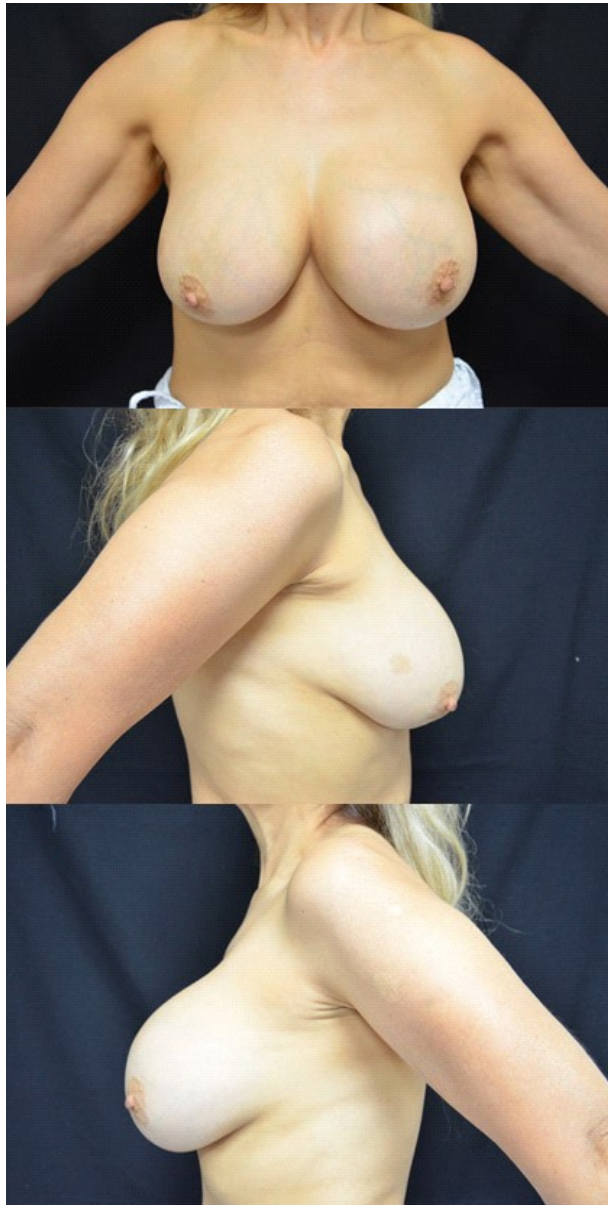
frequency of implant rupture increases with time, and most of them do not cause clinical symptoms.(4)

In this article we present the case of a patient with unilateral prosthetic rupture and symmastia with migration of silicone gel and implant shell to the contralateral breast, as well as a review of the literature of diagnostic studies of these alterations.

## Case report

This is a 56-year-old female patient who has a history of cervical uterine cancer diagnosed in 2021, treated with chemotherapy, radiotherapy and brachytherapy, rhinoseptoplasty 14 years ago and placement of textured breast implants of 340 cc volume retropectoral on May 16, 2006, positive transfusions in 2021 due to cervical hemorrhage. This patient noticed in 2020 changes in the size of the right breast compared to the left breast, referring that at night, when lying down, she had a sensation of liquid movement inside the right breast, however she referred that due to cervical pathology she did not go for specialized assessment. Physical examination showed a larger left breast, sagging and projection compared

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**Figure 1.** Pre-surgical anterior and lateral images of the patient showing breast asymmetry.

to the right breast, areolas and nipples without apparent alterations, at the level of the sternal intermammary fold with presence of medial confluence of the breasts in the lower third, on palpation the left breast with greater volume, induration, tension and irregularity unlike the right breast with slight sagging, no lymph nodes are palpated, not painful on palpation, preserved sensitivity (Image 1).

A digital infrared study was requested on March 4, 2021, observing the right breast with temperature increase of 1.5 C in the nipple/areola region compared to another mother, the rest without alterations. On April 21, 2021 bilateral mammography was performed and bilateral retropectoral implants were reported with data of intracapsular rupture and

contracture of the right breast. (Image 2) Bilateral ultrasound was performed on October 28, 2022 where no occupying lesions were observed, a smaller retropectoral breast implant was observed in the right breast compared to the contralateral one, its content is hypoechoic and the sign of the ladder is observed, suggesting intracapsular rupture, in the left breast.

(Image 3) On July 19, 2023 capsulotomy + periareolar pexy + removal of implants was performed.

### Surgical technique

Under peridural block, asepsis and antisepsis of the thoracic region is performed, sterile fields are placed and we proceed to de-epithelialize previously designed periareolar pexy marking, peri areolar right breast is incised finding in submuscular space silicone gel in moderate amount without cover of the implant and the periprosthetic capsule very thin, the gel is removed in its entirety, We proceed to perform the same cutaneous de-epithelization of peri-areolar marking in the left breast where the left breast implant is found but around this silicone gel is observed within the retromuscular space and the implant is extracted finding under this cover of the right implant with little gel inside the cover of the implant, the cover is removed as well as the gel that was in the space of the left implant and the resection of the capsule of the implant,

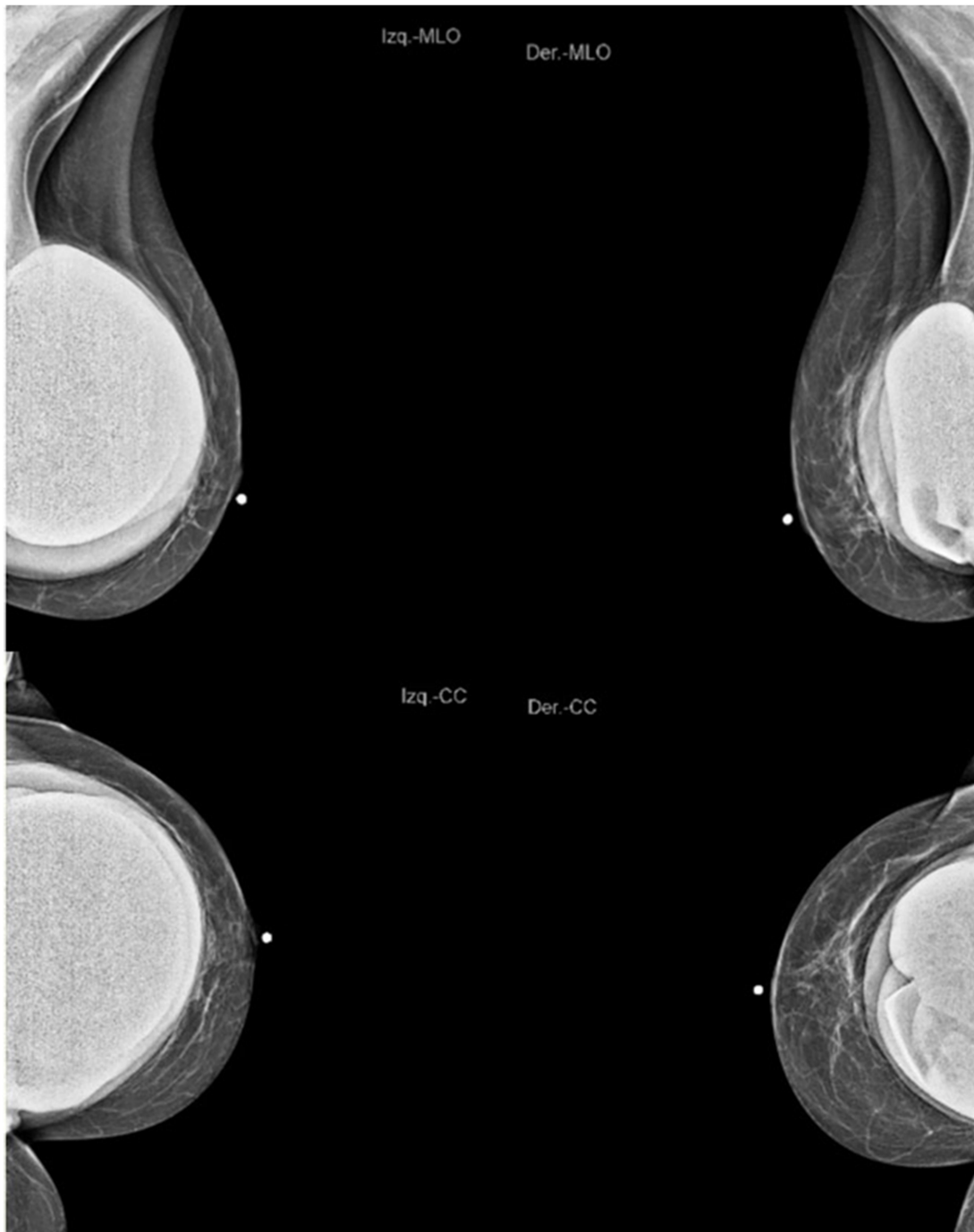
Both retro muscular spaces of the mammary implants are washed with soap and saline solution and a tunnel is observed that would correspond to a partial symmastia that communicated the right mammary gland with the left one of approximately 10 centimeters by 10 centimeters of diameter (image 4), which is removed the capsule strip of the medial part of this tunnel which is closed with vicryl 2/0.

Drainage is placed in both mammary glands, facial suture is placed with vicryl 2/0 continuous surging and subcutaneous tissue with vicryl 3/0, periareolar pexia is performed with nylon 2/0 and areola is sutured with vicryl 3/0 separate stitches (image 5).

The surgical specimen was sent to pathology (left breast implant capsule) which report fibrous wall with multifocal chronic inflammation with foreign body type giant cells, no data of malignant neoplasm were identified.

### Discussion

Prosthetic rupture is one of the most frequent complications in breast implant surgery along with periprosthetic capsular contracture. Its incidence is difficult to estimate because it is often underdiagnosed due to the phenomenon of silent rupture, but it is



**Figure 2.** Mammography.

estimated that 15% of current breast implants will rupture between the third and tenth year of their placement, and the literature reports data between 4 and 63% (5).

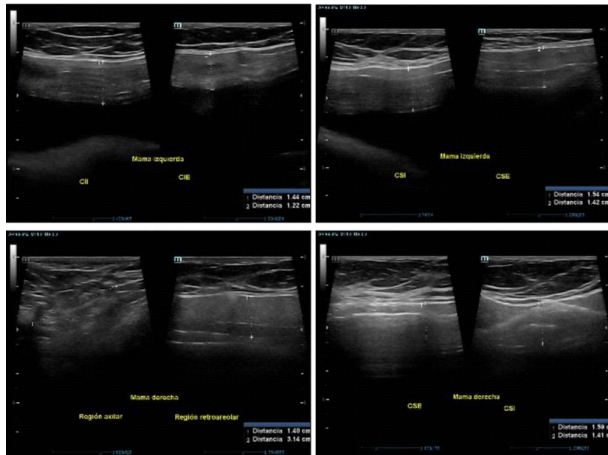
The most common cause of prosthetic rupture is normal aging of the implant, all prostheses have a recommended life expectancy and are prone to rupture eventually when this is exceeded. All ruptures before the age of 20 years are considered premature in the case of modern implants (6).

Once the implant ruptures, the free silicone can migrate. More frequently, free silicone infiltrates

the tissues adjacent to the breast and can sometimes mimic breast cancer (4).

Although breast symptoms and abnormal physical examination can lead to the diagnosis of breast implant rupture, neither represents a reliable predictive value. Ultrasound has variable sensitivity and specificity, ranging from 54-67% and 64-92% respectively (7).

Mammography is an extremely specific method for diagnosing extracapsular breast rupture that can detect migration of silicone gel into the glandular parenchyma. On the other hand, the



**Figure 3.** Breast ultrasound with staircase sign.

diagnosis of intracapsular rupture cannot be made by mammography (5).

However, the already mentioned radiodiagnostic methods are operator dependent, so MRI is considered the best method to diagnose implant rupture, since it is useful for extracapsular silicone leakage and even more for intracapsular rupture, with a higher sensitivity and specificity (7). (8).

In a comparative analysis between ultrasound and MRI for the detection of implant rupture, it was observed that ultrasound is significantly better in cost-effectiveness for symptomatic and asymptomatic women. Therefore, routine screening ultrasound and confirmation with MRI is recommended (8).

Synmastia was first described by Spence in 1983 as medial confluence of the breasts. It exists in two forms: congenital and iatrogenic.(9)

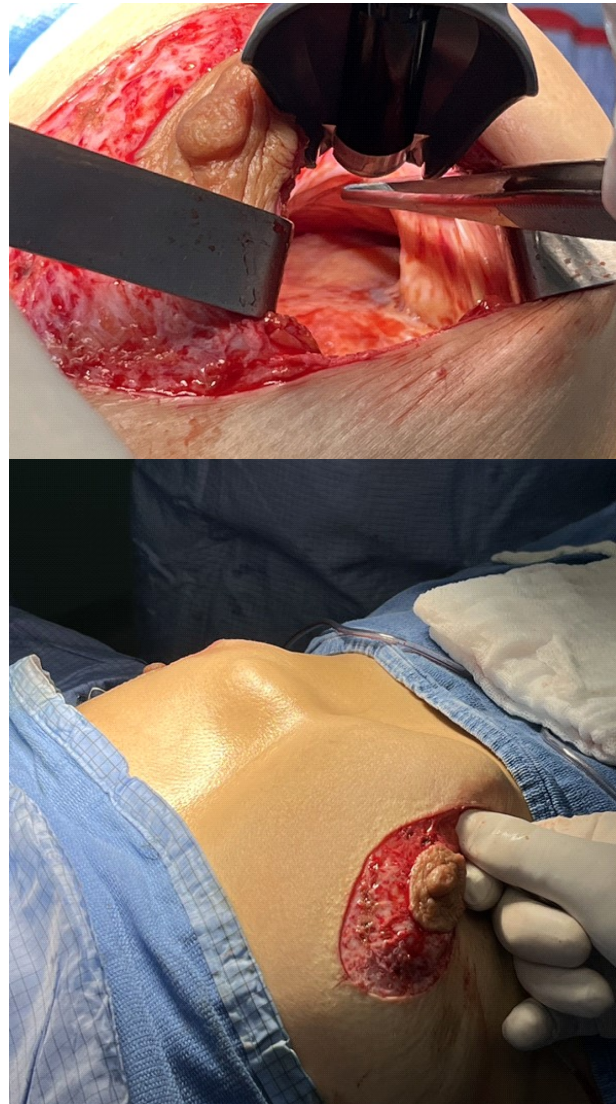
There are no reports in the literature regarding the incidence of iatrogenic symmastia.(10)

The diagnosis is essentially clinical. It has a spectrum of symptom intensity, from mild cases that go unnoticed to severe cases that present with important psychosocial repercussions (10).

Iatrogenic symmastia after breast augmentation has been attributed to subglandular over dissection of the medial pocket over the sternum, with disruption of the medial sternal fascia, displacement of the implants across the midline, oversized implant base diameter, oversized implants, and over dissection of the medial insertions of the pectoralis muscle.(9)

Complications such as seromas, hematomas, infections and other factors that increase the pressure of the dissection plane or even a rupture of tissue attachment of the medial region of the plane may increase the risk of symmastia(10).

Inframuscular implants in breast augmentation usually move inferiorly or inferolaterally over time. Also the pectoralis major muscle exerts a force vector on the implant based on the position of the muscle

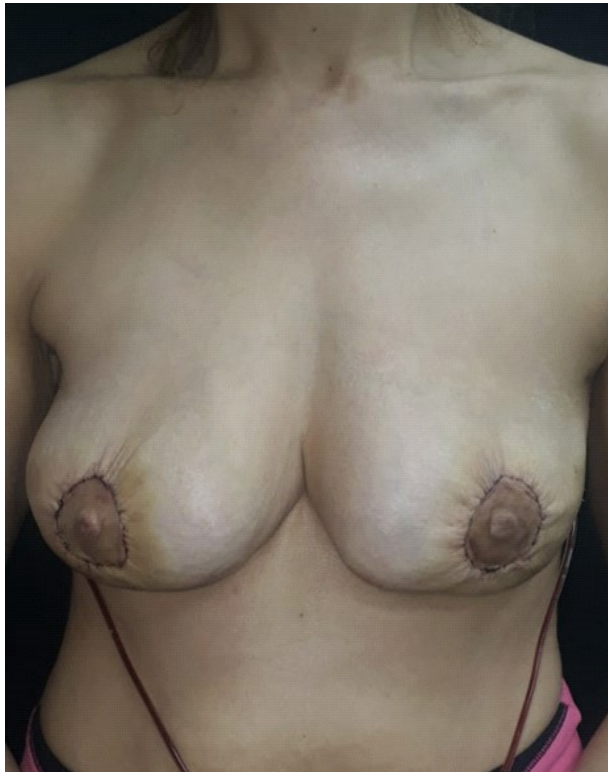


**Figure 4.** Tunneling between both breasts (symmastia).

over the implant. The thickness of the pectoralis major muscle at its sternal origin is 7.1 millimeters (range 3-18 millimeters). These delicate medial elements can be torn during pocket dissection or by the constant medial force of the implants. Once the muscle is disinserted, the inferior-lateral force shifts to an inferior-medial force.(9)

## Conclusion

In terms of cosmetic surgeries performed worldwide, breast augmentation remains the most requested. The evolution of silicone implants has improved the safety of the implants and of the patients, however the durability and the need for replacement is still a controversial issue. Taking into account that the cases of implant rupture have been increasing with time due to different etiologies, one of them obviating the necessary replacement, we must consider the use of breast ultrasound as the cornerstone for the study of



**Figure 5.** Mid Postoperative.

the same, with a variable sensitivity and specificity, with a range of 54-67% and 64-92% respectively; however it is not exempt from ignoring the presence of alterations such as medial confluence of the breasts or migration of part of the breast implant material to the contralateral breast, so it is of optimal importance to request sternal approach to rule out this type of alterations and improve the planned treatment.

### Conflicts of interests

There are no potential conflicts of interest of any of the author in this case report.

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