Review

Breast Cancer in Women Using Breast Implants:

Impact on Diagnosis and Treatment

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ABSTRACT

Background: Breast cancer is one of the most common diseases among women, and early diagnosis is essential for effective treatment. The use of breast implants can introduce additional challenges in the diagnosis and treatment of breast cancer.

Methods: A literature review was conducted to investigate the impact of breast implants on the diagnosis and treatment of breast cancer. Studies on the effectiveness of different imaging methods (mammography, magnetic resonance imaging, and ultrasound) and therapeutic approaches (surgery, radiotherapy, and chemotherapy) in women with breast implants were analyzed, as well as the psychological impact of diagnosis and treatment.

Results: The results show that breast implants can make it difficult to visualize the entire breast tissue on mammograms. However, advanced techniques such as MRI and ultrasound can improve diagnostic accuracy. In treatment, the presence of implants can influence surgical approaches and the administration of radiotherapy, requiring careful planning. The psychological impact of diagnosis and treatment on women with implants is significant, highlighting the importance of emotional support.

Conclusion: The use of breast implants presents unique challenges in the diagnosis and treatment of breast cancer. With advanced imaging techniques and personalized therapeutic approaches, it is possible to effectively manage these challenges. Collaboration between radiologists, surgeons, oncologists and psychologists is essential to ensure the best possible care for these patients, providing effective and humane treatment.

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What do we already know about this topic?
Breast cancer in women with breast implants is a topic that has generated increasing interest in the medical community due to its implications for diagnosis and treatment. Studies indicate that the use of breast implants does not directly increase the risk of developing breast cancer. However, a rare type of cancer, anaplastic large cell lymphoma (BIA-ALCL), has been associated with textured implants. Implants can make early detection of tumors difficult, especially in mammography exams, due to interference in the visualization of breast tissue. Advanced techniques, such as magnetic resonance imaging, have been recommended to improve diagnostic accuracy. Women with breast implants may face additional challenges during treatment, such as the need to consider reconstructions after mastectomy. The choice of surgical techniques and therapies, such as intraoperative radiotherapy, can be adapted to meet the anatomical and aesthetic particularities of these patients. Studies suggest that the use of implants does not negatively influence the prognosis of breast cancer. Patients with implants can have similar outcomes to women without implants, provided that diagnosis is performed effectively. This topic remains an active area of research, with a focus on improving diagnostic and treatment strategies to ensure that women with breast implants receive appropriate and personalized care.
What is the main contribution to Evidence-Based Practice from this article?
The main contribution of the article "Breast Cancer in Women Using Breast Implants: Impact on Diagnosis and Treatment" to evidence-based practice lies in its detailed analysis of how breast implants can influence the early diagnosis and clinical management of breast cancer. This study addresses specific challenges, such as the interference of implants in imaging exams, especially mammography, and provides practical recommendations to optimize tumor detection, including the use of advanced techniques such as magnetic resonance imaging. In addition, the article provides insights into the necessary adaptations in treatments for patients with implants, highlighting personalized surgical and therapeutic approaches that take into account both oncological efficacy and aesthetic and functional preservation. By integrating these data with previously established evidence, the article strengthens the ability of physicians to make more informed and effective clinical decisions, ensuring better outcomes. This contribution is particularly relevant in promoting a multidisciplinary approach, uniting oncologists, radiologists and plastic surgeons in the care of women with breast cancer who use implants, showing how this collaboration can mitigate current limitations and improve patient-centered care.
What are this research's implications towards health policy?
What are the implications of the article for theory, practice, or policy?
The article "Breast Cancer in Women Using Breast Implants: Impact on Diagnosis and Treatment" presents significant contributions to the theoretical, practical and policy fields. The article advances the understanding of the technical and clinical challenges involved in detecting and treating breast cancer in women with breast implants. It reinforces hypotheses about how implants can interfere with the visualization of breast tissue during imaging exams, and suggests complementary techniques, such as magnetic resonance imaging, to mitigate these limitations. These observations not only add knowledge, but also open doors for future research into more accurate diagnostic technologies. The study presents practical guidelines to help health professionals deal with patients who have breast implants. It highlights the importance of using advanced imaging exams and describes how to personalize treatments, taking into account both oncological aspects and aesthetic and functional considerations. Implementing these clinical strategies improves the effectiveness of early diagnosis and promotes more favorable outcomes for patients. The article proposes changes in policy formulation that ensure equal access to more sophisticated diagnostic tools, such as magnetic resonance imaging, for patients with implants. In addition, it reinforces the need for ongoing training for health professionals, enabling them to adapt to the specific challenges of this group of patients. It is also possible to argue in favor of the creation of standardized protocols that integrate advanced technologies and multidisciplinary approaches in clinical management. These implications position the article as a relevant contribution to scientific research, helping to overcome diagnostic and therapeutic barriers faced by women with breast implants.
Authors' Contributions Statement:
Mello, Vitor Armando Avilla was the lead author and helped to write the introduction and methodology. Sais, Daniela Alves was a co-author and helped to write the methodology and results. Santos, Vanielle da Cruz was a co-author and helped to write the results. Silva, Felipe was a co-author and helped to write the results and methodology. Fuentes, Matias was a co-author and helped to write the results and conclusion..

Introduction

Breast cancer is the most common neoplasm among women worldwide, accounting for approximately 24% of female cancer cases, with more than 2 million new diagnoses annually. In Brazil, the estimate for 2020 was approximately 66,280 new cases, with an incidence rate of 43.74 cases per 100,000 women. Mortality is also significant, being the main cause of death from cancer in women, with more than 600,000 global deaths recorded annually (INCA, 2023).
The carcinogenic potential of silicone has been questioned since the 1950s, when silicone and other foreign materials were

discovered to induce sarcomas in rodents. As early as the 1970s, there was speculation about a possible relationship between silicone mammoplasty and the risk of breast cancer. This foreign body carcinogenesis occurs in rodents with exposure to a wide range of substances, and there is no convincing evidence that a similar risk exists in humans (Morgan, & Elcock, 1995). It was initially postulated that silicone-induced mastopathy caused by injections of liquid silicone for breast augmentation, which was an accepted treatment at that time, resulted in a delayed diagnosis of breast cancer. The practice of silicone injections became obsolete in the early 1970s after the introduction of silicone gel-filled implants. Silicone has also been reported to induce plasmacytomas in susceptible mice, and several case reports of breast cancer, multiple myeloma, and lymphomas occurring in women with silicone breast implants have appeared in the literature (Sahoo et al., 2003). None of these observations have been substantiated in epidemiological studies, and in 2000 an independent review board concluded that the available evidence does not support an association between silicone breast implants and breast carcinoma or sarcoma, multiple myeloma, or lymphoma (Sahoo et al., 2003).

Implant prevalence estimates

Estimates of the prevalence of silicone breast implants have increased in recent years, due to the high demand for cosmetic procedures. Data from the 1988 Medical Device Implant Supplement to the National Health Interview Survey (Bright, Jeng, & Moore, 1993) yielded an estimate of 304,000 women (95% CI, 239,000–369,000) with cosmetic implants counted. Bright and colleagues (Bright, Jeng, & Moore, 1993), using market reports and expected implant mortality and removal rates, concluded that the actual number of breast implant recipients in countries such as the United States in 2018 was about 1 million.

Methodology

The Silicone

They are synthetic polymers of silicone oxide with organic side chains (polydimethylsiloxane) that can be formed into gels by stretching the polymer chains or can be modified into a solid rubber-like material (elastomer) by cross-linking the polymer chains (Bridges, & Vasey, 1993). Silicone gel breast implants consist of a silicone elastomer envelope filled with silicone gel, and saline implants consist of a silicone elastomer envelope filled with a saline solution. Until recently, most implants used for cosmetic and reconstructive purposes contained silicone gel. The body of anecdotal literature describing local and systemic complications of silicone gel breast implants is increasing (Bridges, & Vasey, 1993), but epidemiological evidence to support these reports remains sparse. The Medical Device Amendments of 1976 to the Food, Drug, and Cosmetic Act require that medical devices be demonstrated to be safe and effective before marketing. Because silicone breast implants were introduced before the act was enacted, they were allowed to remain on the market (“grandfathered”); however, they will eventually need to meet the same safety requirements as new devices. Because of growing concern about the safety of silicone gel implants, a brief moratorium on their use was implemented in January 1992 until new information received by the Food and Drug Administration (FDA) could be presented to an advisory panel (Rohrich, & Clark, 1993).

This new information included case reports of autoimmune disease in women with breast implants and evidence that some early models of gel-filled implants leaked excessively. Although the moratorium was lifted in April 1992, the continued lack of adequate safety data prompted the FDA to act on the advisory panel's recommendation that the availability of silicone gel implants be restricted to participants in controlled clinical trials, including women undergoing reconstructive surgery and a limited number of women undergoing augmentation surgery. A detailed description of the regulatory history of silicone gel breast implants is beyond the scope of this review but is available elsewhere (Rohrich, & Clark, 1993). Several categories of problems related to silicone gel breast implants continue to be of concern, including 1) local effects such as implant rupture, capsular contracture, and pain; 2) the association between silicone gel implants and the development of systemic autoimmune or connective tissue disease; and 3) the association between silicone gel implants and the development or delay in diagnosis of breast cancer.

Breast cancer risk

Concern about the potential carcinogenicity of silicone has prompted several cohort studies on the possible link between silicone breast implants and breast cancer. An association between silicone breast implants (SBIs) and breast carcinoma has never been proven in epidemiological research (De Cholnoky, 1970, Deapen, Pike, Casagrande, & Brody, 1986). As the positive effects of breast contour restoration on quality of life and patient satisfaction have become apparent, an increasing number of women are receiving immediate breast reconstruction with SBIs (Kouwenberg et al., 2020, van Bommel et al., 2020). Especially in the last decade, immediate breast reconstruction rates have been increasing, now reaching 50% in developed countries such as the United States and England (Panchal, & Matros, 2017, Mennie, Mohanna, O'Donoghue, Rainsbury, & Cromwell, 2017). Contemporary controversies surrounding the safety of SBI have focused primarily on the alleged association with autoimmune diseases and an entity called “Breast Implant Illness” (Watad et al., 2018, de Vries et al., 2022). This constellation of non-specific health symptoms is reported by some women with SBIs, but currently still lacks an evidence-based definition. On the other hand, an established but extremely rare sequela of SBIs concerns breast implant-associated anaplastic large cell lymphoma (BIA-ALCL) (de Jong et al., 2008, de Boer et al., 2018). BIA-ALCL is a T-cell non-Hodgkin lymphoma that develops as a seroma or a tumour mass in the capsule surrounding the implant (St Cyr et al., 2020). There is suggestive evidence indicating that BIA-ALCL arises more frequently in patients with high surface area or microtextured implants (Loch-Wilkinson et al., 2020). Drawing strong epidemiological conclusions about the role of implant texture is difficult, as the overall use of textured and smooth implants has varied over time, and historical market shares are unclear. However, it has been speculated that both texture-related mechanical factors resulting in chronic inflammation and an adherent bacterial biofilm may elicit an immune response that ultimately leads to lymphomagenesis (Hu et al., 2016). In an analogous process, chronic inflammation induced by the textured surface of an SBI can trigger tumour regrowth and metastasis in breast cancer patients through alterations in tumour cell biology, tumour

microenvironment, and vasculature permeability (Salvans et al., 2014; Cole, 2009; Pierce, 2009).

Lee et al. (Lee et al., 2020) were the first to specifically investigate the difference in oncologic outcomes between breast cancer patients with smooth and textured implant reconstruction. In their retrospective cohort study of 650 patients, they found that textured implant use was significantly associated with shorter disease-free survival [hazard ratio (HR) 3.1; 95% CI, 1.16–8.05]. Although some caveats apply to this study, these results warrant further investigation (Bijlard, & Mureau, 2021; Maarse, & Teunis, 2021; de Andrade Urban, 2021). This is especially relevant for breast cancer survivors in the Netherlands, where, during the last two decades, most centres have almost exclusively used textured implants for oncologic reconstruction. Similar conclusions have been reached by the International Agency for Research on Cancer (IARC) (IARC, 1999) and other review panels. In 2001, researchers reported increased incidence and mortality from respiratory and brain cancers among 13,488 women with cosmetic breast implants compared with women in the general population and 3,936 cosmetic surgery controls. These results, however, are likely due to confounding, chance, or misclassification of outcome, as also discussed by the authors. In addition to assessing the carcinogenic potential of breast implants, there has been debate as to whether the presence of breast implants may delay the diagnosis of breast cancer by interfering with the interpretation of routine mammography examinations. This issue has not been completely resolved, due in part to changes in mammography techniques over time, but recent epidemiological studies do not suggest delayed diagnosis or worse prognosis of breast cancer among women with breast implants (Hölmich et al., 2003).

Implant failure and silicone migration

In general, implant failure is defined as a rupture of the implant that causes silicone gel to leak into the surrounding tissue. Symptoms of rupture include lumps, decreased breast size, asymmetry, and pain (sometimes characterized as burning) or tenderness. In some cases, however, symptoms may be absent. Implant age, closed capsulotomy (a technique that uses manual pressure to rupture the fibrous scar tissue around the implant), trauma or injury to the breast, and mammography have all been implicated in ruptures. However, in many cases, rupture may be spontaneous or caused by normal wear of the elastomer envelope. Physical examination is not sensitive for diagnosing rupture of silicone gel implants (McLaughlin, et al., 1998). Although mammography, ultrasonography, and magnetic resonance imaging have been studied for their ability to identify implant rupture, their true sensitivity and specificity are unknown. Using screening mammography, Destouet and colleagues (Brinton et al., 2001) identified implant failure in 16 (5%) of 350 asymptomatic breast implant recipients. Only 5 of these 16 women elected to have their implants removed (explanted); rupture was confirmed in all cases (Brinton et al., 2001). Researchers retrospectively reviewed mammography findings for 336 silicone breast implant recipients and reported that 6.5% had sonographic or mammographic evidence of silicone leakage. This estimate may have been biased upward because many of the study participants had symptoms related to their implants. The “gold standard” for confirmation of rupture is explantation and inspection of the implant (St

Cyr et al., 2020). The risk of rupture increases with implant age, a finding that has led researchers to conclude that women with implants should have them removed as a prophylactic measure, ideally within 8 years of implantation, to reduce the risk of rupture or severe bleeding. Although explantation studies incompletely reflect the overall recipient population and use varying definitions of rupture and leakage, they do provide some insight into the causes of rupture. Some evidence suggests that as implants age, they are more susceptible to rupture from external pressure, as assessed by compression testing techniques on explanted intact prostheses (St Cyr et al., 2020). Prosthetic rupture is not the only means by which silicone can escape into surrounding tissues. Silicone can diffuse, or bleed, through the silicone elastomer envelope in the absence of tear or rupture. Evidence also suggests that the silicone shell of the implant can release silicone fragments. Textured silicone shells appear to be more likely than smooth shells to release fragments. Another problem that has been reported in connection with silicone injection, as well as with silicone breast implants, is the migration of silicone to distant sites, formation of silicone granulomas or pseudotumors, and transport of silicone gel to regional lymph nodes. The wide range of estimates of rupture and overall failure in the published literature can be attributed to several factors, including differences in patient samples and implant types studied, the methods used to detect rupture, and the duration of follow-up after breast implantation (St Cyr et al., 2020).

Capsular contracture

The formation of a capsule around a silicone implant is part of the expected inflammatory response to any foreign body, even one composed of a material considered “inert.” Capsular contracture, resulting in moderate to extreme breast hardening, tightness, mild to severe pain, and breast deformity or distortion, is the most common local reaction following implantation. Diagnosis and measurement of contracture severity are inherently subjective, making it difficult to compare studies that have used different diagnostic criteria; the widely used Baker scale, which grades implant outcomes on a scale from I (a soft, natural-looking breast) to IV (a hard breast with obvious spherical distortion), requires the observer to use some judgment when grading individual patients’ implants. Anecdotal reports of contracture incidence as low as 0.6% and as high as 100% have been published; neither of these two reports was accompanied by data on duration of follow-up, diagnostic criteria, and follow-up technique. (Bijlard, & Mureau, 2021).

Autoimmune and connective tissue disease

Many individual case reports and case series have implicated breast augmentation and reconstruction, particularly the implantation of silicone breast implants, in the development of connective tissue disease-like syndromes. Some reports have involved confirmed diagnoses of disorders known as systemic sclerosis, rheumatoid arthritis, and systemic lupus erythematosus, while others have described an entity called “human adjuvant disease.” Although the term “human adjuvant disease” has been widely used to describe constitutional and rheumatic symptoms in patients exposed to silicone or paraffin, it has been discredited because it lacks precise and reproducible criteria (Maarse, & Teunis, 2021).

Breast implant interference in mammography

Mammography is an essential tool for the early detection of breast cancer. However, the presence of breast implants can make it difficult to visualize the entire breast tissue. Implants can obscure areas of tissue, making it more difficult to detect small tumours. To overcome this limitation, special techniques such as additional compression and mammography from different angles are often used. These techniques help to improve the visualization of breast tissue and increase the accuracy of diagnosis (de Andrade Urban, 2021).

As the population of women with breast implants ages, the risk of breast cancer and the need for regular screenings increase. The presence of a silicone breast implant has been shown to interfere with the complete image of the breast. Moving the silicone implant posteriorly during mammography has been shown to improve the visualization of breast tissue compared to the standard compression technique. However, researchers compared post-augmentation mammoplasty films made with compression and displacement techniques with pre-augmentation films in 62 breast implant recipients and found that regardless of the technique used, much of the breast tissue was obscured by the implant (de Andrade Urban, 2021). When the compression method was used, the presence of a breast implant resulted in a 35% decrease in the visible area compared with the area visible on pre-augmentation films; when the displacement method was used, the visible area was reduced by 25% (Bijlard, & Mureau, 2021). The compression and displacement methods complement each other because posterior breast tissue tends to be better visualized with standard compression and anterior tissue can be better seen with the displacement technique. Several case series reviews of women who underwent augmentation and were diagnosed with breast cancer have been conducted; most of these studies concluded that mammography had reduced sensitivity for detecting palpable masses in women who underwent augmentation. There is disagreement about whether the presence of implants delays diagnosis in a clinically important way; prospective data on women with and without implants who are receiving equal screening are needed to resolve this issue (Maarse, & Teunis, 2021). Despite concerns about the sensitivity of mammography in implant recipients, the value of mammography is such that women who have received implants should be screened according to the same schedule recommended for women without implants. It has also been suggested that women over 30 years of age who are considering breast augmentation should have a mammogram before and after implantation. Current mammography screening guidelines emphasize that at least four views (two using the compression technique and two using the displacement technique) rather than the usual two views be performed in all women who have had augmentation. Additional views may be necessary in patients in whom a rigid capsule has formed around the implant. The more intensive pre- and postoperative screening required for women who have had augmentation will result in greater long-term radiation exposure, an additional concern for women considering implants. Another concern is the possibility of implant rupture during the compression procedure. Several cases of such occurrences have been reported (Bijlard, & Mureau, 2021).

Magnetic Resonance Imaging (MRI)

MRI is a valuable tool for women with breast implants, as it provides a more detailed image of the breast tissue. MRI is particularly useful for detecting abnormalities that are not visible on mammography. In addition, MRI can be used to assess the integrity of implants and identify possible ruptures or leaks (St Cyr et al., 2020).
MRI has the following advantages: detailed, high-resolution images of breast tissue, allowing detailed visualization of internal structures. This is particularly useful in women with silicone implants, as MRI can differentiate between breast tissue and implant material. Assessment of implant integrity, where in addition to detecting breast cancer, MRI can also assess the integrity of silicone implants. It can identify ruptures or leaks that are not visible on other imaging tests, such as mammography or ultrasound (USG). Detection of tumors hidden by the silicone of the implants. This is crucial to ensure that no tumors are missed due to the presence of implants (de Andrade Urban, 2021).
During an MRI scan, the patient is positioned on a table that slides into the MRI machine. The scan is painless and noninvasive, but it can be somewhat uncomfortable due to the noise of the machine and the need to remain still for a period of time.
In women with silicone implants, a specific imaging protocol is used to ensure the best possible visualization of the breast tissue. This may include the use of intravenous contrast to improve differentiation between normal tissue and suspicious areas. Interpreting MRI images in women with silicone implants requires experience and specialized knowledge. Trained radiologists are able to distinguish between benign changes related to the implants and signs of malignancy.

Although MRI is a powerful tool, it also has some limitations. The test is more expensive and less accessible than other imaging methods, such as mammography. Furthermore, MRI can generate false-positive results, leading to unnecessary biopsies (de Andrade Urban, 2021).

Ultrasound (USG)

USG is often used as a complement to mammography and can be especially useful for evaluating suspicious areas that are not clearly visible due to the presence of implants. USG allows for a more detailed evaluation of breast tissue and can help identify tumors that have not been detected in other imaging tests.
USG has the following advantages: real-time imaging of breast tissue, allowing a dynamic evaluation of internal structures. This is particularly useful in women with silicone implants, as USG can differentiate between breast tissue and implant material. USG is effective in evaluating suspicious areas that may not be visible in other imaging tests, such as mammography. It can help identify nodules or other abnormalities that may be hidden by the silicone of the implants. USG is often used as a guide for breast biopsies. In women with silicone implants, USG can help to precisely locate the area to be biopsied, ensuring that the tissue sample is collected safely and effectively (Maarse, & Teunis, 2021). During an ultrasound examination, the patient is positioned lying down and a gel is applied to the skin to facilitate the transmission of sound waves. A transducer is then moved over the breast area, emitting sound waves that are reflected by the internal structures and converted into images.
In women with silicone implants, a specific imaging protocol is used to ensure the best

possible visualization of the breast tissue. This may include the application of different compression techniques and varying imaging angles. Interpretation of ultrasound images in women with silicone implants requires experience and specialized knowledge. Trained radiologists are able to distinguish between benign changes related to the implants and signs of malignancy.
Although ultrasound is a powerful tool, it also has some limitations. Ultrasound may not be able to visualize all areas of breast tissue, especially in women with dense breasts. In addition, ultrasound may produce false-positive results, leading to unnecessary biopsies (Maarse, & Teunis, 2021).

Treatment

Surgery

The type of surgery may be influenced by the presence of breast implants. In some cases, it may be necessary to remove or reposition the implant during mastectomy or lumpectomy surgery. Breast reconstruction may also be more complex in women who already have implants. It is important that the medical team carefully plan the surgery to ensure the best possible results (St Cyr et al., 2020).

Radiotherapy (RT)

The presence of implants can affect the delivery of RT. RT is an important part of breast cancer treatment, but it is crucial to plan treatment to minimize damage to implants and surrounding tissue. Advanced RT techniques, such as intensity-modulated radiation therapy (IMRT), can help target radiation more precisely and reduce side effects (St Cyr et al., 2020).

Chemotherapy (CT) and Systemic Therapies

The use of prostheses usually does not directly interfere with chemotherapy or other systemic therapies. However, the treatment plan should be tailored to the individual needs of each patient. Chemotherapy may be administered before or after surgery, depending on the stage of the cancer and the response to treatment (Lee et al., 2020).

Results

Silicone breast implants are not associated with an increased risk of breast cancer or other cancers. Epidemiological studies show that women with breast implants have a reduced incidence of breast cancer compared to women in the general population and women with other types of plastic surgery. Women experienced an increased risk of non-melanoma skin cancer compared to the general population. Regarding other cancer sites, there are no significantly reduced or increased risks for women who use silicone (Lee et al., 2020).
Some factors may be related to a greater propensity to develop breast cancer after implantation, among these factors may be reproductive factors related to breast cancer risk (St Cyr et al., 2020).
The relationship between breast size and breast cancer risk is complex. Although it seems plausible that mammary gland size is directly related to breast cancer risk, epidemiological studies that have assessed the association between breast size, as a proxy for mammary gland size, and breast cancer risk have produced inconsistent results, indicating an influence of other factors, for example, breast density (St Cyr et al., 2020).
The pattern of risk according to time since

implantation among women with implants also seems to indicate a role for other factors. It is conceivable that women who undergo breast implants increase their sun exposure because these women tend to have an improved body image and change their way of dressing after implantation. It is also possible that some women seeking cosmetic breast implant surgery have high sun exposure and use indoor tanning facilities already at the time of implantation. Increased sunlight exposure therefore represents a likely explanation for the increased occurrence of non-melanoma skin cancer among women with breast implants (St Cyr et al., 2020). Instead, women who undergo breast implants appear to have a reduced risk of subsequent breast cancer. The reasons for this consistent finding are not entirely clear but are possibly related to specific characteristics among women seeking breast implant surgery.

Conclusion

Breast cancer in women with breast implants presents unique challenges in both diagnosis and treatment. The presence of implants can make it difficult to fully visualize breast tissue on traditional imaging tests, such as mammography, requiring the use of advanced and complementary techniques, such as MRI and ultrasound, to ensure an accurate assessment.
In treatment, the presence of implants can influence surgical approaches and the administration of RT, requiring careful planning to minimize complications and ensure treatment efficacy. With advances in imaging techniques and therapeutic approaches, it is possible to overcome the challenges presented by the use of breast implants and offer effective and humane treatment for breast cancer..

Abbreviations

BIA-ALCL - Breast Implant Associated Anaplastic Large Cell Lymphoma,
FDA - Food and Drug Administration,
HR- Hazard Ratio,
IARC- International Agency for Research on Cancer,
IMRT- Intensity Modulated Radiation Therapy,
CT - Chemotherapy,
MRI - Magnetic Resonance Imaging,
RT - Radiotherapy,
SBIs- Silicone Breast Implants,
USG - Ultrasound.

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