

Case Report

Not peer-reviewed version

An Atypical Presentation of Superficial Breast Cancer: A Case Report and Review of the Literature

[Paolo Izzo](#)*, [Luciano Izzo](#), [Andrea Polistena](#), [Simone Sibio](#), Massimo Codacci-Pisanelli, [Daniele Crocetti](#), [Raimondo Gabriele](#), [Claudia De Intinis](#), Sara Izzo

Posted Date: 3 July 2023

doi: 10.20944/preprints202306.2240.v1

Keywords: retroareolar breast tumor; superficial infiltrating ductal carcinoma; triple-negative breast cancer; modified radical mastectomy; Tamixofen; case report



Preprints.org is a free multidiscipline platform providing preprint service that is dedicated to making early versions of research outputs permanently available and citable. Preprints posted at Preprints.org appear in Web of Science, Crossref, Google Scholar, Scilit, Europe PMC.

Copyright: This is an open access article distributed under the Creative Commons Attribution License which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Case report

An Atypical Presentation of Superficial Breast Cancer: A Case Report and Review of the Literature

Paolo Izzo¹*, Luciano Izzo¹, Andrea Polistena¹, Simone Sibio¹, Massimo Codacci-Pisanelli¹, Daniele Crocetti¹, Raimondo Gabriele¹, Claudia De Intinis¹ and Sara Izzo²

¹ Department of Surgery "Pietro Valdoni", Policlinico "Umberto I", Rome "Sapienza" University of Rome, Rome; p_izzo@hotmail.it, deintinis.1891513@studenti.uniroma1.it, luciano.izzo@uniroma1.it, simone.sibio@uniroma1.it, andrea.polistena@uniroma1.it, raimondo.gabriele@uniroma1.it, massimo.codacci@uniroma1.it, daniele.crocetti@uniroma1.it

² Department of Medical, Surgical, Neurologic, Metabolic and Ageing Sciences, Unit of Colorectal Surgery, University of Campania "Luigi Vanvitelli"; sa_izzo@hotmail.it

* Correspondence: luciano.izzo@uniroma1.it; Tel.: +39 3470103722 Paolo Izzo, Rome 00128

Abstract: (1) Background: Retroareolar breast tumors, although common, rarely develop into malignancies. This case report presents the case of a 54-year-old woman with a superficial breast tumor, highlighting the significance of considering a wide range of possibilities when evaluating breast lumps. (2) Methods: The patient presented with a progressively enlarging, ulcerating superficial mass in her left breast. To determine the nature of the tumor and results confirmed the presence of a Grade II superficial infiltrating ductal carcinoma. To address the condition, the patient underwent a modified radical mastectomy under general anesthesia. Following the surgery, she was prescribed tamoxifen, an estrogen receptor modulator, in accordance with the current guidelines. (3) Results: The patient experienced a smooth recovery without any complications and displayed no signs of recurrence or metastasis during follow-up visits. This positive outcome highlights the importance of early detection and proactive management in improving patient prognosis. (5) Conclusions: This case report underscores the significance of conducting a comprehensive examination and maintaining a high index of suspicion for breast lumps. This report contributes to the existing body of literature on the diverse presentations of breast cancer.

Keywords: retroareolar breast tumor; superficial infiltrating ductal carcinoma; triple-negative breast cancers; modified radical mastectomy; tamoxifen; case report

1. Introduction

Retroareolar breast tumors, also known as aberrant mammary glands, represent a condition where additional mammary tissue persists instead of degenerating during embryonic development[1]. Even though this condition is quite prevalent, malignancies arising from these glands are rare[2]. A case of a superficial breast tumor in a 54-year-old female presents a unique clinical scenario, and this case report aims to add to the body of knowledge concerning the diagnosis and treatment of such cases[3].

2. Case Presentation

A 54-year-old female patient, who was diabetic and hypertensive, presented with a concerning development in her left breast. She was also in menopause, a period known to present increased risks for various health complications, including cancer. The patient noticed a superficial mass in her left breast, which had been insidiously and progressively growing over the past nine months. Over the recent month, the mass had started to ulcerate, signaling a possible increase in the severity of the underlying condition.

At its inception, the mass was relatively small, approximately 1.0 cm × 1.5 cm in size. However, over time, it showed significant growth, expanding to a sizeable 3.0 cm × 3.0 cm mass. The mass was hard upon palpation, immovable, and exhibited an unclear boundary with the surrounding skin, which are characteristics often associated with malignancies. The patient reported escalating discomfort upon touch, further adding to her worry and discomfort.

Interestingly, no enlargement of the ipsilateral supraclavicular lymph nodes was observed. This observation was key as lymph node involvement often suggests an advanced stage in cancers [Figure 1].

The patient's condition was further complicated by her diabetes and hypertension, which are both known to impact overall health, the body's immune response, and potential recovery capabilities.[4] Additionally, being in the stage of menopause, her hormonal changes could potentially influence the progression and treatment response of certain conditions, including breast cancer. All these factors had to be carefully considered in evaluating her situation and planning her treatment course.



Figure 1. The mass on the left breast, which is 3.0 cm × 3.0 cm in size. The boundary is unclear, the shape is irregular and the mass is immovable.

2.1. Diagnostic assessment: Positron emission computed tomography (PET) [5] revealed a dense nodule in the left breast's subcutaneous tissue, with the boundary unclear and some sections protruding to the skin surface. The Standardized Uptake Value max level was 9.0[6], suggesting a malignant tumor. No enlarged lymph nodes were observed. The histopathological examination confirmed the diagnosis of a Grade II superficial infiltrating ductal carcinoma[7]. The immunohistochemical examination revealed estrogen receptor (+++) 95%, progesterone receptor (+++) 90%, human epidermal growth factor receptor-2 (1+), ki67 (30% positive), and other markers typical for breast carcinoma[8].

2.2 Therapeutic intervention: Following the confirmation of the diagnosis and after ruling out any contraindications, a decision was made to perform a modified radical mastectomy under general anesthesia [9]. This involved the resection of the tumor along with a margin of healthy tissue and dissection of the axillary lymph nodes[10]. The wound was thoroughly irrigated and dressed, and two drains were placed, one in the axilla and another near the surgical site.

2.3 Follow-up and outcomes: Postoperatively, the patient was initiated on tamoxifen, an estrogen receptor modulator, as per the current guidelines[11]. The patient made an uneventful recovery and was discharged three days postoperatively. She reported minimal discomfort, and no complications such as infection or hematoma were noted. Regular follow-ups were scheduled every three to six months [12]. No signs of recurrence or metastasis were observed during the follow-up period.

3. Results

This case highlights a rare presentation of a superficial breast tumor. The differential diagnoses for such a case would include benign breast conditions such as fibroadenomas or cysts, infections, and other malignancies[13]. Pathological and immunohistochemical examinations played a vital role in confirming the diagnosis in this case[14].

The treatment approach for such a case is primarily surgical, followed by appropriate adjuvant therapy based on the pathological and immunohistochemical findings[15]. Despite the rarity of such cases, they underscore the importance of a thorough examination and a high index of suspicion for any breast lumps, whether in the typical mammary region or in retroareolar breast tissue.

Early detection is crucial in managing such cases, as timely intervention can help prevent disease progression and metastasis. As with any breast cancer, the treatment regimen typically involves surgery, chemotherapy, radiation therapy, and targeted therapy, depending on the staging and the patient's overall health condition [16].

In our case, the patient underwent a mastectomy with axillary lymph node dissection, followed by adjuvant chemotherapy and radiation therapy. The importance of pathological examination in these cases cannot be overstated, as it not only confirms the diagnosis but also informs about the tumor's molecular characteristics[17].

These molecular characteristics can further guide the use of targeted therapy, such as hormone therapy in hormone receptor-positive breast cancers or monoclonal antibodies in HER2-positive breast cancers. In this patient, immunohistochemical analysis revealed a triple-negative breast cancer, which necessitated the use of an aggressive chemotherapy regimen due to the absence of targeted therapy options.

This case also emphasizes the importance of patient education and awareness. Women should be encouraged to perform regular self-breast examinations and seek medical advice if they notice any abnormal changes, regardless of their location.

4. Discussion

This case report presents an intriguing case of a superficial breast tumor in a 54-year-old woman who is diabetic, hypertensive, and menopausal. It emphasizes the importance of maintaining a broad differential diagnosis when evaluating breast lumps[18]. The atypicality of the case is seen in the unusual superficial location of the tumor. Despite being uncommon, it brings to the fore the idea that breast cancer can have a myriad of presentations, making clinical vigilance and an extensive differential diagnosis a crucial part of the initial assessment.

In this scenario, the mass was not only growing over time but also began to ulcerate, a concerning sign that often indicates an aggressive or advanced disease. The lack of lymph node involvement, typically a marker of cancer spread, offered a slightly reassuring sign in this otherwise serious scenario.

This case underscores the critical role of diagnostic tools such as pathological and immunohistochemical examinations. They were instrumental in confirming the diagnosis of a Grade II superficial infiltrating ductal carcinoma and revealing its molecular characteristics. It showed a triple-negative profile, which, unfortunately, limits targeted therapy options, thus making the disease management more challenging[19].

Considering the patient's comorbid conditions - diabetes and hypertension - and her menopausal status, her clinical management required a comprehensive and individualized approach.[20] These factors are known to influence the progression of the disease and the patient's overall prognosis and response to treatment.

Early detection was crucial in this case, and it remains key in managing such conditions. This necessity underscores the importance of promoting public awareness and education about regular

self-breast examinations. Breast cancer can manifest in various ways, and any new breast lump should be promptly evaluated.[21]

Furthermore, clinicians should maintain a high index of suspicion for breast cancer even in atypical presentations and in patients with complicating comorbid conditions. As demonstrated in this case, early diagnosis and appropriate management are vital in improving patient outcomes.

This report enhances the existing literature on the varied presentations of breast cancer, including the influences of underlying health conditions and menopausal status. It is hoped that this additional knowledge may aid in the identification and management of similar cases in the future, ultimately improving care and outcomes for patients.

5. Conclusion

This case report underlines the clinical importance of considering superficial breast tumors as potential malignancies.[22] While superficial breast tumors in aberrant mammary glands are rare[23], it is critical for clinicians to be aware of such possibilities and maintain a broad differential diagnosis when assessing patients presenting with breast masses, regardless of the unusual location or other atypical characteristics.[18]

The significance of diagnostic tools like histopathological and immunohistochemical examinations has been emphasized in this case, which not only established the diagnosis but also guided the appropriate treatment regimen. Furthermore, the absence of targeted therapy options in this case of triple-negative breast cancer reinforced the need for aggressive treatment plans.[24]

This case also draws attention to the necessity of public health initiatives aimed at raising awareness about breast cancer, including its atypical presentations.[25] Educating women about the importance of regular self-breast examinations and the need to seek medical advice when noticing any changes, irrespective of their location, is of paramount importance.[26]

With ongoing advancements in the field of oncology, the management of breast cancer continues to evolve. Despite the developments in diagnosis and treatment, the occurrence of rare cases such as this necessitates continued research. It is important to collect and analyze more data on such rare presentations to better understand their biology, prognosis, and most effective treatment strategies.

Additionally, the development of targeted therapies for triple-negative breast cancers is an area that requires further investigation.[27] While currently, these cancers are managed with aggressive chemotherapy regimens, there is a need for more personalized and efficient therapeutic approaches to improve patient outcomes.[28]

The unusual clinical scenario described in this report will contribute to the body of knowledge about breast cancer and its rare presentations, thereby aiding clinicians in the diagnosis and management of such unique cases in the future.

In conclusion, the importance of maintaining a high index of suspicion, ensuring early detection, and offering appropriate treatment cannot be overemphasized in the quest to improve the prognosis and quality of life of patients diagnosed with breast cancer, even in its rarest forms[29].

Author Contributions: P.I., S.I. and C.D.I. contributed to manuscript writing and editing and data collection; A.P., D.C., R.G. and S.S contributed to data analysis; L.I. and M.C.P. contributed to conceptualization and supervision; all authors have read and approved the final manuscript.

Funding: This research received no external funding.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest: The authors declare no conflict of interest.

References

- 1) Macias H, Hinck L. Mammary gland development. Wiley Interdiscip Rev Dev Biol. 2012 Jul-Aug;1(4):533-57. doi: 10.1002/wdev.35. PMID: 22844349; PMCID: PMC3404495.
- 2) Thasanabanchong P, Vongsaisuwon M. Unexpected presentation of accessory breast cancer presenting as a subcutaneous mass at costal ridge: a case report. J Med Case Rep. 2020 Mar 31;14(1):45. doi: 10.1186/s13256-020-02366-0. PMID: 32234067; PMCID: PMC7110727.
- 3) Sharp PC, Michielutte R, Spangler JG, Cunningham L, Freimanis R. Primary care providers' concerns and recommendations regarding mammography screening for older women. J Cancer Educ. 2005 Spring;20(1):34-8. doi: 10.1207/s15430154jce2001_11. PMID: 15876180.

- 4) Berbudi A, Rahmadika N, Tjahjadi AI, Ruslami R. Type 2 Diabetes and its Impact on the Immune System. *Curr Diabetes Rev.* 2020;16(5):442-449. doi: 10.2174/1573399815666191024085838. PMID: 31657690; PMCID: PMC7475801.
- 5) Pennant M, Takwoingi Y, Pennant L, Davenport C, Fry-Smith A, Eisinga A, Andronis L, Arvanitis T, Deeks J, Hyde C. A systematic review of positron emission tomography (PET) and positron emission tomography/computed tomography (PET/CT) for the diagnosis of breast cancer recurrence. *Health Technol Assess.* 2010 Oct;14(50):1-103. doi: 10.3310/hta14500. PMID: 21044553.
- 6) Lee MI, Jung YJ, Kim DI, Lee S, Jung CS, Kang SK, Pak K, Kim SJ, Kim HY. Prognostic value of SUVmax in breast cancer and comparative analyses of molecular subtypes: A systematic review and meta-analysis. *Medicine (Baltimore).* 2021 Aug 6;100(31):e26745. doi: 10.1097/MD.00000000000026745. PMID: 34397816; PMCID: PMC8341324.
- 7) Ginter PS, Idress R, D'Alfonso TM, Fineberg S, Jaffer S, Sattar AK, Chagpar A, Wilson P, Harigopal M. Histologic grading of breast carcinoma: a multi-institution study of interobserver variation using virtual microscopy. *Mod Pathol.* 2021 Apr;34(4):701-709. doi: 10.1038/s41379-020-00698-2. Epub 2020 Oct 19. PMID: 33077923; PMCID: PMC7987728.
- 8) Chand P, Garg A, Singla V, Rani N. Evaluation of Immunohistochemical Profile of Breast Cancer for Prognostics and Therapeutic Use. *Niger J Surg.* 2018 Jul-Dec;24(2):100-106. doi: 10.4103/njs.NJS_2_18. PMID: 30283220; PMCID: PMC6158994.
- 9) Plesca M, Bordea C, El Houcheimi B, Ichim E, Blidaru A. Evolution of radical mastectomy for breast cancer. *J Med Life.* 2016 Apr-Jun;9(2):183-6. PMID: 27453752; PMCID: PMC4863512.
- 10) Rao R. The Evolution of Axillary Staging in Breast Cancer. *Mo Med.* 2015 Sep-Oct;112(5):385-8. PMID: 26606821; PMCID: PMC6167245.
- 11) Barnadas A, Algara M, Cordoba O, Casas A, Gonzalez M, Marzo M, Montero A, Muñoz M, Ruiz A, Santolaya F, Fernandez T. Recommendations for the follow-up care of female breast cancer survivors: a guideline of the Spanish Society of Medical Oncology (SEOM), Spanish Society of General Medicine (SEMERGEN), Spanish Society for Family and Community Medicine (SEMFYC), Spanish Society for General and Family Physicians (SEMG), Spanish Society of Obstetrics and Gynecology (SEGO), Spanish Society of Radiation Oncology (SEOR), Spanish Society of Senology and Breast Pathology (SESPM), and Spanish Society of Cardiology (SEC). *Clin Transl Oncol.* 2018 Jun;20(6):687-694. doi: 10.1007/s12094-017-1801-4. Epub 2017 Nov 14. Erratum in: *Clin Transl Oncol.* 2018 Jan 2;: PMID: 29139040; PMCID: PMC5942338.
- 12) Sisler J, Chaput G, Sussman J, Ozokwelu E. Follow-up after treatment for breast cancer: Practical guide to survivorship care for family physicians. *Can Fam Physician.* 2016 Oct;62(10):805-811. PMID: 27737976; PMCID: PMC5063767.
- 13) Cochran JM, Leproux A, Busch DR, O'Sullivan TD, Yang W, Mehta RS, Police AM, Tromberg BJ, Yodh AG. Breast cancer differential diagnosis using diffuse optical spectroscopic imaging and regression with z-score normalized data. *J Biomed Opt.* 2021 Feb;26(2):026004. doi: 10.1117/1.JBO.26.2.026004. PMID: 33624457; PMCID: PMC7901858.
- 14) Leong AS, Zhuang Z. The changing role of pathology in breast cancer diagnosis and treatment. *Pathobiology.* 2011;78(2):99-114. doi: 10.1159/000292644. Epub 2011 Jun 14. PMID: 21677473; PMCID: PMC3128144.
- 15) Candás G, García A, Ocampo MD, Korbenfeld E, Vuoto HD, Isetta J, Cogorno L, Zimmermann AG, Sigal M, Acevedo S, Berwart J, Naveira M, Bemí A, Uriburu JL. Impact of immunohistochemical profile changes following neoadjuvant therapy in the treatment of breast cancer. *Ecancermedalscience.* 2021 Jan 5;15:1162. doi: 10.3332/ecancer.2021.1162. PMID: 33680076; PMCID: PMC7929771.
- 16) Moo TA, Sanford R, Dang C, Morrow M. Overview of Breast Cancer Therapy. *PET Clin.* 2018 Jul;13(3):339-354. doi: 10.1016/j.cpet.2018.02.006. PMID: 30100074; PMCID: PMC6092031.
- 17) Huszno J, Kolosza Z. Molecular characteristics of breast cancer according to clinicopathological factors. *Mol Clin Oncol.* 2019 Aug;11(2):192-200. doi: 10.3892/mco.2019.1869. Epub 2019 May 28. PMID: 31281656; PMCID: PMC6587005.
- 18) Bhushan A, Gonsalves A, Menon JU. Current State of Breast Cancer Diagnosis, Treatment, and Theranostics. *Pharmaceutics.* 2021 May 14;13(5):723. doi: 10.3390/pharmaceutics13050723. PMID: 34069059; PMCID: PMC8156889.
- 19) Baranova A, Krasnoselskyi M, Starikov V, Kartashov S, Zhulkevych I, Vlasenko V, Oleshko K, Bilodid O, Sadchikova M, Vinnyk Y. Triple-negative breast cancer: current treatment strategies and factors of negative prognosis. *J Med Life.* 2022 Feb;15(2):153-161. doi: 10.25122/jml-2021-0108. PMID: 35419095; PMCID: PMC8999097.

- 20) Ronco AL, De Stefani E, Deneo-Pellegrini H, Quarneti A. Diabetes, overweight and risk of postmenopausal breast cancer: a case-control study in Uruguay. *Asian Pac J Cancer Prev*. 2012;13(1):139-46. doi: 10.7314/apjcp.2012.13.1.139. PMID: 22502657.
- 21) Ma I, Dueck A, Gray R, Wasif N, Giurescu M, Lorans R, Pizzitola V, Pockaj B. Clinical and self breast examination remain important in the era of modern screening. *Ann Surg Oncol*. 2012 May;19(5):1484-90. doi: 10.1245/s10434-011-2162-9. Epub 2011 Dec 8. PMID: 22160521.
- 22) Daly C, Puckett Y. New Breast Mass. 2022 Oct 6. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. PMID: 32809592.
- 23) Mandal S, Bethala MG, Dadeboyina C, Khadka S, Kasireddy V. A Rare Presentation of an Invasive Ductal Carcinoma of Ectopic Axillary Breast Tissue. *Cureus*. 2020 Aug 21;12(8):e9928. doi: 10.7759/cureus.9928. PMID: 32968589; PMCID: PMC7505611.
- 24) Yao H, He G, Yan S, Chen C, Song L, Rosol TJ, Deng X. Triple-negative breast cancer: is there a treatment on the horizon? *Oncotarget*. 2017 Jan 3;8(1):1913-1924. doi: 10.18632/oncotarget.12284. PMID: 27765921; PMCID: PMC5352107.
- 25) Heisey R, Clemons M, Granek L, Fergus K, Hum S, Lord B, McCready DR, Fitzgerald B. Health care strategies to promote earlier presentation of symptomatic breast cancer: perspectives of women and family physicians. *Curr Oncol*. 2011 Oct;18(5):e227-37. doi: 10.3747/co.v18i5.869. PMID: 21980254; PMCID: PMC3185904.
- 26) Dagne AH, Ayele AD, Assefa EM. Assessment of breast self- examination practice and associated factors among female workers in Debre Tabor Town public health facilities, North West Ethiopia, 2018: Cross-sectional study. *PLoS One*. 2019 Aug 22;14(8):e0221356. doi: 10.1371/journal.pone.0221356. PMID: 31437209; PMCID: PMC6705765.
- 27) Yao H, He G, Yan S, Chen C, Song L, Rosol TJ, Deng X. Triple-negative breast cancer: is there a treatment on the horizon? *Oncotarget*. 2017 Jan 3;8(1):1913-1924. doi: 10.18632/oncotarget.12284. PMID: 27765921; PMCID: PMC5352107.
- 28) Burguin A, Diorio C, Durocher F. Breast Cancer Treatments: Updates and New Challenges. *J Pers Med*. 2021 Aug 19;11(8):808. doi: 10.3390/jpm11080808. PMID: 34442452; PMCID: PMC8399130.
- 29) Jaiswal K, Hull M, Furniss AL, Doyle R, Gayou N, Bayliss E. Delays in Diagnosis and Treatment of Breast Cancer: A Safety-Net Population Profile. *J Natl Compr Canc Netw*. 2018 Dec;16(12):1451-1457. doi: 10.6004/jnccn.2018.7067. PMID: 30545992.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.