



MANAGEMENT OF BREAST CANCER IN PREGNANCY VS FETO MATERNAL OUTCOME – A CHALLENGE

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ABSTRACT

The occurrence of breast cancer during pregnancy presents significant diagnostic, therapeutic, prognostic, and psychological challenges for both the patient and her family. Additionally, it poses potential risks to the developing fetus, complicating treatment decisions and outcomes. The frequency of pregnancy-associated breast cancer (PABC) is rising, largely due to the increasing trend of delayed childbearing and the rising incidence of breast cancer in young women of reproductive age [1]. Although breast cancer treatments during pregnancy, such as chemotherapy and surgical interventions, have been deemed relatively safe, detailed information regarding obstetric risks remains limited. Breast cancer diagnosed during pregnancy requires a delicate balance, as chemotherapy regimens might adversely affect the fetus, potentially leading to congenital abnormalities or compromising fetal survival. This case report highlights two patients with breast tumors diagnosed during pregnancy, each managed with a multidisciplinary approach to optimize both maternal and fetal outcomes. The first patient was diagnosed with breast cancer during the first trimester. A decision was made to proceed with chemotherapy, and the pregnancy was terminated by caesarean section at 36 weeks of gestation, following steroid coverage to ensure fetal lung maturity. The baby was delivered healthy with no apparent congenital anomalies, and the patient resumed her chemotherapy regimen post-delivery. The second patient, a known case of phyllodes tumor, presented with a rapidly progressive left breast swelling at 26 weeks of gestation. The pregnancy was managed conservatively, and the patient underwent full-term vaginal delivery at 37 weeks 4 days. A healthy baby was delivered with no apparent abnormalities, and the mother had an uneventful postpartum recovery. At 4 weeks postpartum, she underwent a left mastectomy, which was completed successfully, and the patient recovered well post-surgery. Both cases underscore the importance of a multidisciplinary approach involving obstetricians, oncologists, surgeons, and neonatologists to optimize outcomes in pregnancy-associated breast tumors. These cases demonstrate that with proper monitoring and timely interventions, good feto-maternal prognoses can be achieved, even in complex clinical scenarios.

KEYWORDS

Breast cancer, Pregnancy-associated breast cancer, Phyllodes tumor, Pregnancy, Multidisciplinary management, Caesarean section, Vaginal delivery.

INTRODUCTION

Breast cancer remains the most common malignancy among women globally [4], accounting for a significant health burden. In 2020 alone, 2.3 million women were diagnosed with breast cancer, leading to 685,000 deaths worldwide [5]. By the end of 2020, 7.8 million women who had been diagnosed with breast cancer within the previous five years were still alive, establishing it as the most prevalent cancer globally [6]. Among the various subtypes, invasive ductal carcinoma is the most common form of breast cancer.

A specific type of breast cancer, known as pregnancy-associated breast cancer (PABC), is diagnosed during pregnancy, the first year postpartum, or during lactation [7,8]. The incidence of PABC is approximately 3 per 1000 pregnancies, and this rate is rising as more women delay childbearing [9]. The coexistence of cancer and pregnancy is particularly complex, as both conditions share mechanisms involving cellular proliferation, invasiveness, and immune tolerance [10].

between the 13th and 32nd weeks of pregnancy [12]. However, this window is narrow, limiting active intervention in patients presenting with advanced disease. Other therapies, such as radiation or targeted treatments, are generally postponed until after delivery due to the risk of fetal harm [13,14].

Treatment decisions are further influenced by gestational age, tumor characteristics, and disease stage. The primary goal is to ensure the safe delivery of a healthy, full-term baby without compromising the mother's prognosis. This is achieved through a multidisciplinary team (MDT) approach involving oncologists, surgeons, obstetricians, neonatologists, psychologists, and social workers, alongside the patient and her family [11].

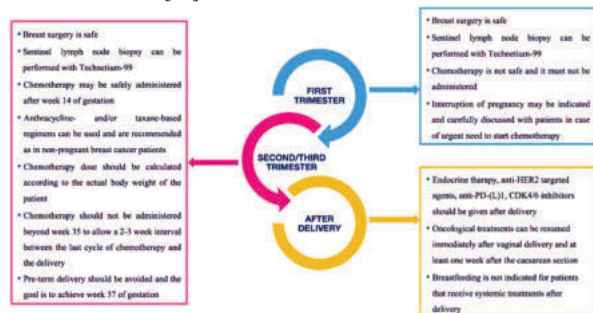
In many low- and middle-income countries (LMICs), delays in diagnosis and limited access to standard treatment protocols contribute to poor outcomes for patients with PABC [15,16,17].

Additionally, local data supporting favorable maternal and fetal outcomes remain scarce, which sometimes leads to recommendations for therapeutic abortion [15]. Global evidence, however, demonstrates that appropriate therapies during pregnancy can improve maternal prognosis while reducing fetal complications [16,17].

In our case report we attempt to portray the onset, diagnosis, the treatment modalities offered to 2 of our patients- one diagnosed with breast cancer in the first trimester of pregnancy, and the other a k/c/o phyllodes tumour, the multidisciplinary decision making involved on the period of gestation till which the pregnancy was extended , and furthermore terminated in maternal interest, with our maximum effort to not compromise on the fetal outcome.

Case Presentation Case 1

A 32-year-old primigravida, resident of Pauri Garhwal, Uttarakhand, presented to the Himalayan Hospital at 8 weeks of gestation with complaints of a painful swelling in the left breast. The patient had menarche at the age of 13 years, and there was no family history of



Managing breast cancer during pregnancy requires an approach that balances maternal and fetal well-being. In cases where the disease is identified early, treatment options include breast-conserving surgery and chemotherapy. [11] The safest chemotherapy agents, such as Adriamycin, cyclophosphamide, and 5-fluorouracil, can be administered during the second and third trimesters, specifically

breast disease or any significant comorbidities.

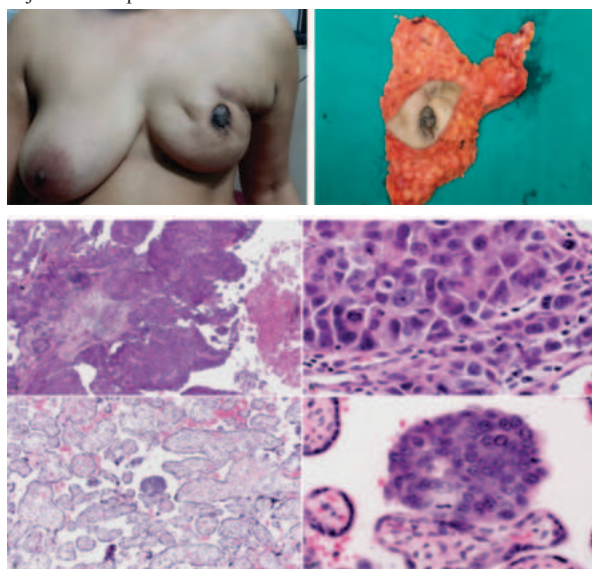
On examination, a hard, painless mass measuring approximately 3 cm was identified in the upper inner quadrant of the left breast. The nipple on the affected breast was circumferentially retracted, and the skin displayed a peau d'orange appearance, indicative of underlying malignancy. There were no signs of ulceration, fungation, or abnormal discharge. The patient also reported chest pain radiating to the back. Examination of the right breast revealed multiple small-sized lumps distributed in all quadrants but without any features of nipple retraction, growth, abnormal discharge, or fungation.

To further evaluate the condition, a bilateral sonomammography was performed. The findings showed multiple hypoechoic lesions in the left breast, with the largest lesion measuring 3×1 cm in the upper inner quadrant, surrounded by hyperechoic parenchyma. Axillary lymphadenopathy with loss of fatty hilum was noted on the left side, raising concerns of regional metastasis. The right breast showed small lesions categorized as BIRADS III, suggestive of benign pathology. A USG whole abdomen and chest X-ray (P/A view) were also conducted and reported as normal.

At 18 weeks of gestation, the patient underwent a left breast lumpectomy. Histopathological examination (HPE) confirmed an infiltrating tumor with lymphovascular invasion. Surrounding breast tissue showed features of ductal infiltration with lobular hyperplasia, supporting the diagnosis of invasive ductal carcinoma. Given the findings, a multidisciplinary team comprising oncologists, obstetricians, neonatologists, and surgeons decided to initiate chemotherapy. The patient was started on Tamoxifen, receiving a total of three cycles during the pregnancy, with close maternal and fetal monitoring.

Considering the need for further chemotherapy and in the interest of maternal health, the patient and her family were counseled about the risks and benefits of continuing the pregnancy. A decision was made to plan delivery at 36 weeks of gestation to allow for maternal treatment while ensuring fetal maturity. At 36 weeks, with antenatal steroid coverage to promote fetal lung maturity, the patient underwent an emergency lower segment cesarean section (LSCS). A healthy baby weighing 2100 grams was delivered with no apparent congenital anomalies.

Postpartum, the patient resumed her treatment and received the fourth cycle of chemotherapy. Both the mother and baby were monitored closely, and the multidisciplinary team ensured comprehensive follow-up. The patient was discharged in stable condition, and further oncological care was planned, including imaging and evaluation for adjuvant therapies.



This case highlights the complexities of managing pregnancy-associated breast cancer (PABC), particularly in resource-limited settings. A multidisciplinary approach played a pivotal role in optimizing outcomes for both the mother and the baby. Early surgical intervention combined with chemotherapy during the safe gestational

period allowed for timely treatment while minimizing risks to the fetus. This case underscores the importance of balancing maternal prognosis with fetal safety in managing breast cancer during pregnancy.

Case 2

A 27-year-old primigravida, resident of Haridwar, Uttarakhand, presented to the Himalayan Hospital as a follow-up case of left breast phyllodes tumor. She was initially under the care of the surgery department and referred to the obstetrics and gynecology (OBGY) department for routine antenatal care (ANC). The patient had a history of a left breast fibroadenoma excision performed at Himalayan Hospital 9 months prior, and the histopathological examination (HPE) of the excised tissue had revealed a borderline phyllodes tumor.

At 26 weeks of gestation, the patient again presented to the surgery department with complaints of a left breast swelling. The swelling was insidious in onset, rapidly progressive, and mobile from side to side. She described the associated pain as mild in intensity and sharp in character, with no aggravating or relieving factors. Additionally, the patient reported symptoms of anorexia and weight loss. Based on clinical evaluation and investigations, a diagnosis of left breast phyllodes tumor (BIRADS IVC) was made.

A USG of the left breast was performed, which showed a large lobulated heteroechoic mass lesion measuring $21.4 \times 9.2 \times 11.9$ cm. The lesion exhibited central necrosis and internal vascularity, involving the entire left breast. There were also a few subcentimetric lymph nodes noted within the breast tissue.

The patient was thoroughly counseled regarding the diagnosis, prognosis, and associated feto-maternal risks. After a multidisciplinary discussion involving obstetricians, surgeons, and neonatologists, a plan was made for full-term vaginal delivery at 37 weeks of gestation to prioritize maternal health while ensuring fetal safety. At 37 weeks 4 days of gestation, the patient was induced with Cerviprime gel, following which she underwent spontaneous vaginal delivery. She delivered a healthy baby weighing 3795 grams with no apparent congenital anomalies. The postpartum period remained uneventful, with both mother and baby in stable condition.

After adequate postpartum recovery, the patient was re-evaluated and deemed fit for surgical intervention. At 4 weeks postpartum, the patient underwent a left mastectomy to completely excise the tumor. The surgical procedure was uneventful, and the patient had a smooth postoperative recovery. She responded well to the treatment and was discharged in a satisfactory condition with appropriate follow-up planned.



This case highlights the need for awareness and early intervention in patients with recurrent breast lesions, especially during pregnancy. It

also underscores the value of multidisciplinary management to ensure both maternal and fetal safety while addressing the primary condition effectively.

DISCUSSION

Incidence of carcinoma breast – 30% of all female cancers and 20% of cancer-related deaths in females .2–4% are bilateral, and 2–5% are hereditary, Incidence in India is one in 100 women. [2]

The most recent updates show that breast cancer is the second most common malignancy diagnosed during pregnancy[3]. It is estimated that 7% to 14% of breast cancers that occur before the age of 45 coincide with pregnancy or breastfeeding. [1] The diagnosis of breast cancer during pregnancy is difficult and late with a delay of 2 to 15 months. This delay is explained by the anatomical and physiological modifications of the breast making it more difficult for the patient to detect a mass during a clinical examination, and on the other hand by the negligence of certain breast examination practitioners, content with monitoring the pregnancy only. A high index of suspicion is therefore warranted for a breast lump in an under thirty-year-old pregnant female and a breast ultrasound remains the gold standard for diagnoses.

Breast self-examination plays a major role in early detection and intervention of breast carcinoma.

The delay of twenty-two weeks from suspicious breast mass to surgical excision and the subsequent six-month delay from diagnosis to beginning radiation therapy contributes enormously to the eventual demise of patients as the daily increased risk for developing metastasis for an untreated breast carcinoma in a pregnant woman is 0.057% [3]

Radiation therapy is contra-indicated in pregnancy as it is associated with mental retardation in the fetus. [3] Current guidelines recommend surgical management similar to non-pregnant patients when discovered in the second or third trimesters with intrapartum MRM and 2nd or 3rd trimester adjuvant chemotherapy [3]

Phyllodes tumour is the most commonly occurring nonepithelial neoplasm of the breast, although it represents only about 1% of tumours in the breast. They show a wide spectrum of activity , varying from almost a benign condition (85%) to a locally aggressive and sometimes metastatic tumour (15%). On Microscopy, It contains cystic spaces with leaf like projections, hence the name (Phylloides—Greek—leaf-like). They occur in premenopausal women (30–50 years).It is usually unilateral, grows rapidly to attain a large size with bosselated surface. Swelling is smooth, nontender, soft, fluctuant with necrosis of skin over the summit due to pressure.

Skin over the breast is stretched, red and with dilated veins over it. Tumour is warmer, not fixed to skin or deeper muscles or chest wall. Nipple retraction is absent. Lymph nodes are usually not involved. These are the differentiating features from carcinoma. Tumour grows rapidly; undergoes necrosis at various places; and causes cystic areas. Recurrence is common. Treatment modalities- Excision or subcutaneous mastectomy is done. If malignant (sarcoma), total mastectomy is indicated. [2]

In our patients, Total mastectomy was done with the removal of the respective tumours, entire breast, areola, nipple, and skin over the breast, including the axillary tail along with the removal of axillary fat, fascia, and lymph nodes. Level I and II axillary nodes were also removed.

Chemotherapy in Breast Cancer-

CAF	CEF	CMF	TAC/AC	Others
Cyclophosphamide	Cyclophosphamide	Cyclophosphamide	Taxane (Docetaxel/ Paclitaxel)	For Her - 2 New positive -
Adriamycin (Doxorubicin)	Epirubicin	Methotrexate	Adriamycin	AC followed by paclitaxel + Trastuzumab
5 Fluorouracil	5 Fluorouracil	5 Fluorouracil	Cyclophosphamide	Docetaxel + Trastuzumab with CEF

Our Patient was on a CAF Regimen.

The fact of postponing the treatment of breast cancer increases the oncological risk of progressive progression, trans-placental metastasis; and death of the mother. In our observation, efficient multidisciplinary decision-making and team effort in the management of such cases lead to no obstetrical complications and a positive foeto-maternal outcome in both cases.

CONCLUSION

The association between breast cancer and pregnancy is increasing and has a poor prognosis due to often late diagnosis and a high potential for lymphatic dissemination. It poses diagnostic and therapeutic problems and major psychological repercussions for the pregnant woman, the family and for the medical teams. Management is multidisciplinary and should not wait until the end of the pregnancy.

Patient's Consent:

Written consent was taken from the patient to publish this case report.

Conflict Of Interests:

The authors declared no conflicts of interests.

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