



# Breast Cancer Diagnosed During Pregnancy

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## ABSTRACT

The patient is a P1G0 35 year old woman who presented with a new breast mass at 26 weeks of gestational age. Diagnostic workup, including core biopsy, revealed invasive ductal carcinoma, Estrogen Receptor positive (ER) 70%, Progesterone Receptor positive (PR) 40%, HER2 negative. After multidisciplinary discussion with the breast team and the patient's obstetrician, the patient underwent mastectomy with sentinel node biopsy at 28 weeks gestation age. The pathology report revealed a 1.9 cm tumor with 5 negative sentinel nodes. Genomic evaluation of her tumor, using 21-gene recurrence score, revealed significant risk of distant recurrence without chemotherapy. Patient decided to initiate chemotherapy after delivery. For breast cancer during pregnancy, treatment regimen should be as close to standard of care for a non-pregnant woman with the same cancer as possible. Diagnostic workup should include ultrasound and possible mammogram with shielding of the fetus. Core biopsy can provide definitive diagnosis. Surgery is the mainstay of treatment during pregnancy, and decisions regarding breast conservation are dependent on gestational age at presentation. Adjuvant treatments can be performed with modifications and avoidance of radiotherapy during pregnancy. Decisions regarding treatment require multidisciplinary input between the oncology and obstetric teams to provide effective care with minimal toxicity to the fetus. Physiological changes of the breast during pregnancy make diagnosis of new breast cancer difficult. Furthermore, lack of diagnostic suspicion delays diagnosis. Further research is needed to determine the best diagnostic and therapeutic methods to ensure the best prognosis for mother and baby as the prevalence of breast cancer during pregnancy continues to rise.

## BACKGROUND

Breast cancer is the most common type of cancer diagnosed during pregnancy. One in five breast cancers diagnosed in women 25-29 are associated with pregnancy (diagnosed during pregnancy or 1 year postpartum). The overall occurrence of cancer diagnosis is thought to be anywhere from 2.5-7.5/ 100,000, and these numbers continue to increase as maternal age increases.

Diagnosis is most commonly made in the second or third trimester, rarely is it found early in the pregnancy.

- 80% are infiltrating ductal carcinomas
- 49-84% are estrogen receptor/progesterone receptor negative
- 28-58% are HER2/neu overexpressed
- 67% present with positive lymph nodes

Physiological changes of the breast due to pregnancy often makes diagnosis difficult. This can delay proper diagnosis and treatment putting the mother at great risk of metastasis.

## Case Images



IMPRESSION:  
1. Indeterminate right breast mass for which ultrasound-guided core biopsy is recommended. These findings and recommendations were discussed with the patient at the time of image acquisition.

## Importance of Initial Exam

No specific risk factors for pregnancy associated breast cancer are currently known. Typical pregnancy related physiologic breast changes can obscure a diagnosis:

- Breast engorgement
- Hypertrophy
- Nipple discharge

Due to these changes clinically suspicious masses that are palpable for more than two weeks require further investigation through these methods:

- Breast ultrasonography
  - non ionizing with high sensitivity and specificity
- Core biopsy under general anesthesia
  - sensitivity 90%
  - fine needle aspirate is not recommended due to high rates of false positives and negatives

Recently MRI has been recommended as a secondary screening option for women who have known genetic abnormalities. Otherwise, radiographic exams should only be done if results will change management outcomes.

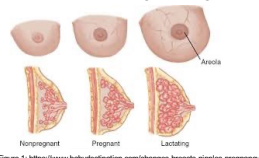


Figure 1: <https://www.babydigestion.com/changes-breasts-nipples-pregnancy>

## Interventions

The same treatments for breast cancer should be considered in this pregnant women compared to non-pregnant women with the exception of radiation therapy.

- Mastectomy is the definitive local treatment, lumpectomy likely will require radiation therapy after delivery
- If the patient opts for reconstruction, this must be delayed until after delivery

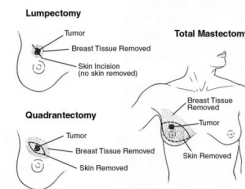


Figure 2: <https://www.news-medical.net/health/What-is-a-Mastectomy.aspx>

- Chemotherapeutic agents may be considered safe when administered after the first trimester, but should be avoided 3-4 weeks before delivery to avoid transient myelosuppression and potential complications of sepsis and death
- Data in nonpregnant women indicate that delaying chemotherapy might increase risk of relapse, and since it is considered safe to use chemotherapy after the first trimester, waiting until after delivery is not recommended
- The most commonly used regimens in pregnant women with breast cancer are:
  - Doxorubicin plus cyclophosphamide
  - Fluorouracil, doxorubicin, and cyclophosphamide
  - Experience with anthracycline-based regimens suggests their safety and efficacy in pregnancy
  - Tamoxifen, other endocrine agents and trastuzumab are also avoided
- Cytotoxic drugs are excreted in breast milk, therefore breastfeeding is contraindicated

When checking for metastases in a pregnant woman with breast cancer, chest X-ray, MRI of the spine without contrast, and US or MRI of the liver should be completed. Sentinel lymph node biopsy (SLNB) is considered standard of care, and studies indicate safety of using technetium sulfur colloid only. Blue dyes (lymphazurin and isosulfan blue) are avoided because of risk of anaphylaxis in the fetus.

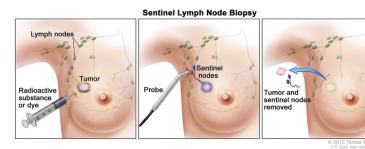


Figure 3: <https://www.cancer.gov/publications/dictionaries/cancer-terms/def/sentinel-lymph-node-biopsy>

## SUMMARY

- Due to breast tissue changes that occur during pregnancy diagnosis of breast cancer in this population is difficult. Resulting in delays in treatment.
- Pregnant women who have a suspicious lump that has been present for more than 2 weeks should be screened using ultrasound followed by a core biopsy
- Treatment of breast cancer during pregnancy should be as close to treatment of breast cancer in a non-pregnant patient as possible
- Surgery is the definitive treatment, including SLNB to check for metastases, and standard chemotherapeutic regimens of doxorubicin and cyclophosphamide +/- fluorouracil should be started after the first trimester

## Things to Consider

- Although pregnancy termination may be considered during treatment planning, pregnancy termination has not been demonstrated to improve outcomes in gestational breast cancer
- Breast and axillary lymph node surgery during any trimester appears to be associated with minimal fetal risk
- Prenatal exposure to cancer with or without treatment has not been shown to impair cognitive, cardiac, or general development in early childhood
- Chemotherapy in the second or third trimester has been associated with intrauterine growth restriction, premature birth, and low birth weight in up to 50% of infants
  - Prematurity is correlated with worse cognitive outcomes, but this is considered to be independent of maternal cancer diagnosis according to the NEJM

## REFERENCES

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