C32 – Breast Cancer During Pregnancy

PABC Awareness. From *Healthworld,* 2022, https://health.economictimes.indiatimes.com/videos/lifescience-kaleidoscope/pregnancy-associated-with-breast-cancer-can-be-aggressive-key-concerns/95334627

Objectives

By the end of this presentation, you will be able to:

- **Define** pregnancy-associated breast cancer (PABC)
- **Explain** the prevalence and rising incidence
- **Analyze** the benefits of early detection during pregnancy
- **Identify** breast changes that complicate diagnosis
- **Evaluate** how these changes can delay diagnosis

Objectives cont.

- **Describe** imaging methods for diagnosing PABC
- **Explain** the role of biopsy in confirming a PABC diagnosis
- **Identify** safe treatment options during pregnancy
- **Differentiate** treatments to avoid during pregnancy
- **Assess** the effects of treatments on both mother and baby
- **Evaluate** the importance of timely diagnosis and multidisciplinary care

Overview

- Pregnancy-associated breast cancer (PABC) is breast cancer diagnosed during pregnancy or within one year post-partum
- It occurs in approximately 1 in 3,000 pregnancies, with incidence increasing due to delayed childbearing
- Diagnosis is challenging because normal breast changes during pregnancy can mask other cancer symptoms
- Treatment requires balancing effective cancer care with fetal safety
- Care is managed by a multidisciplinary team including obstetricians, oncologists, radiologists, and surgeons
- Early detection and accurate staging are essential for improving outcomes

History

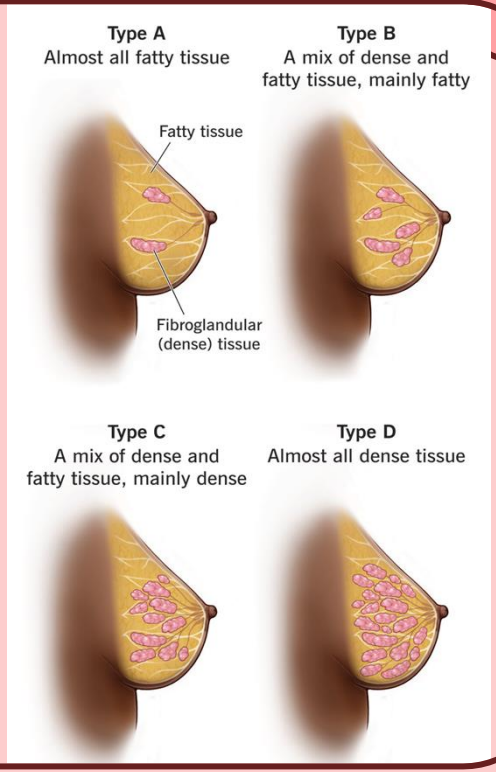
- Cases were first speculated in the mid-1800s but not formally recognized in medical literature until 1907 (Proussaloglou, 2023).
- PABC was historically associated with a poor prognosis due to delayed diagnosis and limited treatment options.
- Pregnancy termination was often recommended to allow treatment for the mother
- Modern research shows that with the timely diagnosis and appropriate management, outcomes for pregnant patients are comparable to those of non-pregnant patients (Amant, 2022).

Epidemiology & Incidence

- **Incidence:** Occurs in 17.5-39.9 per 100,000 births (Johansson, 2020).
  - **During pregnancy:** lower rates, 3..0-7.7 per 100,000
  - **Postpartum:** higher rates, 13.8-32.2 per 100, 000
- **Rank:** Second most common malignancy during pregnancy after melanoma
- **Average maternal age at diagnosis:** 32-38 years
- **Risk factors:** Hormonal changes during pregnancy may contribute to tumor growth
- **Trends:** Incidence is rising due to delayed pregnancies, advanced maternal age, and increased awareness (Piekarz, 2024).

Breast Changes During Pregnancy

- Increased breast density, vascularity, and glandular tissue
- Tenderness and nodularity
  - Can obscure tumors
- Tumors are often larger at presentation compared to non-pregnant patients due to delayed diagnosis
- Clinical breast exams and patient awareness remain essential



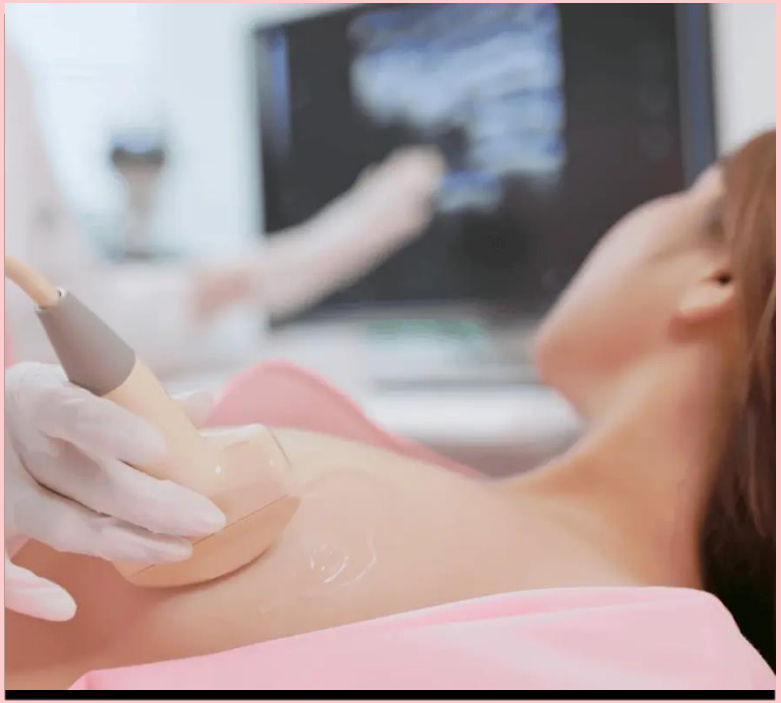
Dense Breast Tissue: What Is It, Categories, and Concerns. From *Cleveland Clinic*, 2024, https://my.clevelandclinic.org/health/articles/21169-dense-breast-tissue

Diagnostic Imaging Overview

- Ensure accurate diagnosis and staging of cancer while minimizing fetal exposure
- **Ultrasound:** first-line imaging modality; safe and non-ionizing
- **Mammography:** recommended with abdominal shielding; valuable for detecting microcalcifications
- **MRI:** utilized selectively, avoiding gadolinium contrast
- **Biopsy:** critical for obtaining histopathological confirmation

Ultrasound

- **Safe for all trimesters: Ultrasound uses no ionizing radiation, making it suitable throughout pregnancy**
- **Mass Characterization: Effectively differentiates between solid and cystic breast lesions**
- **Lymph node evaluation: Can assess axillary lymph nodes for potential involvement**
- **Procedure Guidance: Serves as a reliable tool for guiding core needle biopsies**
- **High Sensitivity: Particularly effective in dense or physiologically altered breasts, common during pregnancy**



Thomson Team. (2025, March 24). *Breast ultrasound: What it is and when you might need it*.
https://www.thomsonmedical.com/blog/breast-ultrasound-singapore

Mammography

Safe with abdominal shielding: Fetal radiation exposure remains very low (<0.03 mGy)

Lesion Detection: Effective for identifying microcalcifications, architectural distortions, and multifocal disease

Limitations: Sensitivity may be reduced in dense breasts, which is common during pregnancy

Clinical Value: Important for evaluating the contralateral breast and assisting in surgical planning

MRI

Selective Use: Reserved for complex or ambiguous cases when other imaging is insufficient

Contrast Considerations: Gadolinium is contraindicated due to fetal risk

Clinical Utility: Assists in evaluating multifocal or multicentric disease and chest wall involvement

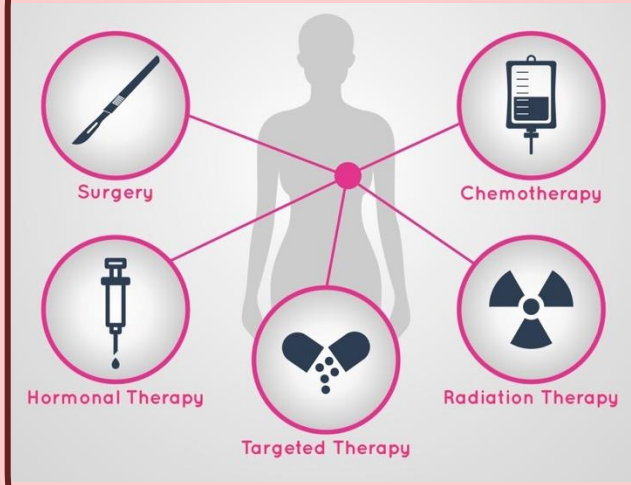
Not Routine: MRI is not the first-line modality during pregnancy and is employed only as needed

Biopsy

- **Safe Throughout all Trimesters:** Core needle biopsy can be performed safely during pregnancy
- **Anesthesia Considerations:** Local anesthetics do not pose a risk to the fetus
- **Diagnostic Value:** Provides a definitive histopathologic diagnosis
- **Timing:** Should not be delayed, as prompt diagnosis is critical for treatment planning
- **Therapeutic Guidance:** Essential for informing both systemic therapy and surgical management

Treatment Overview

- **Individualized Approach:** Treatment is tailored based on trimester, tumor stage, and receptor status
- **<u>Treatment Options</u>:**
  - **Surgery:** Primary intervention for tumor removal
  - **Chemotherapy:** Can be used depending on the timing in pregnancy
  - **Radiation:** Considered based on tumor location and gestational age
  - **Endocrine and Targeted Therapy:** Guided by tumor receptor status



Breast Cancer Treatment. From *North Houston Cancer Clinic*, 2024, https://nhcancerclinics.com/cancer-types/breast-cancer/

Surgery

Mastectomy: Often preferred if radiation will be delayed

Lumpectomy: Feasible when postpartum radiation is planned

Sentinel Node Biopsy: Possible using safe tracers

Anesthesia: Carefully monitored for both mother and fetus

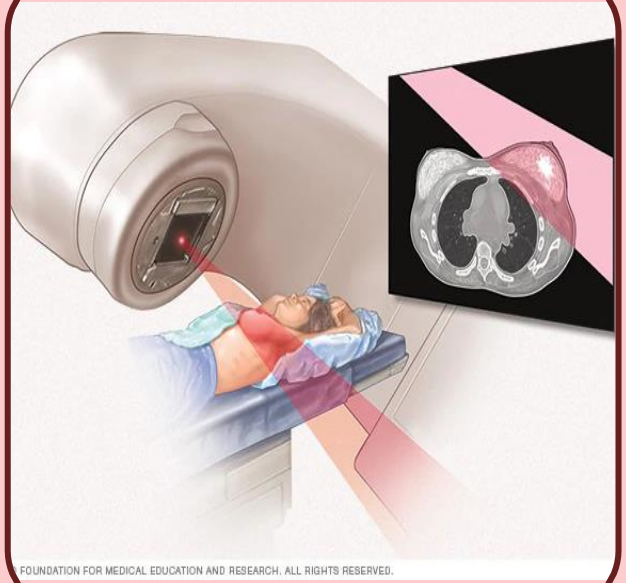
Safety: Surgery is safe throughout all trimesters

Chemotherapy

- **Timing:** Contraindicated in the first trimester
- **Regimens:** Anthracycline-based chemotherapy is safe during the second and third trimester
- **Delivery Considerations:** Stop treatment 3-4 weeks before delivery to reduce the risk of neonatal myelosuppression
- **Other Agents:** Taxanes used cautiously with fetal monitoring
- **Benefits:** Reduces metastasis risk and improves maternal survival

Radiation Therapy

- Can cause fetal growth restriction, congenital abnormalities, and neurodevelopmental issues
- Contraindicated during pregnancy due to teratogenic effects
- Postpartum therapy is preferred
- Requires careful planning with the oncologist and surgeon
- Limits breast-conserving surgery options during pregnancy



Mayo Clinic Staff. (n.d.). *Radiation therapy for breast cancer*. Mayo Clinic. https://www.mayoclinic.org/tests-procedures/radiation-therapy-for-breast-cancer/about/pac-20384940

Hormonal & Targeted Therapy

Tamoxifen: Associated with risk of birth defects

Trastuzumab: Can cause fetal renal toxicity

Timing: Therapy is typically initiated postpartum

Research: Ongoing efforts aim to identify safer therapeutic alternatives (Pagani, 2025).

Aspect	Pregnant	Non- Pregnant
Imaging	Limited due to fetal safety	Full imaging options
Chemotherapy	Only safe during the 2nd and 3rd trimester	Standard chemotherapy regimens used as indicated
Surgery	Safe in all trimesters	Standard surgical options
Radiation Therapy	Deferred until postpartum due to fetal risk	Administered as indicated
Targeted/Hormonal Therapy	Postpartum only	Standard use according to tumor biology
Prognosis	Similar to non-pregnant with proper management	Standard prognosis based on stage and treatment

Benefits	Risks
• Curative treatment is feasible • Safe therapies available in later trimesters • Fetal outcomes generally favorable with planning	• Treatment delays may occur • Emotional stress and complex decision-making • Increased monitoring for maternal and fetal safety

Risk to Baby

- **No risk to the baby throughout pregnancy or breastfeeding**
- **Placental Barrier:** Protects the fetus from certain exposures
- **Genetic Risk:** Consideration for inherited cancer predisposition
- **Indirect Effects:** Maternal illness, treatment, or stress may impact fetal development

Fetus. https://www.freepik.com/free-photos-vectors/fetus-outline

Support

Counseling: Often recommended due to complex decision-making and emotional burden

Mental Health: Support improves coping and resilience

Support Systems: Participation in groups can provide guidance and reassurance

Resources:

- American Cancer Society Helpline **1-(800)-227-2345**
- Hope For Two: The Pregnant with Cancer Network **1-800-743-4471**

Torrey, L (2024, November 11). *How a breast cancer diagnosis can impact heart health— and what the Pauley Heart Center is doing about it*. VCU Health. https://www.vcuhealth.org/news/breast-cancer-and-heart-health/

Future Implementations

- **Therapies:** Development of safe, targeted, and biologic treatments for pregnant patients
- **Imaging:** Improved techniques for dense breasts to enhance early detection
- **Fetal Monitoring:** Enhanced protocols to ensure maternal and fetal safety during treatment
- **Awareness:** Campaigns to promote early detection and timely diagnosis
- **Goals:** Improve maternal and fetal outcomes while reducing treatment delays

Conclusion

- **Complex but Treatable:** PABC requires careful evaluation and management
- **Favorable Outcomes:** Maternal and fetal outcomes are positive with timely, appropriate care
- **Key Strategies:** Advanced imaging and multidisciplinary coordination are essential
- **Future Outlook:** Ongoing research will continue to enhance care and outcomes

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