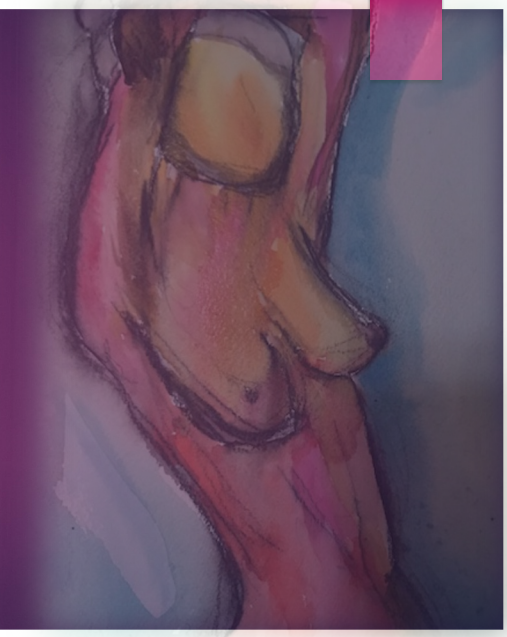
Breast Cancer: When it is Not a Complication of Breastfeeding



RACHEL YANG MD, CLC, IBCLC

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Outline

- **Prevention & Detection**
- **Diagnosis**
- **Treatment**
- **Prognosis**
- **Survivorship**

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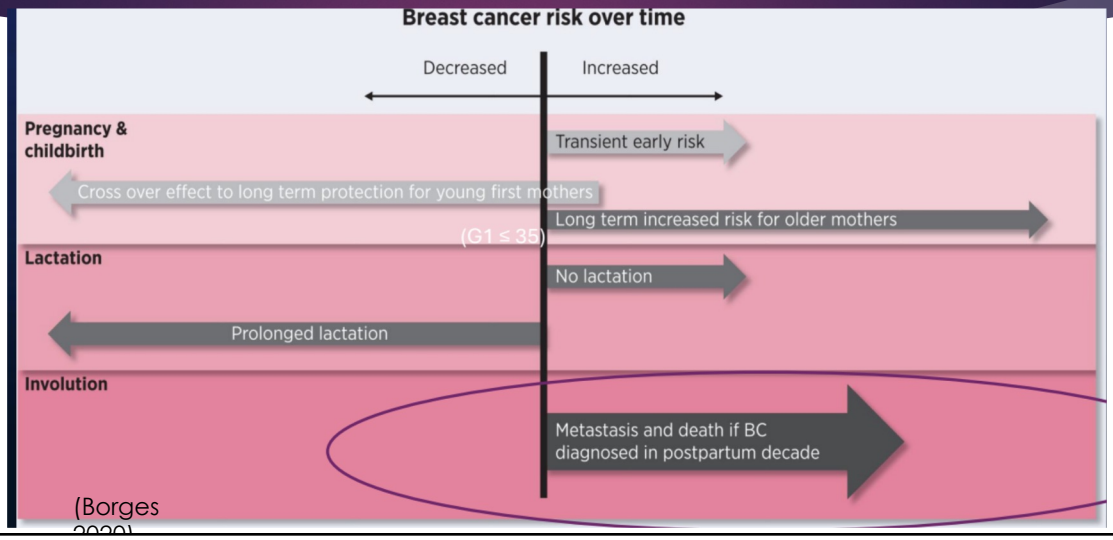
Breast Cancer and Lactation



(Borges 2020)

3

Breast Cancer Prevention

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Breastfeeding Protects against Breast Cancer

- Lack of breastfeeding is associated with increased incidence of breast cancer
  - Independent of age, number of births, age at first live birth
  - Greater protective benefit if exclusively breastfeeding
  - For every 12 months of breastfeeding, the risk of developing breast cancer decreases by 4.3%

(AAP Technical Report: Breastfeeding and the use of Human Milk)

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Dose-Dependent Reduction in Breast Cancer Risk with Length of Breastfeeding

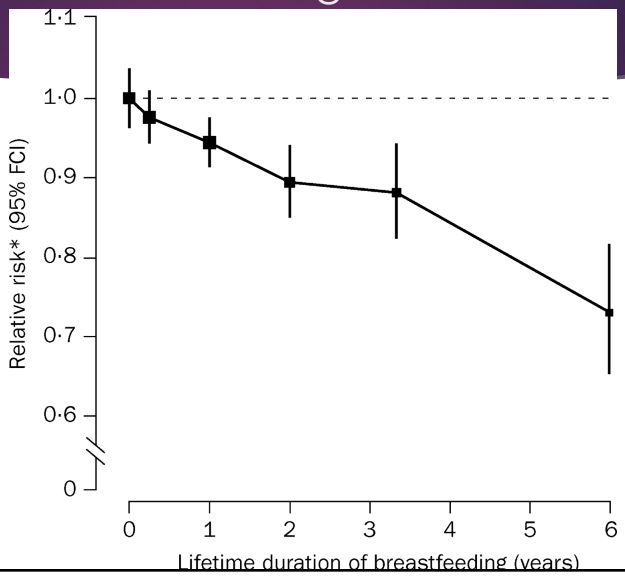

Image: Collaborative Group on Hormonal Factors in Breast Cancer

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How Breastfeeding Protects

- Reduction in lifetime estrogen exposure
- Promotion of terminal differentiation of mammary epithelial cells
- Antibodies in mothers milk enhance immune vigilance
- Alpha-lactalbumin combined with oleic acid induces apoptosis in cancer cell
- Epigenetic changes such as DNA methylation and histone modification (Surdacka 2024)

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Breast Cancer Detection

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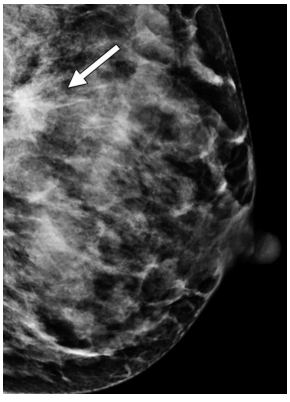
Breast Cancer Screening is Effective in Pregnancy and Lactation

- Despite the physiologic changes, all modalities remain highly sensitive
- Potential for increased false-positive findings and need for biopsy



(Vashi 2013)

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Identifying Patients at High Risk of Breast Cancer

Tyrer-Cuzick	Gail	BRCAPRO	Claus
Personal Characteristics Up to age 85 Body mass index Ashkenazi Jewish heritage Breast density **Family History** *Breast and Ovarian Cancer* First, second-degree relatives Age of onset Bilateral breast cancer **Reproductive History** Age at menarche Age at first live birth Age at menopause Use of hormone replacement therapy **Personal Medical History** Atypical ductal hyperplasia Lobular carcinoma in situ Ovarian cancer **Genetic Testing** *BRCA1, BRCA2* Personal testing First, second-degree relatives	**Personal Characteristics** Age 35 - 85 Race/Ethnicity **Family History** *Breast Cancer* First-degree relatives **Reproductive History** Age at menarche Age at first live birth **Breast Disease** Breast biopsies Atypical ductal hyperplasia *Gail model can estimate risk for women without a BRCA1/BRCA2 mutation and no prior history of breast cancer, or ductal or lobular carcinoma in situ	**Personal Characteristics** No age restriction Ashkenazi Jewish heritage **Family History** *Breast and Ovarian Cancer* First, second-degree relatives Age of onset Bilateral breast cancer Male breast cancer	**Personal Characteristics** Age 20 - 79 **Family History** *Breast Cancer* First, second-degree relatives Age of onset

Ahsan, 2024

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Breast Cancer Screening for High Risk Patients

National Comprehensive Cancer Network®

NCCN Guidelines Version 2.2025
Breast Cancer Screening and Diagnosis

NCCN Guidelines Index
Table of Contents
Discussion

SCREENING OR SYMPTOM CATEGORY[a]	SCREENING/FOLLOW-UP[b]
Increased Risk:	• Clinical encounter[b,d,l] every 6–12 mo ‣ To begin when identified as being at increased risk ‣ Consider referral to a genetic counselor or other health professional with expertise and experience in cancer genetics, if not already done ‣ Consider referral to a breast specialist as appropriate
Residual lifetime risk ≥20% as defined by models that include a comprehensive family history[h,j,k]	• Annual screening[b] mammogram[c,n] with tomosynthesis[p] ‣ To begin no later than age 40 y, or 10 y prior to when the youngest family member[r] was diagnosed with breast cancer, not prior to age 30 y[s] (whichever comes first) • Annual breast MRI[b,t,u] with and without contrast ‣ To begin no later than age 40 y, or 10 years prior to when the youngest family member[r] was diagnosed with breast cancer, not prior to age 25 y[v,w] (whichever comes first) ‣ Consider contrast-enhanced mammography (CEM)[b] or molecular breast imaging (MBI)[b] for those who qualify for but cannot undergo MRI. Whole breast ultrasound[b] may be done if CEM or MBI is not available/accessible • Consider risk reduction strategies (see NCCN Guidelines for Breast Cancer Risk Reduction) • Breast awareness[m]

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ACR Appropriateness Criteria for Breast Imaging of Pregnant and Lactating Women

Mammography

- Initial screening modality
  - Age ≥40 at average risk
  - Age 30-39 at high risk
- Initial diagnostic modality
  - Palpable mass or breast pain
- **Safe** during pregnancy
  - Uterus is shielded
  - Radiation dose is <0.04 mGy
- **Safe** during lactation

Ultrasound

- *Additional* screening test for patients with dense breast tissue (institution specific)
- Initial diagnostic tool in pregnant patients
- **Safe** during pregnancy and lactation

MRI

- *Additional* screening test for high risk patients
- Additional diagnostic tool
- **Contraindicated** during pregnancy
  - Gadolinium can cross placenta (unknown fetal effects)
- **Safe** during lactation
  - <0.04% of contrast reaches milk and, of that, <1% is absorbed
  - Women should nurse or pump prior to improve image quality

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What education should be provided ahead of breast cancer screenings while breastfeeding?

Education for Breastfeeding Patients Eligible for Breast Cancer Screening

- Patient should *NOT* be advised to wean for the sake of breast cancer screening
- Patient should plan on nursing or pumping right before imaging test
- Patient does *NOT* have to withhold from nursing or "pump and dump" following MRI

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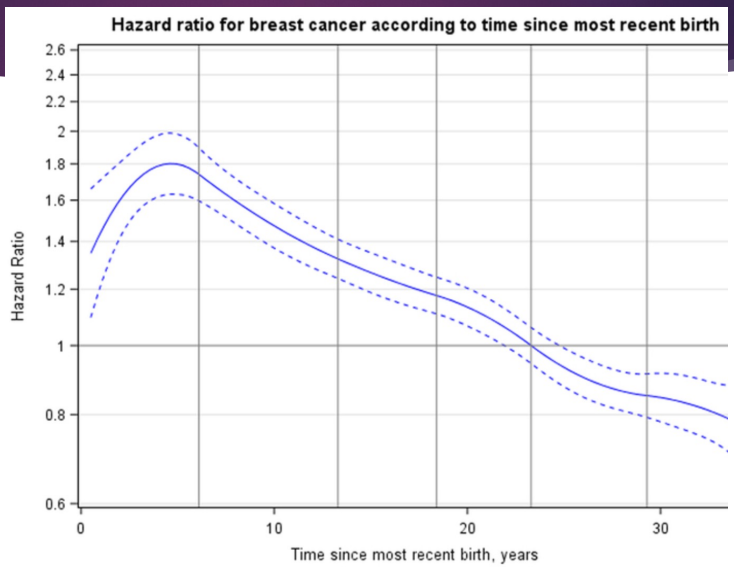
Post-partum is a High Risk Time

- Nichols 2019



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Breast Cancer Diagnosis

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Presentation of Breast Cancer while Lactating

- Mass, architectural distortion or calcifications on screening mammography or ultrasound
- Mass or non-mass enhancement on screening MRI
- Palpable mass
- Peau d'orange (inflammatory of breast cancer)
- Recurrent focal mastitis
- Bloody nipple discharge

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Diagnostic Imaging

- Begin with diagnostic bilateral mammogram and ultrasound
- MRI if mammogram/US is negative or to evaluate extent of disease
- If stage 3, then PET/CT or CT chest/abdomen/pelvis with bone scan are indicated
  - No interruption of breastfeeding for CT with IV contrast
  - PET: separation from infant for 12 hours
  - Bone scan: separation from infant for 4 hours
  - Can pump/feed milk after PET or bone scan as radioactive material is not found in milk (Mitchell 2019)

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Lactation-Related Changes on Breast Imaging

- Increased density
- Increased echogenicity
- Increased T2 signal on MRI from breastmilk
- Hyperplasia-related microcalcifications
- Important that radiologist is aware of lactational status

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Increase Imaging sensitivity when Lactating

- Breastfeed/pump immediately before imaging, or within 1 hour
- Consider addition of MRI for diagnostic imaging

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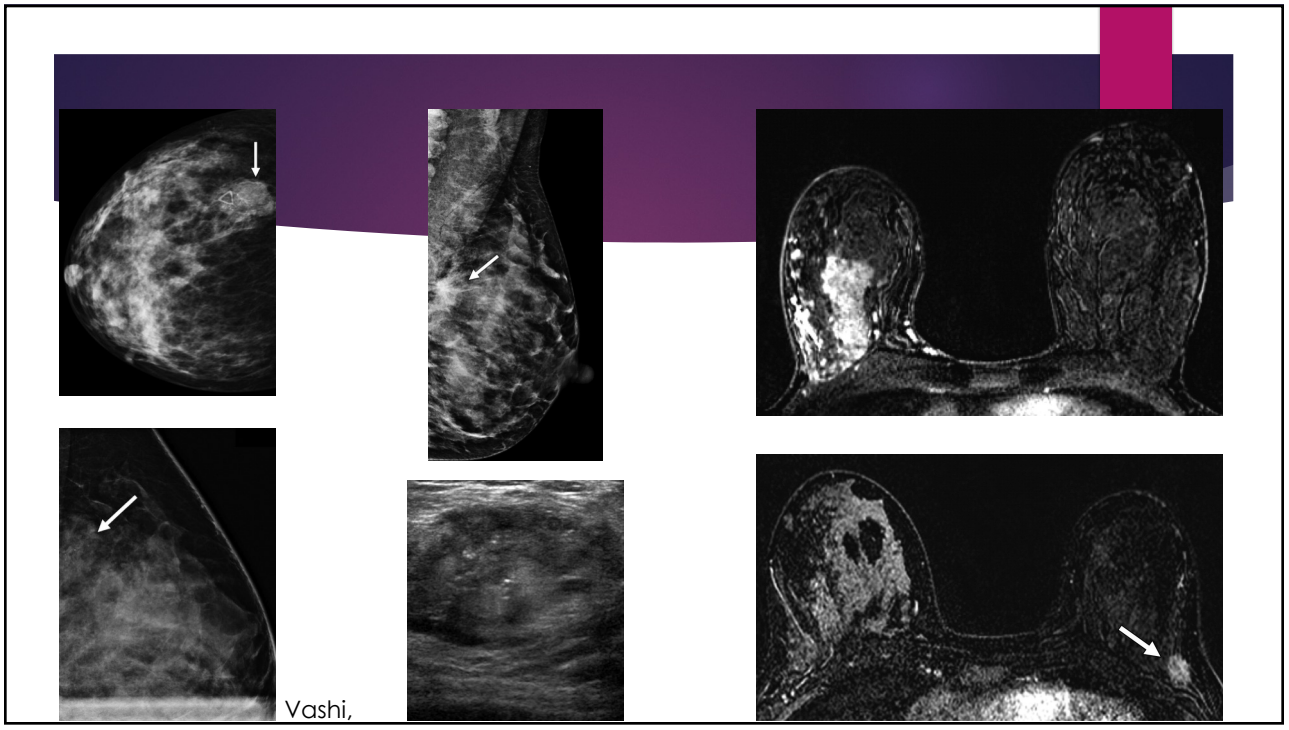

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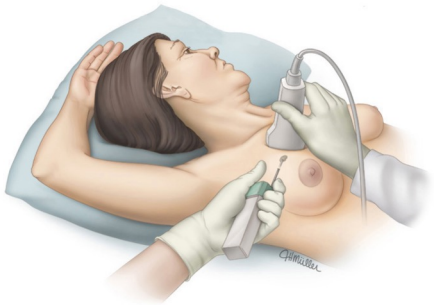
Biopsies in Pregnant and Lactating Women

- Core needle biopsy can be safely performed under ultrasound or stereotactic guidance with negligible risk to a fetus or nursing infant
- Don't advise pumping to empty after biopsy
- No interruption of feeding, lidocaine used in biopsy is safe



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Biopsies and Milk Fistula

- The only significant risk factor presented by biopsy is the formation of a milk fistula
  - A rare occurrence that can be managed conservatively (Johnson, 2021)

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Skin Punch Biopsy

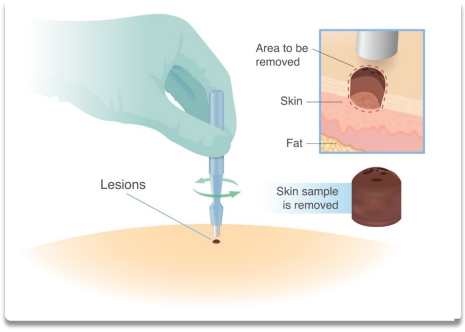

Image: https://www.news-medical.net/health/How-and-Why-is-a-Punch-Biopsy-Done

- Concern for inflammatory breast cancer if persistent erythema/induration/peu d'orange appearance
- Reassuring features: bilateral and/or dependent edema
- Punch biopsy is safe when lactating

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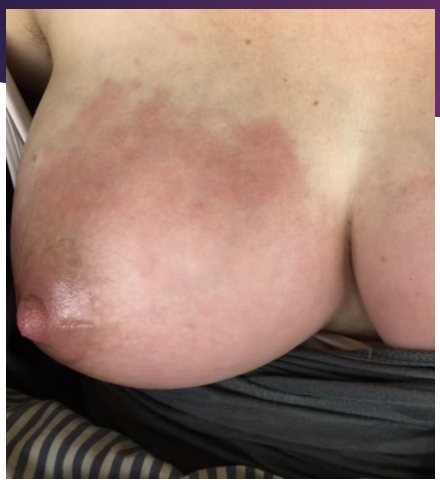

Excessive pumping

(Physicianguidetobreastfeeding.org)

Inflammatory Breast Cancer

(Moore, 2022)

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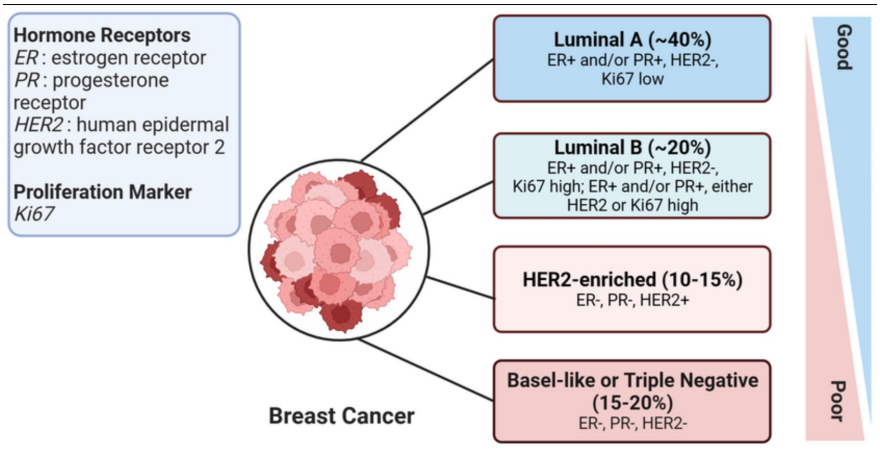
Breast Cancer Subtypes



Wang, 2024

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Postpartum Breast Cancer Prognosis

- Highest rates of metastasis, recurrence and death
- Higher stage at diagnosis, often related to delays in care in due to concerns about imaging/biopsy in lactating women
- Early disease progression: likely due to immunosuppressive microenvironment (Jindal 2021)
- More often triple negative, lymph node positive and higher Ki-67 (Vohra 2022)

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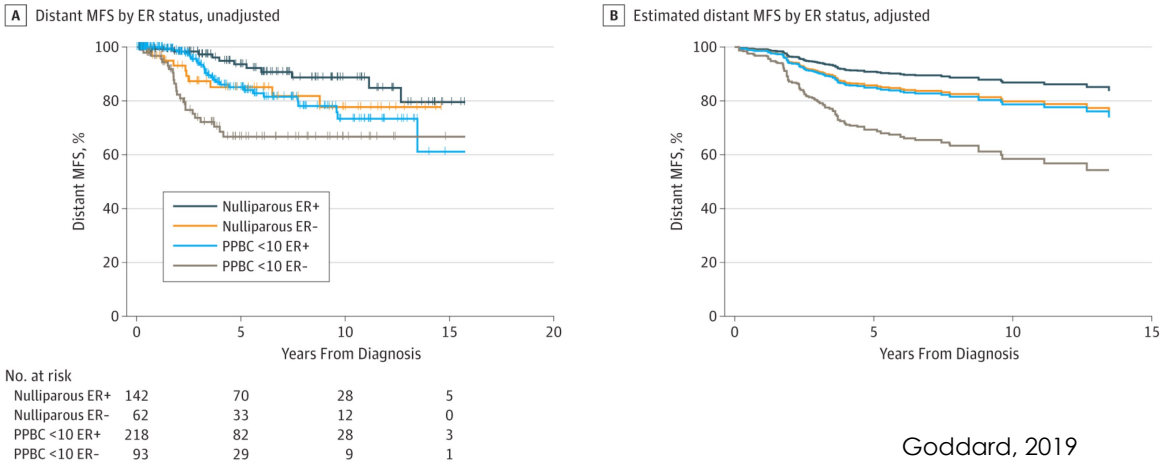
Estrogen Receptor Association with Prognosis



Goddard, 2019

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Breast Cancer Treatment

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Treatment of Pregnancy-Related Breast Cancer

Source: https://tinyurl.com/mr49fkcc

- Mastectomy at any stage or lumpectomy in late 2nd or 3rd trimester with radiation postpartum
- Axillary staging without blue dye
- Chemo is often required during pregnancy
  - avoid in first trimester and discontinue 3 weeks prior to delivery
  - resume several weeks postpartum (can breastfeed until then)

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Treatment of Postpartum Breast Cancer

- Depends on stage and subtype, many are indicated for neoadjuvant chemotherapy
- Most medical treatments are contraindicated if breastfeeding
- Breastfeeding from cancerous breast is not harmful to child
- Breastfeeding from contralateral breast during radiation is OK

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Therapies Not Compatible with Lactation

- Chemotherapy passes into breastmilk and is harmful to child
- Endocrine therapy (ie tamoxifen) passes into breastmilk and impacts estrogen metabolism in child
- No data on CDK4/6 inhibitors or HER2-targetted therapies
- Lactation can be ceased with pharmacologic support such as cabergoline or sudafed

Image: https://www.oncoplus.co.in/chemotherapy-some-surprising-things-you-may-not-know/

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Breastfeeding during Chemotherapy

- If women desire to maintain production, milk should be pumped and dumped for several half lives under the guidance of an oncologic pharmacologist
- High rate of complications due to exclusive pumping while receiving chemo including mastitis, nipple injury, decreased milk volume, change in breastmilk microbiome, and infant disinterest in return to nursing
  - Neutropenic infections can be life-threatening

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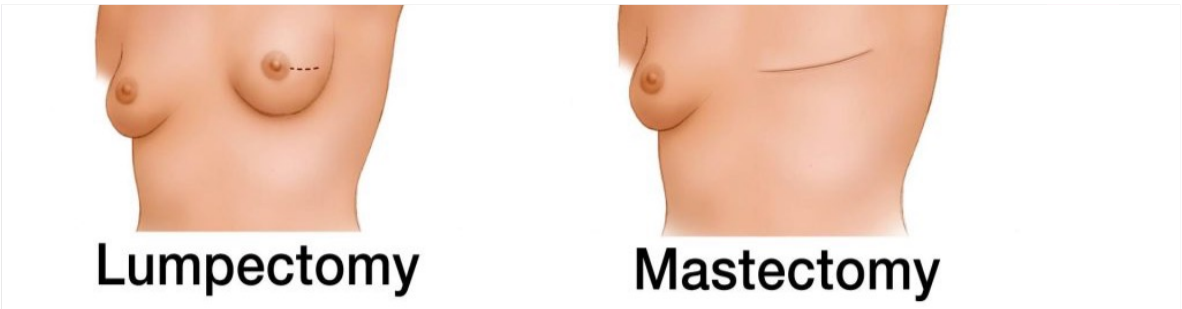

Breast Cancer Surgery

- Lumpectomy and mastectomy have no difference in survival
- Contralateral risk-reducing mastectomy for mutation carriers can be delayed if desiring another pregnancy

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Perioperative Management of Lactation

- Surgery should not be delayed for weaning as involution takes months, but ideally wean affected breast 1-2 weeks in advance
  - Can upregulate contralateral breast if continued milk expression is desired
- Leave a gravity drain in place for lumpectomies, suction drains for mastectomy
- Discard milk for 24 hours after using radioactive tracer or methylene blue for sentinel lymph node biopsy
- Pump unaffected breast right before surgery and resume breastfeeding/pumping as soon as awake from anesthesia

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Breast Cancer Survivorship

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Breastfeeding after Breast Cancer

- Safe to breastfeed from contralateral breast
- Milk production is independent in each breast, can upregulated in the contralateral breast
- Some patients use Domperidone, Reglan can be prescribed

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Breastfeeding after Breast Cancer

- Breastfeeding after lumpectomy is contraindicated in the affected side
  - Parenchymal fibrosis from radiation, loss of elasticity
  - Severed ducts, disruption of innervation impacts milk ejection
- Breastfeeding/latching after mastectomy is contraindicated
  - Risk of tissue damage because insensate
  - Risk of infection to implants from wounds

Image: physicianguidetobreastfeeding.org

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Length of Breastfeeding in Breast Cancer Survivors

Image: https://tinyurl.com/2p8aj3ct

- POSITIVE Trial: Pregnancy Outcome and Safety of Interrupting Therapy for women with endocrine responsIVE breast cancer (Partridge 2023)
- Interruption of endocrine therapy treatment for up to 2 years after 18–30 months of therapy for pregnancy +/- breastfeeding is safe
  - ~9% 3-year incidence of breast cancer events in both interruption group and control group
- Months trying to conceive plus 9 months for pregnancy often leaves <1 year to breastfeed

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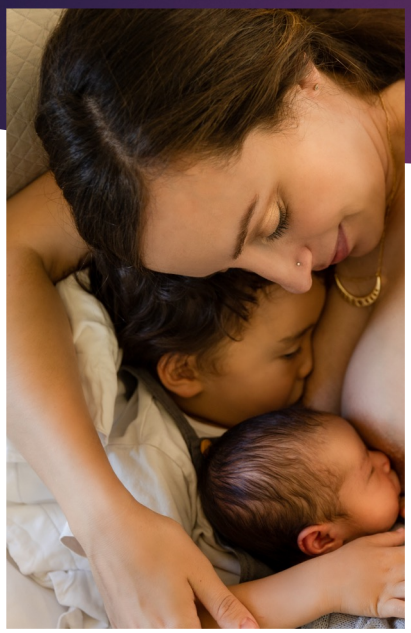

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