YOUNG WOMEN'S
BREAST CANCER
RESEARCH INSTITUTE

BREAKING THE MYTHS

A Science Series on Breast Cancer in Young Women

Twelve Common Misconceptions Examined Through Evidence, Biology, and Clinical Reality



An Educational Science Series from
The Breast Cancer in Young Women Foundation
The Young Women's Breast Cancer Research Institute

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ABOUT

The Foundation

The Breast Cancer in Young Women Foundation (BCYW Foundation) is a U.S. 501(c)(3) nonprofit dedicated to saving young women's lives through targeted awareness, education, advocacy, early detection, and scientific research. It brings together clinicians, scientists, nurses, survivors, advocates, NGOs, and partners from 35 countries.

The Foundation's work connects breast health education with research and survivorship support. It advances targeted awareness and research and highlights emerging advances in BCYW through its peer-reviewed, open-access journal of Young Women's Breast Cancer and Health (YWBC). One of the foundation's programs, the Youth Council for Breast Health (YCBH), promotes targeted awareness on educational campuses. The BCYWF also conducts innovative research on early-onest breast cancer in young women through the Young Women's Breast Cancer Research Institute. Through evidence-based analysis, the Foundation works to improve outcomes and long-term survivorship for young women diagnosed with breast cancer. By helping young women recognice changes, seek timely evaluation, and engage in informed conversations about care, it aims to reduce barriers to earlier diagnosis and improve life during and after treatment.

The Institute

The Young Women's Breast Cancer Research Institute (YWBCRI), a research initiative of the BCYW Foundation, advances collaborative research on the earliest biological changes that precede breast cancer. It focuses on early breast biology, metabolic drivers, and opportunities to predict risk, prevent disease, and enable early intervention.

The Institute aims to connect discoveries about how disease begins with approaches that could help identify and intercept risk earlier. Its research programs explore mitochondrial field effects, the biology of microinvasion in ductal carcinoma in situ, and systemic signals linked to early risk. Through a collaborative research network, YWBCRI brings together scientific, clinical, academic, and translational expertise to advance upstream breast cancer discovery.

The Series

Breaking the Myths is an educational science series from the Foundation and the Institute, edited by Rakesh Kumar, PhD, Founder and President of the Breast Cancer in Young Women Foundation, and Scientific Director of the Young Women's Breast Cancer Research Institute, USA. It features twelve in-depth LinkedIn Pulse articles by leading subject-matter experts that examine common misconceptions about breast cancer in young women through evidence, biology, and clinical reality.

The collection addresses age and family history, symptoms and diagnostic delay, pregnancy and lactation, inflammatory breast cancer, breast density and imaging, age-related biological differences, endocrine therapy, and risk-reducing mastectomy. Each article offers a clear key point, an organized discussion, supporting references, and a link to the original illustrated article. The aim is to strengthen understanding and informed dialogue. This educational resource complements individualized medical advice and clinical care.

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Editorial

Assumptions about breast cancer in young women can shape how symptoms are interpreted, when care is sought, and how treatment decisions are made. “You are too young,” “there is no family history,” or “it does not hurt” may seem reassuring, but without appropriate evaluation, reassurance can become a barrier to timely care.

Breaking the Myths brings together twelve articles by leading medical and subject-matter experts to examine common misconceptions through evidence, biology, and clinical reality. The purpose is to make complex information accessible while preserving the qualifications needed for responsible interpretation. Young women deserve clear explanations of common myths to support informed action, which can directly influence steps toward early detection.

The collection follows the journey from recognizing breast changes through diagnosis, treatment, and prevention. It addresses diagnostic delays, pregnancy and lactation, inflammatory breast cancer, breast density, imaging, biological differences, endocrine therapy, and risk-reducing surgery.

Across these topics, one principle is clear: age alone should neither dismiss concerns nor determine clinical decisions. Appropriate care requires considering individual risk, symptoms, reproductive priorities, quality of life, and early medical consultation.

This series aims to foster conversations among young women, families, clinicians, educators, and advocates. Each article provides a starting point for understanding, with references and illustrated sources for further reading. Education is most useful when it helps people ask better questions and seek appropriate early medical care.

Looking Forward

Each of twelve articles offers a deeper understanding of a common myth and, in turn, supports earlier action and detection. By engaging young women and adolescents, supporting evidence-supported pathways, and advancing research into the earliest origins of disease, the BCYW Foundation hopes to build a more informed future—and to ensure that young women help shape the questions, priorities, and solutions.

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The 12 Myths at a Glance

MYTH 01 · Too Young to Worry?

MYTH: "Breast cancer affects older women, so I am too young to worry about it."

REALITY: Breast cancer risk increases with age, but women under 40 are not immune—it's no longer a disease that affects only older women. According to WHO's 2022 report, breast cancer among young women is expected to continue rising globally through 2040. Lower risk doesn't mean zero risk. At any age, a new lump, a persistent change in one area, underarm swelling, nipple discharge, or a change in the skin or nipple warrants evaluation. Routine screening recommendations and symptom evaluations serve different purposes: being below the recommended screening age doesn't mean you're too young for diagnostic care. Know what's normal for you and how your body feels. Prioritize your breast health and seek timely advice about unexplained changes.

MYTH 02 · No Family History, No Risk?

MYTH: "No one in my family has breast cancer, so I am unlikely to develop it."

REALITY: Most breast cancers occur without a strong family history or a known inherited cancer–associated variant. Cancer can arise as genetic changes accumulate in breast cells over time. Family history is important, but it is only one factor in assessing risk; small families or incomplete information may also make inherited susceptibility harder to recognize. A concerning family pattern may warrant genetic counseling and close monitoring, but its absence should never delay evaluation of symptoms. Any new or persistent breast change deserves attention. Family history can help guide additional care, but the absence of a known family history does not mean a breast change is harmless.

MYTH 03 · No Pain, No Problem?

MYTH: "If a breast lump does not hurt, it cannot be cancer."

REALITY: Breast cancer, even in its early stages, is often painless. A tumor can grow without causing inflammation or pressing on pain-producing structures. Therefore, pain cannot reliably distinguish a benign change from cancer or indicate the cancer's stage. Most breast pain has a benign cause, often related to hormonal changes, but persistent, localized, or unusual pain still warrants medical evaluation. Similarly, don't ignore a painless new lump or other breast changes, such as focal thickening, nipple or skin changes, and discharge, whether or not they cause pain. A clinical evaluation—not the presence or absence of pain—provides meaningful reassurance.

MYTH 04 · "It's Probably Just a Cyst"

MYTH: "A smooth, tender, fixed, or movable lump is probably a harmless cyst."

REALITY: Most breast cysts are benign, but touch, tenderness, age, and menstrual changes alone cannot confirm a diagnosis. A focused medical evaluation can often distinguish a simple, fluid-filled cyst from a solid mass or a lesion with suspicious features. A confirmed simple cyst does not become cancerous or independently increase breast cancer risk. However, complex cystic and solid findings may require further testing. Any new, growing, persistent, or otherwise concerning lump should be evaluated by a doctor. "Probably a cyst" is a possibility to consider, not a reason to stop seeking medical evaluation. Reassurance is most reliable when the clinical examination and your doctor agree.

The 12 Myths at a Glance

MYTH 05 · "They Won't Take Me Seriously"

MYTH: "Since I'm young, reassurance is enough, even if the change persists."

REALITY: Young women deserve clear, clinically supported explanations of breast symptoms. Diagnostic delays may result from age-related assumptions, repeated reassurance, access barriers, or gaps in follow-up. Most symptoms are benign, but likelihood alonei is not a diagnosis. Describe when the change began, whether it is growing, and how it differs from your usual breast pattern. Ask what might be causing it, whether imaging is needed, and when a doctor should reassess. Self-advocacy can improve communication, but patients, clinicians, and healthcare systems share responsibility for timely diagnosis.

MYTH 06 · A Breastfeeding Lump Can Wait

MYTH: "A lump during breastfeeding is lactation-related, and testing can be delayed until I stop breastfeeding."

REALITY: Breastfeeding often causes benign lumps, tenderness, and inflammation, but it does not rule out cancer. Promptly consult a doctor about any lump that persists or grows, unusual skin changes, bloody discharge, redness, or any other new change. Targeted ultrasound is often the first test. When needed, clinicians can also perform diagnostic mammography and a core-needle biopsy during lactation. Treatment for a suspected benign condition should include a clear reassessment plan. Breastfeeding should never delay appropriate evaluation or lead to repeatedly dismissing a concerning change.

MYTH 07 · Breast Cancer Always Starts with a Lump

MYTH: "Without a distinct lump, redness and swelling must be due to an infection and not related to breast cancer."

REALITY: Inflammatory breast cancer can develop without a palpable lump. Warning signs include rapidly developing redness, swelling, breast enlargement, thickened skin or an orange-peel texture, and nipple changes. These symptoms can mimic mastitis, especially during breastfeeding, but persistent or worsening changes should prompt reassessment by a doctor. Treatment for a suspected infection should include a clear follow-up plan; repeated treatment without expected improvement can delay diagnosis. Look beyond lumps: how quickly the breast changes and whether it responds as expected can be crucial clues that further investigation is needed.

MYTH 08 · Dense Breasts Mean Cancer Is Likely

MYTH: "Dense breasts mean I might develop cancer—or that mammograms may not help."

REALITY: Breast density refers to the tissue composition shown on a mammogram. Dense breasts are normal in young women. You can't tell breast density by touch; it is one potential risk factor among many, not a sign of cancer. It has two implications: in some cases, it can increase breast cancer risk and make cancer harder to detect on mammograms. Still, most women with dense breasts will not develop cancer. Additional imaging isn't automatically appropriate for everyone, as extra testing can lead to false alarms. A doctor should evaluate any persistent breast change.

The 12 Myths at a Glance

MYTH 09 · One Scan Gives All the Answers

MYTH: "One imaging test is best for everyone, and a normal scan rules out cancer."

REALITY: Breast imaging follows a clinical pathway, and the appropriate test depends on age, symptoms, breast composition, and individual risk. Ultrasound often begins the assessment of a lump in younger women. Mammography detects calcifications and other abnormalities, while MRI is important in selected high-risk or diagnostic situations. Each test has strengths and limitations, and greater sensitivity does not always make a test more appropriate. Reassuring imaging can reduce concern, but it cannot override a persistent, suspicious clinical finding. Further examination, targeted imaging, specialist review, or a doctor's consultation may still be needed.

MYTH 10 · Breast Cancer Is the Same at Every Age

MYTH: "Breast cancer has the same biology and treatment needs in every woman."

REALITY: Breast cancer includes distinct diseases, classified by factors such as hormone receptor and HER2 status, stage, and inherited susceptibility. Tumor subtype distributions differ among younger women, but age alone cannot reveal an individual tumor's biology. Many young women have hormone receptor–positive disease, while others have HER2-positive or triple-negative cancers. Treatment should reflect both the tumor and the person—not age. Fertility, ovarian function, reproductive plans, quality of life, and long-term survivorship also need attention. Recognizing these differences supports individualized decisions without assuming every young woman needs the same treatment intensity.

MYTH 11 · Endocrine Therapy Is an Optional Extra

MYTH: "Once surgery and chemotherapy are complete, hormonal therapy adds little benefit."

REALITY: For hormone receptor–positive breast cancer, endocrine therapy is a key treatment that reduces the risk of recurrence and breast cancer death. It blocks hormone signals that can help residual cancer cells—including those linked to later recurrence—grow. Depending on your risk and menopausal status, treatment may include tamoxifen, ovarian suppression, or an aromatase inhibitor combined with ovarian suppression. Discuss side effects, fertility goals, and treatment duration with your doctor. If you experience difficulties, report them and seek support before stopping treatment; make any planned changes with your oncology team.

MYTH 12 · Preventive Mastectomy Removes All Risk

MYTH: "Removing both breasts guarantees prevention and is the best choice."

REALITY: Risk-reducing mastectomy can significantly reduce breast cancer risk for some women with very high inherited risk, but it cannot completely eliminate the risk of breast cancer. Some breast tissue remains, and the surgery does not remove inherited susceptibility to other cancers. It is not routinely recommended for women at average risk. Decisions should weigh baseline risk, genetic counseling when appropriate, alternatives such as surveillance, and the surgery's lasting physical and emotional effects. Removing an unaffected breast after cancer develops in the other breast is a separate decision and does not improve survival.

TOO YOUNG TO WORRY? THINK AGAIN

Why Breast Cancer Has No Age Limit

Understanding why breast cancer can affect young women—and why early awareness matters more than age

Rakesh Kumar, PhD, and Sabine Hairabedian, MS, MBA

KEY POINT **Breast cancer risk rises with age, but being young doesn't confer immunity. Breast cancer can—and does—affect women under 40.**

The Myth

Breast cancer is often seen as a disease affecting middle-aged and older women. Since routine screening usually starts later in life, a young woman may assume a breast change cannot be cancer—or be reassured that she is "too young" for her concerns to be taken seriously. The mistaken conclusion is that being young rules out disease, but it doesn't.

What the Science Shows

Breast cancer is the most frequently diagnosed cancer among women worldwide, with an estimated 2.3 million new cases in 2022 (1–3). Although breast cancers diagnosed before age 40 make up a minority of cases globally, their share is notable and varies considerably across countries. In 2022, approximately 10.7% of breast cancers worldwide occurred in women younger than 40. The corresponding proportions were approximately 6% in the United States and 13.49% in India.

These percentages may seem small compared with the much higher number of diagnoses among older women. Still, they represent thousands of young women diagnosed with breast cancer each year.

Breast cancer in young women also carries distinct immediate and long-term medical, reproductive, professional, social, and personal consequences. Therefore, its significance cannot be assessed solely by its share of the overall breast cancer burden (3–6).

Why the Myth Persists

Several aspects of current breast cancer communication may unintentionally reinforce the belief that young women are not affected. Examples include: a) routine screening mammography generally begins at age 40 for women at average risk, though this is starting to change; b) public awareness messages often focus on women in midlife and older age groups; and c) risk communication appropriately emphasizes that breast cancer incidence increases with age but often offers little information about women aged approximately 18 to 40.

These messages describe population-level risk and screening policy; they do not mean breast cancer cannot occur below a certain age. Confusing "lower risk" with "no risk" can delay recognition, evaluation, and diagnosis. This distinction matters more than ever, as breast cancer diagnoses among younger women have been rising and are expected to continue increasing in the coming decades.

TOO YOUNG TO WORRY? THINK AGAIN

What It Means for Young Women

Because routine imaging screening is not recommended for healthy young women at average risk, evaluation in this group is usually prompted by a clinical abnormality. Women at increased risk may need earlier or additional surveillance, according to risk-specific guidelines (7).

This makes it especially important to know what your breasts usually look and feel like. Breast self-awareness does not replace clinical evaluation, diagnostic imaging, or screening when indicated. It helps you notice new or persistent changes and seek appropriate assessment.

Population data indicate that women under 40 are more likely than older women to be diagnosed at a later stage (8). One possible contributor is that symptoms in younger women may initially be attributed to benign conditions, hormonal changes, pregnancy, lactation, or even young age itself.

Young women should seek medical evaluation for a new or unexplained breast change, such as:

- A new lump in the breast or underarm
- Knowing that breast cancer can also be lump-less
- Breast swelling or a change in breast size or shape
- Skin dimpling, thickening, redness, or other persistent skin changes
- New nipple inversion
- Unexplained nipple discharge
- Persistent, localized breast pain
- Any change that is new, unusual, worsening, or does not resolve

Most breast changes in young women are not cancerous. Nevertheless, age alone should not be used to dismiss a persistent or concerning symptom. Age should guide clinical assessment—not prevent it.

Why Breaking This Myth Matters

Some breast tumors in younger women may grow more rapidly and have shorter doubling times than those diagnosed in older women (9, 10). If diagnosis occurs at a later stage, treatment may be more intensive, the physical and emotional burden may be greater, and survival may be lower than when the disease is detected earlier.

Early detection is associated with substantially better outcomes than diagnosis at an advanced stage. Challenging the “too young” myth does not mean creating fear or recommending universal screening for all young women. Rather, it means ensuring that symptoms receive appropriate attention and that young age does not lead to avoidable diagnostic delays.

A Thought to Carry

Breast cancer is less common in young women—but less common or lower risk does not mean zero risk. However, a low population-level probability does not eliminate the possibility of disease.

Young women deserve accurate information, evidence-based assessment, timely diagnostic evaluation, and healthcare systems that do not dismiss concerning symptoms because of age. Early detection begins with awareness: knowing what is normal for you, recognizing meaningful changes, and seeking evaluation when something does not feel right.

The next myth addresses another widespread misconception: that no family history means no meaningful risk of breast cancer.

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READ THE ORIGINAL ILLUSTRATED ARTICLE

View the complete article and accompanying figures:

“Too Young to Worry? Think Again”

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NO FAMILY HISTORY? YOU'RE STILL AT RISK

Understanding Sporadic Breast Cancer in Young Women

Why the absence of breast cancer in your family does not mean the absence of personal risk

Rakesh Kumar, PhD, and Tamara Hussong Milagre, BN

KEY POINT **Family history is an important breast cancer risk factor, but most breast cancers in young women occur without a strong family history or a recognized inherited genetic predisposition.**

The Myth Versus the Reality

Many young women believe breast cancer is mainly inherited. If no close relative, such as a mother or sister, has had it, they may assume they are unlikely to develop breast cancer.

This belief may be reassuring, but it's misleading. Breast cancer in young women is often diagnosed at a later stage and can be more aggressive. Tumors may also be hormone receptor-negative or triple-negative, limiting the effectiveness of some treatments (1–5).

Approximately 8–15% of breast cancers are linked to inherited genetic susceptibility or a significant family history, including pathogenic variants in BRCA1, BRCA2, and other cancer-predisposing genes (6–8). Most breast cancers, however, are not associated with a recognized inherited mutation or a strong family history; instead, they arise from biological changes acquired over a person's lifetime.

The absence of family history therefore does not mean the absence of risk.

Why the Myth Persists

Public discussion of breast cancer genetics often focuses on BRCA1 and BRCA2. Media coverage, high-profile disclosures of inherited mutations, and simplified messages about family risk have helped many people understand the value of genetic testing. However, they can also suggest that breast cancer mainly "runs in families."

The hidden consequence is false reassurance. A young woman with no affected relatives may dismiss a breast change, put off seeking medical advice, or assume that a symptom cannot be cancer.

Early breast cancer can be painless or subtle. Waiting for a family history before taking a concern seriously can delay evaluation. Genetics is important, but it does not explain most breast cancers diagnosed in young women.

NO FAMILY HISTORY? YOU'RE STILL AT RISK

Understanding Family History and Hereditary Risk

Family history includes patterns of breast, ovarian, and other cancers among parents, siblings, children, grandparents, aunts, and uncles. Breast or ovarian cancer diagnosed at a young age, multiple affected relatives, male breast cancer, or several related cancers in one family may indicate inherited susceptibility (6–8).

BRCA1 and BRCA2 are not the only genes of interest. Inherited pathogenic variants in other genes involved in DNA repair and genomic stability may also increase breast cancer risk (9, 10).

Knowing about inherited risk can influence:

- Whether genetic counselling or testing should be considered
- When breast surveillance should begin
- Which imaging methods may be appropriate
- What preventive or risk-reduction options are available
- Whether relatives may also benefit from risk assessment

However, family histories may be incomplete because families can be small, relatives may not share medical information, or earlier generations may have died before developing cancer. As a result, an apparently negative family history does not necessarily rule out inherited susceptibility.

What Sporadic Breast Cancer Means

Sporadic breast cancer develops without a known inherited cancer-predisposition variant or a strong family history. It arises from genetic and biological changes that occur in breast cells during a person's life, rather than being inherited.

These acquired—or somatic—changes can disrupt pathways involved in DNA repair, cell growth and death, metabolism, and intercellular communication (2, 4). They may result from random DNA damage, faulty DNA repair, hormonal signaling, environmental exposures, metabolic influences, cellular aging, or interactions among several factors (11).

Most breast cancers develop from acquired changes, rather than a single inherited cause. "Sporadic" does not mean the cancer arose without a biological explanation; it means the changes responsible for it were not identified as inherited through the family.

What Young Women Should Know

Multiple factors shape breast cancer risk. Beyond inherited susceptibility, age, reproductive history, hormonal exposure, breast density, prior radiation exposure, alcohol use, obesity, and population-level disease patterns can influence risk (11).

Yet many women diagnosed before age 40 have no clear major risk factors. This makes symptom awareness especially important, as routine population screening is generally not offered to average-risk young women.

Young women should:

- Know what is normal for them. Awareness should encourage familiarity, not anxiety.
- Pay attention to persistent changes. A lump, skin change, nipple alteration, unusual discharge, swelling, or another persistent concern warrants evaluation.
- Seek medical assessment regardless of age or family history. A symptom does not become unimportant just because breast cancer has not occurred in the family.
- Discuss meaningful family patterns with a healthcare professional. Genetic counseling may be appropriate when personal or family history suggests inherited risk.
- Recognize that family history is only one part of risk. Most breast cancers arise without a clearly recognized hereditary cause.

A Thought to Carry

Family history can increase breast cancer risk, but no family history does not mean no risk. Most breast cancers do not run in families, yet they still affect lives.

Understanding your family history matters. Knowing what is normal for your breasts matters. Most importantly, a persistent breast change should be evaluated on its own merits—not dismissed because you are young or because no one in your family has had breast cancer.

Early detection begins when awareness replaces assumptions.

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"No Family History? You're Still at Risk"

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WHY EARLY-STAGE BREAST CANCER IN YOUNG WOMEN IS OFTEN PAINLESS

And Why That Can Be Dangerous

Understanding why the absence of pain does not exclude breast cancer—and which breast changes require medical evaluation

Rakesh Kumar, PhD, Hyma Vani Polimera, MD, and Allan Lipton, MD

KEY POINT **Most early-stage breast cancers don't cause pain. Any new or persistent change in the breast should be evaluated whether or not it's painful.**

The Core Misconception

Pain is one of the most intuitive signs of illness. If something is serious, it tends to hurt, which can lead to a dangerous assumption: "If it doesn't hurt, it can't be cancer."

However, early-stage breast cancer often develops without symptoms. A small breast tumor may cause no pain or discomfort, and a painless lump may be the first noticeable sign. Believing that cancer must hurt can lead a young woman to dismiss a new breast change or delay seeking medical care.

Pain is not necessary for breast cancer to be present, nor is it a reliable indicator of whether a breast change is serious.

Why Early Breast Cancer Is Usually Painless

Pain often occurs when inflammation, tissue damage, pressure, or nerve irritation activates pain pathways. Early breast tumors may not cause these effects at first. Because much of the breast is made up of fat and glandular tissue, a small, localized tumor may grow without significantly affecting nearby nerves or tissues (1–3).

Stage 0 or stage I breast cancer is often confined to the ducts, lobules, or a limited area of breast tissue. At this stage, the disease may not cause pain because there is little invasion, inflammation, or pressure on nearby structures. When symptoms do occur, they typically include a painless lump or another visible or palpable change.

Pain may become more likely as a tumor grows, invades nearby tissue, or causes inflammation. Some forms of breast cancer—particularly inflammatory breast cancer—may cause tenderness, burning, swelling, redness, or discomfort because they extensively involve the skin and lymphatic vessels (6–8).

However, pain varies widely between people and types of tumors. Some early-stage cancers cause discomfort, while some advanced cancers cause no pain. Pain—or the lack of it—cannot determine whether cancer is present or what stage it is.

WHY EARLY-STAGE BREAST CANCER IS OFTEN PAINLESS

Understanding Breast Pain in Young Women

Breast pain, or mastalgia, is common in young women and is usually caused by benign hormonal or structural changes rather than cancer (1, 2). To interpret the pain, consider its timing, location, persistence, and any associated breast changes.

Common cyclical breast pain is often:

- Related to the menstrual cycle
- Present in both breasts
- Diffuse rather than confined to one point
- Accompanied by generalized tenderness or lumpiness
- Mild to moderate
- Improved after menstruation

Fibrocystic breast changes and hormonal fluctuations can cause these recurring patterns.

Pain requiring medical assessment may be:

- Localized to one breast or one specific area
- Persistent, progressive, or unexplained
- Unrelated to the menstrual cycle
- Deep, sharp, burning, or radiating toward the armpit or chest wall
- Associated with a lump, thickening, skin change, nipple inversion, or discharge

Pain is rarely the first sign of breast cancer. However, persistent or unusual pain—with or without a lump—should be evaluated, rather than repeatedly dismissed as hormonal or age-related (1, 3–8).

A Thought to Carry

Silence does not mean safety. Early breast cancer is often painless, so waiting for pain to signal a serious problem can waste valuable time. Breast cancer is defined not by pain but by abnormal biological changes. What matters is noticing a new or persistent change in the breast and having it evaluated.

Most breast symptoms in young women are not cancer. Still, neither young age nor the absence of pain should be a reason to dismiss a concern. A change can be important even if it's painless. Early detection starts with noticing it and acting.

Why This Myth Is Dangerous for Young Women

Young women already face several barriers to early detection. They may perceive their risk as lower, routine population screening generally has not yet begun, and dense breast tissue can make some abnormalities more difficult to detect on mammography (9, 10). Symptoms may also be attributed to hormonal changes, menstruation, pregnancy, lactation, exercise, or benign breast conditions.

If a painless breast change is dismissed because "cancer should hurt," medical evaluation may be delayed. That doesn't mean every painless change is cancer; most breast changes in young women are benign. The danger is relying on pain as the deciding factor.

A breast abnormality should be assessed based on its clinical features and how long it persists—not on whether it is painful.

What Should Raise Concern Even Without Pain

Breast cancer is not defined by pain. It is more often recognized by a new or persistent change (1–5). Medical evaluation should be considered for:

- A new lump or area of thickening
- A change in breast size, shape, or contour
- Persistent swelling in part or all of the breast
- Skin dimpling, puckering, redness, or thickening
- A new nipple inversion or change in nipple position
- Unexplained nipple discharge, particularly if bloody or occurring spontaneously
- A new lump or swelling in the underarm
- Persistent pain or another localized change that does not resolve

A painless lump deserves just as much attention as a painful one. Similarly, don't dismiss persistent, localized pain simply because you can't feel a lump.

Young women should know what is normal for their breasts and seek an assessment if a change is new, unexplained, worsening, or persistent. Breast awareness should encourage timely action—not anxiety or repeated self-diagnosis.

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“IT’S PROBABLY JUST A CYST”—OR IS IT?

Why Persistent Breast Changes Should Not Be Dismissed and Deserve Careful Evaluation

Rakesh Kumar, PhD, and Miguel Martín Jiménez, MD

KEY POINT **Most breast cysts are benign, but “probably a cyst” is not a diagnosis. A new or persistent lump should be assessed—not classified by age, pain, or touch alone.**

The Core Misconception

A breast lump in a young woman is often casually labeled “just a cyst.” That label may sound reassuring, especially when the lump is tender or appears to fluctuate with the menstrual cycle. Yet age, pain, or touch alone cannot determine what a lump is.

Most breast cysts are harmless (1–4). The problem is not the presence of a typical simple cyst; it is assuming that every new lump is a cyst before proper assessment. That assumption can create false reassurance and delay evaluation of a solid or complex lesion.

Understanding Breast Cysts

Breast cysts are fluid-filled structures that commonly occur as part of benign fibrocystic breast changes. They may feel smooth, round or oval, and mobile, and may be soft or firm. Tenderness and size can vary with hormonal changes, particularly around menstruation (1–8).

On ultrasound, a simple cyst has characteristic features: it is well circumscribed, has a thin wall, contains fluid without a solid component, and shows posterior acoustic enhancement. When these features are present, the finding is benign. Simple cysts do not become cancerous and do not independently increase breast cancer risk (1, 5–9).

Cysts can, however, make a breast feel generally lumpy or nodular. Knowing what is usual for one’s breasts can help a woman recognize a new, enlarging, or persistent change that warrants assessment.

Why “Just a Cyst” Can Be Misleading

Not all fluid-containing or cyst-like breast lesions are the same. A complicated cyst may contain internal debris but no solid component and is often managed conservatively based on imaging features. A complex cystic-and-solid mass contains a definite solid component or other suspicious features and requires further evaluation, often including biopsy (5–9).

Some malignant tumors can undergo necrosis or develop cystic-appearing areas. For this reason, you cannot safely classify a lump based on how it feels. Clinical examination matters, but imaging helps distinguish a typical simple cyst from a solid mass or a lesion with complex features.

When a Breast Lump Needs Evaluation

Any new or unexplained breast lump deserves attention. Features that make timely medical assessment especially important include:

- A lump that persists, enlarges, or does not return to the usual baseline
- A hard, fixed, irregular, or poorly defined mass
- A change that is confined to one breast or one specific area
- Skin dimpling, redness, thickening, or a change in breast contour
- New nipple inversion or spontaneous nipple discharge, particularly if bloody
- A new lump or swelling in the underarm

Pain and menstrual fluctuations may suggest a benign hormonal cause, but they do not prove a change is harmless. Do not ignore a new lump just because it is painful, and do not assume a painless lump is reassuring. Menstrual timing can provide useful context, but it should not replace clinical assessment when a change is new, persistent, or concerning.

“IT’S PROBABLY JUST A CYST”—OR IS IT?

How Clinicians Evaluate a Breast Lump

Evaluation begins with a clinical history and a breast examination. The clinician considers age, duration, menstrual or reproductive context, family and personal history, mobility, texture, and any associated skin or nipple changes.

For women under 30, targeted breast ultrasound is typically the initial imaging test for a palpable mass. For women aged 30–39, ultrasound is also commonly used, with diagnostic mammography or digital breast tomosynthesis added when clinically appropriate (2, 10). MRI is not usually a first-line test for a new breast lump, but it may play a role in selected cases after conventional imaging.

A simple cyst typically requires no treatment. Aspiration can relieve a painful or tense cyst or help clarify an uncertain finding. If the mass persists, recurs, yields bloody fluid, or has a solid or suspicious imaging component, additional imaging and a core-needle biopsy may be required (1–4).

A Thought to Carry

Most breast cysts are benign, but “probably a cyst” isn’t a diagnosis. Reassurance should come after an appropriate assessment, not instead of one. Imaging—usually targeted ultrasound for younger women—can often quickly and accurately tell a simple cyst from a solid or complex lesion.

A young woman should know what is normal for her breasts and seek medical evaluation for any new, persistent, growing, or otherwise unusual change. Early assessment can offer prompt reassurance when a finding is benign and timely diagnosis when it is not.

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THEY WON'T TAKE ME SERIOUSLY

Self-Advocacy in Young Women's Breast Health

Rakesh Kumar, PhD, Lorna Larsen, RN, BScN, and Birgitte Baht

KEY POINT **Most breast symptoms in young women are benign, but probability is not a diagnosis. Persistent or changing symptoms deserve a clinically supported explanation.**

The Core Misconception

For many young women, the first obstacle to a timely breast cancer diagnosis is not biology alone—it's the belief that cancer is too unlikely to consider. Reassuring phrases such as "You're too young," "It's probably nothing," or "Come back in a few months" may be well-intended, but can cause harm when they take the place of an appropriate clinical assessment.

Breast cancer is less common among younger women than older women, but youth does not provide immunity. Tumors diagnosed in younger women are also more likely to have biologically aggressive subtypes, such as triple-negative and HER2-positive disease (1–3). Age should guide risk assessment, not be a reason to dismiss symptoms.

Why Diagnostic Delay Can Happen

Diagnostic delays can occur at several stages between noticing a breast change and receiving a diagnosis. Patient-related delays may occur when a woman delays seeking care. Provider-related delays may result when symptoms are attributed to benign hormonal or reproductive causes without adequate examination, imaging, or follow-up. System-related delays may stem from limited access, cost, scheduling difficulties, fragmented referrals, or difficulty reaching breast specialists (3–6).

Not every young woman experiences a prolonged delay, and young age alone does not explain every delayed diagnosis. In a prospective study of women diagnosed at age 40 or younger, most received a diagnosis within 90 days. However, clinically significant patient and care delays still occurred, particularly among women facing financial barriers (4). The central concern is not that delay is inevitable, but that many of these delays are preventable.

Where the Diagnostic Pathway Can Break Down

Young women often seek care because of a symptom rather than as part of routine screening. A lump, focal thickening, nipple or skin change, discharge, swelling, or persistent localized pain may initially be attributed to a cyst, fibroadenoma, menstruation, pregnancy, lactation, or another benign condition. These explanations may be correct, but reassurance should follow appropriate evaluation—not replace it.

Evidence from young, symptomatic populations shows that when cancer is not suspected at the initial consultation, the diagnostic pathway can be prolonged, leading to repeated visits or transitions between healthcare services (3, 5, 6). Another risk arises when imaging results do not align with persistent clinical findings. This clinical–imaging discordance warrants reassessment rather than indefinite observation.

Dismissal can also have psychological effects. A woman may begin to question her observations, feel guilty for not insisting, or lose trust in the healthcare system. A single invalidating encounter can make it harder to seek care again if the symptom persists or changes.

What Timely Evaluation Should Look Like

Clinicians should evaluate any new, unexplained, or persistent breast change, regardless of age. Evaluation should begin with a thorough history and breast examination, followed by diagnostic imaging appropriate for the patient's age and symptoms. For women younger than 30 with a palpable mass or any abnormality, targeted ultrasound is usually the initial imaging test. For women aged 30–39, ultrasound and diagnostic mammography or tomosynthesis may be appropriate, depending on the clinical context (7).

A benign assessment should include a clear explanation and a follow-up plan. The patient should know what finding was identified, whether it explains the symptom, what changes to watch for, and when to return. If a palpable abnormality persists, grows, or remains clinically concerning despite reassuring imaging, further clinical review, additional imaging, or tissue sampling may be necessary.

THEY WON'T TAKE ME SERIOUSLY

Self-Advocacy

Self-advocacy isn't about challenging clinicians or assuming every symptom is cancer. It means helping ensure decisions are based on clinical findings, not on reassurance based on age. A young woman can:

- Describe when the change began and whether it is persistent, enlarging, or different from her usual breast pattern
- Ask what diagnosis best explains the symptom and whether the examination and imaging are concordant
- Request the recommended diagnostic imaging when a symptom has not been adequately evaluated
- Ask for a specific follow-up interval and instructions for what to do if the change persists
- Seek a second opinion when a concerning or changing symptom remains unexplained

Self-advocacy can improve communication and help prevent missed follow-ups. Clinicians and healthcare systems share responsibility for listening, documenting, evaluating, and closing the diagnostic loop.

A Thought to Carry

"They won't take me seriously" should never be an expected part of breast healthcare for young women. Most breast symptoms in this age group are benign, but probability is not a diagnosis. Persistent or changing symptoms deserve a clinically supported explanation.

If possible, ask what happens next and keep following up until the symptoms and the medical assessment align. Healthcare professionals must also move beyond age-based dismissal and evaluate symptoms directly. Timely diagnosis is a shared responsibility —not a burden that should fall on the young woman alone.

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NOT EVERY LUMP IS HARMLESS. ACT EARLY.

Breastfeeding Changes Are Common—but Persistent Lumps or Unusual Pain Should Always Be Evaluated Early

Rakesh Kumar, PhD, and Sabhyata Gupta, MD

KEY POINT **Most breast changes during breastfeeding are benign. However, lactation should never be used to explain not paying attention to a persistent, enlarging, or otherwise concerning change. Prompt consultation with your doctor is safe and can prevent avoidable diagnostic delay.**

The Core Misconception

Breastfeeding commonly causes fullness, tenderness, nodularity, plugged ducts, and inflammation. Since these changes are expected, a new lump or visible abnormality may be dismissed as "just milk," mastitis, or another harmless effect of lactation. Another misconception is that pain rules out cancer or that breast imaging must wait until breastfeeding ends.

Most breast lumps during pregnancy and lactation are benign, but normal lactational changes can resemble breast cancer in appearance and symptoms. Pregnancy-associated breast cancer is commonly defined as cancer diagnosed during pregnancy, within the first year postpartum, or during lactation (1–3). A reassuring explanation is appropriate only when supported by the clinical course and diagnostic findings.

Common Benign Changes During Breastfeeding

During lactation, prolactin stimulates milk production, while oxytocin helps release it. The breast becomes more glandular and vascular, and its usual texture may change significantly. Examples of common benign reasons include:

- A galactocele, or milk-filled cyst
- Milk stasis or a plugged duct
- Mastitis or a breast abscess
- A lactating adenoma or fibroadenoma

Doctors can recognize these conditions by their patterns. A plugged duct may improve after feeding or expressing milk. Mastitis typically causes localized pain, warmth, redness, and sometimes fever, while a galactocele may feel smooth and mobile. However, no symptom pattern is definitive: cancer can be painless or painful, and inflammatory breast cancer can resemble an infection. Persistence or progression matters more than any single symptom (4–6).

When Cancer and Lactation Can Look Alike

Pregnancy-associated breast cancer is uncommon, but it deserves particular attention because physiologic breast changes may conceal a tumor or make a new finding harder to interpret. A palpable mass is the most frequent presentation, but equal attention to any other noticeable abnormality is equally important. Other concerning changes can include focal thickening, skin dimpling or thickening, nipple retraction, bloody discharge, persistent unilateral redness, or enlarged underarm lymph nodes (4, 7, 8).

Diagnostic delay can occur when clinicians continue to attribute a symptom to lactation even though it does not resolve. Recent evidence suggests that women who were breastfeeding at diagnosis were more likely to have their symptoms attributed to lactational changes and to experience delays; early postpartum disease was also associated with a higher stage at diagnosis (7). These findings do not mean that every postpartum lump is dangerous. Rather, an unresolved finding needs a diagnostic endpoint—not repeated reassurance alone.

What Prompt Evaluation Should Include

A new or persistent breast symptom during lactation warrants a focused history and clinical examination. Targeted ultrasound is usually the first imaging test for a palpable mass and can distinguish cystic from solid lesions. Diagnostic mammography may also be appropriate when clinically indicated; lactation alone is not a reason to delay imaging. Feeding or pumping shortly before imaging can reduce breast density and discomfort (4, 5, 9).

If imaging reveals a suspicious lesion or a clinically concerning mass persists despite reassuring imaging, tissue sampling may be necessary. Ultrasound-guided core-needle biopsy can be performed during lactation. Base imaging and biopsy decisions on clinical findings, not on the assumption that breastfeeding renders evaluation unsafe.

NOT EVERY LUMP IS HARMLESS. ACT EARLY.

Changes That Should Not Be Watched Indefinitely

A brief course of conservative treatment may be reasonable when the presentation strongly suggests a benign lactational problem, provided there is a clear plan for reassessment. Prompt review is especially important for:

- A lump that persists or enlarges despite feeding, milk expression, or treatment
- A hard, irregular, or fixed mass
- A change that recurs in the same location
- Skin dimpling, peau d'orange, persistent unilateral redness, or nipple retraction
- Bloody nipple discharge or an unexplained enlarged underarm node

A rigid 1- or 2-week rule cannot diagnose cancer, and infections may take time to resolve. The practical principle is simple: if the expected improvement does not occur, reconsider the diagnosis and do not delay imaging. Clinical and imaging findings must also agree; any discordance warrants reassessment (4, 5, 8).

A Thought to Carry

Breastfeeding-related changes are common, and most lumps are not cancer. Still, common changes should never be a reason to skip evaluation. Any persistent, enlarging, or atypical breast change warrants prompt clinical assessment, regardless of age, pregnancy, or breastfeeding status.

Don't automatically wait for breastfeeding to end. Ask what diagnosis accounts for the change, what improvement to expect, and when reassessment is planned. If imaging or a biopsy is indicated, lactation should not delay it.

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INFLAMMATORY BREAST CANCER IN YOUNG WOMEN

Why This Fast-Spreading Disease Is Often Missed and Misdiagnosed

Rakesh Kumar, PhD, and Naoto T. Ueno, MD, PhD, FACP

KEY POINT **Inflammatory breast cancer may develop without a distinct lump. Rapid redness, swelling, skin thickening, breast enlargement, or nipple change requires prompt evaluation—especially when presumed infection does not improve as expected.**

The Core Misconception

Breast cancer awareness often follows a familiar sequence: a lump appears, grows, is detected, and is treated. This model is useful, but it does not apply to every case. Inflammatory breast cancer (IBC) challenges several common assumptions: it may not form a palpable mass, may not progress slowly, and can mimic an infection or inflammation.

IBC is rare, representing approximately 1–5% of breast cancers in the United States. However, its rapid progression and early spread mean it accounts for a disproportionate share of breast cancer deaths (1–4). IBC is often diagnosed at a younger age than other breast cancers, though it can occur at any age in adulthood (4). Therefore, do not dismiss a rapidly changing breast lesion solely because the patient is young.

IBC Does Not Follow the Lump-Based Model

IBC is defined mainly by its clinical pattern, not by a single mass. Cancer cells block lymphatic vessels in the breast skin, causing diffuse changes that may affect a substantial portion of the breast. Symptoms usually develop quickly—often over several weeks or a few months—and may include (2, 5, 6):

- Diffuse redness or a pink, reddish-purple, or bruised appearance
- Swelling, heaviness, warmth, or rapid breast enlargement
- Skin thickening or peau d'orange
- Nipple flattening or inversion
- Tenderness or enlarged lymph nodes under the arm or near the collarbone

A discrete lump may be absent. This does not make the process harmless; rather, it helps explain why conventional lump-centered awareness can fail. By the time IBC is recognized, it is classified as stage III or IV, depending on whether distant spread is present (4).

Why IBC Is Often Missed in Young Women

IBC can initially resemble conditions that are far more common in young women, such as mastitis, cellulitis, allergic reactions, and skin inflammation. This confusion is especially likely during pregnancy, breastfeeding, or the postpartum period, when breast redness, warmth, tenderness, and swelling are often attributed to infection or lactation-related changes.

An initial course of antibiotics may be appropriate when infection is clinically likely. The risk arises when treatment is repeated despite minimal or no improvement, or when imaging and biopsy are delayed because the woman is considered too young to have breast cancer. IBC can progress substantially during observation. Clinical assessment should therefore be guided by symptoms, include a defined reassessment time, and prompt escalation if the expected response does not occur (2, 4, 7).

Rapid Progression Reflects Distinctive Biology

IBC does not just appear inflammatory; tumor emboli in dermal lymphatic channels can block lymphatic drainage, leading to edema, skin thickening, and peau d'orange. Tumor-related cytokine, vascular, immune, and invasive signaling also contributes to the inflammatory phenotype (5–8). The breast may look infected, even though the underlying process is malignant.

IBC is often associated with aggressive molecular features, including HER2-positive and triple-negative disease, high proliferation, angiogenesis, and early lymphovascular dissemination (3, 5–8). Dermal lymphatic tumor emboli support the diagnosis when present, but their patchy distribution can make them absent on biopsy. Their absence on a skin biopsy does not, by itself, exclude IBC. Diagnosis depends on integrating the rapid clinical presentation with imaging and pathology (2, 5, 9).

INFLAMMATORY BREAST CANCER IN YOUNG WOMEN

What Timely Evaluation Should Include

A rapidly changing breast warrants clinical examination and diagnostic imaging, not screening alone. Mammography may show skin or trabecular thickening, diffuse density, distortion, or an underlying lesion, but may not reveal a distinct mass. Ultrasound can assess the breast and regional lymph nodes and identify a biopsy target. When needed, breast MRI can help define the extent and distribution of disease (4, 9, 10)

Diagnosis generally requires a core-needle biopsy of an abnormal breast finding. If dermal lymphatic involvement is suspected, a skin punch biopsy may also be performed. However, IBC remains a clinicopathologic diagnosis, so neither imaging nor a single biopsy result should be considered in isolation. Once cancer is confirmed, biomarker testing and staging studies help guide treatment. Persistent erythema, edema, peau d'orange, or breast enlargement after appropriate treatment for presumed infection should prompt urgent assessment by a breast specialist—not another indefinite period of observation (2, 4, 9, 10).

A Thought to Carry

Inflammatory breast cancer is not necessarily invisible; it is often misinterpreted because it does not match the familiar image of a slowly enlarging breast lump. Its rapid progression is not evidence against cancer. Rapid progression is part of the warning pattern.

If one breast becomes red, swollen, thickened, enlarged, or otherwise changes quickly —and doesn't improve as expected—ask what may be causing these changes and what to do next. Awareness must extend beyond lumps. With IBC, recognizing the pattern and acting promptly can help speed up the correct diagnosis.

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DENSE BREASTS: HIDDEN RISK—BUT NOT ALWAYS HIGH RISK

Understanding What Breast Density Means for Risk, Mammography, and Young Women

Rakesh Kumar, PhD, Sunil Saini, MBBS, MS, and Vijian Dhevan, MD

KEY POINT **Dense breasts are common and cannot be identified by touch. Density can both increase breast cancer risk and make cancers harder to see on mammography, but it does not determine an individual woman's future or automatically require additional imaging.**

The Core Misconception

Breast density is often misunderstood in two opposite ways. Some women assume it doesn't matter because it's common, while others take a "dense breast" notification to mean that cancer is likely or already present. Neither assumption is correct. Density describes the composition of the breast on imaging; it is not a diagnosis.

Dense breasts are more common at younger ages, but density varies widely among women of the same age and may change over time. Breast density is also unrelated to how a breast feels: a firm breast is not necessarily mammographically dense, while a large or soft breast may still contain substantial fibroglandular tissue. Only breast imaging—most commonly mammography—can classify density (1, 2).

What Breast Density Actually Means

The breast is made up of fat, fibrous connective tissue, ducts, and milk-producing lobules. On a mammogram, fat appears relatively dark, while fibrous and glandular tissues appear white. Radiologists generally use four BI-RADS density categories (1):

- Almost entirely fatty
- Scattered areas of fibroglandular density
- Heterogeneously dense
- Extremely dense

The last two categories are commonly described as "dense." Density is not fixed. It often decreases with age and menopause, but hormonal exposure, pregnancy, lactation, body composition, medications, and individual biology can influence it. A woman's category may also differ between examinations because density assessment is partly subjective and because breast composition changes over time (1–3).

Density Is a Risk Factor—Not a Prediction

Higher mammographic density is independently linked to increased breast cancer risk (3, 4), though the strength of this association depends on which groups are compared. Women with extremely dense breasts may have several times the relative risk of women with almost entirely fatty breasts, while comparisons with the average woman produce smaller estimates. Relative risk should not be mistaken for absolute risk.

The association is biologically plausible, but it cannot be explained by a single mechanism. Dense tissue contains more epithelial and stromal components and less fat; its microenvironment may also differ in collagen, growth signaling, hormonal exposure, and tissue remodeling. These characteristics may contribute to susceptibility, but density is an imaging marker—not proof that a particular breast will develop cancer. The implications of the same density category can vary considerably from one woman to another (3, 4).

Most women with dense breasts will not develop breast cancer, and breast cancer can also occur in women whose breasts are not dense. Individual risk depends on age, family history, inherited variants, prior breast biopsy findings, reproductive history, previous chest radiation, and other factors. Density should therefore be considered as part of a broader risk assessment, not treated as a stand-alone verdict (3, 4, 10).

The Second Issue Is Mammographic Masking

Density matters not only because it affects risk, but also because it can affect detection. Many breast cancers and dense tissue both appear white on a mammogram. This overlap can hide, or "mask," a cancer, reducing mammographic sensitivity and increasing the chance that cancer is diagnosed between scheduled screenings (5, 6, 10).

This does not mean mammography is useless in dense breasts. Mammography and digital breast tomosynthesis can still detect calcifications, distortion, masses, and other abnormalities, and remain central screening tools for people in age- and risk-appropriate groups. Density affects mammography's performance but does not eliminate its value.

DENSE BREASTS: HIDDEN RISK—BUT NOT ALWAYS HIGH RISK

What Young Women Should Know

Most average-risk women younger than the usual screening age do not have mammograms solely to determine breast density. Density is generally reported when mammography is performed for screening, risk-based surveillance, or diagnostic evaluation. In the United States, federal rules require mammography reports and patient summaries to include breast-density information (7).

Supplemental ultrasound or MRI may find additional cancers in some women with dense breasts, but these tests can also lead to more recalls, false-positive findings, biopsies, costs, and anxiety. Density alone does not support one universal recommendation. Decisions should take into account the degree of density, overall calculated risk, age, personal and family history, prior imaging, and the benefits and limitations of each modality (8–10).

Regardless of density, a new lump, focal thickening, nipple or skin change, discharge, or persistent localized symptom requires diagnostic evaluation. A recent negative mammogram—or a statement that symptoms are difficult to assess because of density—should not replace evaluation of a persistent clinical finding.

A Thought to Carry

Breast density is neither a diagnosis nor a prediction of what will happen. It's one piece of information with two distinct implications: it may affect breast cancer risk and make mammograms harder to interpret. Understanding both helps prevent false reassurance and unnecessary fear.

If you receive a dense-breast notification, ask two questions: What is my overall breast cancer risk, and does my individual situation warrant any change in imaging? The most useful response is not necessarily more testing; it is a risk-informed plan that integrates density with age, history, symptoms, and clinical judgment.

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BREAST IMAGING IN YOUNG WOMEN

Myths, Misconceptions, and Reality

How Imaging Really Works—and What Every Young Woman Should Understand

Rakesh Kumar, PhD, and Samantha Heller, MD, PhD

KEY POINT **No single imaging test is best for every young woman. The appropriate pathway depends on symptoms, age, breast density, personal risk, and what clinical question must be answered.**

The Core Misconception

Young women may notice a lump, focal thickening, nipple changes, or asymmetry early, but may delay evaluation because they have heard: "I am too young," "mammograms do not work in dense breasts," or "my scan was normal, so I am fine." These statements contain fragments of truth, but they can be dangerous when treated as absolute rules.

Breast imaging in young women differs from routine population screening. It is typically guided by symptoms or risk and may involve more than one modality. The goal is not to identify one test as universally superior, but to match the test—or sequence of tests—to the woman's age, symptoms, breast composition, and underlying risk.

Why Dense Breasts Do Not Make Imaging Useless

Breasts contain fat, fibrous connective tissue, ducts, and milk-producing lobules. On mammograms, fat appears dark, while fibrous and glandular tissue appear white. Most breast cancers also appear white, so dense tissue can obscure a tumor and reduce mammographic sensitivity (1–3). Detection may be more difficult, but it remains possible.

Density is therefore a limitation to understand—not a reason to stop imaging. Mammography can still reveal masses, distortion, asymmetry, and especially microcalcifications, which may be an early sign of ductal carcinoma in situ. Ultrasound and MRI offer complementary information and may be added when clinically appropriate. These tests can help address one another's limitations, but additional imaging should be guided by the clinical question, not density alone (2–5).

Mammography Still Has an Important Role

The belief that mammography does not work for young women is too broad. Younger women often have denser breasts, which reduces sensitivity, but "less sensitive" does not mean ineffective. Mammography is used for age- and risk-appropriate screening and can also support diagnostic evaluation when a younger woman has concerning symptoms or a suspicious ultrasound finding (2, 5–7).

Mammography is especially valuable for detecting microcalcifications and showing how abnormalities are distributed across both breasts. Its radiation dose is low—roughly equivalent to a few weeks to a couple of months of natural background exposure, depending on the comparison used. When mammography is clinically indicated, its expected diagnostic benefit substantially outweighs the very small radiation risk (8).

Ultrasound and MRI Have Specific Roles

Ultrasound is often the first test for a palpable lump in women under 30, and may be used first or alongside mammography for women aged 30–39. It uses no radiation, distinguishes many cysts from solid findings, and allows real-time evaluation. However, ultrasound depends on the operator, may miss microcalcifications or subtle disease, and can produce false-positive findings that lead to further imaging or biopsy (5, 9).

MRI is the most sensitive breast-imaging modality and is important for selected high-risk women, including many carriers of pathogenic variants and some women with a strong family or treatment history. However, MRI is not automatically the "best" test for everyone. It usually requires intravenous contrast, may reveal benign changes, and can lead to recalls or biopsies. Its value is greatest when there is a clear indication and the results can meaningfully guide care (4, 10).

BREAST IMAGING IN YOUNG WOMEN

Normal Imaging Does Not Override a Persistent Concern

Most women with negative diagnostic imaging do not have breast cancer, but every imaging method can miss it. Dense tissue, subtle lesions, fast-growing tumors, and certain disease patterns can make cancer harder to detect. A reassuring report reduces concern, but it does not explain away a persistent, suspicious clinical finding.

Family history should not determine whether a symptom is evaluated. Many women diagnosed with breast cancer have no known affected relatives, and inherited susceptibility accounts for only part of the risk. A new breast change should be assessed based on its clinical features, not dismissed because a woman is young or has no family history.

If a lump, bloody nipple discharge, skin change, or other focal symptom persists despite normal imaging, clinical follow-up is still necessary. The next step may be a repeat targeted assessment, a different imaging method, a surgical consultation, or a palpation-guided biopsy if the physical finding remains concerning. Imaging supports clinical judgment; it does not replace it (5).

A Thought to Carry

Breast imaging follows a decision pathway, not a contest between machines. Symptoms often call for targeted ultrasound, mammography, or both. High-risk surveillance may combine MRI with mammography, while unresolved clinical concern may still require a tissue diagnosis—even if imaging is negative.

The central message is simple: choose the right test, at the right time, for the right reason. Any new, different, or persistent breast change deserves evaluation, regardless of age or family history. Early detection begins before the machine—with awareness, timely action, and a willingness to seek further assessment when something doesn't feel right.

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BREAST CANCER IS NOT THE SAME AT EVERY AGE

Understanding Biological Differences—and Why Young Women Need Age-Aware Care

Rakesh Kumar, PhD, and Carlos Garcia-Cantu, MD, FACS

KEY POINT **Young age does not define one breast cancer biology. Tumor subtype, stage, inherited risk, treatment response, reproductive priorities, and survivorship needs must all be considered together.**

The Core Myth

Breast cancer is often discussed as a single disease affecting women of different ages. In reality, it is a diverse group of diseases that vary in receptor status, molecular features, aggressiveness, treatment response, and prognosis. Age at diagnosis can influence how these features are distributed, but age alone does not determine an individual tumor's behavior (1, 2).

Young women account for a minority of breast cancer diagnoses, but the disease has a disproportionate personal and social impact on this group. Diagnosis may come during education, career development, relationships, pregnancy planning, or early parenthood. Its effects therefore extend beyond tumor control to fertility, long-term health, family life, employment, and decades of survivorship (1–3).

Breast Cancer Is Not One Biological Disease

Clinical breast cancer classification starts with three key biomarkers: estrogen receptor, progesterone receptor, and human epidermal growth factor receptor 2 (HER2). These markers define broad groups that guide treatment: hormone receptor-positive/HER2-negative, HER2-positive, and triple-negative breast cancer. Gene expression analyses further distinguish intrinsic molecular subtypes, revealing additional biological diversity within these clinical groups (2, 4).

These distinctions matter because each subtype follows a different treatment pathway. Hormone receptor-positive disease may respond to endocrine therapy; HER2-positive disease can be treated with HER2-directed agents; and triple-negative disease may require chemotherapy, immunotherapy, or other approaches, depending on stage and setting. The key question is therefore not simply, "How old is the patient?" but rather, "What disease does she have, and what are its actionable features?"

Age Changes the Distribution—not the Rules

Hormone receptor-positive/HER2-negative breast cancer remains common in young women. However, triple-negative and HER2-positive tumors account for a larger share of cases among younger people than among older populations (2, 4, 5). These subtypes may grow more quickly and often require treatments different from those used for endocrine-responsive disease.

Young age may also be associated with prognosis in some subtypes, but the relationship varies. Outcomes are influenced by stage at diagnosis, tumor grade, treatment, access to care, ancestry, and socioeconomic circumstances. Rising rates of distant-stage breast cancer among younger U.S. women underscore the need to promptly evaluate persistent symptoms, although these trends do not prove that all tumors in young women are biologically more aggressive (5, 6).

Inherited susceptibility is also more clinically prominent at younger ages. Pathogenic variants in genes such as BRCA1 and BRCA2 are more common among women diagnosed at younger ages than in unselected breast cancer populations. Genetic assessment can influence systemic therapy, surgical choices, surveillance, and risk management for patients and their relatives (2).

Treatment Must Reflect Both Tumor and Life Stage

Personalized care for a young woman should consider tumor biology and stage alongside ovarian function, fertility goals, pregnancy plans, sexual and bone health, and the long-term effects of treatment. Discuss fertility preservation early if treatment may affect ovarian reserve. For hormone receptor-positive disease, decisions about tamoxifen, ovarian function suppression, and aromatase inhibitors should balance recurrence risk, side effects, adherence, and reproductive priorities (7, 8).

More treatment is not necessarily better. A young patient should not receive intensive therapy based on age alone, nor should clinically significant risk be downplayed because her cancer is uncommon. The goal is evidence-based treatment tailored to the tumor that protects future health and quality of life whenever possible.

BREAST CANCER IS NOT THE SAME AT EVERY AGE

Survivorship Has a Longer Horizon

Young survivors may live for decades after diagnosis, making late and cumulative effects particularly important. Premature menopause, infertility, bone loss, cardiovascular risks, neuropathy, sexual-health concerns, and cognitive symptoms can affect work, parenting, relationships, and emotional well-being. Anxiety about recurrence and the possibility of second cancers may continue long after active treatment ends (9)

Survivorship care should begin at diagnosis, not after therapy. It should include monitoring treatment effects, reproductive and menopausal care, psychosocial support, healthy-lifestyle counseling, and coordination between oncology and primary care. Supporting survival is essential, but supporting the life that follows is just as important.

A Thought to Carry

A young woman with breast cancer is not simply an unusually early case of a disease usually associated with older people. She may have a different mix of subtypes, a greater likelihood of inherited susceptibility, reproductive implications, and a much longer period to manage the effects of treatment.

Age should prompt questions, not close them. What are the tumor's subtype and stage? Is genetic evaluation appropriate? How might treatment affect ovarian function, fertility, pregnancy plans, and long-term health? Age-aware care means accurately understanding the biology, promptly evaluating symptoms, and supporting the whole person through diagnosis, treatment, and survivorship.

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HORMONAL THERAPY IN YOUNG WOMEN WITH BREAST CANCER

Myths, Evidence, and Clinical Reality

Why Endocrine Therapy Is a Core Treatment—not an Optional Add-On

Rakesh Kumar, PhD, and Michael Gnant, MD, FACS, FEBS

KEY POINT For hormone receptor-positive breast cancer, endocrine therapy is a central treatment that lowers recurrence and mortality. The drug, ovarian strategy, and duration must be individualized and supported over time.

The Core Misconception

Hormonal—or endocrine—therapy is sometimes seen as secondary to chemotherapy: a mild treatment that can be stopped if side effects occur, or an optional precaution after surgery. These views overlook both the biology of hormone receptor-positive breast cancer and the purpose of long-term therapy.

In these cancers, estrogen signaling can drive tumor growth. Surgery removes visible disease, while chemotherapy targets susceptible cancer cells over a relatively short period. Endocrine therapy addresses a different concern: microscopic hormone-sensitive cells may remain and lead to recurrence years later. By blocking estrogen receptors, suppressing ovarian function, or reducing estrogen production, endocrine therapy lowers this ongoing risk (1–3).

Why Endocrine Therapy Matters for Years

Tamoxifen and aromatase inhibitor strategies have substantially reduced recurrence and breast cancer mortality in appropriately selected patients with hormone receptor-positive disease (1, 2). Their importance is especially clear because recurrence risk persists beyond the first few years. Even after five years of therapy, hormone receptor-positive breast cancer can continue to recur for many years (3).

Feeling well after surgery, radiation, or chemotherapy does not mean preventive treatment is unnecessary. Endocrine therapy is prescribed precisely because residual risk usually cannot be detected through examination or imaging. Its benefits accumulate over time, so persistence matters—but the expected absolute benefit varies by stage, nodal status, tumor biology, genomic risk, age, and prior treatment.

Tamoxifen Ovarian Suppression and Aromatase Inhibitors

Tamoxifen blocks estrogen signaling at the receptor and is used in premenopausal women. Ovarian function suppression, often achieved with a gonadotropin-releasing hormone agonist, temporarily lowers ovarian estrogen production. For selected women, especially those with higher-risk disease, adding ovarian suppression to tamoxifen or combining it with an aromatase inhibitor can further reduce the risk of recurrence (4, 5).

An aromatase inhibitor should not be used alone when ovarian function remains active. In premenopausal women, the ovaries may continue to produce estrogen even when peripheral estrogen synthesis is inhibited. If an aromatase inhibitor is chosen, ovarian suppression must be effective and monitored when clinically indicated. The most intensive regimen is not needed for every patient; treatment should be guided by recurrence risk, menopausal status, tolerability, and informed preference (4–6).

Side Effects Are Real—and Require Active Care

Endocrine therapy is not cytotoxic chemotherapy, but it can still affect quality of life. It may cause hot flashes, sleep disturbances, mood changes, vaginal symptoms, sexual dysfunction, and musculoskeletal pain. Ovarian suppression can intensify menopausal symptoms, and aromatase-inhibitor regimens may contribute to bone loss. Patient-reported outcomes indicate that these effects can be substantial, particularly for young women balancing work, relationships, sexuality, and family plans (6).

The answer is not to dismiss symptoms or assume treatment cannot be sustained. Early discussion, exercise, nonhormonal symptom-management options, sexual health support, bone health monitoring, and—when appropriate—a supervised change in the agent or schedule may help. Patients should contact their oncology team before stopping treatment. Shared decision-making can help protect both quality of life and anticancer benefit.

HORMONAL THERAPY IN YOUNG WOMEN WITH BREAST CANCER

Fertility Duration and Adherence Must Be Individualized

Endocrine therapy delays attempts to become pregnant, whereas ovarian suppression temporarily halts ovarian activity. Fertility after treatment depends on age, pre-treatment ovarian reserve, chemotherapy exposure, treatment duration, and individual recovery, so it cannot be guaranteed. Whenever possible, discuss fertility preservation and reproductive planning before therapy.

The POSITIVE study found that selected women who had completed an initial period of endocrine therapy could temporarily pause treatment to attempt pregnancy without a higher short-term recurrence rate than an external control cohort. Longer follow-up remains important, and this approach requires close oncologic supervision—it does not show that stopping treatment without supervision is safe (7).

Five years of therapy remains appropriate for some women, while extended treatment may be considered for those at higher risk of late recurrence. Persistence also matters: observational studies link early discontinuation or poor adherence to worse outcomes (8–10). Therefore, plan treatment duration and any interruptions based on risk, benefits, side effects, fertility priorities, and emerging evidence.

A Thought to Carry

Endocrine therapy is not an afterthought. For a young woman with hormone receptor-positive breast cancer, it can be one of the strongest defenses against both early and late recurrence. Its importance comes not from dramatic effects, but from the sustained interruption of a biological signal that may remain relevant for years.

The goal is neither adherence at any human cost nor symptom relief that creates avoidable cancer risk. It is personalized, supported care: the right endocrine strategy for the right duration, with fertility planning, active side-effect management, and ongoing communication. When difficulties arise, the next step should be a conversation—not silent suffering or an unplanned stop.

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THE MYTH ABOUT RISK-REDUCING MASTECTOMY IN YOUNG WOMEN

Reframing Terminology, Risk Evidence, and Decision-Making

Rakesh Kumar, PhD, Caroline Drukker, MD, PhD, and Marie-Jeanne T. F. D. Vrancken Peeters, MD, PhD

KEY POINT **Risk-reducing mastectomy can greatly lower breast cancer risk in carefully selected very-high-risk women, but it cannot remove all risk and is not a routine precaution for most young women.**

The Core Misconception

The term "preventive mastectomy" can suggest certainty: removing the breasts means breast cancer can no longer occur. It can also make a major operation sound like a reasonable precaution for any woman seeking reassurance. Neither interpretation is accurate. "Risk-reducing mastectomy" is the better term because the operation substantially lowers risk but does not eliminate it. The decision should be considered in light of an individual woman's actual likelihood of developing breast cancer (1, 2).

Fear, family history, public stories, and overestimating personal risk can all shape decisions, especially among young women. Good counseling neither promotes nor discourages surgery in the abstract. Instead, it clarifies baseline risk, expected risk reduction, potential survival benefits, alternatives, surgical consequences, and the values that matter most to the woman facing an irreversible decision.

Risk Is Reduced—not Eliminated

Bilateral risk-reducing mastectomy can lower breast cancer incidence by approximately 90% or more among women with BRCA1 or BRCA2 pathogenic variants and other selected very-high-risk groups (2–4). Some risk remains because mastectomy cannot remove every breast epithelial cell. Small amounts of tissue may remain beneath the skin, near the chest wall, or around the nipple-areolar complex.

Breast cancer can still occur after risk-reducing surgery, although it is uncommon. For this reason, surgery should not be presented as a guarantee or a complete "cure" for inherited risk. It greatly reduces risk but does not eliminate the underlying genetic susceptibility or the need for individualized follow-up. Nor does the operation address the risk of other cancers linked to some hereditary syndromes.

Who May Reasonably Consider the Operation

Risk-reducing mastectomy is generally considered for women at very high lifetime risk. This includes many carriers of high-penetrance pathogenic variants, such as BRCA1, BRCA2, TP53, PALB2, PTEN, STK11, or CDH1, as well as some women with compelling family histories or prior high-dose chest irradiation. The strength of the recommendation varies by gene, age, family history, other health risks, and available surveillance (1, 5).

For women at average or moderately increased risk, the balance is different. Surgery may offer only a small absolute risk reduction while causing permanent physical changes and possible complications. Genetic counseling, testing when indicated, and a personalized risk estimate should inform surgical decisions. For many high-risk women who do not choose surgery, enhanced surveillance with MRI and mammography may be an effective alternative.

Evidence on mortality is less extensive than that on incidence, but newer observational studies suggest that risk-reducing mastectomy may be associated with lower breast cancer-specific mortality among BRCA1/2 carriers. These findings are important but should be considered in light of study design, gene-specific risk, age, screening, and personal preference (4).

Risk-Reducing Surgery Is Not the Same as Contralateral Mastectomy

Bilateral risk-reducing mastectomy in an unaffected high-risk woman differs from contralateral prophylactic mastectomy in a woman who already has cancer in one breast. Removing the unaffected breast lowers the risk of a new cancer in the other breast but has not been shown to improve overall survival for most women without a high-risk pathogenic variant (6).

THE MYTH ABOUT RISK-REDUCING MASTECTOMY IN YOUNG WOMEN

The main issue with survival may stem from recurrence or metastasis of the original cancer, rather than from a future cancer in the opposite breast. Modern systemic therapy also reduces contralateral risk. Because younger women often overestimate this risk, discussions should separately address local risk reduction, symmetry or reconstruction preferences, anxiety, and expectations about survival, rather than combining them into a single promise (6, 7).

Surgery and Reconstruction Have Lasting Consequences

Risk-reducing mastectomy, with or without reconstruction, is major surgery. Potential consequences include infection, bleeding, wound complications, implant or flap problems, additional operations, loss or changes in breast and nipple sensation, dissatisfaction with appearance, and effects on sexuality or body image. Many women report satisfaction, but this does not mean there are no trade-offs or regrets (8, 9).

Pain does not always resolve after healing. Post-mastectomy pain syndrome can cause persistent burning, numbness, tightness, or stabbing pain in the chest wall, axilla, or upper arm. Some studies link younger age with a higher risk. Early recognition can facilitate referrals to rehabilitation, pain specialists, and psychosocial care, rather than leaving women to believe their chronic symptoms are imaginary or unavoidable (10).

A Thought to Carry

Risk-reducing mastectomy is neither an absolute safeguard nor inherently excessive. For a woman with a very high inherited risk, it can prevent a breast cancer diagnosis and may improve important outcomes. For a woman at average or moderate risk, the same operation may offer limited absolute benefit relative to its permanent costs.

The right decision generally starts with the right comparison: risk reduction, not risk elimination; individualized benefit, not fear-driven certainty; and surgery weighed alongside surveillance and other health priorities. Precision prevention matches intervention intensity with risk and supports informed women in choosing surgery or surveillance.

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READ THE ORIGINAL ILLUSTRATED ARTICLE

View the complete article and accompanying figures:

"The Myth About Risk-Reducing Mastectomy in Young Women"

https://lnkd.in/gc7t-e8i

What the 12 Myths Collectively Reveal

The twelve myths point to a recurring problem: broad assumptions can delay timely awareness when they replace an individual medical assessment. Young age, no family history, no pain, breastfeeding, or reassuring imaging may influence clinical interpretation, but none of these alone can establish that a new, persistent breast abnormality is harmless.

Together, the articles show that breast health awareness should go beyond checking for a lump. Changes in the skin, nipples, breast size, or underarm lymph nodes matter, too. A symptom's pattern, persistence, and progression can be more informative than whether it matches a familiar expectation.

The collection also highlights breast cancer's diversity. Age alone doesn't determine tumor biology, and no imaging test, treatment, or preventive procedure suits everyone. Decisions should consider symptoms, individual risk, tumor characteristics, reproductive priorities, and quality of life.

The shared message is that every young woman must know what's normal for her and take informed action. Most breast changes in young women are benign, but reassurance should follow an appropriate assessment and include a clear follow-up plan. Education can help young women recognize changes and participate in their care, while clinicians and healthcare systems must promptly address their concerns.

From Awareness to Action: Breast Self-Care and Timely Diagnosis

Breast self-care starts with understanding what is normal for your body and noticing any new changes, since you know your body best. This awareness can help you communicate with a clinician, but it does not replace a medical assessment or recommended screening.

Seek prompt medical advice for any new, persistent, growing, or otherwise unusual breast change. Don't wait for pain, a family history, screening eligibility, or the end of breastfeeding to seek care. Explain where the change is, when it began, and whether it's progressing.

A doctor's consultation can help explain what may be causing the symptom and outline a plan. Ask whether imaging or other tests are appropriate, what improvement to expect, and when to return for reassessment. If the finding persists or the explanation doesn't seem right, seek further evaluation; a second opinion may help.

Preventing diagnostic delays also requires action from healthcare professionals and systems. It is essential to listen carefully, avoid dismissing concerns because of a patient's age, and not adopt a wait-and-watch approach when the faster growth rate of breast cancer in young women warrants further action. Complete appropriate investigations, referrals, and follow-up.

Reach out to trusted family members, peers, patient advocates, or breast health organizations for support. Reliable educational resources and services can also help you navigate your concerns. Sharing what's on your mind and asking for practical help can make it easier to seek timely care, especially if you face access barriers or feel uncertain. A clear explanation, a named contact, and a specific reassessment plan can help ensure that unresolved symptoms aren't overlooked.

Self-advocacy matters. Breast health education works best when it connects awareness with early action, evaluation, detection, and treatment planning.

Original Articles: Sources and Links

01: Too Young to Worry? Think Again
Rakesh Kumar, PhD, and Sabine Hairabedian, MS, MBA
https://lnkd.in/gpyBBxN5

02: No Family History? You're Still at Risk
Rakesh Kumar, PhD, and Tamara Hussong Milagre, BN
https://lnkd.in/gtp2FTer

03: Why Early-Stage Breast Cancer in Young Women Is Often Painless
Rakesh Kumar, PhD, Hyma Vani Polimera, MD, and Allan Lipton, MD
https://lnkd.in/dZVvWiWt

04: "It's Probably Just a Cyst"—Or Is It?
Rakesh Kumar, PhD, and Miguel Martín Jiménez, MD
https://lnkd.in/gS-QzsSu

05: They Won't Take Me Seriously
Rakesh Kumar, PhD, Lorna Larsen, RN, BScN, and Birgitte Baht
https://lnkd.in/gf6iWE-N

06: Not Every Lump Is Harmless. Act Early.
Rakesh Kumar, PhD, Sabhyata Gupta, MD
https://lnkd.in/gje4XSmA

07: Inflammatory Breast Cancer in Young Women
Rakesh Kumar, PhD, Naoto T. Ueno, MD, PhD, FACP
https://lnkd.in/dxpd7NDn

08: Dense Breasts. Hidden Risks – But Not Always. Life-changing Awareness
Rakesh Kumar, PhD, Sunil Saini, MBBS, MS, Vijian Dhevan, MD
https://lnkd.in/gJf2kacS

09: Breast Imaging in Young Women: Myths, Misconceptions, and Reality
Rakesh Kumar, PhD, Samantha Heller, MD, PhD
https://lnkd.in/gVC29Qcn

10: Breast Cancer Is Not the Same at Every Age
Rakesh Kumar, PhD and Carlos Garcia-Cantu, MD, FACS
https://lnkd.in/g5dZ4grJ

11: Hormonal Therapy in Young Women with Breast Cancer: Myths, Evidence, and Clinical Reality
Rakesh Kumar, PhD, Michael Gnant, MD, FACS, FEBS
https://lnkd.in/g5tXQfFP

12: The Myth About Risk-Reducing Mastectomy in Young Women
Rakesh Kumar, PhD, Caroline Drukker, MD, PhD,
Marie-Jeanne TFD Vrancken Peeters, MD, PhD
https://lnkd.in/gc7t-e8i

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BREAKING THE MYTHS

SCIENCE SERIES

FROM MYTHS TO INFORMED ACTION

Clear science can replace fear, challenge assumptions,
and help young women act earlier with confidence.

Awareness is the beginning.
Evidence gives it direction.

The Young Women's Breast Cancer Research Institute
https://ywbcri.org

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