AMSER Case of the Month
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Initial Breast Cancer Screening in a Transgender Woman

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Patient Presentation

**HPI:** 40 year old transgender woman (male-to-female, she/her/hers). Treated with exogenous estrogen for the past 16 years, presents for preliminary breast cancer screening exam, no current breast complaints

**PMH:** asthma, essential hypertension, HIV, major depressive disorder (recurrent), anal LSIL

**Meds:** albuterol, amlodipine, biktarvy (bictegravir, emtricitabine, tenofovir alafenamide), cetirizine, D3, **Delestrogen** (estradiol valerate injection), losartan, omeprazole, ondansetron, Prezcobix (darunavir, cobicistat), quetiapine. Sertraline, **spironolactone**

**Family history:** Breast cancer in maternal aunt (around age 45)

**Substance use:** non-smoker, no injection drug use
**What Imaging Should We Order?**

- ACR Appropriateness Criteria for Breast Cancer screening in cisgender women
- ACR does not comment on screening recommendations for transgender individuals.

**Variant 1:** Breast cancer screening. Average-risk women: women with <15% lifetime risk of breast cancer.

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**Variant 2:** Breast cancer screening. Intermediate-risk women: women with personal history of breast cancer, lobular neoplasia, atypical ductal hyperplasia, or 15% to 20% lifetime risk of breast cancer.

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**Variant 3:** Breast cancer screening. High-risk women: women with a BRCA gene mutation and their untested first-degree relatives, women with a history of chest irradiation between 10 to 30 years of age, women with 20% or greater lifetime risk of breast cancer.

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### What Imaging Should We Order?

**Society of Breast Imaging Newsletter 2016**  
**Current Radiology Reports 2019**

#### Table 1. Screening recommendations for transgender women

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<th>Transgender women with:</th>
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<td>Past or current hormone use in patients ≥ 50 years old</td>
<td>Annual mammography if the patient has additional risk factors:</td>
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<tr>
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<td>• Estrogen AND progestin use for &gt; 5 years</td>
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<tr>
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<td>• BMI &gt; 35</td>
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<tr>
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<td>• Family history</td>
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<td>No hormone use</td>
<td>Routine screening is not indicated unless the patient has other known risk factors, e.g. Klinefelter syndrome, BRCA mutation</td>
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<td>Breast augmentation by direct injection of particles</td>
<td>Contrast enhanced MRI is preferred for detection of breast cancer</td>
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Findings: Bilateral Diagnostic Mammogram with Tomosynthesis
FINDINGS:

Breast density: Almost entirely fatty

No suspicious masses, areas of architectural distortion or calcifications

Innumerable circumscribed dense masses throughout both breast, compatible with silicone injection sites
Findings: Bilateral Breast MRI with Dynacad

T1

T2 STIR
Findings: Bilateral Breast MRI with Dynacad

FINDINGS:

Innumerable small bilateral diffusely scattered T1 hypointense and T2 hyperintense masses, compatible with injected silicone

Prominent bilateral axillary and intramammary lymph nodes consistent with known lymphoproliferative disorder

No abnormal mass or non mass enhancement, or skin thickening
Final Diagnosis

BI-RADS 2 - Benign

IMPRESSION
Bilateral diffusely scattered non-enhancing small masses consistent with injected silicone material.

No findings suggestive of malignancy in either breast.
Companion Case Comparison 1

Diagnostic magnification view mammogram

- 60 year old transgender woman
- Benign calcifications (arrow) after silicone injections and gender-affirming hormone therapy
- Segmental, course, heterogeneous and amorphous
- Retroareolar, in 12 o’clock position
Companion Case Comparison 1

Calcifications seen on mammogram.

Surgical specimen radiograph, needle localization and excision
Companion Case Comparison 1
Hematoxylin-eosin stain; original magnification, ×20.

Columnar changes and benign ductules

Benign calcifications
Companion Case Comparison 2

Silicone Granuloma in 60 y/o trans woman with palpable lump (different patient).
Companion Case Comparison 3

Breast tomosynthesis images showing painful masses, inseparable from pectoralis muscles (arrows), caused by silicone injections in a 54 y/o transgender woman, who later underwent nipple-sparing mastectomy.
Discussion

- Approximately 1 in 167 people in the US is transgender
  - 8 to 25 million people worldwide

- Male-to-female gender-affirming hormone therapies
  - Estrogens, progestins, anti-androgens (spironolactone)
  - Exogenous and endogenous estrogens are implicated in breast cancer pathogenesis in cisgender women:
    - Direct stimulation of neoplastic breast tissue proliferation
    - Genotoxic metabolites

- Breast development in transgender women undergoing hormone therapy
  - Muted version of Tanner development stages; Stage V is rarely reached.
  - Breast tissue in transgender women varies but is more similar to that of cisgender women than to gynecomastia, in both radiologic appearance and physiologic function
  - Some hypothesize that breast tissue remains immature in these patients and may therefore be more susceptible to adverse effects of radiation exposure. More research is needed.
Discussion

- Breast cancer in transgender women
  - Population-level evidence is lacking; more research is needed to develop a risk score calculator
  - Breast cancer in transgender women is less prevalent than in cisgender women
  - Case studies exist and are used to guide clinical decision making
- Considerations for screening (joint decision-making)
  - Surgical history and hormone therapy
  - Family history
  - BMI
  - Augmentation by free particle injections (silicone, mineral oil, petroleum jelly)
    - Precursor to breast implants
    - previously offered by health professionals; sometimes done at home by patients themselves
    - Illegal in the US since 1990s; can cause granulomas and painful masses
- Recommendations for *diagnostic* exams in transgender women are the same as those for cisgender women.
References