



Breast Cancer Risk and Screening Rates in Female-to-Male Transgender Patients

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Introduction

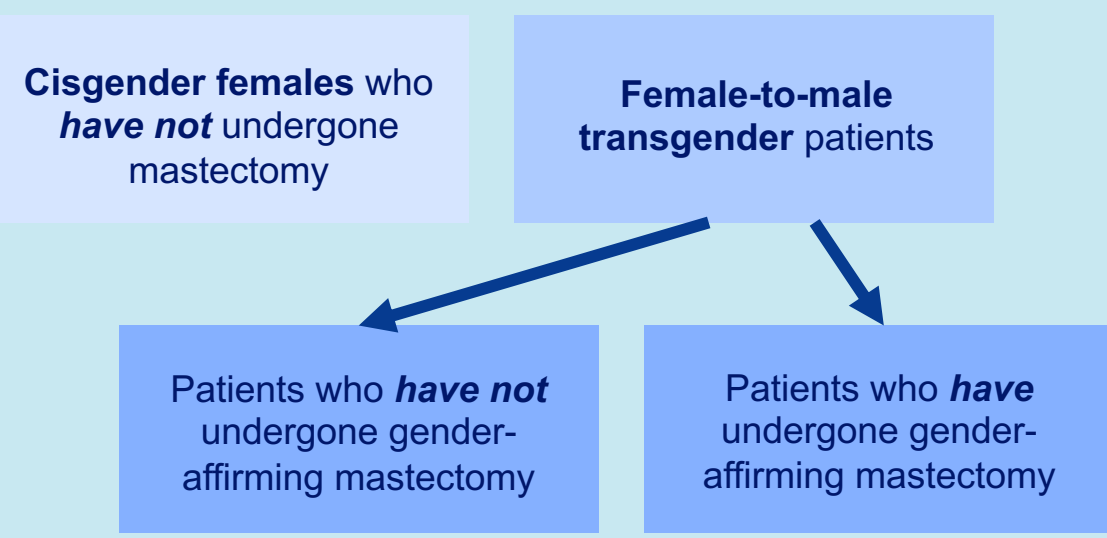
The number of individuals identifying as transgender in the U.S. is increasing. Unfortunately, evidence relating to breast cancers in this population is limited and insufficient to estimate cancer prevalence in female-to-male (FtM) individuals. Better data is needed to contribute to evidence-based screening guidelines.

Objectives

1. Characterize breast cancer risk in FtM transgender patients
2. Evaluate current rates of screening

Methods

A retrospective cohort study was conducted using a multicenter electronic health record database to identify patients born female aged 40-75 years from Jan 2015-Jan 2023. Patients were split into two cohorts, cisgender females who had not undergone mastectomy and FtM patients, with the latter further divided based on gender-affirming mastectomy status.



Patients with breast cancer genetic predisposition were excluded. Cohorts were propensity score matched on age, race, and ethnicity. Using ICD-10 codes, rates of breast cancer screening and diagnoses were identified.

Table 1. Summary of ICD-10 and CPT codes used to design cohorts and evaluate outcomes

| | ICD-10/CPT Codes |
|--|---|
| Gender Identity Disorders | F64.0-9 |
| Encounter for Screening Mammogram for Malignant Neoplasm of Breast | Z12.31 |
| Encounter for Other Screening for Malignant Neoplasm of Breast | Z12.39 |
| Malignant Neoplasms of Breast | C50.0-9 |
| Carcinoma in situ of Breast | D05.0-9 |
| Mastectomy | 85.4, 19303, 19304, 1015054, 7015054, 70183006, 172043006 |

Results

6,140,906 patients met inclusion criteria. Of these, 6,132,901 cisgender females who had not undergone mastectomy, 7,742 FtM patients who had not undergone mastectomy, and 263 FtM patients who had undergone mastectomy were identified. Cisgender patients were twice as likely to receive breast cancer screening compared to transgender patients (24.19%vs12.12%, RR:1.995, p<0.0001). Transgender patients were 3.2 times more likely to develop invasive breast carcinoma versus the cisgender group (3.67%vs1.14%, RR:0.312, p<0.0001). Following mastectomy, cancer screening rates decreased 2.2-fold in the transgender population (4.93%vs10.59%, RR:2.150, p<0.0288). No transgender patients developed invasive breast carcinoma after mastectomy.

Table 2. Demographics of the cisgender and FtM without mastectomy cohorts before and after propensity score matching based on age, race, and ethnicity

| | Before Propensity Score Match | | | After Propensity Score Match | | |
|--|-------------------------------|-------------|---------|------------------------------|-------------|---------|
| | Cisgender | Transgender | p-Value | Cisgender | Transgender | p-Value |
| Total Number of Patients | 6,132,901 | 7742 | n/a | 7742 | 7742 | n/a |
| Age (mean +/- SD) | 58 ± 10.1 | 54 ± 10.4 | <0.0001 | 54 ± 10.4 | 54 ± 10.4 | 1.000 |
| Ethnicity (# patients, % of cohort) | | | | | | |
| Hispanic/Latino | 48,1135 (8) | 414 (5) | <0.0001 | 414 (5) | 414 (5) | 1.000 |
| Not Hispanic/Latino | 3,968,430 (65) | 6418 (83) | <0.0001 | 6418 (83) | 6418 (83) | 1.000 |
| Race (# patients, % of cohort) | | | | | | |
| White | 3,995,412 (65) | 5888 (76) | <0.0001 | 5888 (76) | 5888 (76) | 1.000 |
| Black/African American | 955,167 (16) | 694 (9) | <0.0001 | 694 (9) | 694 (9) | 1.000 |
| Asian | 178,312 (3) | 165 (2) | <0.0001 | 165 (2) | 165 (2) | 1.000 |
| American Indian/Alaska Native | 22,901 (0.4) | 67 (0.9) | <0.0001 | 67 (0.9) | 67 (0.9) | 1.000 |
| Native Hawaiian/Other Pacific Islander | 7756 (0.1) | 10 (0.1) | 0.9467 | 10 (0.1) | 10 (0.1) | 1.000 |

Table 3. Demographics of the FtM with and without mastectomy cohorts before and after propensity score matching based on age, race, and ethnicity

| | Before Propensity Score Match | | | After Propensity Score Match | | |
|--|--------------------------------|-----------------------------|---------|--------------------------------|-----------------------------|---------|
| | Transgender without Mastectomy | Transgender with Mastectomy | p-Value | Transgender without Mastectomy | Transgender with Mastectomy | p-Value |
| Total Number of Patients | 7,742 | 263 | n/a | 263 | 263 | n/a |
| Age (mean +/- SD) | 54 ± 10.4 | 49 ± 8.5 | <0.0001 | 49.2 ± 8.5 | 49.1 ± 8.5 | 0.9469 |
| Ethnicity (# patients, % of cohort) | | | | | | |
| Hispanic/Latino | 414 (5) | 15 (6) | 0.8010 | 13 (5) | 15 (6) | 0.6977 |
| Not Hispanic/Latino | 6,418 (83) | 188 (71) | <0.0001 | 190 (72) | 188 (71) | 0.8462 |
| Race (# patients, % of cohort) | | | | | | |
| White | 5888 (76) | 170 (65) | <0.0001 | 169 (64) | 170 (65) | 0.9274 |
| Black/African American | 694 (9) | 30 (11) | 0.1744 | 30 (11) | 30 (11) | 1.0000 |
| Asian | 165 (2) | 10 (4) | 0.0684 | 10 (4) | 10 (4) | 1.0000 |
| American Indian/Alaska Native | 67 (0.9) | 10 (4) | <0.0001 | 10 (4) | 10 (4) | 1.0000 |
| Native Hawaiian/Other Pacific Islander | 10 (0.1) | 0 (0) | 0.5598 | 0 (0) | 0 (0) | - |

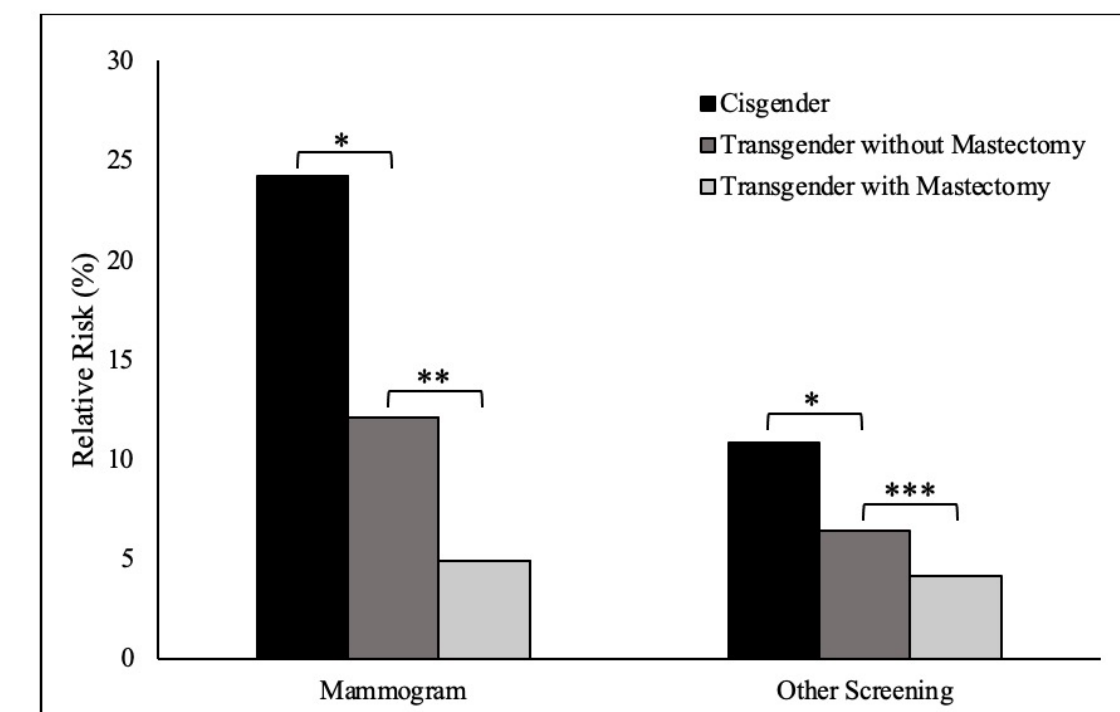


Figure 1. Rates of mammogram and other screening modalities for breast cancer in cisgender and transgender patients who have and have not undergone mastectomy (*p<0.0001, **p<0.05, ***p>0.05)

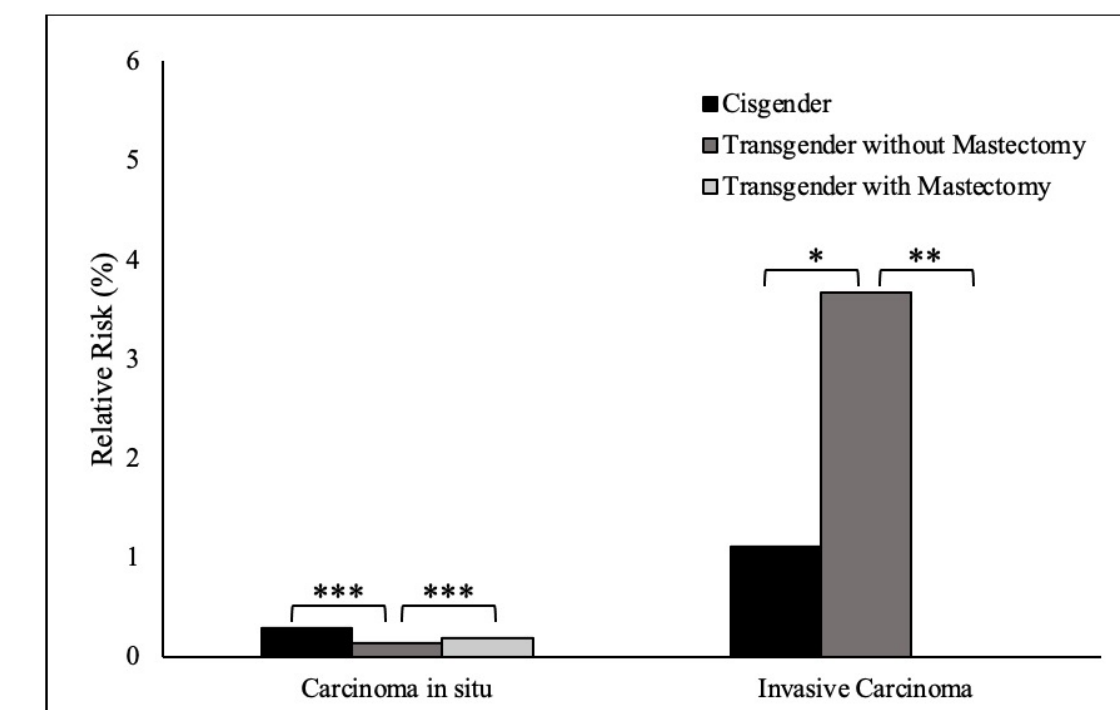


Figure 2. Rates of breast carcinoma in situ and invasive breast carcinoma in cisgender and transgender patients who have and have not undergone mastectomy (*p<0.0001, **p<0.05, ***p>0.05)

Discussion

For cisgender females, practice guidelines for breast cancer screening are outlined by numerous large organizations.¹⁻⁵ For FtM patients, however, guidelines are less clear. Only one society provides appropriateness criteria for screening in transmen⁶, though literature generally supports following the same recommendations in place for cisgender women.⁷⁻⁹ There are a multitude of possible factors that may be contributing to the lower screening rate seen here, including poor access to care, lack of provider knowledge or comfort, provider insensitivity or hostility, or psychological stress associated with screening.¹⁰⁻¹³ Screening further decreases following top surgery, despite residual breast tissue posing a remaining cancer risk and thus a possible need for continued screening.¹⁴⁻¹⁸ The higher rate of cancer diagnoses seen here could possibly be explained by the social factors leading to lower screening rates in this population. An additional complicating factor in care of these patients is the use of hormone therapy. Effects of testosterone use in FtM patients remain unclear with controversial results described in experimental studies; larger long-term outcome studies are needed.¹⁹⁻²⁷

Conclusions

This study suggests that FtM patients receive breast cancer screening at much lower rates than cisgender females, regardless of similar recommendations. Furthermore, screening rates drop significantly following mastectomy, despite residual breast tissue posing a remaining cancer risk. This study highlights the current insufficiency in care of transgender patients and the need for interventions to improve outcomes of gender minorities in the U.S.

