

# Gender-affirming Mastectomy with Concurrent Oncologic Mastectomy

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**Background:** Transmasculine individuals may not have undergone gender-affirming mastectomy and retain natal breast tissue. Our center offers simultaneous oncologic mastectomy with gender-affirming reconstruction to patients who are diagnosed with breast cancer. This study is the first reported series of concurrent gender-affirming and oncologic mastectomies.

**Methods:** A retrospective chart review of all patients undergoing gender-affirming mastectomy at a single institution from February 2017 to October 2021 was performed. Patients were included who had breast cancer diagnoses or pathologic lesions preoperatively. Demographic factors, comorbidities, surgical details, and oncologic history were collected. Both plastic surgery and breast surgery were present for the gender-affirming oncologic mastectomies.

**Results:** Five patients were identified who presented for gender-affirming mastectomy in the context of breast pathologies. Average patient age was  $50.2 \pm 14.8$  years, and no patients used testosterone at any time. Two (40%) patients had a prior breast surgery that included a breast reduction in one patient and breast conserving lumpectomies in another. Sentinel lymph node biopsies were performed in all patients. Only one patient had a positive sentinel lymph node and was subsequently referred for postoperative radiation and chemotherapy. No oncologic recurrence has been detected with 20.6 and 10.0 months of mean and median follow-up.

**Conclusions:** When performed in a multidisciplinary and collaborative setting with breast surgeons and plastic surgeons, oncologic mastectomy can be performed safely while concurrently offering patients an aesthetic gender-affirming reconstructive outcome. (*Plast Reconstr Surg Glob Open* 2022;10:e4092; doi: 10.1097/GOX.0000000000004092; Published online 9 February 2022.)

## INTRODUCTION

Rates of breast cancer are well described in cisgender women, with one in eight women experiencing a lifetime diagnosis of breast cancer.<sup>1</sup> However, the risk of developing breast cancer is not well established in individuals who identify as transgender men, two-spirit, nonbinary, or other gender expansive identities and were assigned female at birth (henceforth referred to with the umbrella term “transmasculine”). Several large cohort studies have demonstrated that transmasculine individuals may have a

lower overall incidence of breast cancers than cisgender women.<sup>2,3</sup> It is theorized that this may be due to risk reduction as a result of prior gender-affirming mastectomy, as well as potential estrogen suppression by gender-affirming testosterone therapy.<sup>4</sup> However, in transmasculine individuals who have not undergone these interventions, the rates of breast cancer would be expected to approximate those in cisgender women. This is of particular importance, as transmasculine individuals, regardless of testosterone utilization or desire for mastectomy, face barriers to accessing comprehensive breast cancer screening, surveillance, and treatment, services that are often offered within gendered structures.<sup>1</sup>

Given the relatively recent increase in cultural acceptance and financial accessibility through health insurance coverage, many transmasculine individuals may not have undergone gender-affirming mastectomy and retain natal breast tissue.<sup>5</sup> In those who develop breast cancer, these patients may desire gender-affirming top surgery in addition to oncologic treatment. While there are individual case series describing the detection and subsequent surgical treatment of breast cancer in transmasculine

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individuals on testosterone who elected to undergo oncologic mastectomy in conjunction with gender-affirming reconstruction, this practice is not well described.<sup>6,7</sup> Here, we present the first series of concurrent gender-affirming and oncologic mastectomies to date, demonstrating that breast cancer can be safely resected while simultaneously providing gender-affirming reconstruction.

## METHODS

Following IRB-approval, retrospective chart review of all patients undergoing gender-affirming mastectomy at our institution between February 2017 and October 2021 identified five patients who had presented at initial consultation for a gender-affirming mastectomy in the context of newly-diagnosed breast cancer. To perform safe oncologic mastectomy with an optimal gender-affirming reconstruction, a multidisciplinary approach was taken with close collaboration between the breast and plastic surgery teams as described below.

Both the plastic surgery and breast surgery teams are present for the gender-affirming oncologic mastectomies. Preoperatively, lymphatic mapping is performed by the breast surgeon using a combination of blue dye and radioisotope injection to identify the sentinel lymph node. The plastic surgeon marks the patient preoperatively, and these markings are confirmed by the breast surgeon.<sup>8</sup> Although periareolar mastectomy may be offered, there is an increased risk for nipple loss or indentation, given the need to resect all tissue behind the nipple. In this series, a double incision with free nipple graft (DIFNG) incision pattern was performed, as all patients were Fischer grade 2b or higher.<sup>8,9</sup> The plastic surgery team began by harvesting both nipples as free grafts. The breast surgery team then proceeded with resection of the bilateral breast tissue through the planned incisions. This is performed similarly to a non-oncologic gender-affirming mastectomy, elevating mastectomy flaps superiorly to the clavicle, inferiorly to 4-cm below the inframammary fold, medially to the lateral border of the sternum and laterally to the anterior border of latissimus dorsi muscle.<sup>8</sup> However, unlike in a non-oncologic gender-affirming mastectomy where the pectoralis fascia is spared to minimize pain and risk of bleeding and seroma, in an oncologic gender-affirming mastectomy the pectoralis major fascia is included in the specimen and removed. The inferior incision is then marked by the plastic surgeon and the inferior flap is developed. It is important that the plastic surgeon communicate with the breast surgeon to undermine the inferior flap *beyond* the inframammary fold to obliterate it.<sup>8</sup> Following the mastectomy, a sentinel lymph node biopsy is performed with frozen sections sent to pathology. While awaiting results of the frozen sections, the plastic surgery team proceeds by approximating closure, confirming symmetry of the incisions and placement of the nipples, as previously described.<sup>8</sup> The patient is kept under anesthesia until frozen sections are reported to ensure subsequent axillary dissection is not required, which is performed if necessary. Drains are placed bilaterally, a bolster dressing applied to each nipple graft, and a compression binder placed around the chest.

## Takeaways

**Question:** What options can be offered to transmasculine patients that present with breast cancer?

**Findings:** Reviewing a case series of five patients, we demonstrate and discuss the nuances of performing gender-affirming mastectomies in patients with breast pathologies by using a multidisciplinary surgical approach. We report no oncologic recurrences using a double incision with free nipple graft technique.

**Meaning:** Oncologic mastectomy can be performed safely while concurrently offering patients an aesthetic gender-affirming reconstructive outcome.

Postoperatively, surveillance includes physical examination by the breast surgeon every 6 months for 5 years. After this time period, patients are followed with an annual examination until 10 years postoperatively. At that time, patients are stratified for continued annual monitoring based on risk of recurrence. Imaging is obtained only when there is concern for a new nodule or mass found on physical examination.

## RESULTS

Descriptions of each patient's initial presentation are provided in [Table 1](#), and patient demographics and surgical outcomes are provided in [Table 2](#). Additionally, full oncologic details are provided in [Table 3](#). Mean patient age was  $50.2 \pm 14.8$  years, two patients were former smokers, and no patients (0%) used testosterone therapy at any time. Two (40%) of the patients had prior breast surgery, a breast reduction in one patient and breast conserving lumpectomies in another. Two patients underwent revision, one for excess tissue laterally and the other for nipple reduction. Sentinel lymph node biopsies were performed in all patients, with only one patient returning a positive sentinel lymph node. This patient was subsequently referred for postoperative radiation and chemotherapy. No oncologic recurrence has been detected with 20.6 and 10.0 months of mean and median follow-up, respectively.

## DISCUSSION

Here we present our experience with oncologic mastectomy and simultaneous gender-affirming reconstruction. To ensure both oncologic safety and reconstructive success in these operations, a multidisciplinary approach is paramount, with breast and plastic surgeons working collaboratively throughout the preoperative, intraoperative, and postoperative course. Irrespective of concurrent gender incongruence as indication for mastectomy and type of reconstruction, standard oncologic follow-up should be done in all patients to assess for cancer recurrence. Our postoperative protocol for monitoring cancer occurrence is identical to protocols for cisgender women following oncologic mastectomies. This protocol includes a physical examination by the breast surgeon every 6 months for the first 3–5 years postoperatively. After this time period, patients are followed with an annual

**Table 1. Details of Patients Presenting for Gender-affirming Oncoplastic Mastectomy**

Patient	Patient Presentation
1	Underwent a screening mammogram, which detected a nonpalpable nodule. Ultrasound guided biopsy revealed moderately differentiated IDC.
2	Six years prior had bilateral breast cancer (right breast IDC, left breast DCIS/LCIS) treated with breast conserving lumpectomies, radiation, and 5 years of tamoxifen therapy. On a screening mammogram and ultrasound, a 1×0.4×9 cm mass was visualized in the left breast, and biopsy revealed IDC.
3	Patient with maternal history of breast cancer at age 49. Screening MRI of breasts revealed a right breast 5 mm mass, which was further characterized on targeted sonography revealing a 5×4 mm mass. Ultrasound guided core biopsy revealed well-differentiated IDC. Genetic workup was negative. Patient already scheduled for gender-affirming mastectomies, and before surgery was referred to surgical oncology for operative collaboration.
4	Previous breast reduction, and patient palpated an abnormal mass in the right breast. Subsequent mammogram revealed an irregular mass in upper outer right breast, with calcifications and distortion. Ultrasound demonstrated a 2 cm mass and a prominent 1.3 cm lymph node in the right axilla. US-guided biopsy revealed IDC. PET-CT revealed a 1 cm right axillary lymph node and a right breast mass measuring 2.6 cm with no distant metastases. Received neo-adjuvant chemotherapy and postoperative radiation
5	Screening mammogram detected a mass in the right breast and repeat mammography showed a 1×1.4 cm nodule. Ultrasound revealed a right breast 1.2×0.7×1.3 cm hypoechoic nodule, a left 0.4×0.3×0.5 cm group of cysts, and a left hypoechoic nodule measuring 0.7×0.6×1.0 cm. Right-sided biopsy revealed atypical ductal hyperplasia and PASH. Patient with a strong history of familial breast cancer but no identified genetic mutation.

All patients were transgender or nonbinary and desired gender-affirming mastectomies. DCIS, ductal carcinoma in situ; IDC, invasive ductal carcinoma; LCIS, lobular carcinoma in situ; PASH, pseudoangiomatous stromal hyperplasia.

examination in perpetuity. Imaging is obtained only when there is concern for a new nodule or mass found on physical examination.

All the patients in our series were seen first by the breast surgeon and referred to plastic surgery for reconstruction. When seeing patients for non-oncologic gender-affirming mastectomy, we take a careful personal and family history of breast disease and cancer. We refer to medical oncology for genetic screening when indicated. If the genetic screen is positive, the mastectomy is done as a joint case with plastic and breast surgery.

None of the patients in our series were on testosterone at any time, and none indicated future plans to start gender-affirming hormone therapy. The association between testosterone therapy and breast cancer remains unknown, with some authors theorizing that testosterone may contribute to reduced breast cancer incidence in transmasculine individuals, and others speculating that testosterone may have a protective effect against breast cancer.<sup>7</sup> This remains an important area of ongoing research, as large studies demonstrate that nearly half of transgender individuals receive testosterone therapy and 29% of transgender individuals desire but have not yet accessed hormonal therapy.<sup>10</sup> Two patients received postoperative tumor modulating hormone therapy. In the third patient, therapy was recommended but the patient declined. Although the risk of gender-affirming hormone therapy on oncologic

occurrence has been studied, the effects of adjuvant modulating hormone therapy for tumor suppression are not described in the literature.<sup>2</sup> Though it was not a factor in this case series, the effects of oncologic hormone therapy in the setting of gender-affirming hormones should be considered with priority given their ability to reduce future oncologic risk.

Another potential complexity to gender-affirming oncologic mastectomy is management of the nipple-areola complex (NAC). Given the absence of data in transmasculine patient seeking simultaneous gender-affirming oncologic mastectomies, our perspective is informed by the nipple-sparing mastectomies (NSM) literature in cisgender women with breast cancer. It is important to establish the absence of NAC tumor involvement, which can be done with preoperative imaging with MRI. If tumor-to-nipple distance is more than 1 cm, NSM can be offered. Intraoperative subareolar biopsies can also be informative when the tumor is closer in proximity to the NAC.<sup>11</sup> In this patient series, the tumor-to-nipple distance was more than 1 cm in all cases, and subareolar biopsy was performed in only one patient. Although not routinely performed in this case series, we would recommend performing subareolar biopsies in cases where the tumor to nipple distance is less than or equal to 1 cm. In cases where a subareolar biopsy is positive, it may still be possible to use the free areolar graft. The free nipple areolar graft is thinned to

**Table 2. Patient Demographic Factors and Reconstructive Details**

Patient	Age (y)	BMI (kg/m <sup>2</sup> )	Smoking History	Diabetes	Testosterone Usage	Prior Breast Surgery	Mastectomy Pattern	Complications	Revision
1	70	31.45	Never	Yes	No	No	DIFNG	None	Yes
2	57	25.35	Former	No	No	Yes	DIFNG	None	Bilateral dog ear
3	42	22.01	Never	No	No	No	DIFNG	Yes, seroma drained in office	No
4	31	23.41	Former	No	No	Yes	DIFNG	Yes, seroma drained in office	Nipple reduction
5	49	30.17	Never	No	No	No	DIFNG	None	No

BMI, body mass index; DIFNG, double incision free nipple graft.

**Table 3. Oncologic Details of Patients Undergoing Gender-affirming Oncologic Mastectomy**

Patient	Tumor Stage	Tumor Grade	Tumor Size (cm)	Pathology Right Breast	Pathology Left Breast	Estrogen Receptor Positivity	Progesterone Receptor Positivity	Her2 Receptor Positivity	Sentinel Lymph Node Biopsy	Postoperative Radiation or Chemotherapy	Postoperative Hormone Therapy	Follow-Up (mo)
1	1A	2	1.1	IDC, LCIS, ALH	LCIS	76%–100%	76%–100%	2+	Yes, 0/2 positive	No	Yes	51
2	1A	2	0.7, 0.1	LCIS	IDC, DCIS	76%–100%	<1%	1+	Yes, 0/2 positive	No	No	33
3	1A	1	0.6	IDC	None	91%–100%	91%	Negative	Yes, 0/6 positive	No	Recommended, but patient declined	10
4	2B	3	1.9	IDC, DCIS	None	98%	92%	3+	Yes, 1/3 positive	Yes, chemotherapy and radiation	Yes	8
5	0	2	1.3	DCIS, PASH	PASH	91%–100%	51%–60%	Not available	Yes, 0/2 positive	No	No	1

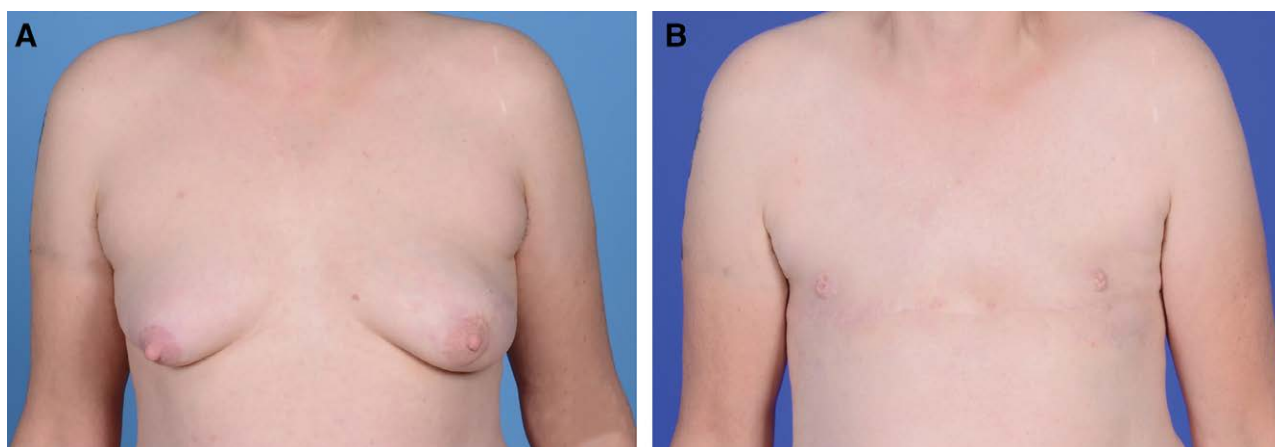
ALH, atypical lobular hyperplasia; DCIS, ductal carcinoma in situ; IDC, invasive ductal carcinoma; LCIS, lobular carcinoma in situ; PASH, pseudoangiomatous stromal hyperplasia.

dermis, removing all breast tissue. The risk of the graft harboring residual breast tissue is extremely low, though admittedly there are no data to support this. For periareolar mastectomy, a small disc of tissue is left behind to maintain vascularity and avoid a saucer deformity. The risk of cancer recurrence at the NAC may therefore be higher.

In our case series, one patient received adjuvant radiation, and another patient had a history of radiation following prior breast conserving lumpectomies. Prior radiation may increase the risk of wound healing, mastectomy flap necrosis, or loss of the nipple areolar graft. Postoperative radiation may change the position of both the scar and the nipple areolar complex. Patients should be counseled accordingly before surgery.

Surgical oncologists/breast surgeons should be aware of the specific needs of the transmasculine population and be equipped to offer these patients a full complement of reconstructive options following oncologic mastectomy, including gender-affirming reconstructive techniques. The aesthetic and oncologic goals can be simultaneously achieved in an oncologic gender-affirming incision (Fig. 1). For example, the incision can be placed in the pectoralis muscle shadow, straight across the chest, and curving out laterally. Historically,

in cisgender women, an ellipse including the NAC is performed leaving the scar in the middle of the pec. The NAC can be thinned and preserved and grafted lower and lateral in line with the deltopectoral groove. Specific patient requests such as forgoing nipple grafts or specifying the exact shape or location of the incision can also be honored. Patients with minimal breast tissue, an NAC that is on the pectoralis muscle, and no skin excess (Fischer grade 1 or 2) may be a candidate for a periareolar technique with coring out of nipple breast tissue. Patients should be informed that depending on the location of the cancer, the mastectomy flaps may be thinner than in a non-oncologic gender-affirming mastectomy. As transgender individuals continue to experience both real and perceived discrimination in the healthcare system, it is important that healthcare professionals be proactive in becoming allies and advocates for their patients. Social and psychological obstacles remain far too common for transmasculine individuals seeking medical care, particularly for historically gendered conditions such as breast cancer.<sup>4</sup> When performed in a multidisciplinary and collaborative setting with breast surgeons and gender-affirming plastic surgeons, oncologic mastectomy can be performed safely



**Fig. 1.** Gender-affirming mastectomy can be safely performed in conjunction with oncologic mastectomy. Preoperative photograph of a patient presenting for gender-affirming mastectomy in the background of an identified breast pathology (A). Postoperative photograph following simultaneous gender-affirming oncologic mastectomy (B).

while concurrently offering patient an aesthetic gender-affirming reconstructive outcome.

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