

Diagnosis and Treatment of Triple Positive Breast Cancer

Student Researcher: Daisy Seibert

Faculty Advisor: Dr. Elaine Halesey, Ed.D., R.T.(R)(QM)

Triple Positive Breast Cancer (TPBC)

- Triple positive breast cancer has three different types of hormones feeding malignancy to grow: a positive estrogen receptor (ER), progesterone receptor (PR), and human epithelial growth factor receptor 2 (HER2) (Goshen Health, 2022)
- The median age for this type of breast cancer is 47 (Abdel-Razeq et al., 2020)

Symptoms

Symptoms can vary from person to person. Some may only have a couple of signs, while others have many. Signs and symptoms can also depend on the stage of cancer. Different stages changes the shape and size of the malignancy.

- A lump is the most common
- Inverted nipple
- Nipple discharge
- Changes in size, shape, or appearance of breast or nipple
- Swelling in part or all of the breast.
- Skin changes (Goshen Health, 2022)

Case Study: Patient X Symptoms

- Lump on right breast
- Inversion of nipple
- Pain at area of lump
- Diagnosed at 30 years old in 2022

Patient X's symptoms were more advanced than some. With the lump and inverted nipple, there was a higher chance of the pathology coming back as positive for cancer.

(Patient X, personal communication, February 8, 2023)

Diagnosis

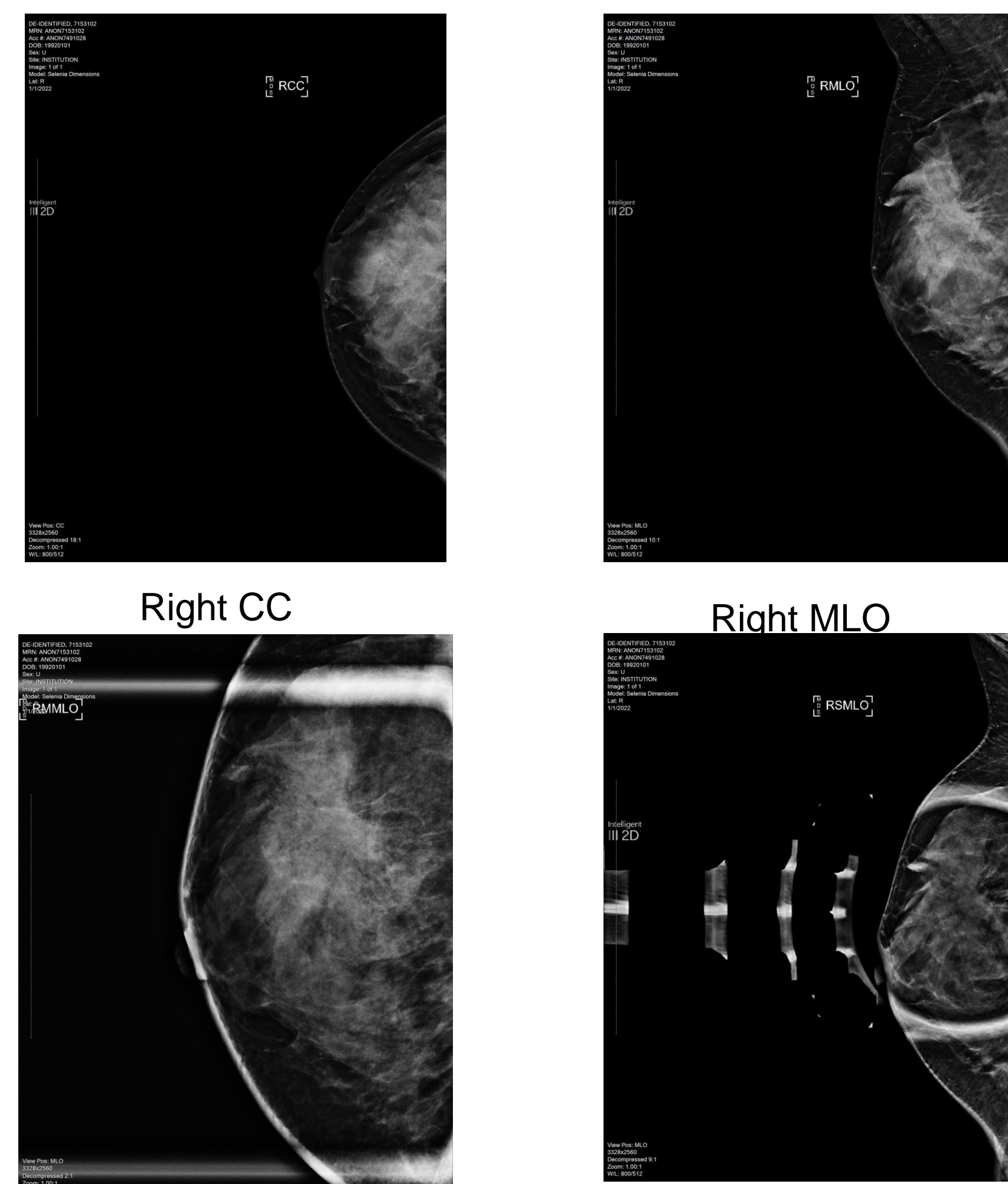
Diagnosis of triple positive breast cancer is done through standardized steps for finding a cancerous lesion in the breast.

- Step 1: mammographic imaging views:
 - Craniocaudal (CC)
 - Mediolateral oblique (MLO)
 - Spot compression
 - Magnification views

- Step 2: Ultrasound imaging of affected breast
- Step 3: Mammographic or ultrasound biopsy
- Step 4: Post biopsy clip placement imaging
- Step 5: Pathology report (Eisenberg & Johnson, 2021, p. 402)

Patient X Diagnosis

- Mammographic imaging
 - CC and MLO on both sides
 - Spot compression on right breast
 - Magnification views on right breast

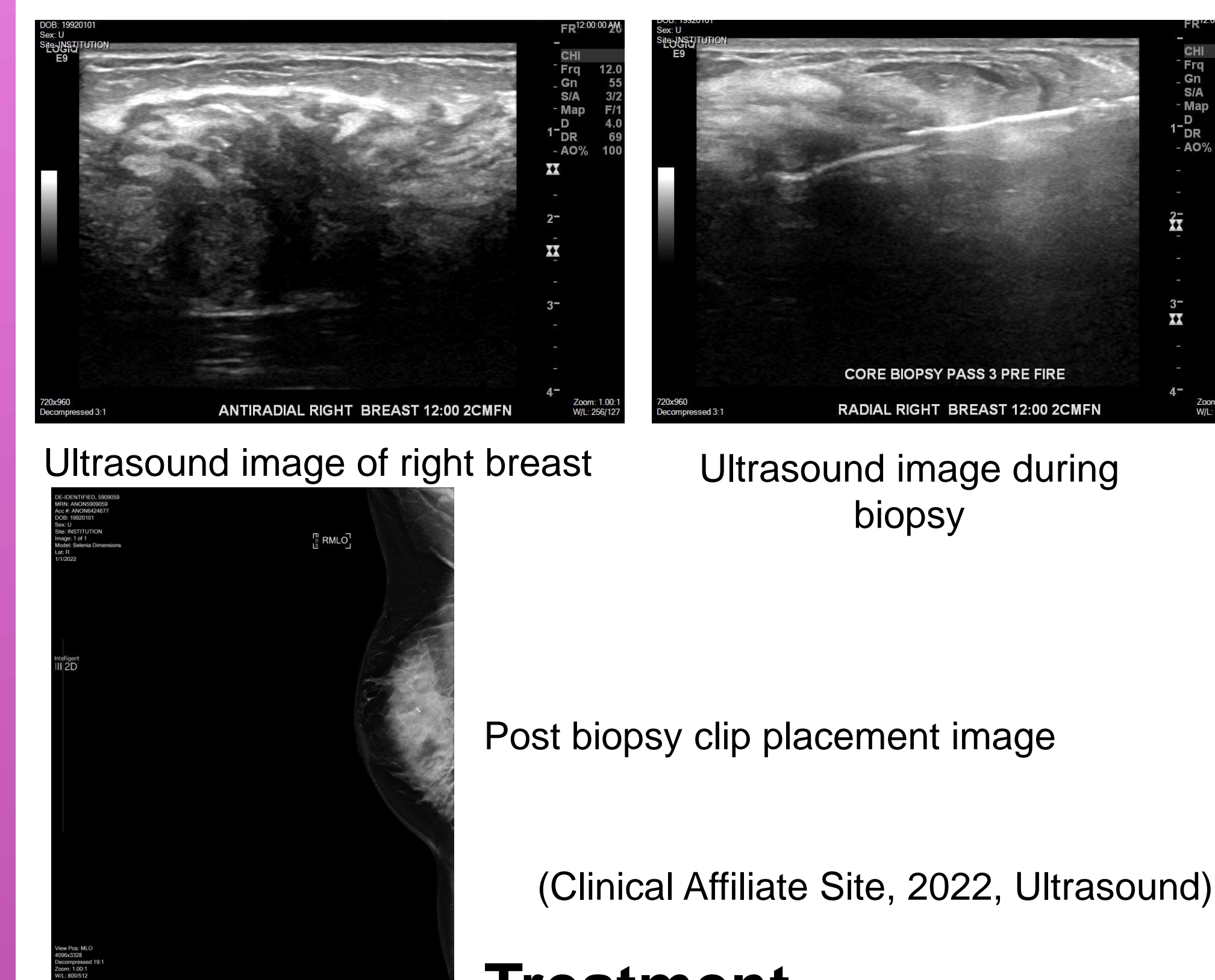


Right MLO magnification view Right MLO Spot compression view
(Clinical Affiliate Site, 2022, Mammogram)

- Ultrasound imaging on the right breast
- Breast biopsy done under ultrasound
- Post biopsy imaging under mammography
- Pathology report

Patient X's pathology report was triple positive breast cancer meaning biopsied cells were positive for ER, PR, HER2. This diagnosis will decide the treatment and options available for this type of carcinoma.

(Patient X, personal communication, February 8, 2023)



Ultrasound image of right breast Ultrasound image during biopsy
Post biopsy clip placement image
(Clinical Affiliate Site, 2022, Ultrasound)

Treatment

- Surgery Chemotherapy
- Radiation therapy Hormone therapy
- Targeted therapy

All these options can be done in many different ways and will be decided between doctor and patient. Triple positive breast cancer is best treated by hormone therapy or targeted therapy because it fights HER2 the best (Goshen Health, 2022)

Since breast cancer is the most common malignancy among females, it is best to know the types of effective treatments. It is also good to know the signaling pathways that are found, especially in triple positive breast cancer, as this will aid in treatment.

- A study done in Egypt, shows that the expression of androgen receptors correlates with the clinicopathologic features.
- This benefits triple positive breast cancer because it was shown to contribute to the pathogenesis.
- With this finding, treatment options will be more targeted towards the stopping of the way the cancer forms (Elsers, Mostafa, Kamel, & Ahmed, 2021)

Tumors with HER2 tend to be more aggressive. There have been many clinical trials that show the benefit of anti-HER2 treatment in the early stages of breast cancer.

- Crosstalks between pathways exist, allowing cancerous cells to resist both hormonal therapy and chemotherapy treatment.
- In a study done between 2006-2016, the patients who did not have anti-HER2 therapy had a worse 5- year disease free survival rate.

- Trastuzumab, an anti-body drug, showed to be effective in patients with residual disease following neoadjuvant chemotherapy. (Abdel-Razeq et al., 2020)

Neoadjuvant chemotherapy is done before surgery to reduce size of tumor. A study for neoadjuvant chemotherapy for triple positive breast cancer, done in New York, showed this method was able to shrink tumor size significantly before surgery. This will give patients better results. Many patients in this study have significantly better results to this treatment. (Zeng et al., 2021) Surgery is one of the most effective treatments for patients with triple positive breast cancer. Other treatments still need to be involved in the fight to rid patients of the cancer.

- In this study with 135 patients, targeted therapy showed a 95.5% 5- year disease free survival rate.
- Targeted therapies that may be included:
 - Trastuzumab
 - Tamoxifen
- Hormone therapies that may be included:
 - Aromatase
 - Anastrozole

These treatments, along with chemotherapy and surgery, resulted in positive outcomes for many patients. This makes it an ideal way to treat triple positive breast cancer. (Ma et al., 2023)

Patient X Treatment

Patient X was diagnosed with stage 2 of 4 triple positive breast cancer and is undergoing many treatments including:

- A double mastectomy
- Chemotherapy
- Hormone therapy (Patient X, personal communication, February 8, 2023)

Conclusion

- There are many ways to diagnosis and treat triple positive breast cancer. Since breast cancer is common, patients need to know the signs & symptoms.
- They also need to know the best course of treatment for diagnosis type. With the different treatment options for triple positive breast cancer, Patient X was able to find a treatment that works best for her.
- Patient X is still undergoing treatment and doing well while continuing the fight to beat triple positive breast cancer.