Feasibility and Outcomes of Premastectomy Radiation Therapy in Locally Advanced Breast Cancer

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INTRODUCTION

- There is evidence to support the oncologic feasibility of pre-mastectomy radiotherapy (PreM-RT) to allow immediate breast reconstruction (IBR), however these trials excluded patients with locally advanced breast cancer (LABC).[1-2]
- LABC patients are recommended to receive trimodality therapy - neoadjuvant chemotherapy (NAC) followed by surgery, and ultimately radiation therapy (RT).[3]
- Patients who undergo mastectomy are recommended to undergo delayed reconstruction to decrease postoperative complications and prevent RT delays.

AIM: assess feasibility of PreM-RT followed by mastectomy to allow for IBR in patients with LABC

METHODS

Prospective, single arm, feasibility trial



≥18
T3-4N0-3M0

NAC
(partial or complete response)

PreM-RT

Mastectomy + immediate autologous reconstruction

Primary Endpoint: postoperative complications

Secondary Endpoints:
- physician-reported RT toxicities (NCI CTCAE v5)
- patient reported outcomes (PRO-CTCAE)

RESULTS

I. Patient and Clinical Characteristics

Characteristic	N=27*
Age	42 (37-57)
Race	
Asian	1 (4%)
Black	5 (19%)
White	16 (59%)
Other	4 (15%)
Unknown	2 (7%)
Ethnicity	
Not Hispanic	19 (70%)
Hispanic	6 (22%)
Unknown	2 (7%)
Inflammatory Breast Cancer	14 (52%)

Characteristic	N (%)
Pathologic Complete Response (n=25)	5 (20%)
Pathologic T Stage (n=24)	
T0	8 (33%)
T1	9 (38%)
T2	4 (17%)
T3	3 (13%)
Pathologic N Stage (n=25)	
N0	13 (52%)
N1	4 (16%)
N2	3 (12%)
N3	5 (20%)
Subtype (n=27)	
ER+/HER2-	13 (48%)
ER+/HER2+	3 (11%)
ER-/HER2+	3 (11%)
ER-/HER2-	8 (30%)

*Median (IQR), n (%)

II. Treatment Details

NAC — Median (IQR) Time: 38 (32-42) days → **PreM-RT** — Median (IQR) Time: 34 (30-40.5) days → **Mastectomy + IBR**

PreM-RT Dosing:
- 50 Gy in 25 daily 2-Gy fractions over 5-6 weeks: 24/25 (96%)
- 42.56 in 16 daily 2.66-Gy fractions over 3-5 weeks: 1/25 (4%)

RESULTS

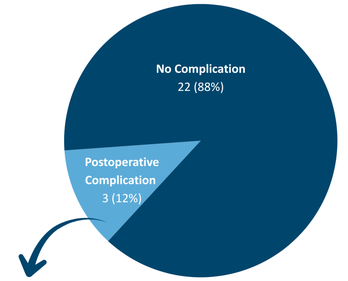
III. Physician-Reported Radiation Toxicities

Toxicity	Overall (n= 25)	Grade I	Grade II	Grade III	Grade IV
Dermatitis	25 (100%)	5/25 (20%)	13/25 (52%)	5/25 (20%)	2/25 (8%)
Fatigue	25 (100%)	19/25 (76%)	3/25 (12%)	2/25 (8%)	1/25 (4%)
Nausea	1 (4%)	1/1 (100%)	-	-	-
Dizziness	1 (4%)	1/1 (100%)	-	-	-
Fibrosis	6 (24%)	5/6 (83%)	1/5 (20%)	-	-
Decreased ROM	8 (32%)	7/8 (88%)	1/8 (13%)	-	-
Sensory Neuropathy	6 (24%)	5/6 (83%)	1/6 (17%)	-	-
Chest Wall Pain	4 (16%)	1/4 (25%)	3/4 (75%)	-	-
Secondary Malignancy	0 (0%)	-	-	-	-
Telangiectasia	2 (8%)	-	2/2 (100%)	-	-
Lymphedema	2 (8%)	1/2 (50%)	-	-	1/2 (50%)
Brachial Plexopathy	1 (4%)	-	1/1 (100%)	-	-

IV. Patient Reported Outcomes

Toxicity	RT Week 4-5		Post RT Weeks 1-2		Post-Operative Weeks 1-2	
	Mild-Moderate	Severe	Mild-Moderate	Severe	Mild-Moderate	Severe
Pain	6/9 (67%)	2/9 (22%)	9/16 (56%)	6/16 (38%)	5/10 (50%)	2/10 (20%)
Fatigue	5/9 (56%)	3/9 (33%)	13/16 (81%)	2/16 (12.5%)	10/17 (59%)	2/17 (11%)
Skin Breakdown	5/9 (56%)	1/9 (11%)	7/16 (44%)	5/16 (31%)	5/6 (83%)	1/6 (17%)
Breast Enlargement	8/11 (73%)	1/11 (9%)	8/12 (67%)	1/12 (8%)	4/4 (100%)	0/4 (0%)

V. Postoperative Complications



Management of Complications:
- One bedside debridement
- One required no intervention
- One was a delayed hematoma after resuming therapeutic AC and required washout

VI. Representative Images



Post PreM-RT



Post Mastectomy + IBR

CONCLUSION

- PreM-RT followed by mastectomy with IBR for patients with LABC appears safe, with postoperative complication rates lower than reported for delayed autologous reconstruction (~30%).[4]
- Patients tolerated PreM-RT with no surgical delay, and physician/patient reported RT toxicities mirror the postmastectomy RT population.
- This is among the first reports of PreM-RT in IBC patients.

Contact

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