

Background

- Post-Mastectomy Radiation Therapy (PMRT) decreases locoregional recurrence and improves overall survival for certain breast cancer patients
- Timing of radiation in autologous reconstruction patients is debated, either PRE or POST Flap
- PreFlap= Radiation BEFORE free flap →flap not radiated
- PostFlap= Radiation AFTER free flap →flap radiated
- **AIM: Evaluate overall outcomes comparing PreFlap and PostFlap PMRT patients**

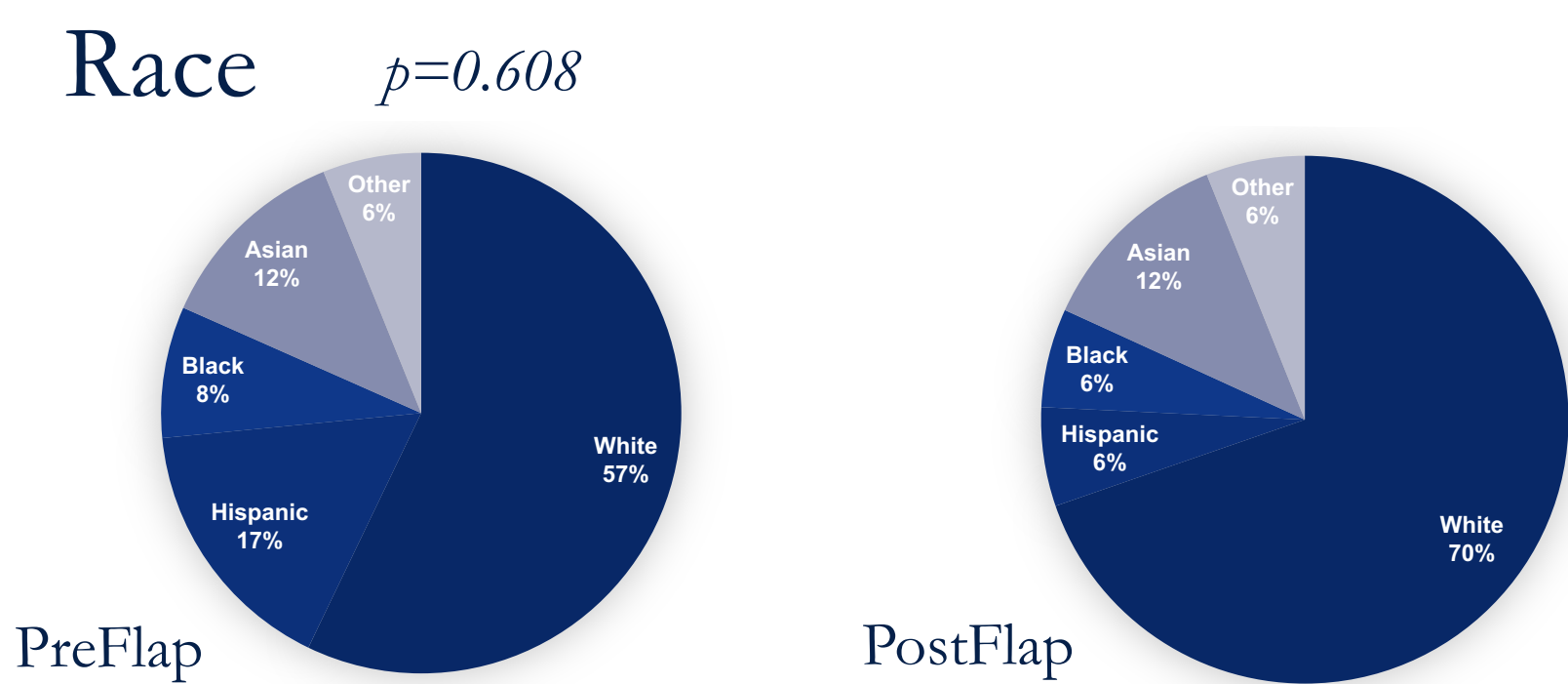
Methods

- Retrospective review of free abdominally-based autologous breast reconstruction from 2004-2021 for PMRT patients
- Demographic, intra-operative, and post-operative variables evaluated and compared between cohorts

Results

- 452 flaps identified, of which 82 underwent PMRT
 - 49 PreFlap (59.8%)
 - 33 PostFlap (40.2%)
- No significant differences in medical comorbidities, prior breast surgery, chemotherapy (adjuvant and/or neoadjuvant)
- No significant differences in free flap outcomes including thrombosis, venous congestion, flap loss, takeback, seroma, nipple necrosis, infection (p>0.05)

Demographic Data



	PreFlap PMRT (n=49)	PostFlap PMRT (n=33)	P value
Age (Mean ± SD)	47.9± 9.3	43.0 ± 8.0	p=0.016*
BMI (Mean ± SD)	28.5± 4.2	30.1 ± 7.2	p=0.213

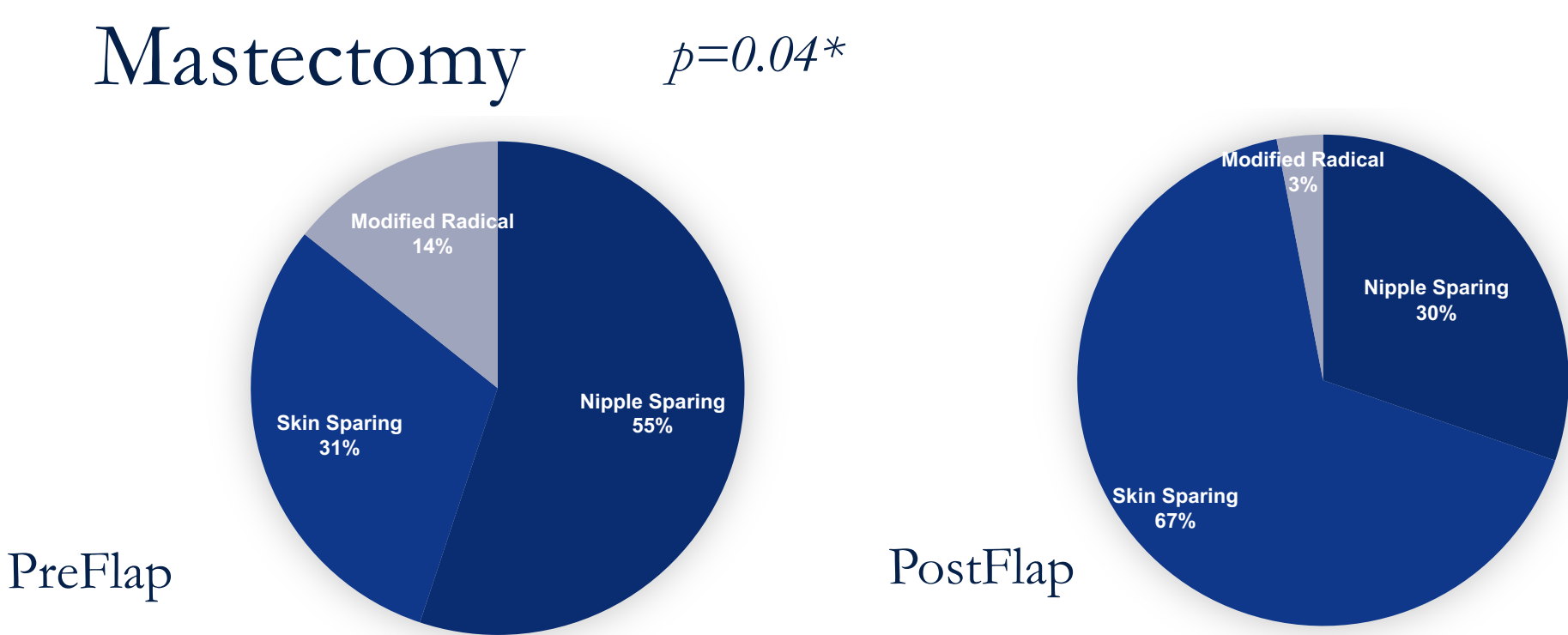
PreFlap Tissue Expander Outcomes

Infection	15 (30.6)
Delayed Wound Healing	10 (20.4)
Hematoma	1 (2.0)
Seroma	5 (10.2)
Loss of Implant	15 (30.6)

Overall Flap Outcomes

	PreFlap PMRT (n=49)	PostFlap PMRT (n=33)	P value
Fat Necrosis	3 (6.1)	2 (6.1)	p=0.991
Any Revisions after Flap	31 (68.9)	18 (48.6)	p=0.063
Number of Revision Surgeries (Mean ± SD)	0.74±0.76	0.55± 0.79	p=0.280
Time to Final Recon, including Revisions if Applicable (Mean days ± SD)	840.1 ± 529.7	224.3 ± 314.8	p=0.000*
Any Free Flap Complication	9 (18.4)	8 (24.2)	p=0.520
Any Breast Complication after PMRT	23 (46.9)	8 (24.2)	p=0.038*
Follow Up after Flap (mean years ± SD)	1.7 ± 1.6	2.2 ± 2.1	p=0.239

Surgical Characteristics



Surgery Characteristic	PreFlap PMRT (n=49)	PostFlap PMRT (n=33)	P value
Plane of Tissue Expander			
Pre-Pectoral	11 (22.4)	n/a	
Sub-Pectoral	23 (46.9)	n/a	
Unknown/Outside Hospital	15 (30.6)		
Mean Time to flap after Tissue Expander (years± SD)	1.63 ± 0.94	n/a	
Flap Type			p=0.146
DIEP	48 (98.0)	30 (90.9)	
msTRAM	1 (2.0)	3 (9.1)	
OR duration (mean minutes ± SD)	674.6 ± 192.1	642.3 ± 123.5	p=0.414
Time to flap after mastectomy (Mean days ± SD)	596.0± 340.1	16.6±55.5	p=0.000*

Patients considering autologous from initial consultation

	PreFlap PMRT (n=32)	PostFlap PMRT (n=33)	P value
Any Free Flap Complication	5 (15.6)	8 (24.2)	p=0.385
Any Breast Complication after PMRT	11 (34.4)	8 (24.2)	p=0.369
Any complication after PMRT requiring return to OR	7 (21.9)	7 (21.2)	p=0.094
Any Revisions after Flap Surgery (i,e Fat Graft)	19 (59.4)	14 (42.4)	p=0.172
Time to Final Recon, including Revisions (Mean years ± SD)	2.3 ± 1.5	0.6 ± 0.9	p=0.000*

Discussion

- Timing of PMRT did not impact free flap outcomes, including fat necrosis
- PreFlap PMRT patients experienced significantly more complications overall, likely due to tissue expander
- No difference in number of revision procedures including fat grafting for asymmetry (surrogate for shrinkage/deformities)
- Increased time to final reconstructive outcome including any revisions in PreFlap PMRT
- PostFlap PMRT may improve the overall patient experience, and decrease time to final outcome for the patient

Future Directions

- Increased sample size
- Multi-institution prospective trial randomizing patients to PreFlap or Post Flap radiation protocol

References

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