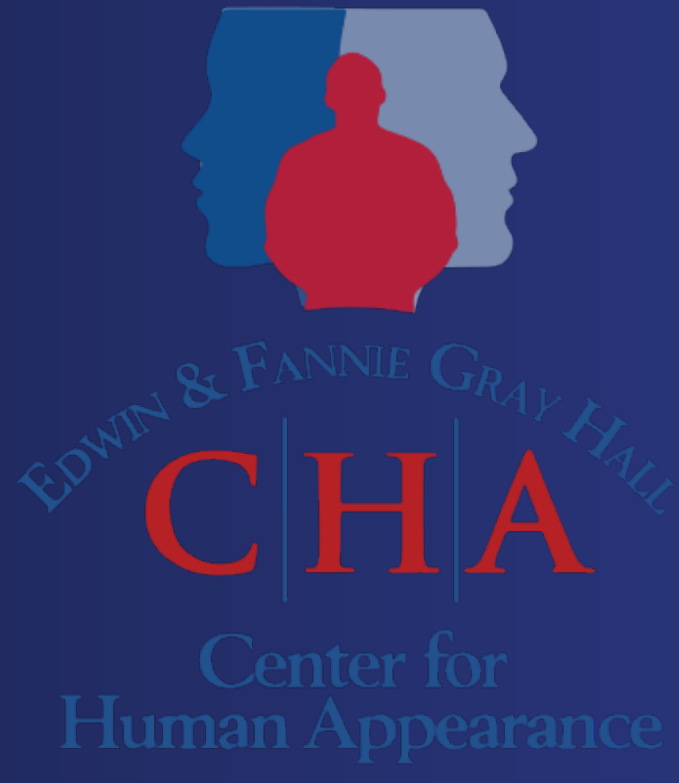




Temporal Patterns of Complications Following Postmastectomy Radiation Therapy: A Multi-Institutional Study

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Background

- The timing of when complications arise during the tissue expander (TE) phase relative to postmastectomy radiation therapy (PMRT) remains unclear.

Purpose

- Delineate PMRT complication risk when tissue expanders are in place.

Methods

- Retrospective, multi-institutional (2014–2025)
- Breast-level analysis & PMRT aligned window
- Cox model with patient clustering (breast-level) to assess hazards of any complication spanning the start of PMRT → implant exchange

Covariates:

- Active PMRT
- Fractions
- Hypertension
- Field
- Age
- Diabetes
- Dose
- BMI
- Smoking

8,384

Total Breasts

2,028

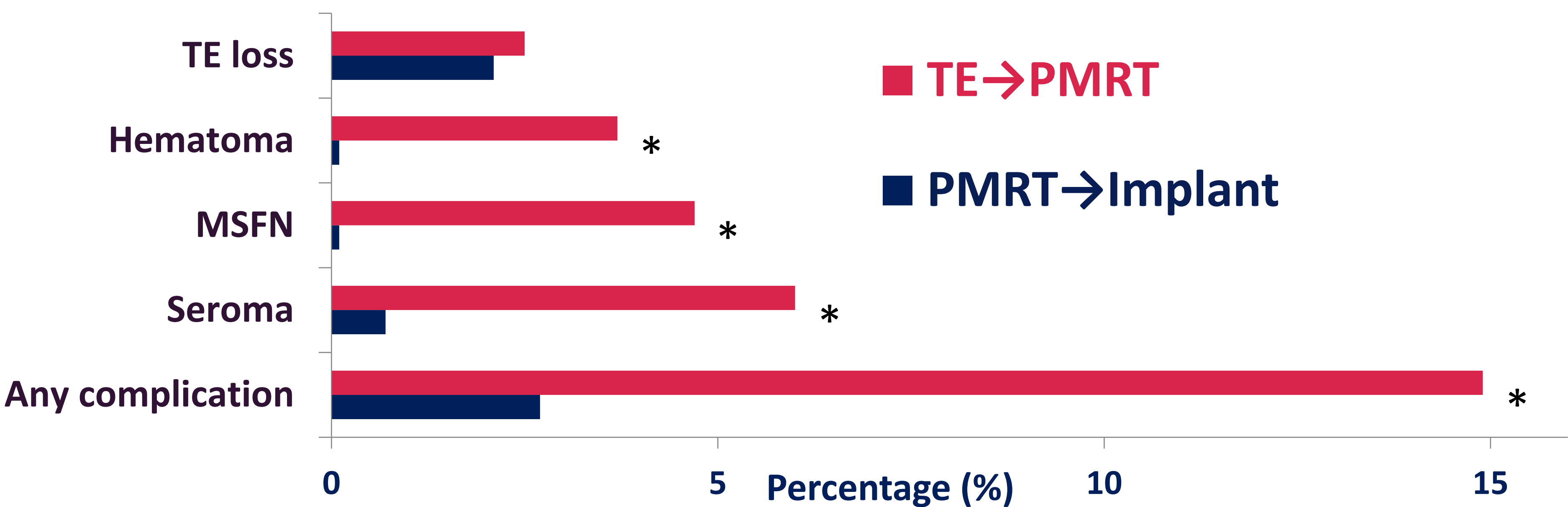
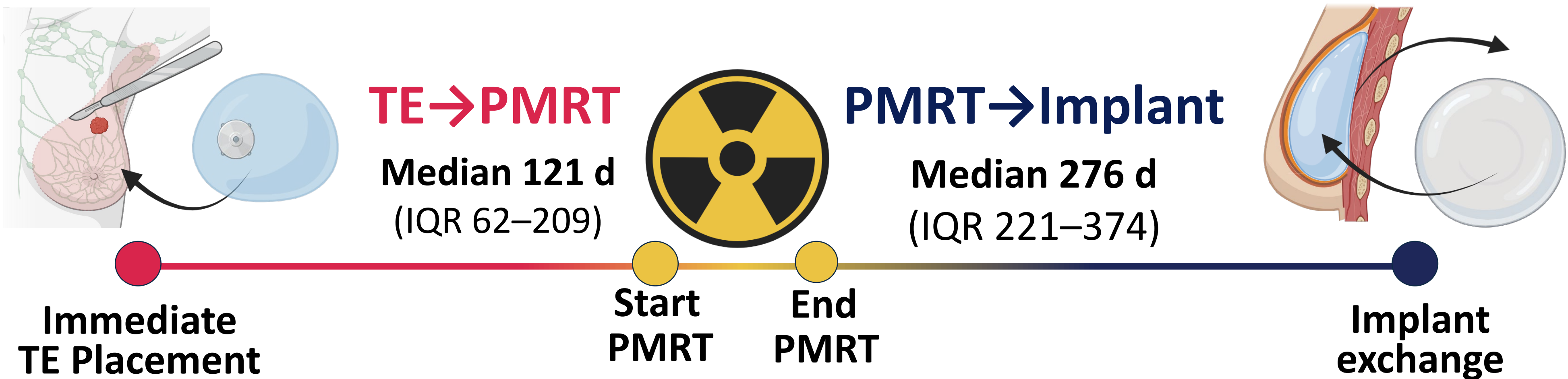
Irradiated Breasts

121 d

TE→PMRT
(IQR 62–209)

276 d

PMRT→Implant
(IQR 221–374)

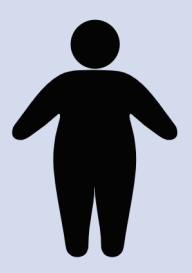


Active PMRT



HR 3.28

95% CI 2.79–3.84



BMI ↑ risk

HR 1.14 • p<0.001



HTN ↑ risk

HR 1.22 • p=0.006

Results

Table 1. Complications during the entire TE interval (TE → Implant)

TE Complication	PMRT– (n=6,356)	PMRT+ (n=2,028)	P
TE loss	185 (2.9%)	94 (4.6%)	<0.001
Hematoma	254 (4.0%)	78 (3.8%)	0.616
MSFN	240 (3.8%)	98 (4.8%)	0.038
Seroma	428 (6.7%)	136 (6.7%)	0.783
Any complication	956 (15.0%)	358 (17.7%)	0.014

Table 2. Complications between pre-PMRT vs post-PMRT

TE Complication	TE→PMRT (n=2,028)	PMRT→Implant (n=2,028)	P
TE loss	51 (2.5%)	43 (2.1%)	0.057
Hematoma	76 (3.7%)	2 (0.1%)	<0.001
MSFN	95 (4.7%)	3 (0.1%)	<0.001
Seroma	121 (6.0%)	15 (0.7%)	<0.001
Any complication	303 (14.9%)	55 (2.7%)	<0.001

Conclusions

- Most complications occur shortly after mastectomy.
- Active PMRT, elevated BMI, and hypertension increase susceptibility to any complication prior to implant exchange.
- Closer wound surveillance before and during radiation warrants consideration.
- Counsel on modifiable risk: BMI and hypertension.