**Introduction**

Postmastectomy radiation therapy (PMRT) following breast reconstruction is among the leading choices of treatment in patients with breast cancer. However, various reconstruction complications have been linked to this approach. These include infection, wound dehiscence, skin flap necrosis, implant exposure, capsular contracture, seroma, and hematoma. While some research has sought to identify potential covariates, which influence the rate of complications among this demographic, there lies a gap in explaining the role of radiation therapy (RT) on reconstruction complications among postmastectomy patients receiving implant-based reconstruction. Our research aims to assess the impact of radiation therapy on reconstruction complications for patients undergoing implant-based reconstruction.

**Materials and Methods**

A retrospective cohort study was conducted in patients who underwent mastectomy followed by breast reconstruction from October 2016 to December 2019. We reviewed charts from 548 patients undergoing mastectomy in 765 breasts, who were planned for immediate delayed implant-based breast reconstruction using tissue expanders. The identified breasts were separated into 4 groups:

1. Postmastectomy reconstruction without RT (n=566)
2. Mastectomy with tissue expander (TE) removed prior to RT (n=20)
3. Mastectomy with TE in place during RT (n=156)
4. TE in prior radiated breast (n=23)

Categorical variables were compared using the Chi-squared test. P-values less than 0.05 were considered statistically significant.

**Results**

In this study, infection was the most common reconstruction complication among all patients, followed by seroma. Figure 1 illustrates the frequency of each type of reconstruction complication among the total patients who faced complications.

The reconstruction complication rate was highest among patients who underwent TE removal prior to RT and lowest in patients who underwent mastectomy without RT. These complication rate differences between category are statistically significant (P < .001).

**Conclusion**

Our findings indicate that radiation therapy in the setting of postmastectomy breast cancer patients with implant-based breast reconstruction is linked to a higher reconstruction complication rate compared to those patients who did not receive RT. Certain covariates such as DM and hypertension increase the risk of complications among this demographic. Varying the radiation technique does not influence complication rates.

**Future Directions**

Ongoing research with these data aims to analyze the effects that different dosimetric factors and deflation of the tissue expander has on complication rates among PMRT patients.