

Is Immediate Tissue Expander Breast Reconstruction a Safe Option after Premastectomy Radiation?

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Introduction:

The purpose of this study is to examine the differences in complications after immediate tissue expander breast reconstruction (ITE-BR) between patients with a history of pre-mastectomy radiation therapy (PrMRT) and those without.

Methods: A retrospective chart review was performed on patients who underwent unilateral or bilateral ITE-BR from 2001 to 2018 at a single-institution. Minimum follow-up was one year.

Results: A total of 678 patients were analyzed. Group 1 (n=54 patients) underwent PrMRT and Group 2 (n=624 patients) did not. There were no demographic differences between these two groups. Group 1 had higher rates of implant loss (14.8% vs 10.9%), infection (16.7% vs 13.5%), skin necrosis (9.3% vs 4.8%), and wound dehiscence (7.4% vs 4.3%) though these values were not significant. Within Group 1, comparison of time between PrMRT and mastectomy revealed shorter intervals in patients who had implant loss (4.63 years vs 7.84 years, p=.113) and infections (5.44 years vs 7.74 years, p=.237). Group 1 patients with hypertension had significantly higher rates of implant loss (**50.0%** vs 15.2%, **p=0.024**). In addition, Group 1 patients also undergoing post-operative chemotherapy had significantly higher rates of skin necrosis (**60.0%** vs 20.4%, **p=0.049**). Otherwise, there was no differences in demographics, comorbidities, age, smoking, post-mastectomy radiation, or pre-operative chemotherapy between any of the groups.

Group 1 was further stratified by specific breast exposed to radiation. Group 1a (n=58 breasts) were directly irradiated breasts and Group 1b (n=39 breasts) were not. Group 1a had significantly higher rates of skin necrosis (**10.3%** vs 0%, **p=0.038**). Group 1a also had higher rates of implant loss (12.1% vs 7.7%), infection (15.5% vs 5.1%), and wound dehiscence (8.6% vs 2.6%) though did not reach significance.

Conclusion: Immediate TE-BR can be a safe reconstructive option in patients with history of prior breast irradiation. Our data indicates that hypertensive patients who have undergone PrMRT have increased rates of implant loss, while patients requiring post-operative chemotherapy have increased rates of skin necrosis. Comparison of irradiated versus non-irradiated breasts also reveals increased skin necrosis in irradiated breasts. Careful patient selection and patient counseling should be an integral part of planning for reconstruction of these patients.