Radiation and chemotherapy not associated with infection following breast reconstruction: A single-institution retrospective study

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Purpose: Infections may complicate breast reconstruction and factors found to predict infection vary between authors, with smoking, radiation, and chemotherapy frequently cited.[1,2,3,4] The authors aimed to evaluate factors associated with infections.

Methods: Patients undergoing breast reconstruction since 2003 with follow up in our institution's medical record system were reviewed. Chi-squared and independent t-tests were used to identify variables associated with infection; associated variables ($p<0.05$) were used to build a logistic regression.

Results: Four hundred thirty-three patients were included, of whom 88 had infections (20.3%). Twenty-three patients had superficial infections, fifty-four had deep infections, and 11 developed both. Infection was more common among patients undergoing implant reconstruction (OR 2.65, 1.50-4.70). Seventy-one implant reconstruction patients (25.2% of all implant-based reconstruction) developed an infection versus 17 autologous reconstruction patients (11.3% of all autologous reconstructions). On univariate analysis, patients who developed infections had more co-morbidities (1.2±1.2 versus 0.92±1.3, p=0.042). They were more likely to be Caucasian (OR 1.69, 1.05-2.71), to be current smokers (OR 2.50, 1.20-5.19), to have undergone implant reconstruction (OR 2.65, 1.50-4.70), to have received radiation (OR 1.76, 1.09-2.85) or to have received chemotherapy (OR 1.62, 1.00-261). Patients with infections were also more likely to have had a dehiscence (OR 2.27, 1.35-3.81), seroma (OR 1.99, 1.11-3.55), or implant exposure (OR 9.79, 3.61-26.60). Factors found to be significant on univariate analysis were entered together into a multivariate regression. Results showed that implant exposure increased odds of infection by 165% (p=0.003), implant-based reconstruction increased them by 90.6% (p=0.004), and dehiscence increased these odds by 65.1% (p=0.034). Patients with infections were more likely to decline further reconstructive procedures (OR 2.10, 1.21-3.64) and require more procedures overall (5.08±2.35 versus 3.74±1.75, $p<0.0001$), largely driven by more implant exchanges (1.89±1.74 versus 1.29±1.13, p=0.017). Infected patients were not any less likely to finish their reconstructions, as indicated by nipple reconstruction or tattooing (OR 0.90, 0.58-1.49).

Conclusions: Contrary to previous studies, we did not find that radiotherapy or chemotherapy were associated with infection in a regression model. While it was reassuring to find that infected patients were not less likely to complete breast reconstruction, the increased number of procedures these patients undergo is concerning from a cost and risk-exposure standpoint.

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