Background: Coronavirus disease of 2019 (COVID-19) poses unique challenges for breast reconstruction. At the authors’ institution, COVID-19 postoperative protocols mandated patients undergoing immediate prosthetic breast reconstruction transition from 23-hour postoperative observation to same-day discharge. The authors sought to compare complications and hospital costs between these groups.

Methods: A retrospective study of consecutive patients who underwent immediate prosthetic breast reconstruction from March of 2019 to April of 2021 at an academic hospital was performed. Before mid-March of 2020, patients were admitted postoperatively for observation; after mid-March of 2020, patients were discharged the same day. Postoperative complications at 48 hours, 30 days, and 90 days and hospital costs were compared.

Results: There were 238 patients included (119 outpatient and 119 observation). Across all time points, total complications, major complications, categorical complications (wound healing, seroma, hematoma, infection, implant exposure), and reconstructive failures were low and not statistically different between groups. There were no differences in 30-day hospital readmission/reoperation rates (7.6% outpatient versus 9.2% observation; \( P = 0.640 \)). No patient or surgical factors predicted major complication or hematoma by 48 hours or infection by 90 days. At 90 days, radiation history (\( P = 0.002 \)) and smoking (\( P < 0.001 \)) were significant predictors of major complications. Average patient care costs outside of surgery-specific costs were significantly lower for outpatients ($1509 versus $4045; \( P < 0.001 \)).

Conclusions: Complications after immediate prosthetic breast reconstruction are low. Outpatient surgery is safe, harboring no increased risk of complications. Furthermore, outpatient care is more cost-effective. Therefore, surgeons should consider outpatient management of these patients to minimize COVID-19 exposure and reduce resource consumption, all while maintaining excellent surgical care. (Plast. Reconstr. Surg. 152: 1e, 2023.)

**CLINICAL QUESTION/LEVEL OF EVIDENCE:** Therapeutic, III.
operations for the patient, it can also increase viral exposure risk to patients and physicians, operative time, and consumption of health care resources. Immediate reconstruction is also associated with a higher risk of infection and wound healing complications.15,16 Among the diverse range of breast reconstruction strategies, implant-based breast reconstruction currently represents over 70% of breast reconstruction, and continues to increase in prevalence because of the improvements in implant design and development of allograft dermal matrices.17–19 In particular, refined technique and materials have led to increased adoption of prepectoral breast implants with equivalent safety outcomes, shorter operative time, and decreased postoperative pain compared with submuscular placement.20,21 Further development of enhanced recovery after surgery protocols that optimize postoperative pain control with nerve blocks and analgesic adjuncts have limited opioid use and decreased hospital admissions.22–24 These advancements render immediate prepectoral implant-based breast reconstruction following mastectomy a viable option for same-day surgery.

The resource strains on the health care system brought about by COVID-19 and its subsequent surges have hastened the resourceful development of improved breast reconstruction strategies where patients are discharged on the same day of surgery. Although several cohort studies and case series describe patients safely undergoing same-day immediate implant-based breast reconstruction, these studies have significant limitations.22,25–36 A true comparison between outpatient and inpatient management has not been performed. Therefore, we sought to compare the safety, complications, and cost differences between consecutive patients discharged on the same day of surgery compared with those admitted overnight for observation following immediate prosthetic breast reconstruction. The goals of this effort were to minimize viral exposure to patients and health care staff, reduce consumption of medical resources, and maintain the equivalent high level of surgical care to the patient.

PATIENTS AND METHODS

Study Design and Data Collection

This study was approved by the Human Research Protection Office at Washington University in St. Louis. After receiving approval, a retrospective chart review of patients who underwent immediate postmastectomy prosthetic breast reconstruction—either permanent implant or tissue expander (TE)—at a single academic hospital from March of 2019 to April of 2021 was performed. Before mid-March of 2020, because of hospital-wide postoperative COVID-19 pandemic protocols, patients were instead discharged on the day of surgery (“outpatient” group). A subset of these patients was admitted for observation postoperatively because of unforeseen issues and were thus excluded. Patients who underwent subpectoral implant placement or in whom acellular dermal matrix was not used were excluded to standardize the procedure performed.

Demographic, clinical, and surgical data were collected for each patient from the electronic medical record. Demographic and clinical variables included age, body mass index (BMI), smoking status (current, former, never), diabetes mellitus (DM), hypertension (HTN), radiation therapy, and chemotherapy. Surgical variables included indication (prophylactic versus therapeutic), mastectomy type (simple, skin-sparing, nipple-sparing), laterality (unilateral versus bilateral), lymph node management, breast specimen weight, intraoperative tranexamic acid (TXA) use, operation length, implant placement (TE versus permanent implant), implant size, and TE fill.

Complication data at 48 hours, 30 days, and 90 days postoperatively were collected. Complications were characterized as wound healing issues (defined as full-thickness mastectomy skin flap necrosis or incisional dehiscence), seroma (defined as a palpable fluid collection that may or may not have required drainage), hematoma (defined as bleeding requiring reoperation), infection (defined as initiation of oral antibiotics after routine perioperative antibiotics), readmission for intravenous antibiotics and/or explantation, and implant exposure. Complications were further grouped into total complications, major complications, and reconstructive failures. Major complications were
defined as complications requiring hospital readmission or reoperation. Reconstructive failures were defined as complications requiring unplanned implant removal. Hospital costs associated with each patient’s index procedure and related readmissions or reoperations were also collected.

Outcomes
Analysis compared observation patients (control group) to outpatients (experimental group). The patient was treated as the unit of analysis. Our primary outcomes of interest were differences in major complications and hematoma between groups by 48 hours postoperatively. Secondary outcome measures were differences between groups in major complications and infection by 90 days, 30-day readmission/reoperation rates, and hospital costs for index operations and secondary readmissions/reoperations.

Statistical Analysis
Patient characteristics were summarized as number (%) for categorical variables and mean ± SD for continuous variables. Normally distributed continuous data were compared using unpaired t tests. Categorical variables were compared using chi-square analysis with the Yates correction or the Fisher exact test where applicable. Simple linear regression analysis was used to examine univariate relationships between each explanatory variable and the following outcome variables: 48-hour major complication, 48-hour hematoma, 90-day major complication, and 90-day infection. Variables were included and tested in stepwise multivariable linear regression models for each outcome variable for univariate values of \( P < 0.20 \). Of note, specimen weight was grouped as greater than or less than the mean specimen weight in our study. Statistical significance was defined as multivariate value of \( P < 0.05 \). All statistical analyses were performed in Excel (Microsoft, Redmond, WA), with the exception of the power analysis (performed in G-power version 3.1.9.7).  

RESULTS
A total of 261 charts were analyzed: 238 patients were included, and 23 patients were excluded. Of the excluded patients, 20 were intended to be treated as outpatients but were admitted postoperatively for unforeseen issues, and three were excluded for subpectoral implant placement. Of the 20 intended outpatients admitted postoperatively, indications for admission were as follows: five for postoperative nausea and vomiting, one for oxygen desaturation, one for patient preference, and 13 for undocumented reasons. Of note, none of these 20 patients experienced a postoperative complication. Patients who ultimately met inclusion criteria were placed into one of two groups: outpatient or observation. Both groups consisted of 119 consecutive patients.

Patient demographics and medical characteristics are reported in Table 1. Groups were well matched, with no statistically significant differences in patient characteristics, including age, BMI, smoking history, or medical comorbidities. There was also no significant difference in mastectomy indication, radiation therapy, or chemotherapy treatment between the two groups.

Surgical characteristics of the two groups are detailed in Table 2. The outpatient and observation groups consisted of 223 and 210 treated breasts, respectively. Significantly more patients received bilateral treatment in the outpatient group compared with the observation group (87.4% versus 76.5%; \( P = 0.020 \)). The two groups were similar with respect to mastectomy type, lymph node biopsy (no patients underwent

| Table 1. Patient Demographics |
|-----------------------------|
| Characteristic              | Outpatient (%) | Observation (%) | \( P \) |
| Total patients              | 119            | 119             |       |
| Mean age ± SD, yr           | 47.0 ± 10.9    | 48.5 ± 10.5     | 0.270 |
| Mean BMI ± SD, kg/m²        | 27.0 ± 6.0     | 27.6 ± 5.6      | 0.447 |
| Comorbidities               |                |                 |       |
| HTN                         | 18 (15.1)      | 22 (18.5)       | 0.488 |
| DM                          | 3 (2.5)        | 4 (3.4)         | 1.000 |
| Smoking                     |                |                 | 0.909 |
| Current                     | 5 (4.2)        | 6 (5.0)         |       |
| Former                      | 27 (22.7)      | 25 (21.0)       |       |
| Never                       | 87 (73.1)      | 88 (73.9)       |       |
| Indication                  |                |                 | 0.563 |
| Prophylactic                | 17 (14.3)      | 14 (11.8)       |       |
| Therapeutic                 | 102 (85.7)     | 105 (88.2)      |       |
| Treatment                   |                |                 |       |
| Neoadjuvant chemotherapy    | 27 (22.7)      | 25 (21.0)       | 0.754 |
| History of radiation therapy| 5 (4.2)        | 1 (0.8)         | 0.212 |
| Adjuvant chemotherapy       | 25 (21.0)      | 25 (21.0)       | 1.000 |
| Adjuvant radiation therapy  | 27 (22.7)      | 24 (20.2)       | 0.636 |
axillary lymph node dissection), implant characteristics, specimen weight, and operative duration. However, significantly more patients in the outpatient group were treated with intraoperative TXA than in the observation group (73.1% versus 10.9%; P < 0.001) secondary to a change in standard intraoperative protocol.

Postoperative complications were investigated at 48 hours, 30 days, and 90 days after the index procedure. Complications were grouped by severity (Table 3 and Fig. 1) and type (Table 4 and Fig. 2). Our primary outcomes of interest were 48-hour major complication rate and 48-hour hematoma rate, neither of which differed significantly between groups. Only one outpatient (0.8%) and three observation patients (2.5%) experienced a major complication by 48 hours (P = 0.622). All major complications by 48 hours were hematoma requiring return to the operating room for washout. The demographic and operative characteristics of the patients who experienced major complications by 48 hours are further detailed in Table 5. The five patients who had postoperative hematoma had no additional major or categorical complications by 90 days. In addition, there was no difference in time to stable reconstruction between groups.

The main secondary outcomes of interest were 90-day major complication and infection rates and 30-day reoperation/readmission rates. Ninety-day total complication rates were 23.5% versus 22.7% in the outpatient and observation groups, respectively (P = 0.878). There was no significant difference in 90-day major complications between the groups: 13 outpatients (10.9%) and 15 observation patients (12.6%) experienced complications (P = 0.687). With respect to complication type, there were no significant differences in 90-day wound healing issues, seroma, hematoma, or implant exposure rates between the groups. Wound healing issues were the most common 90-day complication in both groups, affecting 15 outpatients (12.6%) and 14 observation patients (11.8%) (P = 0.843). Infection was the second most common 90-day complication in both groups, but there

| Characteristic                  | Outpatient (%) | Observation (%) | P    |
|--------------------------------|----------------|----------------|------|
| Total breasts                  | 223            | 210            |      |
| Laterality                     |                |                |      |
| Unilateral                     | 15 (12.6)      | 28 (23.5)      |      |
| Bilateral                      | 104 (87.4)     | 91 (76.5)      |      |
| Mastectomy                     |                |                |      |
| SSM                            | 100 (44.8)     | 95 (45.2)      |      |
| NSM                            | 123 (55.2)     | 115 (54.8)     |      |
| Lymph node biopsy              |                |                |      |
| Yes                            | 103 (46.2)     | 103 (49.0)     |      |
| No                             | 120 (53.8)     | 107 (51.0)     |      |
| Reconstruction type            |                |                |      |
| Tissue expander                | 99 (44.4)      | 96 (45.7)      |      |
| Implant                        | 124 (55.6)     | 114 (54.3)     |      |

| Tissue expanders, cc           |                |                |      |
| Size                           | 525.4 ± 111.4  | 506.6 ± 119.3  | 0.337|
| Fill                           | 257.3 ± 128.6  | 239.9 ± 138.6  | 0.470|
| Implant size, cc               | 439.4 ± 126.7  | 476.1 ± 148.2  | 0.096|
| Specimen weight, g             | 621.1 ± 443.4  | 580.8 ± 339.3  | 0.353|
| OR length, min                 | 108.9 ± 21.7   | 109.9 ± 29.0   | 0.758|
| TXA administered intraoperatively | 87 (73.1) | 13 (10.9) | <0.001 |

SSM, skin-sparing mastectomy; NSM, nipple-sparing mastectomy; OR, operating room.
was no significant difference (8.4% outpatient versus 6.7% observation; \( P = 0.624 \)). Of note, there were no differences in hospital readmissions or reoperations at 30 days postoperatively between groups (7.6% outpatient versus 9.2% observation; \( P = 0.640 \)).

Univariate analysis revealed that age, HTN, admission status, laterality, and intraperative TXA administration were not significantly associated with 48-hour major complications or hematoma. No \( P \) values fell below the \( P < 0.2 \) cutoff for inclusion in a stepwise regression analysis. However, univariate analysis did find that radiation therapy and active smoking were significantly associated with 90-day major complications \( (P = 0.003 \) and \( P < 0.001 \), respectively). DM \( (P = 0.161 \) and obesity \( (P = 0.085 \) did not demonstrate a significant univariate relationship with range-of-motion outcomes but met the criterion for inclusion in the stepwise regression analysis (Table 6). After serial elimination, stepwise multivariable regression revealed that radiation treatment \( (P = 0.002 \) and active smoking \( (P < 0.001 \) were the only significant predictors of 90-day major complications (Table 7). The Hosmer-Lemeshow test for goodness of fit was performed and is detailed in Table 8.

A similar analysis was completed for predictors of 90-day infection. Although univariate analysis revealed that laterality, active smoking, HTN, and radiation therapy were not significantly associated with the development of infections, they did meet the criterion \( (P < 0.20 \) for inclusion in the stepwise regression model (Table 9). After serial elimination, multivariable regression found that none of these variables were significant predictors of infection.

Cost analysis revealed that the average surgery-specific cost per patient was $16,954 ± $4939. Surgery-specific costs were unable to be compared between outpatient and observation patients because of significant differences in baseline surgical characteristics (ie, laterality and TXA use). Additional patient-care costs (ie, all costs not directly attributable to the operation itself), however, are not affected by these differences. Therefore, all nonsurgical costs were compared. As hypothesized, additional patient-care costs were significantly lower in outpatients than in observation patients (ie, $1509 versus $4045 per patient; \( P < 0.001 \)). There were no differences in surgical and nonsurgical costs associated with readmission and reoperations between groups.

### Table 4. Complication Type

| Characteristic       | Outpatient | Observation | \( P \)  |
|----------------------|------------|-------------|---------|
| Wound healing        |            |             |         |
| 48 hr                | 0 (0.0)    | 0 (0.0)     | 1.000   |
| 30 day               | 12 (10.1)  | 12 (10.1)   | 1.000   |
| 90 day               | 15 (12.6)  | 14 (11.8)   | 0.843   |
| Seroma               |            |             |         |
| 48 hr                | 1 (0.8)    | 1 (0.8)     | 1.000   |
| 30 day               | 4 (3.4)    | 6 (5.0)     | 0.518   |
| 90 day               | 5 (4.2)    | 8 (6.7)     | 0.392   |
| Hematoma             |            |             |         |
| 48 hr                | 1 (0.8)    | 3 (2.5)     | 0.622   |
| 30 day               | 1 (0.8)    | 4 (3.4)     | 0.370   |
| 90 day               | 1 (0.8)    | 4 (3.4)     | 0.370   |
| Infection            |            |             |         |
| 48 hr                | 0 (0.0)    | 0 (0.0)     | 1.000   |
| 30 day               | 5 (4.2)    | 5 (4.2)     | 1.000   |
| 90 day               | 10 (8.4)   | 8 (6.7)     | 0.624   |
| Implant exposure     |            |             |         |
| 48 hr                | 0 (0.0)    | 0 (0.0)     | 1.000   |
| 30 day               | 2 (1.7)    | 0 (0.0)     | 0.498   |
| 90 day               | 3 (2.5)    | 0 (0.0)     | 0.249   |
DISCUSSION

Immediate prosthetic breast reconstruction has been safely performed with inpatient postoperative observation in the past. There are well-established financial, psychological, and infectious benefits to outpatient surgery. Patients undergoing outpatient breast cancer operations experience better emotional adjustment and fewer psychological distress symptoms, perceive greater control over their recovery process, and feel “recovered” more quickly postoperatively compared with inpatients. In addition, by reducing a patient’s time in the hospital, the risk for nosocomial infection is decreased. However, the transition to outpatient immediate prosthetic breast reconstruction has yet to be widely accepted. Because of the demonstrated benefits of outpatient surgery, we sought to establish the safety and costs associated with outpatient immediate implant-based breast reconstruction, as this transition was accelerated given the health care burden associated with COVID-19.

Previous studies have described outpatient surgical management of immediate implant-based reconstruction; however, each study has significant limitations that can be attributed to one of the following: poor group matching, small sample size, short-term follow-up, lack of controls, strict exclusion criteria (ie, DM, cardiovascular disease, high BMI, smokers, radiation therapy history), limited complication profile, unclear observation and outpatient definitions, or different pain management strategies or surgery settings between groups. Our study avoids many of these limitations and therefore provides a truer comparison of outpatient versus observation management.

Our study establishes the safety of outpatient immediate implant-based breast reconstruction. There were no differences in major complications by 48 hours postoperatively between outpatients and observation patients. All major complications were hematomas, and our hematoma rate of 2.1% is consistent with the literature range of 1% to 4%. However, TXA use varied between observation and outpatient groups. Two months before the initial COVID-19 peak in 2020, it was established that patients administered perioperative intravenous TXA during immediate two-stage prosthetic breast reconstruction develop fewer hematomas, without increasing risk of thromboembolic events, compared with those who did not receive this medication. Coupled with additional studies across multiple surgical specialties establishing the benefits and safety of perioperative TXA, these findings contributed to practice pattern shifts at our hospital. The timing of incorporating perioperative TXA coincided heavily with the advent of COVID-19 outpatient surgery protocols. Despite significantly more outpatients receiving intraoperative TXA in our study, outpatients and observation patients had similar hematoma rates at all time points postoperatively. Furthermore, univariate and multivariate analyses revealed that intraoperative TXA use did not significantly predict major complication or hematoma at 48 hours.

Secondary outcome measures were major complications and infection rates by 90 days, and 30-day hospital readmission/reoperation rates, all of which were no greater in outpatients. Both major complication rates and infection rates align with those reported in the literature.
Interestingly, the literature surrounding postoperative infection risk is mixed. Theoretically, outpatient surgery should decrease the risk of infection because of decreased exposure to nosocomial pathogens. However, a 2015 National Surgical Quality Improvement Program database review of 1268 patients undergoing outpatient versus inpatient immediate TE breast reconstruction revealed higher infection rates among outpatients: 1.9% versus 0.5%. This was attributed to trends toward minimizing perioperative antibiotic prophylaxis between 2005 and 2012, which has since been shown to increase infection risk. Conversely, Schwartz revealed that among 209 patients undergoing immediate implant-based breast reconstruction, patients treated in a hospital were 4.7 times more likely to develop an infection that led to reconstructive failure than those treated at an ambulatory surgery center (11.5% versus 2.3%, respectively). Our overall infection rate fell between these values at 7.6%. We routinely administer one dose of an intravenous antibiotic within 60 minutes before incision and prescribe oral antibiotics postoperatively for the duration of drain placement. We detected no differences in infection rates between observation and outpatients. Furthermore, despite established predictors of postoperative infection, our univariate and multivariate analyses revealed that none of these factors predicted infection by 90 days. Unsurprisingly, we found that radiation therapy and smoking predict major complications at 90 days, consistent with multiple previous studies.

The benefits of outpatient surgery extend beyond complications. Several studies have investigated the financial benefits of outpatient postoperative management, and the economic advantage of outpatient surgical management across multiple surgical specialties has been well established. For example, Simpson et al. found that each night in the hospital adds $518 when comparing facility costs of outpatient versus inpatient immediate TE breast reconstruction. A 1991 economic comparison of various methods of breast reconstruction revealed that inpatient TE exchange was $5459 more expensive than outpatient. Our findings corroborate the cost-effectiveness of outpatient immediate prosthetic breast reconstruction. We found that inpatient admission after immediate implant-based breast reconstruction increases hospital costs by just over $2500 while placing a significant resource burden on the hospital system.

**Limitations**

Despite the many strengths of this study, there are notable limitations. This is a single-center, two-plastic-surgeon, two-breast-oncologic-surgeon study. Therefore, our findings may not be generalizable to all practices. TXA use and laterality were significantly different between inpatients and outpatients and therefore could confound our results. However, univariate and multivariate analyses revealed that neither factor was predictive of our primary or secondary outcomes. Because of the overall low complication rates, our study was unable to detect small differences in complication risk. We performed a post hoc power analysis (one-tail sensitivity test for the difference between two independent proportions). Given the 2.5% rate of major complications at 48 hours in the control (observation) group, we were only powered to detect a
minimum outpatient complication rate of 11.6% (effect size ≥ 4.60, alpha ≤ 0.05, power = 0.80). As more patients undergo outpatient procedures in the post–COVID-19 pandemic era, we will continue to revisit our complication rate and cost-benefit analysis as our study population increases.

Finally, we were unable to assess patient-reported outcomes, which would add another dimension to the comparison of inpatient and outpatient surgical management.

**CONCLUSIONS**

Complication rates after immediate prosthetic breast reconstruction are low and similar between inpatients and outpatients. Rates of total complications, major complications, categorical complications, and reconstructive failures are no greater in outpatients, establishing the safety of outpatient immediate implant-based breast reconstruction. Furthermore, outpatient surgery has significant economic benefits. Therefore, plastic surgeons should consider transitioning to outpatient treatment.

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**Table 6. Univariate Analysis for the Development of Major Complications by 90 Days**

| Variable               | No. of Patients | 90-Day Complications (%) | Adjusted OR (95% CI) | P    |
|------------------------|-----------------|--------------------------|----------------------|------|
| Admission status       |                 |                          |                      |      |
| Outpatient             | 119             | 13 (10.9)                | 0.85 (0.39–1.87)     | 0.687|
| Observation            | 119             | 15 (12.6)                |                      |      |
| Age                    |                 |                          |                      | 0.369|
| ≥65 years              | 16              | 3 (18.8)                 | 1.82 (0.48–6.82)     |      |
| <65 years              | 222             | 25 (11.3)                |                      |      |
| BMI                    |                 |                          |                      | 0.085|
| ≥30 kg/m²              | 69              | 12 (17.4)                | 2.01 (0.90–4.92)     |      |
| <30 kg/m²              | 169             | 17 (10.1)                |                      |      |
| HTN                    |                 |                          |                      | 0.217|
| Yes                    | 40              | 7 (17.5)                 | 1.79 (0.70–4.54)     |      |
| No                     | 198             | 33 (16.7)                |                      |      |
| DM                     |                 |                          |                      | 0.161|
| Yes                    | 7               | 2 (28.6)                 | 3.15 (0.58–17.09)    |      |
| No                     | 231             | 26 (11.3)                |                      |      |
| Current smoker         |                 |                          |                      | <0.001|
| Yes                    | 11              | 5 (45.5)                 | 7.39 (2.09–26.13)    |      |
| No                     | 227             | 25 (10.1)                |                      |      |
| Specimen weight        |                 |                          |                      | 0.454|
| >602.7 g               | 95              | 13 (13.7)                | 1.35 (0.61–2.99)     |      |
| <602.7 g               | 143             | 15 (10.5)                |                      |      |
| Chemotherapy           |                 |                          |                      | 0.516|
| Yes                    | 81              | 5 (6.2)                  | 0.73 (0.25–2.12)     |      |
| No                     | 157             | 13 (8.3)                 |                      |      |
| Radiation therapy      |                 |                          |                      | 0.005|
| Yes                    | 57              | 13 (22.8)                | 3.27 (1.45–7.38)     |      |
| No                     | 181             | 15 (8.3)                 |                      |      |
| Laterality             |                 |                          |                      | 0.975|
| Unilateral             | 43              | 5 (11.6)                 | 0.98 (0.35–2.75)     |      |
| Bilateral              | 195             | 25 (11.8)                |                      |      |
| Implant type           |                 |                          |                      | 0.246|
| Tissue expander        | 120             | 17 (14.2)                | 1.61 (0.72–3.59)     |      |
| Permanent implant      | 118             | 11 (9.3)                 |                      |      |
| Intraoperative TXA     |                 |                          |                      | 0.924|
| Yes                    | 100             | 12 (12.0)                | 1.04 (0.47–2.31)     |      |
| No                     | 138             | 16 (11.6)                |                      |      |

**Table 7. Final Model of a Multivariate Analysis for the Development of a Major Complication at 90 Days**

| Variable               | Adjusted OR (95% CI) | P    |
|------------------------|----------------------|------|
| Current smoker         | 1.44 (1.19–1.73)     | <0.001|
| Radiation therapy      | 1.16 (1.05–1.27)     | 0.002|

**Table 8. Hosmer-Lemeshow Test**

| Step | χ² | df | P   |
|------|----|----|-----|
| 1    | 7.822 | 8  | 0.451 |
of patients undergoing immediate implant-based breast reconstruction.

Table 9. Univariate Analysis for the Development of Infection by 90 Days

| Variable                | No. of Patients | 90-Day Infection (%) | Adjusted OR (95% CI) | P   |
|-------------------------|-----------------|-----------------------|-----------------------|-----|
| Admission status        |                 |                       |                       | 0.624 |
| Outpatient              | 119             | 10 (8.4)              | 1.27 (0.48–3.35)      |     |
| Observation             | 119             | 8 (6.7)               |                       |     |
| Age                     |                 |                       |                       | 0.439 |
| ≥65 years               | 16              | 2 (12.5)              | 1.84 (0.38–8.81)      |     |
| <65 years               | 222             | 16 (7.2)              |                       |     |
| BMI                     |                 |                       |                       | 0.673 |
| ≥30 kg/m²               | 69              | 6 (8.7)               | 1.25 (0.45–3.46)      |     |
| <30 kg/m²               | 169             | 12 (7.1)              |                       |     |
| HTN                     |                 |                       |                       | 0.195 |
| Yes                     | 40              | 5 (12.5)              | 2.03 (0.68–6.06)      |     |
| No                      | 198             | 13 (6.6)              |                       |     |
| DM                      |                 |                       |                       | 0.495 |
| Yes                     | 7               | 1 (14.3)              | 2.10 (2.04–18.45)     |     |
| No                      | 231             | 17 (7.4)              |                       |     |
| Current smoker          |                 |                       |                       | 0.173 |
| Yes                     | 11              | 2 (18.2)              | 7.39 (2.09–26.13)     |     |
| No                      | 227             | 16 (7.0)              |                       |     |
| Specimen weight         |                 |                       |                       | 0.683 |
| >602.7 g                | 95              | 8 (8.4)               | 1.22 (0.46–3.32)      |     |
| ≤602.7 g                | 143             | 10 (7.0)              |                       |     |
| Chemotherapy            |                 |                       |                       | 0.651 |
| Yes                     | 81              | 7 (8.6)               | 1.26 (0.47–3.37)      |     |
| No                      | 157             | 11 (7.0)              |                       |     |
| Radiation therapy       |                 |                       |                       | 0.122 |
| Yes                     | 57              | 7 (12.3)              | 2.16 (0.80–5.87)      |     |
| No                      | 181             | 11 (6.1)              |                       |     |
| Laterality              |                 |                       |                       | 0.080 |
| Unilateral              | 43              | 6 (14.0)              | 2.47 (0.87–7.01)      |     |
| Bilateral               | 195             | 12 (6.2)              |                       |     |
| Implant type            |                 |                       |                       | 0.650 |
| Tissue expander         | 120             | 10 (8.3)              | 1.25 (0.48–3.29)      |     |
| Permanent implant       | 118             | 8 (6.8)               |                       |     |
| Intraoperative TXA      |                 |                       |                       | 0.7  |
| Yes                     | 100             | 7 (7.0)               | 0.87 (0.52–2.33)      |     |
| No                      | 138             | 11 (8.0)              |                       |     |

Of patients undergoing immediate implant-based breast reconstruction.

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