Table 1 Outcomes in breast surgery studies.

Author, year of publication, name of the article, and country.	Population / patient group of the study	Intervention	Comparison	Outcomes	Study design and time
Aholaakko, Metsälä, Lyytikäinen & Sihvonen. 2013. Risks for surgical site infections in breast surgery. Finland.	Breast surgery patients (N=982).	Lobectomy (n=700) or mastectomy (n=282).	SSI rates in lobectomies and mastectomies compared by patient and procedure specific factors.	The SSI rate was 6.7%. In a multivariate logistic regression model for all operations, a contaminated or dirty wound, high American Society of Anaesthesiologists score, high body mass index, use of surgical drains and re-operation predicted increased infection risk. In lumpectomies BMI > 25, and surgical drains predicted increased risk. In mastectomies, the significant predictor was re-operation. All re-operated patients had 2.6-fold (p=0.003), lumpectomy patients 2.4-fold (p=.017) and mastectomy patients 2.7-fold (p=0.027) risk for SSI compared with primary operated patients.	Retrospective chart review of all breast surgery related documents.
Alves et al. 2022	Adults who underwent breast reconstruction after mastectomy.	Autologous breast reconstruction with DIEP flap.	Reconstruction timing (Immediate versus delayed).	This meta-analysis showed with all articles (n=4) a significant difference in favour of IBR for wound healing (OR = 0.57, 95% CI 0.41, 0.77; p = 0.0003) but not for hematoma (OR = 1.46, 95% CI 0.45, 4.77; p = 0.53) or infection (OR = 0.81, 95% CI 0.52, 1.25; p = 0.34). No significant differences were observed for partial flap loss (OR = 0.77, 95% CI 0.48, 1.24; p = 0.28) and total flap loss (OR = 1.04, 95% CI 0.69, 1.58; p = 0.85).	A Meta-Analysis of Comparative Studies.
de Boniface, Szulkin & Johansson. 2021. Sweden.	The cohort included all women (N= 48986) diagnosed having primary invasive T1-2 N0-2 breast cancer and undergoing breast surgery.	Locoregional treatment comparing breast-conserving surgery with radiotherapy (BCS+RT) (n= 9 367 (59.9%) had BCS+RT), mastectomy without radiotherapy (Mx-RT) (n= 2413 (25.3%) had Mx-RT), and mastectomy with radiotherapy (Mx+RT) (n= 7206 (14.7%) had Mx+RT).	Overall survival (OS) and breast cancer–specific survival (BCSS). Main outcomes were determined before initiation of data retrieval.	All-cause death occurred in 6573 cases, with death caused by breast cancer in 2313 cases; 5-year OS was 91.1% (95% CI, 90.8-91.3) and BCSS was 96.3% (95% CI, 96.1-96.4). Apart from expected differences in clinical parameters, women receiving Mx-RT were older, had a lower level of education, and lower income. Both Mx groups had a higher comorbidity burden irrespective of RT. After stepwise adjustment for all covariates, OS and BCSS were significantly worse after Mx-RT (hazard ratio [HR], 1.79; 95% CI, 1.66-1.92 and HR, 1.66; 95% CI, 1.45-1.90, respectively) and Mx+RT (HR, 1.24; 95% CI, 1.13-1.37 and HR, 1.26; 95% CI, 1.08-1.46, respectively) than after BCS+RT.	Cohort study using prospectively collected national Swedish data from 2008 to 2017.
Deori et al.2021. A prospective randomised controlled study comparing ultrasonic dissector with electrocautery for axillary dissection in patients of carcinoma breast. India.	Breast cancer patients (N=70) having modified radical mastectomy (MRM).	Use of monopolar ultrasonic dissector and electrocautery for axillary dissection in MRM.	Intra and postoperative outcomes in blind randomised patients having axillary dissection in MRM by monopolar ultrasonic dissector (group A) and electrocautery (group B) compared.	In age, BMI and comorbidities of patients in both groups there were no statistically significant differences. Ultrasonic dissector group had significantly lesser intra-operative bleeding (300 ml vs. 399 ml), operating time and post-operative drain output (total output 161 ml vs 219 ml) when compared to electrocautery group. No differences found in VAS pain scores. Axillary drain was removed significantly earlier in Group A (4.17 days) than in group B (4.89 days). Within the first seven days in group A one and in group B two patients had postoperative flap necrosis.	A parallel randomised controlled single blinded study in November 2014 to March 2016.

				The differences between groups in incidence of seroma was not statistically significant. One patient in group A one and in group two patients had seroma between days 8 and 15. In group B one patient had seroma within first seven days.	
Gaynes, R.P., Culver, D.H., Horan, T.C., Edwards, J.R., Richards, C., Tolson, J.S. and the National Nosocomial Infections Surveillance System. 2001. Surgical Site Infection (SSI) Rates in the United States, 1992–1998: The National Nosocomial Infections Surveillance System Basic SSI Risk Index. USA.	Mastectomy operations.	By use of the National Nosocomial Infections Surveillance (NNIS) System's surgical patient surveillance component protocol, the NNIS basic risk index was examined to predict the risk for SSI. The NNIS basic SSI risk index include 1) American Society of Anaesthesiologists score of 3, 4, or 5; 2) wound class; and 3) duration of surgery.	Mastectomy patients in NNIS risk index categories 0&1 (n= 11178) and 2 & 3 (n=403) compared.	Mastectomy duration cu point of operations 3 hours, SSI rate in Risk index category 0 &1 = 2.07%; SSI rate in Risk index category 2 & 3 = 3.97%.	Data regarding 738,398 NNIS operative procedures performed during January 1992 through June 1998, including 19,267 subsequent SSIs, were reported from 225 NNIS hospitals. More than 63% of these procedures were done during the period of 1995–1998.
Leitner et al. 2021. BMI Specific Complications Following Implant-Based Breast Reconstruction after Mastectomy. Austria.	Of all implant-based breast reconstructions 196 reconstructed breasts among 134 patients met eligibility criteria.		to investigate the impact of patients' BMI on postoperative complications following implant-based breast reconstruction.	The most common complications Impaired wound healing (18.3%), seroma (6.1%), hematoma (4.6%), capsular contraction (4.6%) and infection (3.8%) were .	A retrospective study.
Olsen, Nickel, Fox, Margenthaler, Ball, Mines, Wallace & Fraser. 2015. Incidence of surgical site infection following mastectomy with and without immediate reconstruction using private insurer claims data. USA.	Commercially-insured women (N=18085) aged 18–64 years.	Mastectomy procedures (N=18696) with immediate reconstruction in (n=10.836, 58%) procedures.	The incidence of SSI after mastectomy with and without immediate reconstruction was compared.	In mastectomies 8.1% (1520/18696) SSI incidence detected within 180 days following mastectomy with or without reconstruction. Of the SSIs 49% identified within 30 days post-mastectomy, 24.5% between 31–60 days, 10.5% between 61–90 days, and 15.7% between 91–180 days. The incidence of SSI was 5.0% (395/7,860) after mastectomy-only, 10.3% (848/8,217) after mastectomy plus implant, 10.7% (207/1,942) after mastectomy plus flap, and 10.3% (70/677) after mastectomy plus flap and implant (p<0.001). The SSI risk was higher after bilateral compared with unilateral mastectomy with (11.4% vs. 9.4%, p=0.001) and without (6.1% vs. 4.7%, p=0.021) immediate reconstruction.	Retrospective cohort study.
Pastoriza, McNelis, Parsikia, Lewis, Ward, Marini & Castaldi. 2021. Predictive Factors for Surgical	Female patients with invasive breast cancer (N= 54038) who underwent surgical operation.	Lumpectomies (n=30 544) or mastectomies (n=23 494).	Non- SSI and SSI groups were compared.	In the weighted dataset, mastectomy, DM, smoking, COPD, ASA class- severe, BMI >35 kg/m2, and length of hospital stay (LOS) over 1 day reported to increase the risks for SSI. The risk for SSI was highest after mastectomy with reconstruction (OR 2.626, *P* < .001; 95%	NSQIP's participant use data files (PUF) between 2012 and 2015 were examined.

				CI 2.073-3.325). Postoperative variables: systemic infection, unplanned reoperation wound dehiscence, and renal failure reported associating with an increased risks for SSIs.	
Site Infections in Patients Undergoing Surgery for Breast Carcinoma. USA.					
Throckmorton et al. 2009.	Of all patients (N=353) with breast and/or axillary surgical procedures (N=436).	Patient receiving antibiotic prophylaxis.	Of 127 patients, 85 received both pre- and postoperative and 309 only preoperative antibiotic prophylaxis.	The overall SSI rate was 7.8% (34 of 436 surgical sites). The SSI rate was 8.7% (CI95%, 4.8–15.0), 11 in 85 patients with 127 surgical sites provided both preoperative and postoperative prophylactic antibiotics, and 7.4% (CI5.0–11.0), 34 in 309 patients not receiving postoperative AB-prophylaxis. The SSI rates did not differ statistically (P =0.67).	A retrospective chart review of between July 2004 and June 2006.
Yap & De La Serna. 2020. Outcomes of Sentinel Lymph Node Biopsy Using Blue Dye Method for Early Breast Cancer – A Single-Institution Experience in the Philippines. Philippines.	Patients (N=129) with confirmed 5cm or less invasive breast carcinoma (T1/T2), with no preoperative clinical signs of axillary metastasis.	Sentinel Lymph Node Biopsy (SLNB) with blue dye method.	Study group patients (SP)(n=34) with SLNB with blue dye method and control group patients (CP) who had SLNB only (n=95) were assessed.	Characteristics: Invasive ductal carcinoma (65.1%) Mastectomy114 (88.4%). Breast conservation surgery 15 (11.6%). Successful SLNB 126 (97.7%) with 2–4 SLNs. 34 (26.4%) with axillary lymph node dissection (ALND). 46 (61.3%) of CPs with follow-up data had seroma, 1 (1.3%) arm paraesthesia, 2 (2.7%) local (chest wall) and 2 (2.7%) axillary recurrence after a negative SLNB. Lymphedema 0 (0%). Surgical site infection (SSI) 0 (0%).	January 01, 2008, to December 31, 2017.