

## Complications of Aesthetic Breast Surgery - Analysis of 73,608 Cases

**Varun Gupta, MBBS, MPH; Max Yeslev, MD, PhD; Julian Winocour, MD; Heather R. Faulkner, MD, MPH; Charles Rodriguez-Feo, MD; R. Bruce Shack, MD; James C. Grotting, MD; Kent Higdon, MD**

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**INTRODUCTION:** Major complications after aesthetic breast surgery are uncommon resulting in paucity of published literature. The goal of this study was to determine incidence and risk factors of major complications after aesthetic breast surgery in a large, multi-center, prospective database.

**MATERIALS AND METHODS:** A cohort of patients who enrolled into the CosmetAssure (Birmingham, Alabama, USA) insurance program and underwent aesthetic breast surgery between 2008 and 2013 was identified. Major complications (requiring reoperation, re-admission or emergency room visit) within 30 days of surgery were recorded. Univariate and multivariate analysis evaluated risk factors including age, smoking, BMI, gender, diabetes, type of surgical facility and combined procedures.

**RESULTS:** Fifty seven percent (73,608) of all patients (129,007) underwent breast surgery. Breast surgery patients were younger (mean  $36.7 \pm 12$  vs.  $46.3 \pm 14.4$  years), more likely to be smokers (10% vs. 5.9%) and less likely to be diabetic (1.2 vs. 2.7%) or overweight (25% vs. 51%) compared to other patients. Overall complication rate after breast surgery was 1.9%. Hematoma (1.1%), infection (0.4%) and suspected or confirmed venous thromboembolism (0.2%) were the most common major complications.

Breast procedures included: augmentation (56.8%, n=41,839), mastopexy (4.6%, n=3,398), augmentation-mastopexy (11.1%, n=8,157) and reduction mammoplasty (4.5%, n=3,288). Complication rates after augmentation-mastopexy was higher (1.9%) compared to augmentation or mastopexy alone (1.4 and 1.2% respectively,  $p < 0.01$ ) (Table 1, Figure 1). More complications occurred in older patients (0.7% in  $<20$  years to 2% in  $\geq 60$  years). Higher BMI was associated with increased risk of infection (0.1% in BMI  $<18.5$  to 1.5% in BMI  $\geq 40$ ). On multivariate analysis, age  $>40$  years and type of surgical facility (Hospital or Ambulatory Center vs. Office Suites) were risk factors of any complication (RR 1.26 and 1.32 respectively). Age  $>40$  and BMI  $\geq 30$  were risk factors of post-operative infection (RR 1.52 and 2.57 respectively).

Twenty one percent of patients underwent combined procedures with complication rates demonstrated in Table 1. Concomitant abdominoplasty was performed in 5.8% (4,162) of women, which was associated with more complications (7.1%, Figure 1). Smoking increased complications in combined breast-abdominoplasty cases and male breast surgery.

**CONCLUSION:** Incidence of major complications after aesthetic breast surgery remains low. Risk factors for these complications include age, BMI and combined procedures. Careful risk assessment and patient education are critical for establishing patient expectation and optimizing surgical outcomes.

### LEGENDS:

**Table 1.** Major complications after breast aesthetic procedures performed alone or on combination with other procedures. \*, Face procedures (Facelift, Rhinoplasty, Blepharoplasty, Browlift, Otoplasty, Cheek Implant, Chin Augmentation); †, Body procedures (Abdominoplasty, Liposuction, Brachioplasty, Buttock Lift, Lower Body Lift, Thigh Lift, Upper Body Lift Calf Implant, Labiaplasty).

**Figure 1.** Complication rates in female patients undergoing different breast procedures with or without abdominoplasty. VTE, confirmed or suspected venous thromboembolism; *Complication*, Any major complication; \*, complication rate when combined with abdominoplasty; *Aug*, Augmentation mammoplasty; *Pexy*, Mastopexy, *AugPexy*, Augmentation mammoplasty and mastopexy; *Reduction*, Reduction mammoplasty.

<b>Breast Procedure</b>	<b>Frequency</b>		<b>Complications, %</b>
	<b>n</b>	<b>%</b>	
Augmentation	41839	56.8	1.4
Augmentation + Mastopexy	8157	11.1	1.9
Augmentation + Body <sup>†</sup>	4854	6.6	3.1
<b>Augmentation + Mastopexy + Body</b>	3668	5.0	<b>3.8</b>
Mastopexy	3398	4.6	1.2
Reduction Mammoplasty	3288	4.5	1.6
<b>Mastopexy + Body</b>	3010	4.1	<b>3.5</b>
Correction of Gynecomastia	1613	2.2	1.8
<b>Reduction Mammoplasty + Body</b>	1370	1.9	<b>4.6</b>
Augmentation + Face *	883	1.2	2.2
Others	1528	2.0	2.8

