



Barbed sutures as a safe replacement for conventional sutures following reduction mammoplasty

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Introduction

- Knotless barbed suture has begun to replace conventional suture due to its shorter time to closure and lack of knots as infection niduses.^{1,2,3}
- Despite the potential advantages of using barbed sutures, there is not enough unanimous evidence to prove that it improves patient postoperative outcomes.
- We present an updated review of **barbed suture's safety and efficacy** in reduction mammoplasty patients.

Methods

Retrospective analysis **n = 554 patients (1068 breasts)**

- All reductions done by the same senior surgeon
- March 2015–February 2023
- Uni- and bilateral reductions included

Surgical Technique: inferior or superomedial pedicle reduction approach with an inverted-T Wise pattern used for all patients

- *Barbed suture:* Running knotless barbed suture through subcuticular layer
- *No barbed suture:* Interrupted deep dermal sutures + subcuticular layer in a running fashion

Statistical Analysis: Demographic, operative time, and postoperative complication data collected from patient records and summarized with descriptive statistics

- Student's t-test or Wilcoxon rank sum test for continuous variables and Fisher's exact test for categorical variables to evaluate differences in demographics and postoperative outcomes between groups
- Univariate and multivariate logistic regression with Firth's correction to accommodate low frequencies of complications used to calculate odds ratios (ORs), adjusted odds ratios (aORs), and 95% confidence intervals (CIs).

Results

Of **554 patients:**

- Average age = 38 ± 15 years old
- Average pre-operative BMI = 30.9 ± 5.0
- All identified as female
- 16% had hypertension, 5.3% had diabetes, 2.4% were current smokers

Post-operative Characteristics:

After up to a 2-year follow-up:

- 114 (10.7%) breasts had nipple insensitivity
- 44 (4.1%) had wound dehiscence
- 21 (2.0%) had fat necrosis
- 1.0% or less had seroma, hematoma, hypertrophic scarring, or nipple necrosis

Barbed suture is a significant predictor of **lower rates of dehiscence, hypertrophic or keloid scarring, and fat necrosis** after adjusting for baseline demographics (Table 1, Model 1).

After adjusting for operative and post-op characteristics, barbed suture remained a significant predictor of **lower rates of dehiscence** (Table 1, Models 2 & 3).

Of their **1068 breasts:**

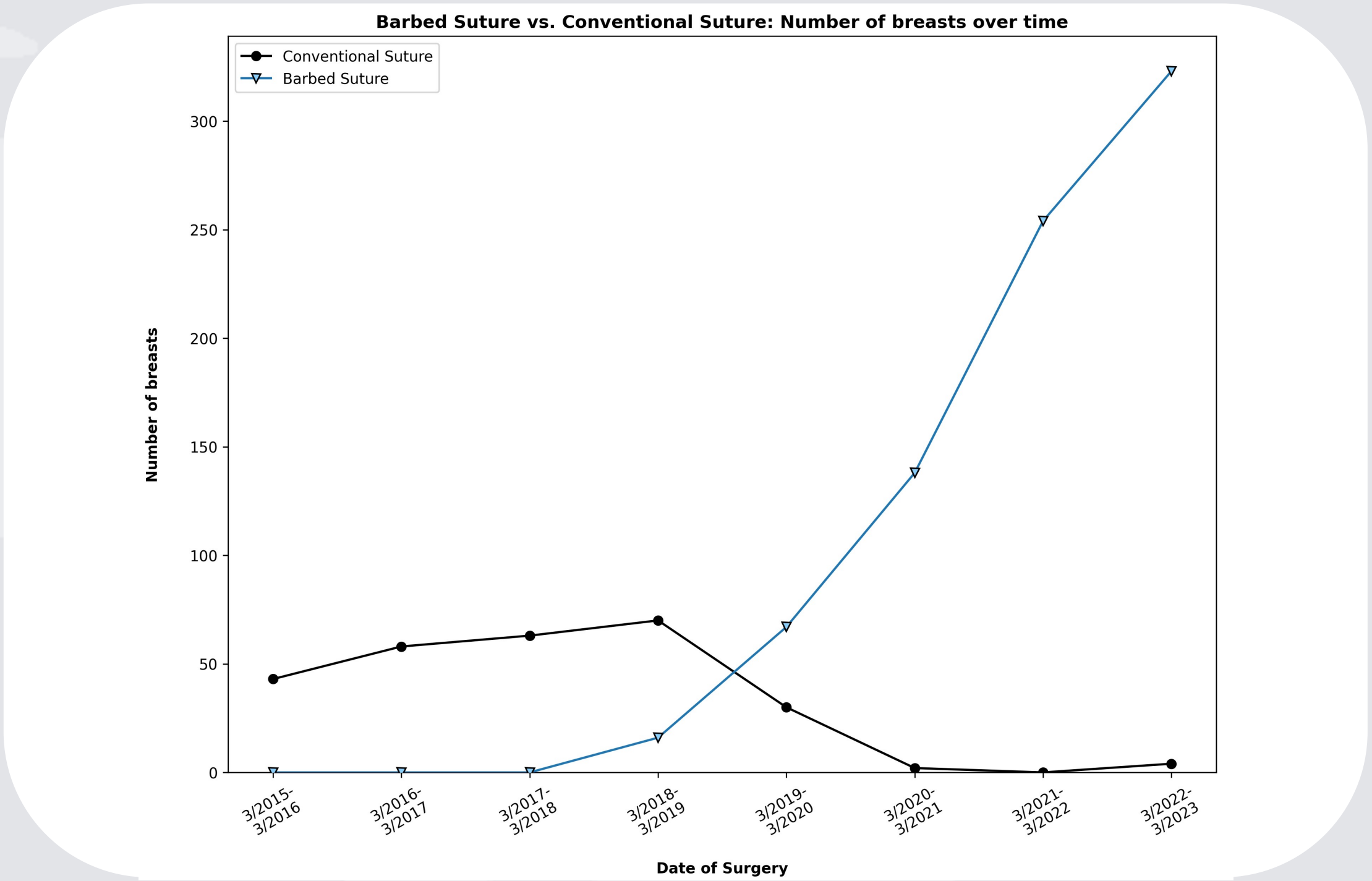
798 (74.7%) got barbed suture
270 (25.3%) did not

Barbed suture was significantly predictive of **lower rates of dehiscence, hypertrophic or keloid scarring, and fat necrosis** (Table 1).

Operative Characteristics:

- Barbed suture use steadily increased with its implementation in common procedures after 2018.
- As the percentage of procedures that used barbed sutures increased, surgeon comfortability with the suture was also likely to increase over time (Figure 1).

Figure 1. Distribution of the count of barbed suture vs. no barbed suture use over time by breast



Conclusions

Despite its higher base price, our data shows that the use of **barbed suture in reduction mammoplasty can help avoid adverse outcomes** and improve patient/physician satisfaction following this exceptionally common procedure.

References:

1. Rosen AD. New and emerging uses of barbed suture technology in plastic surgery. 2013;33(3 Suppl). doi:10.1177/1090820X13500048
2. Liang DG, Dusseldorp JR, van Schalkwyk C, et al. Running barbed suture quilting reduces abdominal drainage in perforator-based breast reconstruction. J Plast Reconstr Aesthetic Surg JPRAS. 2016;69(1):42-47. doi:10.1016/j.bjps.2015.09.009
3. Koide S, Smoll NR, Liew J, et al. A randomized "N-of-1" single blinded clinical trial of barbed dermal sutures vs. smooth sutures in elective plastic surgery shows differences in scar appearance two-years post-operatively. J Plast Reconstr Aesthetic Surg JPRAS. 2015;68(7):1003-1009. doi:10.1016/j.bjps.2015.03.015

Table 1. Univariate and multivariate regression assessing the association of barbed suture and individual wound complications

	Unadjusted OR	p-value	Model 1 aOR	p-value	Model 2 aOR	p-value	Model 3 aOR	p-value
Seroma	0.92 (0.27 - 3.16)	0.895	1.01 (0.34 - 3.02)	0.987	0.29 (0.05 - 1.62)	0.104	0.32 (0.07 - 1.44)	0.224
Dehiscence	0.09 (0.05 - 0.18)	< 0.001	0.10 (0.05 - 0.21)	< 0.001	0.28 (0.12 - 0.65)	0.002	0.33 (0.14 - 0.75)	0.009
Infection	0.95 (0.36 - 2.55)	0.927	0.95 (0.38 - 2.34)	0.914	1.60 (0.54 - 4.78)	0.422	1.64 (0.59 - 4.53)	0.397
Nipple Insensitivity	1.09 (0.69 - 1.71)	0.711	1.02 (0.65 - 1.60)	0.934	0.72 (0.37 - 1.34)	0.293	0.65 (0.35 - 1.22)	0.193
Hypertrophic Scarring/Keloid	0.07 (0.02 - 0.28)	< 0.001	0.07 (0.02 - 0.23)	< 0.001	0.26 (0.04 - 1.49)	0.150	0.27 (0.05 - 1.52)	0.241
Fat Necrosis	0.30 (0.13 - 0.71)	0.006	0.39 (0.17 - 0.90)	0.040	0.56 (0.19 - 1.61)	0.294	0.61 (0.21 - 1.77)	0.409

Model 1 adjusts for demographic characteristics: age, smoking history, hypertension, diabetes, Caprini Score, history of breast cancer, prior breast surgery, and history of weight loss.

Model 2 adjusts for operative and post-operative characteristics: weight of tissue removed, procedure duration, pedicle choice, drain usage, Dermabond usage, liposuction performed, and time to last follow-up.

Model 3 adjusts for all of the factors that were included in both Models 1 and 2.