

What Nipple Reconstruction Can Tell Us About The Latissimus Dorsi Flap Subdermal Plexus

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Background

- Surgical nipple reconstruction is commonly assumed to be more reliable on flap beds than on mastectomy skin over implants.
- Rate of partial nipple necrosis has been described as high as 13 to 29%.

Objective: Evaluate rates of and factors contributing to partial nipple reconstruction necrosis among various breast mound reconstructive modalities.

Methods

- Retrospective review (2012- 2022)
- Primary C-V pedicle flap nipple reconstructions
- Non-primary reconstructions excluded
- Starting 2021, all reconstructions on latissimus flaps were based laterally
- Patient demographics, C-V flap orientation, history of radiation, and postoperative nipple necrosis recorded

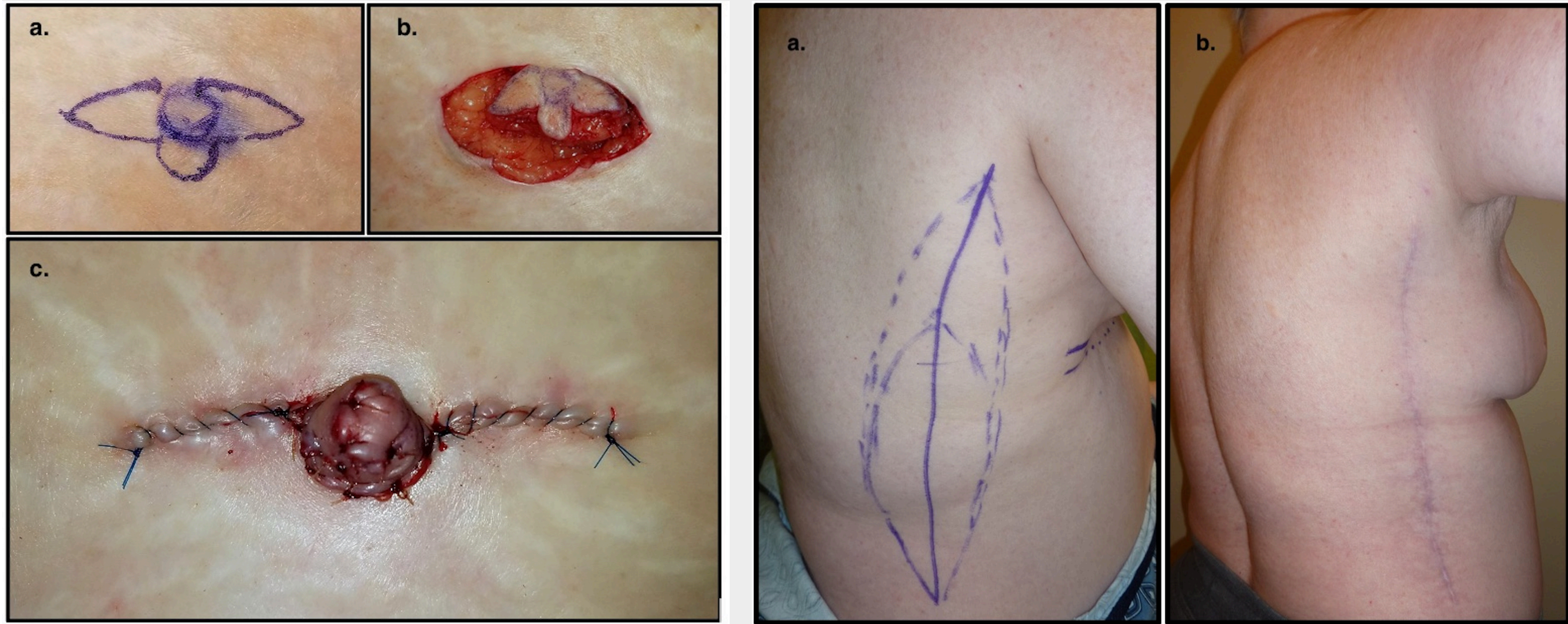


Figure 1: Superiorly-based C-V flap design and elevation

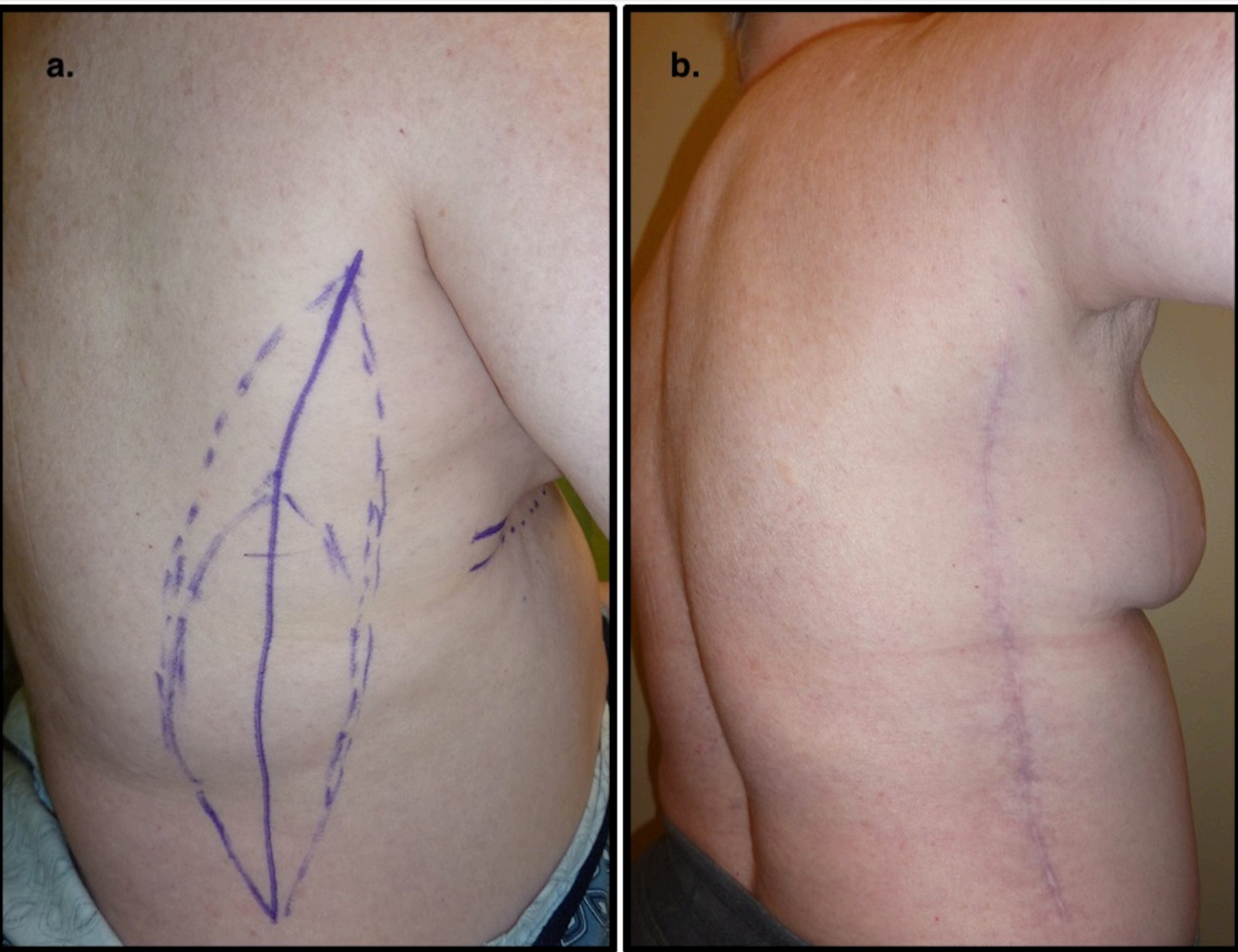


Figure 2: Latissimus dorsi flap design

Latissimus dorsi flap design:

- Skin paddle vertically centered along posterior axillary line
- However, no portion of skin paddle sits off the muscle
- Advantages: Hides donor scar, requires less rotation of skin paddle

Results

Table 1: Sample characteristics of nipple reconstruction patients, by breast reconstruction modality

	DIEP (n=52)	Expander (n=210)	Implant (n=129)	Latissimus (n=44)	Pedicled TRAM (n=52)	All (n=487)	P- Value
Age, μ	49.0	51.8	51.9	58.1	57.3	52.7	<.001
BMI, μ	29.3	26.4	26.1	29.4	29.6	27.2	<.001
Smoking Status	-	-	-	-	-	-	-
Current, n	3	19	14	4	2	42	0.620
Former, n	12	44	21	14	10	101	0.131
Diabetes History, n	4	19	7	5	5	40	0.617
Reconstruction	-	-	-	-	-	-	-
Laterality, n							
L	26	108	61	19	28	242	0.861
R	26	102	68	25	24	245	
Radiation, n	3	48	5	0	2	58	<.001

- No difference between smoking or diabetes history between groups
- No latissimus flap breast mounds were radiated

Table 2: Prevalence of nipple necrosis, by breast reconstruction modality

Breast Reconstruction	Skin Edge Necrosis		P- Value
	n	%	
Latissimus	10	22.7%	
DIEP	1	1.9%	
Expander	5	2.4%	
Implant	2	1.6%	
Pedicled TRAM	3	5.8%	
Total	21	4.3%	<.001

- Almost 10-fold greater risk of nipple reconstruction skin edge necrosis over latissimus breast mound compared to mastectomy skin over implant reconstruction
- This is despite many radiated breast mounds in the prosthetic groups

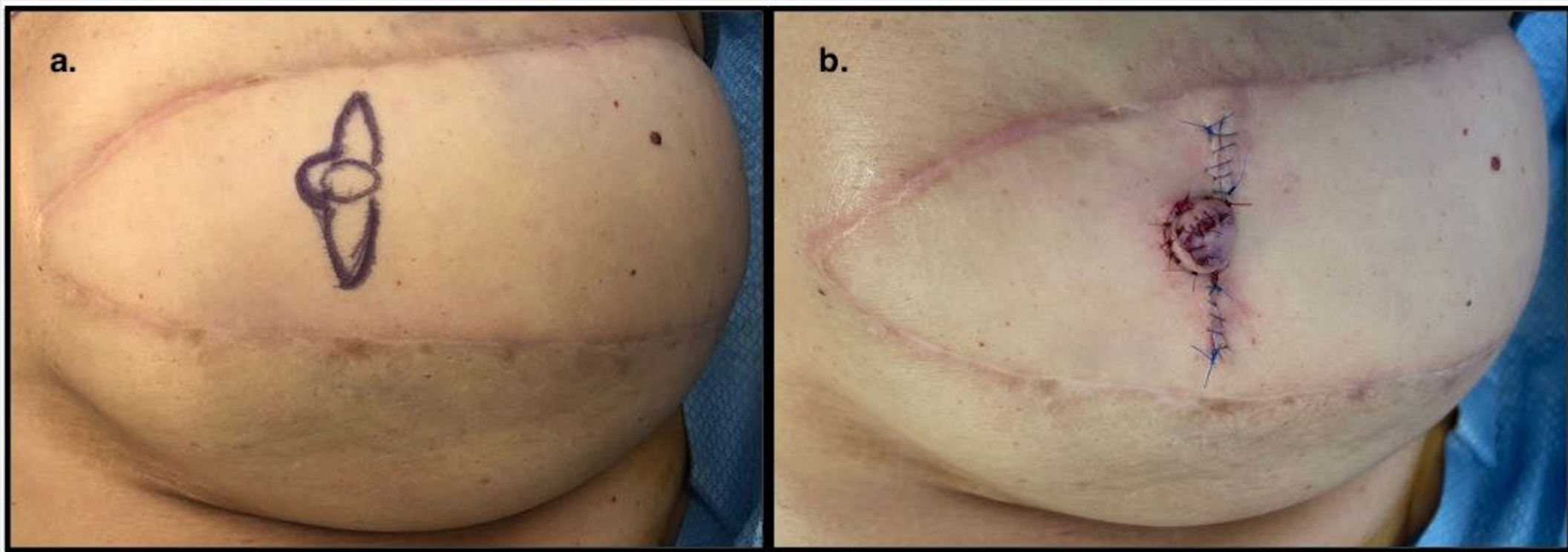


Figure 3: a) Laterally-based C-V flap on latissimus dorsi breast mound, directed towards vascular pedicle and b) completed design.

Table 3: Nipple necrosis in latissimus flap cohort, by C-V flap orientation

	Orientation	Viable	Necrosis	Percent
2012 - 2020	Superior	12	7	36.8%
	Inferior	8	2	20%
	Medial	2	0	0
		3	0	0
2021 - 2023	Lateral	9	1	11.1%
All		12	1	7.7%
	Total	34	10	22.7%

- Traditional superiorly-based pedicle of C-V flap on latissimus mound demonstrates a significantly higher risk of necrosis, 36.8%
- Risk of necrotic events decreases almost 5-fold laterally-based design

Conclusions

Although more cases needed to have equivalent group comparisons:

- Anatomically conceivable that latissimus dorsi subdermal plexus may have more polarity than breast and abdominal skin flaps
- Appears safer to orient C-V flap laterally on latissimus dorsi breast mounds