Breast Reconstruction with the Buried Deep Inferior Epigastric Perforator Flap Without Postoperative Device Monitoring

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BACKGROUND

- Flap survival rates exceed 99% in many published series, bringing into question the need for intensive device monitoring of flaps .
- At our institution we have been performing reconstruction with fully buried DIEP flaps without device monitoring in select cases since 2018.

OBJECTIVE: This study evaluates the safety and outcomes of buried unmonitored DIEP flaps compared to traditional monitoring.

METHODS

- Retrospective review of 182 patients undergoing DIEP flap breast reconstruction at Mayo Clinic Florida from 2018-2022.
- Patients were divided into buried and non-buried groups, and demographic/baseline characteristics and outcome measures were collected
- Outcome measures were reoperation, readmission, operative time, follow-up time, reconstructive procedures, and complications.
- Continuous variables were compared using Wilcoxon rank sum test and categorical variables were compared using Chi-squared or Fisher's exact test.
- Multivariable logistic regression models were used to compare risks for prolonged LOS and OR time between the groups.
- Tests were two-sided with $p<0.05$ considered significant.

RESULTS

- There were 80 patients in the buried, non-monitored group, and 102 patients in the non-buried group.
- Infectious and wound complications were not different between the groups.
- Overall flap survival was 98.5% and was 100% in the buried group.
- There were more OR takebacks in the non-buried group (10 versus 3).
- Buried flaps demonstrated shorter mean operative times (7.1 vs. 8.4 hours, $p<0.0001$) and hospitalizations (3.5 vs. 3.9 days, $p=0.005$).

TABLE 1: Baseline Characteristics by Bury Group

	Buried (N=80)	Non-Buried (N=102)	P-value
Race, n (%)			1.00001
Asian	3 (3.8)	5 (5.1)	
Black or African American	13 (16.7)	16 (16.3)	
White	62 (79.5)	77 (78.6)	
Ethnicity, n (%)			0.2104[1]
Hispanic or Latino	5 (6.4)	13 (13.0)	
Not Hispanic or Latino	73 (93.6)	87 (87.0)	
Mean BMI (kg/m²)	31.0 (5.19)	30.3 (5.20)	0.3387[2]
Mean Age at Procedure (years)	53.5 (9.69)	53.9 (10.19)	0.7767[2]
Timing of reconstruction, n (%)			1.0000[1]
Immediate	49 (61.3)	63 (61.8)	
Delayed	30 (37.5)	38 (37.3)	
Mixed	1 (1.3)	1 (1.0)	
Mean flap weight (g)	686.0 (202.13)	732.2 (245.03)	0.3844[2]
Received Chemotherapy, n (%)	35 (43.8)	50 (49.0)	0.5499[1]
Received Radiation Therapy, n (%)	28 (35.0)	53 (52.0)	**0.0249[1]**
Mean Follow-up time	544.4 (461.22)	586.7 (494.62)	0.4483[2]

TABLE 2: Outcome Comparisons by Bury Group

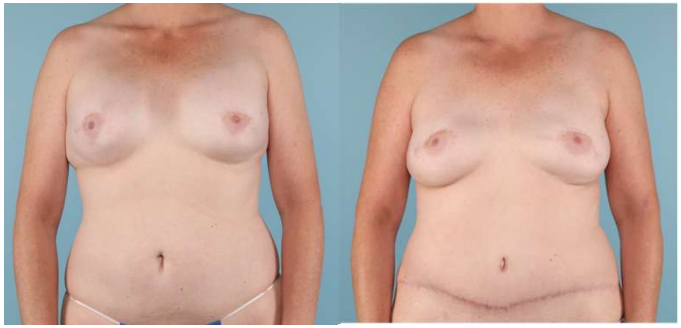
	Buried (N=80)	Non-Buried (N=102)	P -value
Any Complication, n (%)	49 (61.3)	52 (51.0)	0.179[1]
Major Complication, n (%)	15 (18.8)	21 (20.6)	0.852[1]
Reoperation, n (%)	15 (18.8)	21 (20.6)	0.8520[1]
Readmission, n (%)	3 (3.8)	6 (5.9)	07333[1]
Hematoma, n (%)	8 (10.0)	9 (8.8)	0.8027[1]
Seroma, n (%)	2 (2.5)	0 (0.0)	0.1919[1]
Micro Complication, n (%)	2 (2.5)	9 (8.8)	0.1158[1]
Wound Complication, n (%)	36 (45.0)	38 (37.3)	0.3618[1]
Infection Complication, n (%)	5 (6.3)	8 (7.8)	0.7771[1]

TABLE 3: Logistic Regression Model for Outcomes by Bury Group Adjusted for Radiation Therapy

Outcomes	OR (95% CI)	95% CI for OR	P value
LOS ≤ 3 days	0.43	0.23-0.8	0.0079
OR time ≥ 7.5hours	0.26	0.14-0.49	<.0001
≥1 Secondary Procedure	0.54	0.28-1.02	0.0575

Table Legend: LOS; length of stay, OR; operating room

FIGURE 1: Patient before (A) and after (B) delayed DIEP flap reconstruction after tissue expansion.



DISCUSSION

- Recent studies have examined whether an unburied monitoring flap provides measurable benefits in DIEP flap breast reconstruction but have utilized internal monitoring techniques[2-4].
- We found that patients with buried, unmonitored DIEP flap breast reconstruction had similar complication rates and fewer readmissions, reoperations, and secondary procedures that those undergoing non-buried flaps.

CONCLUSIONS

- These findings support the efficacy and safety of buried DIEP flaps without device monitoring.
- Flap monitoring is unnecessary to get similar, highly positive outcomes in DIEP flap breast reconstruction.
- Additionally, buried DIEP flaps may offer a reduction in peri and postoperative hospital utilization.

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