

Free Tissue Transfer to the Lower Extremity in the Setting of Thrombocytosis and the Role of Antiplatelet Therapy: A Propensity-score Matched Analysis

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Introduction

- Free flaps (FF) are a reliable reconstructive method for chronic lower extremity (LE) wounds, with flap survival reaching 99% at large-volume centers.¹
- Chronic wound patients are often on at-home antiplatelet (AP) medication (ASA, Plavix) in the setting of cardiac or vascular comorbidities.
- Our institution previously demonstrated that continuing at-home AP medication on the day of LE FF can be safely performed.²
- Concurrently, thrombosis-induced anastomotic occlusion remains the most common reason for FF failure → this risk is elevated in patients with thrombocytosis.^{3,4}
- Yet, remains unclear whether continuing at-home AP medication in thrombocytotic patients is protective against this increased risk

Objectives

- To:
 - Assess** the overall feasibility of performing LE FF in patients with preoperative thrombocytosis
 - Characterize** whether AP medication on the day of surgery (DOS) is beneficial in this patient population

Methods

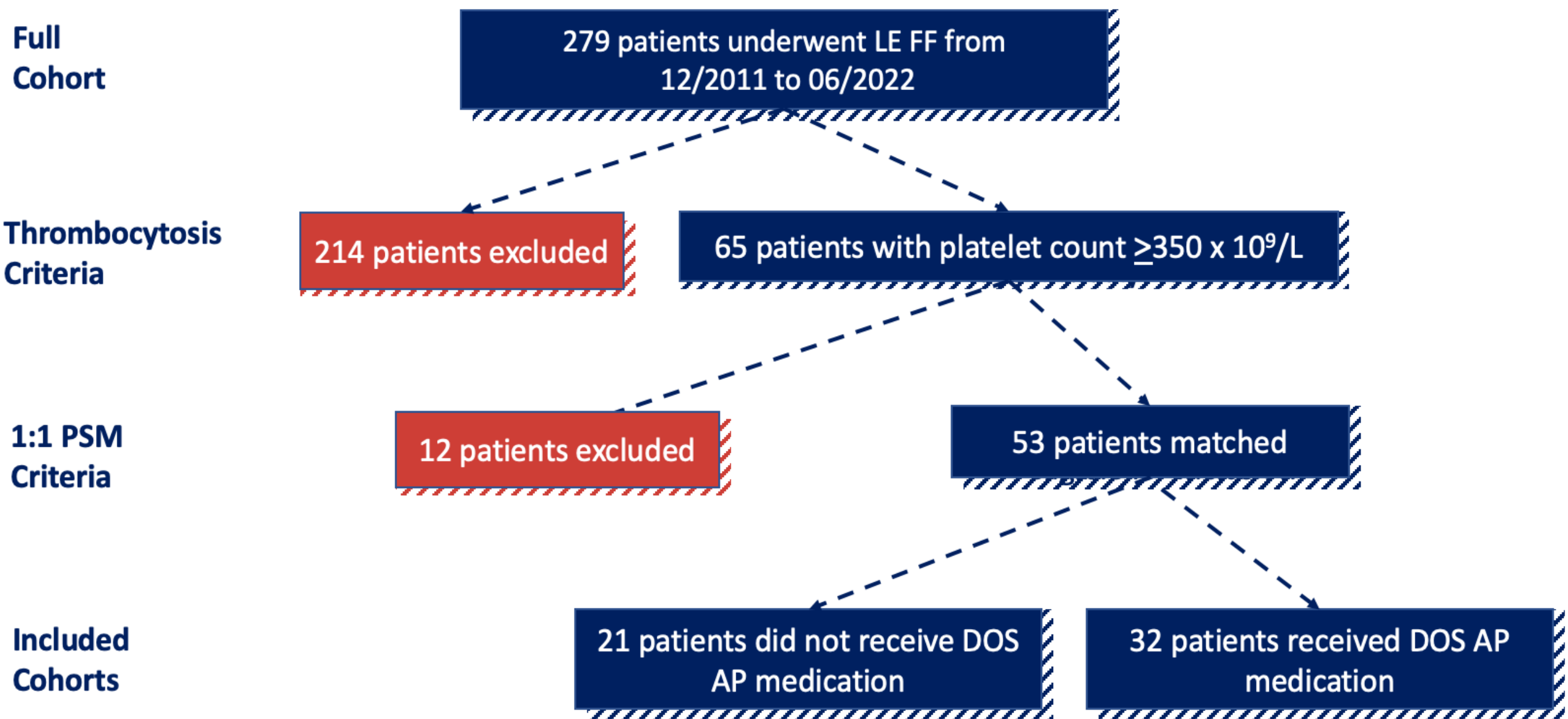
- Retrospective chart review
- December 2011 through June 2022

- Inclusion criteria: Platelet count ≥ 350 x 10⁹/L
- Cohorts: Continuation of at-home AP medication vs. No AP medication group

- 1:1 propensity-score matched (PSM) model, maximum allowed difference of ±0.1 → univariate analyses

*Matched based on risk-stratification status and CCI score

Results



Abbreviations: LE: Lower extremity; FF: Free flap; PSM: Propensity-score matching; AP: Antiplatelet; DOS: Day of surgery

Patient Characteristics

- Average patient age and body mass index (BMI) 57.8 ± 10.9 years and 28.9 ± 7.0 kg/m², respectively
- Average **Charlson Comorbidity Index (CCI) score 4.3 ± 2.0**, reflecting substantial comorbidity burden
- No differences** between cohorts in demographic or comorbidity covariates
- At-home AP medication regimens:

Variable	Total (n=53)	No AP (n=21)	AP (n=32)	p value
Plavix	7 (13.2%)	1 (4.8%)	6 (18.8%)	<0.001
Aspirin	32 (60.4%)	1 (4.8%)	31 (96.9%)	
Dual	4 (7.5%)	0 (0.0%)	4 (12.5%)	
None	19 (35.8%)	19 (90.5%)	0 (0.0%)	

- No differences** in vessel patency as measured by preoperative arteriography or endovascular interventions

Variable	Total (n=53)	No AP (n=21)	AP (n=32)	p value
Vascular interventions during admission				
Vascular bypass	2 (3.8%)	1 (4.8%)	1 (3.1%)	0.760
Angiogram				
Balloon angioplasty	19 (35.8%)	8 (38.1%)	11 (34.4%)	0.782
Stent placement	1 (1.9%)	1 (4.8%)	0 (0.0%)	0.213

Perioperative Characteristics

- Intraoperatively*: **No differences** in wound location, donor site, flap composition, or anastomosis technique

Variable	Total (n=53)	No AP (n=21)	AP (n=32)	p value
Recipient vessels				
AT artery	28 (52.8%)	7 (33.3%)	21 (65.6%)	0.024
PT artery	16 (30.2%)	10 (47.6%)	6 (18.8%)	
DP artery	7 (13.2%)	2 (9.5%)	5 (15.6%)	
Number of recipient veins				
One	9 (17.0%)	4 (%)	5 (15.6%)	0.745
Two	44 (83.0%)	17 (%)	27 (84.4%)	
Calcified vessels	23 (43.4%)	3 (14.3%)	20 (62.5%)	<0.001
Saphenous vein graft	13 (24.5%)	5 (23.8%)	8 (25.0%)	0.922
Intraoperative transfusion data				
Transfusion incidence	28 (52.8%)	8 (38.1%)	20 (62.5%)	0.082
Transfusion units	1.0 ± 1.2	0.6 ± 0.8	1.3 ± 1.3	0.034
Transfusion volume	348.3 ± 397.7	192.5 ± 262.2	449.0 ± 439.8	0.012
Other intraoperative details				
Operative time	381.3 ± 110.3	358.5 ± 81.5	396.2 ± 124.7	0.227
EBL (mL)	258.8 ± 238.7	198.3 ± 245.3	299.2 ± 263.4	0.179

- Postoperatively*: **No differences** in risk stratification or flap-related complications (e.g., infection, dehiscence, revision, take-back)

Variable	Total (n=53)	No AP (n=21)	AP (n=32)	p value
Short-term outcomes				
Any complication	22 (41.5%)	6 (28.6%)	16 (50.0%)	0.121
<i>Flap-related</i>				
Any thrombosis	5 (9.4%)	2 (9.5%)	3 (9.4%)	0.986
Intra-op thrombosis	3 (5.7%)	2 (9.5%)	1 (3.1%)	0.324
Post-op thrombosis	2 (3.8%)	0 (0.0%)	2 (6.3%)	0.506
<i>Bleeding-related</i>				
Flap Hematoma	4 (7.5%)	1 (4.8%)	3 (9.4%)	0.534
<u>Post-op transfusion data</u>				
Total units POD0-5	2.4 ± 2.0	1.8 ± 1.8	2.8 ± 2.1	0.068
Transfusion vol. POD0-5	858.5 ± 739.9	616.7 ± 634.9	1017.2 ± 769.9	0.053
Total units POD0-DC	3.8 ± 4.3	2.1 ± 2.3	4.9 ± 4.9	0.008
Transfusion vol. POD0-DC	1331.1 ± 1507.5	733.3 ± 805.0	1723.4 ± 1730.0	0.007
Flap success	51 (96.2%)	21 (100.0%)	30 (93.8%)	0.243
Long-term outcomes				
Follow-up duration (mo)	20.7 ± 20.4	20.2 ± 18.9	21.1 ± 21.5	0.878
Limb salvage	43 (81.1%)	17 (81.0%)	26 (81.3%)	0.943
Ambulatory	42 (79.2%)	17 (81.0%)	25 (78.1%)	0.541
Deceased	4 (7.5%)	1 (4.8%)	3 (9.4%)	0.565

Univariate Analysis of PSM Model

	Thrombosis		Hematoma	
	OR (95% CI)	p-value	OR (95% CI)	p-value
DOS AP therapy	0.93 (0.11-7.78)	0.949	0.48 (0.04-6.26)	0.574
Calcified vessels	1.21 (0.15-10.04)	0.862	-	-

Abbreviations: OR: Odds ratio; CI: Confidence interval; DOS: Day of surgery; AP: antiplatelet

	Total units transfused POD0-DC		Total vol transfused (mL) POD0-DC	
	B (95% CI)	p-value	B (95% CI)	p-value
DOS AP therapy	2.77 (0.45-5.10)	0.020	990.10 (178.3-1801.9)	0.018

Abbreviations: B: standardized Coefficient Beta

Limitations & Conclusion

- Findings limited by retrospective design and relatively small sample size, given rarity of thrombocytosis
- Thrombocytosis categorization based on preoperative lab values, which were sometimes limited to single-point values
- 96.2%** flap success rate → LE FF can be feasibly performed in high-risk patients with thrombocytosis
- Possible **short-term, minor bleeding risks**
- Despite much higher rates of **calcified vessels** in the AP medication group, thrombosis rates were similar → **possibly beneficial** to continue at-home AP medication in this patient population
- Our institution’s practice**:
 - If on at-home AP medication → continue on DOS
 - If **not** on at-home AP medication → do not initiate AP medication

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