

# Multidisciplinary Practice Variations of Anti-thrombotic Strategies for Free Tissue Transfers

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## Introduction

The leading cause of flap failure is venous thrombosis. Thrombosis can result from technical factors, such as vessel kinks, or non-technical factors such as patient co-morbidities. Numerous anti-thrombotic protocols have been described to prevent or treat thrombosis of free flaps. With the multitude of pharmacological agents in a surgeon's armamentarium, there is no clear consensus which anti-thrombotic regime is superior.

We sought to determine the practice variation and perceptions surrounding risk factors, prophylaxis, and management of free flap thrombosis. We also wished to understand the perspectives of our thrombosis colleagues and identify gaps in knowledge between surgeon practice patterns and the literature.

## Methods

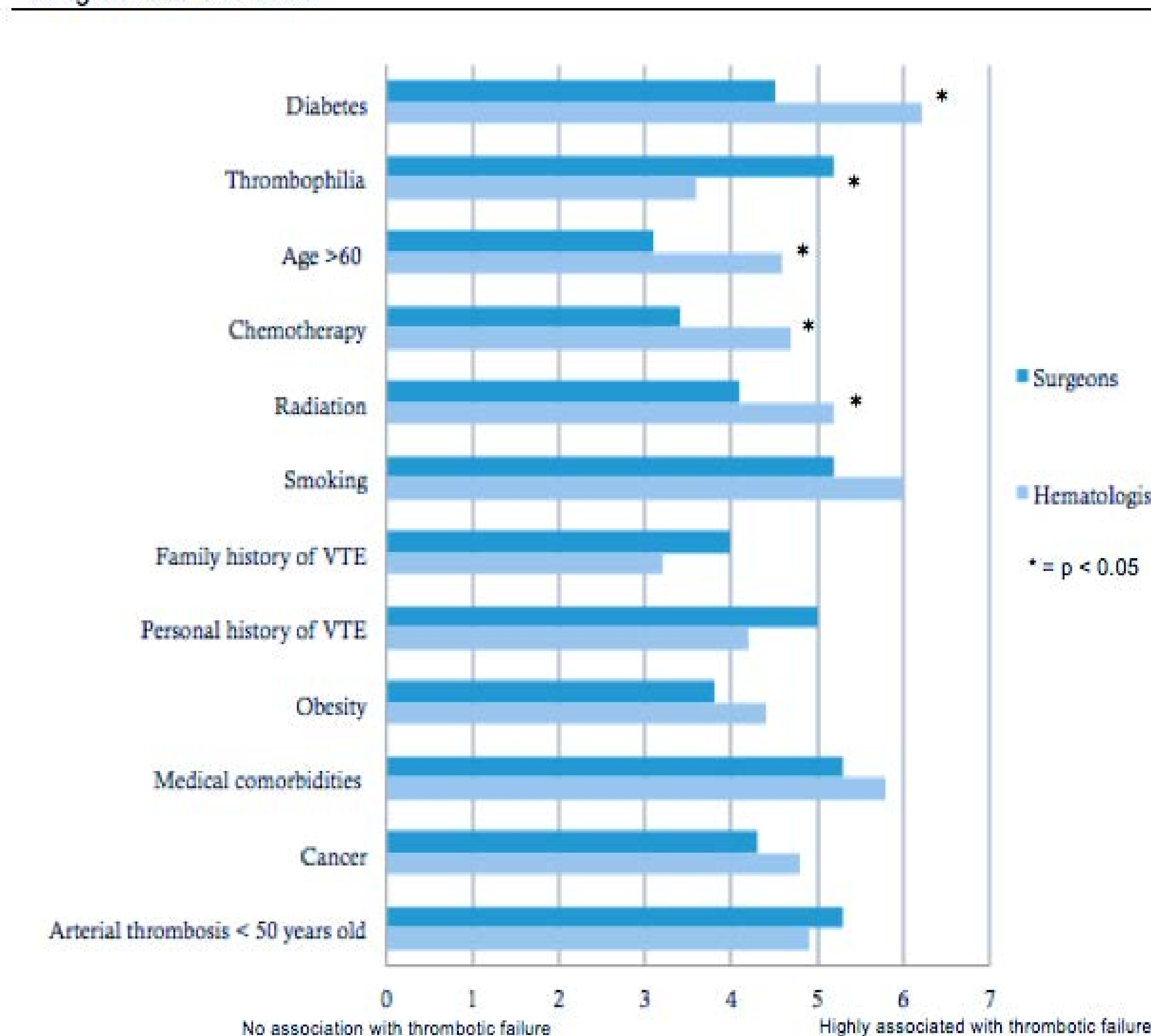
- Surveys were distributed electronically to all members on the following email lists:
  - Thrombosis Canada
  - Canadian Society of Otolaryngology- Head & Neck Surgery
  - Canadian Society of Plastic Surgeons
- Data was collected on:
  - Physician demographics and practice
  - Perceptions of risk factors for flap failure
  - Routine pre-, intra-, and post-operative anti-thrombotic strategies
  - Management of flap thrombosis

## Results

**Table 1:** Respondent Demographics

	Surgeons % (n)	Hematologists % (n)
<b>Response rate (n)</b>	17 (105)	27 (30)
<b>Manage flaps</b>	62 (65)	30 (9)
Plastic surgery	68 (44)	
ENT	32 (21)	
<b>Practice type</b>		
Academic	83 (54)	100 (9)
Non-academic	15 (10)	0 (0)
Both	2 (1)	0 (0)
<b>Practice duration years (SD)</b>	12 (9.2)	15 (7.4)
<b>Number of flaps/year</b>	28 (22)	3.7 (3.3)

**Figure 1:** Perceived Patient Risk factors for Flap Failure between Surgeons and Hematologists using Seven Point Scale



**Table 2:** Routine Anti-thrombotic Strategies

	Surgeons % (n=65)	Hematology % (n=9)
<b>Pre-operative</b>		
UFH	32 (21)	22 (2)
LMWH	22 (14)	22 (2)
Both	0 (0)	11 (1)
<b>Intra-operative</b>		
IV heparin	6 (4)	0 (0)
Flush flap with heparin	39 (25)	11 (1)
Both	8 (5)	0 (0)
<b>Post-operative</b>		
UFH only	12 (8)	0 (0)
UFH with ASA	12 (8)	0 (0)
LMWH only	11 (7)	56 (5)
LMWH with ASA	8 (5)	0 (0)
LMWH, ASA, and dextran	3 (2)	0 (0)
ASA only	14 (9)	0 (0)
ASA and dextran	2 (1)	0 (0)
UFH and LMWH	2 (1)	11 (1)
UFH, LMWH, and ASA	2 (1)	0 (0)

UFH= unfractionated heparin, LMWH= low molecular weight heparin, IV= intravenous, ASA= aspirin

**Table 3:** Interventions if Intra-operative Thrombosis

	Surgeons % (n=65)	Hematology % (n=9)
<b>Intra-operative</b>		
IV UFH	42 (27)	33 (3)
Flush flap	54 (35)	22 (2)
Change recipient vessel	34 (22)	22 (0)
<b>Post-operative</b>		
UFH	35 (23)	0 (0)
LMWH	20 (13)	33 (3)
ASA	40 (26)	11 (1)
• 325mg OD	11 (7)	0 (0)
• 325mg BID	1 (1)	0 (0)
• 81mg OD	5 (3)	11 (1)
Post-op dextran	8 (5)	0 (0)
IV Ketorolac	1.54 (1)	0 (0)
None	32 (21)	33 (3)

**Table 4:** Interventions if Post-operative Thrombosis

	Surgeons % (n=65)	Hematology % (n=9)
<b>Technical factor identified and corrected</b>		
Would change management	25 (16)	22 (2)
• Anti-platelet	3 (2)	0 (0)
• Heparin	2 (1)	0 (0)
• Both	2 (1)	0 (0)
None	57 (37)	56 (5)
<b>Technical factor not identified</b>		
Would change management	59 (38)	33 (3)
• Anti-platelet	2 (1)	0 (0)
• Anti-coagulant	23 (15)	0 (0)
• Both	6 (4)	0 (0)
• Thrombolytic	3 (2)	0 (0)
None	14 (9)	44 (4)

## Conclusions

- There still remains ambiguity for the risk factors and prophylaxis for flap thrombosis.
- The most significant perceived differences in risk factors are thrombophilia, pre-operative chemotherapy, pre-operative radiation, age and diabetes mellitus.
- There is significant variability in pre-, intra-, and post-operative management

## References

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