

Incidence and Risk Factors for Deep Vein Thrombosis after Radiofrequency and Laser Ablation of the Lower Extremity Veins

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DISCLOSURE

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**No Relevant Financial
Relationship Reported**

Background

- **>2 million adults in US have chronic venous disease**
- **Venous ablation preferred over open ligation in the US**
- **Low but known risk of deep venous thrombosis (DVT) after endovenous treatments (<1-18%)**

Question

- **What is the incidence of DVT after venous ablation?**
 - **Radiofrequency Ablation (RFA) vs Laser Ablation (LA)?**
- **What is the incidence of pulmonary embolism (PE) after ablation**
- **What are the risk factors for DVT after ablation?**

Methods

- **Population:**
 - Truven Health Marketscan Database
 - 2007-2016
- **Exposure:** RFA vs LA
- **Covariates:**
 - Patient demographics/comorbidities
- **Outcomes:**
 - DVT at 7 and 30 days
 - PE at 7 and 30 days

Methods

- **Inclusion Criteria:**
 - Follow-up duplex ultrasound within 30 days of RFA or LA
- **Exclusion Criteria:**
 - History of previous DVT or PE
 - Previous open ligation or stripping procedure
 - Concurrent RFA/LA procedure
- **Analysis**
 - Univariate and multivariate regression to determine risk factors for new DVT

Truven Health
Marketscan Database
RFA/LA: 2007-2016
N = 637,169

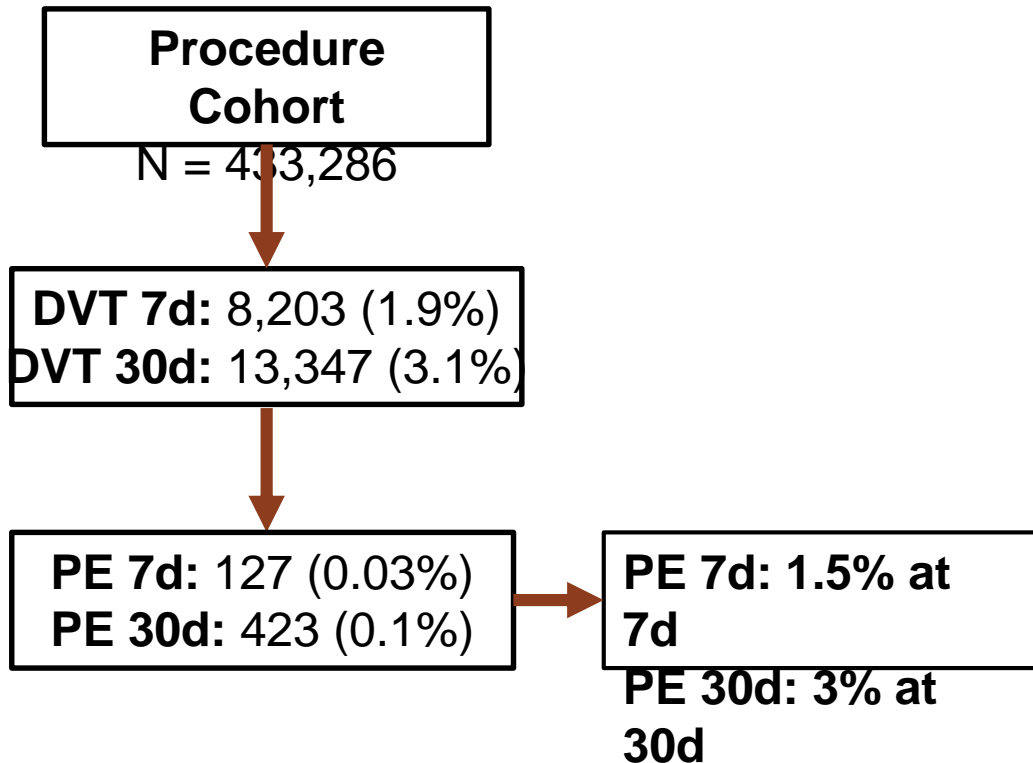
150,846 no post-op U/S
4,346 hx PE
41,016 hx DVT
6,950 hx open
ligation/stripping
725 concurrent RFA/LA

RFA/LA Procedure
Cohort
N = 433,286

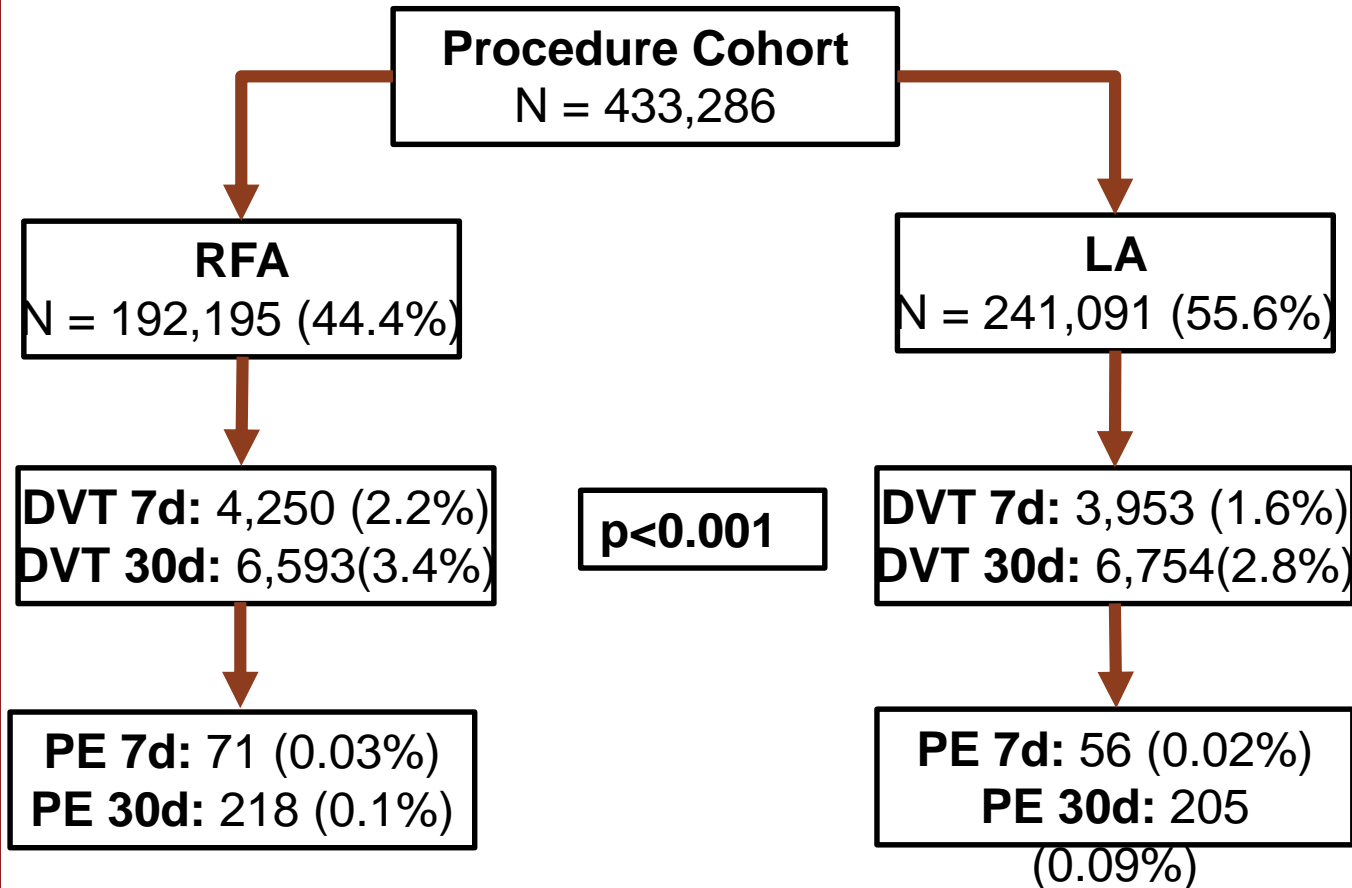
RFA
N = 192,195

LA
N = 241,091

Results – Primary Outcomes



Results – Radiofrequency Ablation vs. Laser Ablation



Univariate Analysis – DVT at 30 Days

Characteristic	Total (N = 433,286)	NO DVT (N = 419,939)	DVT (N = 13,347)
Age	49.2±9.97	49.2±9.97	49.4±9.92
Female Gender	331,439 (76.5)	322,055 (76.7)	9,384 (70.3)
Sclerotherapy	29,743 (6.9)	28,899 (6.9)	844 (6.3)
PAD	35,139 (8.1)	33,796 (8.1)	1,343 (10.1)
Ulcer	36,796 (8.5)	35,350 (8.4)	1,446 (10.8)
Radiofrequency Ablation	192,195 (44.4)	185,602 (44.2)	6,593 (49.4)
Stab Phlebectomy	68,134 (15.7)	65,365 (15.6)	2,769 (20.8)

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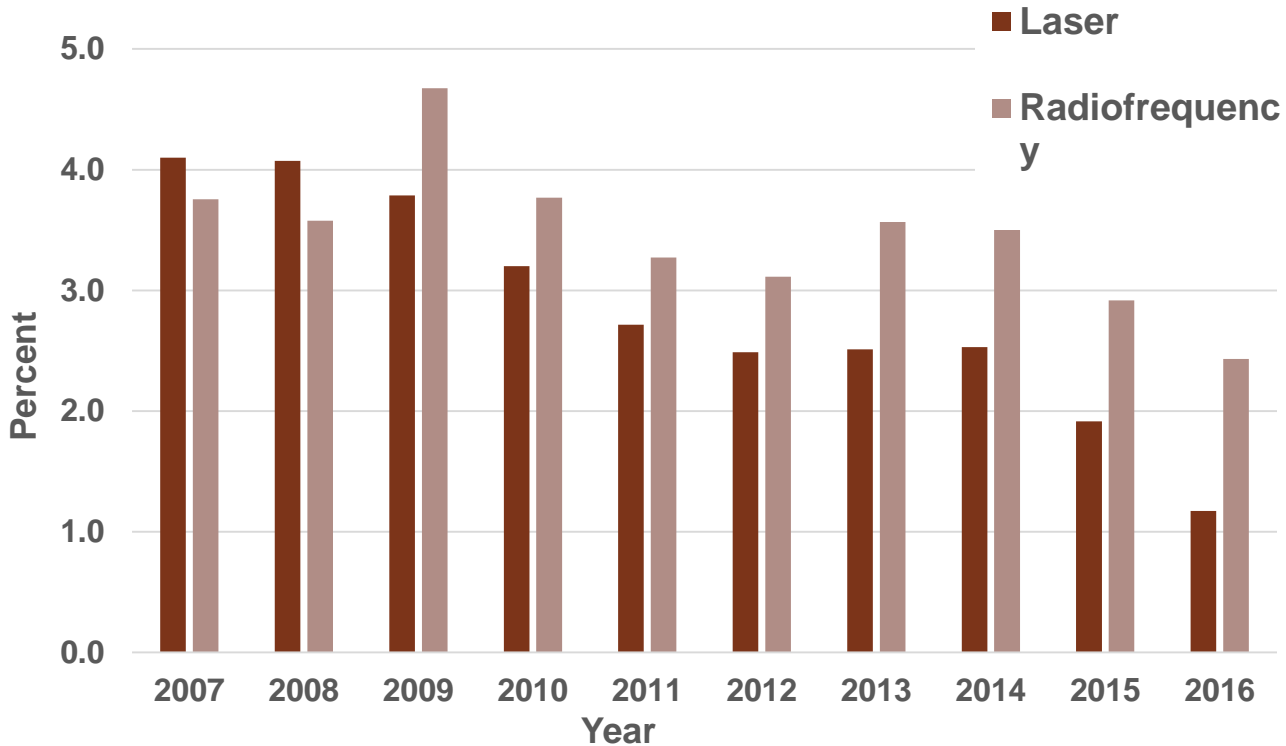
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DVT at 30 Days by Year



Multivariate Regression – DVT at 30 Days

Characteristic	OR	95% CI	P-Value
Stab Phlebectomy	1.43	1.37-1.49	<.001
PAD	1.21	1.16-1.31	<.001
Lower extremity wound	1.21	1.14-1.28	<.001
Radiofrequency Ablation	1.23	1.2-1.3	<.001
Female Gender	0.75	0.72-0.78	<.001
Sclerotherapy	0.91	0.85-0.98	.012
Year (Every 1 year from 2007)	0.92	0.92-0.93	<.001

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Discussion

- **DVT rates low but not insignificant**
 - 1.9% at 7 days, 3.1% at 30 days
 - At 30 days, 3% of DVTs progressed to PE
- **Slightly higher risk of DVT with RFA vs LA (3.4% vs. 2.8%)**
- **DVT rates decreasing over time**
- **Increased risk of DVT with concomitant stab phlebectomy**

Limitations

- **Large insurance claims database**
 - Limited DVT characteristics
 - No clinical notes or imaging
 - Insured patients only
- **Unable to distinguish between EHIT and DVT**

Conclusions

- **Small but significant DVT risk after venous ablation**
- **Slightly higher risk for DVT with RFA vs LA (OR 1.21)**
- **Increased risk for DVT with stab phlebectomy, PAD, lower extremity wound**
- **Further work needed on clinical significance of DVT**

Thank You!