Routine Venous Thromboembolism Screening after Pneumonectomy: The More You Look, the More You See

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Cleveland Clinic Foundation
AATS 2015
No Disclosures
Death by Clot...
STS Database

General Thoracic Surgery Database

DVT req. Rx → 1%

Pulmonary Embolism → 1.2%

2011-13
The Problem

Venous thromboembolism (VTE)*

- Incidence of VTE – 7.4%
- Worse survival

*J Thorac Cardiovasc Surg 2006;131:711-8
Practice Change

Routine screening pre discharge after pneumonectomy was initiated in 2006 as part of a quality improvement initiative.
Objectives

• Ascertain the prevalence of VTE after pneumonectomy
• Assess risk of developing VTE
• Identify risk factors for VTE
• Determine effect of VTE on survival
Patients

Pneumonectomy For Malignancy

VTE Screened
2006 – 2012
n = 112

VTE Not Screened
1990 – 2001
n = 336
Findings (n=112)

Mean age: 61 years
Male: 74%
Mean FEV1: 75% ± 18%
Mean DLCO: 79% ± 19%
Mean tobacco use: 35 ppy
Preoperative Therapy

- 42% of patients underwent induction chemotherapy or chemoradiotherapy
Tumor Distribution (%)
Pneumonectomy Resections

- Intrapericardial: 38%
- Extrapericardial: 30%
- EPP: 22%
- Completion: 8.9%
- Carinal: 0.9%
<table>
<thead>
<tr>
<th>Predominant Histology</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Squamous cell carcinoma</td>
<td>38%</td>
</tr>
<tr>
<td>Adenocarcinoma</td>
<td>28%</td>
</tr>
<tr>
<td>Mesothelioma</td>
<td>18%</td>
</tr>
<tr>
<td>Carcinoid</td>
<td>4.5%</td>
</tr>
</tbody>
</table>
VTE Events

Total
n = 112

VTE
20 patients

50% In-hospital
10

Discharge

20% In 30 days
4

In 30 days
Probability of VTE

%

Days after Pneumonectomy

Screened

Not screened
Risk of VTE

Days after Pneumonectomy

% / day

Screened

Not screened
Freedom from VTE

Age (years)

% Freedom from VTE

Standard pneumonectomy

Extrapleural pneumonectomy
Freedom from VTE

- No COPD
- COPD

Months after Pneumonectomy

%
Survival and VTE

Survival before VTE

Survival after VTE
Survival after VTE

- Screened
- Not screened

Years after First VTE

%
Study Significance

More you look the more you see
Principle Findings

- Risk of VTE pre discharge is almost 3X in the screened cohort
- 50% of VTE occur pre-discharge
- Risk of VTE remains elevated for 30 days
Principle Findings

• Development of VTE is associated with increased mortality
• Unadjusted risk of mortality greater in unscreened cohort compared to screened cohort
Summary

• VTE are more common after pneumonectomy than previously thought

• Presence of VTE portends poor long term survival
Recommendations

Routine screenings and longer/better VTE prophylaxis are recommended.