### Background

Incidence of venous thromboembolism (VTE) after knee arthroscopy is reportedly low, but rates vary across literature. Guidelines recommend against routine thromboprophylaxis, but VTE risk factors and prescribing practices are poorly understood.\(^1,2\)

**Purpose:** Determine the rate of symptomatic VTE among patients undergoing arthroscopic knee procedures, VTE risk factors, and perioperative thromboprophylaxis prescribing patterns in the U.S.

### Methods

- Medical records for patients ≥18 years old were queried from a large national insurance claims database using knee arthroscopy CPT codes.
- Patients with a prior diagnosis of VTE or hypercoagulable disorder were excluded.
- Patients diagnosed with pulmonary embolism and/or deep vein thrombosis within 90 days of surgery were identified using ICD-9/10 codes.
- Multivariable logistic regression models were utilized to identify VTE risk factors and likelihood of thromboprophylaxis prescription.

### Patient Demographics, N=718,289

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obesity</td>
<td>21.0%</td>
</tr>
<tr>
<td>Alcohol use disorder</td>
<td>2.8%</td>
</tr>
<tr>
<td>Tobacco use</td>
<td>7.3%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>39.8%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>20.2%</td>
</tr>
<tr>
<td>Coronary Artery Disease (CAD)</td>
<td>9.1%</td>
</tr>
<tr>
<td>Renal Disease</td>
<td>3.0%</td>
</tr>
<tr>
<td>Congestive Heart Failure (CHF)</td>
<td>2.1%</td>
</tr>
<tr>
<td>Malignancy</td>
<td>4.9%</td>
</tr>
<tr>
<td><strong>Nonoperative VTE prophylaxis</strong></td>
<td>1.5%</td>
</tr>
<tr>
<td>Aspirin</td>
<td>0.7%</td>
</tr>
<tr>
<td>LMWH</td>
<td>0.6%</td>
</tr>
<tr>
<td>Factor Xa inhibitor</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

VTE, venous thromboembolism; LMWH, low-molecular-weight heparin

### Results

**The 90-day rate of symptomatic VTE events after knee arthroscopy is 1.06%**

- Deep Vein Thrombosis 0.9%
- Pulmonary Embolism 0.3%

**Approximately 1.5% of patients received perioperative thromboprophylaxis**

- Aspirin 0.7%
- Low-molecular-weight heparin 0.6%
- Oral factor Xa inhibitors 0.1%

**Thromboprophylaxis was associated with decreased odds of VTE**

- Adjusted odds ratio [aOR]=0.65, 95% confidence interval [CI]=0.51–0.80

**Higher risk procedures were associated with increased odds of VTE**

- aOR=1.42 (1.34–1.50) compared to lower-risk procedures

**OCPs, obesity, CHF, and renal disease were associated with increased odds of VTE**

- OCP use: aOR=1.63 (1.38–1.91)
- CHF: aOR=1.30 (1.13–1.50)
- Obesity: aOR=1.17 (1.11–1.24)
- Renal disease: aOR=1.33 (1.18–1.50)

**VTE risk factors are not always correlated with increased use of thromboprophylaxis**

### Discussion

- Arthroscopic knee procedure types that are generally more complex and require restrictive rehabilitation protocols are associated with significantly increased odds of symptomatic VTE.
- Conversely, the use of perioperative thromboprophylaxis is associated with significantly lower odds of VTE.
- Orthopaedic surgeons should be aware of VTE risk factors and prophylaxis patterns in knee arthroscopy to provide comprehensive clinical care and judgment when assessing a patient’s need for perioperative thromboprophylaxis.

### Limitations

- Potential bias introduction through inaccurate documentation of CPT, NDC, or ICD codes.
- This dataset only reflects the number of thromboprophylaxis prescriptions filled, which does not account for adherence or OTC meds.

### Conclusion

While the overall rate of symptomatic VTE following knee arthroscopy remains low, more complex procedure types that generally require restrictive rehabilitation protocols, OCP use, obesity, renal disease, and CHF are associated with increased odds of experiencing VTE.

### References


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