The Effects of Early Ambulation and VTE Prophylaxis in the Post-Surgical Patient

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Background

Importance:
- Surgery patients are at particular risk for VTE because major operations induce an inflammatory response and a hypercoagulable state and necessarily create an endothelial vascular insult. (1)
- The tendency for patients to limit mobilization due to postoperative pain may predispose them to venous stasis. (1)

Current Practices:
- VTE Risk Stratification tool / Caprini tool.
- Ambulation post-op day 2-3.
- Anticoagulation therapy (pharmacological)
- Pneumatic Compression Devices
- Bed-rest

VTE Risk Stratification

Highest Risk
- Acute ischemic stroke/TIA
- Acute spinal cord injury
- Multiple major trauma
- Abdominal or pelvic surgery for cancer
- Previous ischemic stroke w/ paresis
- Immobility (confined to bed or chair)
- Central venous catheter
- Recent major surgery (<3 months)
- Vascular insult.

Low Risk
- No risk factors for expected LOS < 2 days, plus patient ambulatory, or minor surgery (same day or < 45 minutes OR time).

Methods

- Databases searched: Ovid, BWMC Intranet, Journal of American College of Surgeons, DVT.org
- Search Terms: Post surgical ambulation, VTE prophylaxis, surgical complications, early ambulation, DVT/PE prevention
- Criteria: Scholarly journals/articles within 5 years

Summary of Evidence

<table>
<thead>
<tr>
<th>Article #</th>
<th>Author &amp; Date</th>
<th>Evidence Type</th>
<th>Sample, Sample Size &amp; Setting</th>
<th>Study findings that help answer the EBP question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Michael R. Cassidy, MD, Pamela Rosemurgy, RN, FRN, MPe, David McAmeny, MD, FAC5</td>
<td>Case Study</td>
<td>Post Surgical, 1000 patients, Urban Medical Center (setting)</td>
<td>A patient care program, emphasizing early postoperative mobilization along with mandatory VTE risk stratification and comprehensive electronic prophylaxis recommendations, significantly reduced the likelihood of VTE complications among our patients.</td>
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<tr>
<td>2</td>
<td>Frederick A. Anderson, Jr PhD, Anne-Marie Audt, MD, MSc, FAOP</td>
<td>Systematic Review</td>
<td>Post Surgical, 100 participants, Professional (hospital) setting</td>
<td>Early mobilization of patients as soon as possible after surgery is thought to reduce the chances of venous thromboembolic complications. Early mobilization also serves as an important mechanical method.</td>
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<td>3</td>
<td>Beatrice J. Kalach, Sarah Lee and Beverly W Calamy</td>
<td>Systematic Review</td>
<td>Multihospital, 10-500 (mean), Mixed (surgical/patient/implant) setting</td>
<td>The other mechanical methods of prophylaxis act on the same principle as early mobilization, that is they stimulate calf muscles and put pressure on the calf and leg veins, thus discouraging stasis and venous pooling of blood in the lower extremities.</td>
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<td>4</td>
<td>Anupama R. Pillai, MSN, and Joy R. Raval, MD</td>
<td>Random Control</td>
<td>Inpatients, 45-2318 (subjects), Hospital (setting)</td>
<td>As early ambulation may allow for home treatment or early discharge from the hospital, it may also be a more cost-effective treatment option. Similar to the findings in the current review, a meta-analysis of five randomized controlled trials examining early ambulation in surgical patients found that patients who were encouraged to ambulate had a lower likelihood of VTE than those who were not. (2) Early mobilization in patients with VTE by Rossano et al. (2000) concluded that early ambulation was not associated.</td>
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<td>5</td>
<td>Wu, Pheam O</td>
<td>Case Study</td>
<td>NA</td>
<td>Ambulation can maintain independence, enhance patient satisfaction, decrease healthcare costs, and prevent many other undesirable outcomes including loss of lean muscle, decreased functional capacity, skin breakdown, and compaction associated with prolonged bed rest.</td>
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<td>6</td>
<td>Sarah Hudson Roberts, DNP, MSN, RN, and Sherry Mires Lawrence, DNP, MSN, RN</td>
<td>Narrative Literature Review</td>
<td>NA</td>
<td>The overall incidence of DVT in surgical patients is 19-22%, with patients with malignancy being at highest risk. PE is clinically recognized in 1.6% of patients with an additional 0.9% being recognized only post-mortem. Knowledge of specific risk factors forms the basis for appropriate prophylaxis. The rationale for thromboembolism prevention is based on the high prevalence of DVT among hospitalized patients, the clinical sequelae of symptomatic DVT and PE, the morbidity and mortality associated with DVT (4,5). (page 1)</td>
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Recommendations/Next Steps

In order to sustain best practice or to get to a level of where best practice is performed, the following steps are recommended:
- Nurses will be educated on the VTE stratification tool used by BWMC Physicians. With this education, nurses will have the knowledge to identify and classify those patients based on VTE requirements as the event the order is missed by physicians or pertinent events change with the patient, which would alter the patient risk classification.
- Nurses will also be educated to follow up with providers regarding ambulation orders/activity orders for patients with no orders placed or ordered strict bed rest if not indicated.
- Comprehensive education regarding complications in the post-surgical patient should be emphasized to all nursing staff.
- Additional planning with the nursing staff to share responsibilities among shifts and staff members in ambulating patients:
  - Daily Ambulation Checklist
  - Implementation of patient education: *Footsteps* patient ambulation handout

Conclusion

Evidence according to Kalisch (2013), shows that "patients who experience less mobilization and prolonged immobility often experience less optimal physical and psycho-social outcomes, slower recovery, more functional decline and longer length of stay than patients with more mobility." Therefore, all post-operative patients should have specified activity orders and VTE orders for high to moderate risk patients.

Prevention of venous thromboembolism (VTE) after surgery

Undergoing surgery and bed rest after surgery increase the risk of VTE. Ways to help prevent VTE following surgery include:
- Early walking
  - As soon as your doctor allows, get out of bed and walk several times a day.
- Sequential compression devices (SCDs)
  - Wear SCDs when sitting or lying down.
- Blood-thinning medication
  - You may receive blood-thinning medication after surgery. For some types of surgery, this medication may be continued briefly after you go home.

References available upon request*