



Consensus Guideline on Venous Thromboembolism (VTE) Prophylaxis for Patients Undergoing Breast Operations

Purpose: To outline the approach to venous thromboembolism prophylaxis for patients undergoing breast operations

Associated ASBrS Guidelines or Quality Measures:

1. Consensus Statement: Venous Thromboembolism Prophylaxis for Patients Undergoing Breast Operations-Approved September 2011
2. Performance Guideline: none
3. Quality Measure (QM): The ASBrS Board of Directors retired the CMS PQRS and ASBrS Quality Measure on VTE for breast surgeons on February 26, 2015, after unanimous vote of Patient Safety and Quality Committee (PSQC) to recommend retirement, based on modified delphi ranking of 99 breast surgical QM for importance from November, 2014.

Methods: A systematic review of the literature was performed to evaluate incidence, risks, and effectiveness of prevention of VTE in patients undergoing breast operations. The search was performed using Medline (OVID) and PubMed databases (January 1994-July 2015). There were no Cochrane reviews specific to breast surgery and VTE. Forty-three articles contained information on VTE incidence, risk factors, prevention effectiveness, or risk of chemoprophylaxis. The majority of information was from retrospective data review. Several publications used the National Surgical Quality Improvement Program (NSQIP) database, and it was not possible to determine if there was duplication of patients and outcomes in separate metachronous reports. In addition, the NSQIP database does not include information on which patients received chemoprophylaxis.

Summary of Data Reviewed:

The incidence of VTE (deep venous thrombosis [DVT] and pulmonary embolism) after breast surgery

The risk of VTE after breast surgery is lower than major operations of the abdomen and pelvis, especially compared to those surgeries performed for cancer. The risk of VTE in ambulatory outpatients undergoing breast surgery is very low. The risk of VTE is lower in patients undergoing partial mastectomy (lumpectomy) compared to mastectomy.

The aggregate DVT risk for all patient and procedure types was less than 0.4% in more than 100,000 patients undergoing breast surgery published in multiple studies using data from the Nationwide Inpatient Sample and the National Surgical Quality Improvement Program (NSQIP).

In a single institution retrospective review from MD Anderson, the VTE risk was 0.16% in 3898 patients undergoing breast surgery with sequential compression devices and early ambulation without chemoprophylaxis.

Pulmonary embolism risk after breast operations ranges from less than 1% to 4%.

VTE Risk Factors

VTE risk depends on the operation performed and the patient characteristics. The risk is highest in patients undergoing mastectomy with immediate reconstruction, especially autologous reconstruction. Other reported risk factors for VTE in patients undergoing breast surgery include age >65, obesity, operative time with general anesthesia >3 hours, increased length of hospital stay, recent surgery within 30 days before the breast operation, and a cancer diagnosis.

Risks of VTE chemoprophylaxis

Most studies do not indicate an increased risk of hematoma formation, reoperation, or transfusion with chemoprophylaxis compared to no chemoprophylaxis.

The risk of unplanned re-operations for hematoma or any bleeding complication after initial breast surgery ranges from 2%-6% and depends on procedure type. The evidence is insufficient to determine if there is a significant increase in patients receiving chemoprophylaxis.

Effectiveness of chemoprophylaxis in patients undergoing breast operations

Some, but not all, studies identify decreases in VTE in breast patients who receive chemoprophylaxis compared to not. Randomized controlled trials with adequate adjustment for patient risk and operation type are lacking.

ASBrS Recommendations for Venous Thromboembolism Prophylaxis

1. There is insufficient evidence to determine whether the published VTE prophylaxis guidelines for patients undergoing major orthopedic or general surgical operations for cancer should be uniformly applied to breast surgery patients.
2. Decisions regarding VTE prophylaxis in breast surgery patients should be individualized, and should take into consideration procedure type, procedure duration, anesthesia type, patient history of prior VTE or hypercoagulability condition, and the risk of bleeding complications.
3. Ambulatory patients undergoing breast operations with local or regional anesthesia generally do not require any specific prophylaxis for VTE.
4. Most patients undergoing breast operations with general anesthesia and no reconstruction will have a low risk of VTE with early ambulation and sequential compression devices (SCD) for prophylaxis

5. Chemoprophylaxis may be considered for patients receiving general anesthesia (GA) for breast operations in the following settings:
 - a. Expectation of duration of GA >3 hours
 - b. Patients at “higher” risk for VTE (multiple risk factors as noted above; Caprini score greater than 5), who are not at high risk for bleeding complications. See the American College of Chest Physicians Executive Summary Guideline references below.
 - c. Mastectomy with immediate reconstruction
 - d. Chemoprophylaxis is recommended for all patients undergoing mastectomy with immediate autologous reconstruction unless there is a specific medical contraindication.
 - e. The drug of choice, timing, and dose of chemoprophylaxis are out of scope for this consensus statement. See the American College of Chest Physicians Executive Summary Guideline references below.

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This statement was developed by the Society's Research Committee, and on November 30, 2016, it was approved by the Board of Directors.