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Cesarean Delivery Thromboprophylaxis

Background

Pregnancy is a state of physiologic hypercoagulability. Pulmonary embolism is a leading cause of maternal mortality. The postpartum period is the time of highest risk for venous thromboembolic disease (VTE). Cesarean delivery, especially when performed emergently, is associated with a higher risk of VTE than vaginal delivery. VTE occurs in up to 0.7% of women undergoing the operation, most of whom are asymptomatic. However, the absolute risk remains low (about 1 per 1,000 or less).

The use of intermittent pneumatic compression devices reduces the risk of VTE by at least 50%, and are a cost-effective ($37 per device) intervention. (ACOG Practice Bulletin No. 84, Appelen-Cochrane Database) Early ambulation is also to be encouraged. Low molecular weight heparin is considered the drug of choice for this situation because of the safety and efficacy profile. The recommended regimen for prophylactic low molecular weight heparin in high-risk women undergoing cesarean delivery is subcutaneous enoxaparin. Heparin pharmacokinetics in pregnancy are largely determined by renal clearance, not volume of distribution.

Risk Factors

Post-cesarean use of prophylactic low molecular weight heparin is not associated with an increased risk of postoperative bleeding (0.4%), but is accompanied by a small (0.1%) risk of heparin induced thrombocytopenia. While it is not recommended for low risk women undergoing cesarean delivery, it may be warranted for women with additional risk factors. The American College of Chest Physicians (ACCP) risk factors include:

ACCP, major risk factors

strict bedrest for ≥1 week antepartum
bleeding ≥1000 mL at cesarean
previous VTE
preeclampsia with fetal growth restriction
antithrombin deficiency
factor V Leiden (homozygous or heterozygous)
prothrombin G20210A (homozygous or heterozygous)
blood transfusion
infection
Lupus, heart disease
Sickle cell disease

ACCP, minor risk factors

BMI >30 kg/m^2
multiple gestation
postpartum hemorrhage >1000 mL
smoking >10 cigarettes/day
birth weight <25th centile
protein C or S deficiency
preeclampsia

I. Management: Short term

A. Baseline intervention
-Early ambulation
-Intermittent pneumatic compression devices
- Consider consultation with PT to assist in early mobilization of super-obese patients

B. Pharmacologic thromboprophylaxis
Begin pharmacologic therapy if:
-One major ACCP risk factor for VTE
or
-Two minor ACCP risk factors for VTE

Treatment will consist of:
BMI<50 kg/M^2
Enoxaparin (Lovenox) 40 mg subcutaneous q 12 hrs, starting 12 hrs post op

BMI>50 kg/M^2
Enoxaparin (Lovenox) 60 mg subcutaneous q 12 hrs, starting 12 hrs post op

B. High Risk
(multiple episodes of VTE, or anti-thrombin III deficiency)
Individualize care

Weight-based dosing is superior to fixed dosing, eg, enoxaparin 0.5 mg/kg every 12 hours

II. Management: Long term
A. Baseline intervention
Treatment in hospital only

B. High Risk
Care should be individualized
Warfarin, Enoxaparin, and antiplatelet agent therapy have been described in various clinical situations.

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