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Date: 26 Jun 2017

Sources Searched: Medline, Embase, CINAHL.

Prevention of VTE in First Trimester Miscarriage or Pregnancy Termination

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1. First-trimester abortion in women with medical conditions: release date October 2012 SFP guideline #20122.

Author(s): Guiahi, M; Davis, A; Society of Family Planning

Source: Contraception; Dec 2012; vol. 86 (no. 6); p. 622-630

Publication Date: Dec 2012

Publication Type(s): Practice Guideline Journal Article

url: <https://www.societyfp.org/documents/resources/guidelines2012-2.pdf>

PubMedID: 23039921

Abstract:Most women undergoing first-trimester abortion are healthy. However, abortion providers also encounter women with a wide variety of medical conditions, some of which are serious and complex. When such a condition exists, consultation with the woman's physician or a specialist can facilitate decision making regarding hospital referral and additional preparations that may be required. Medical conditions may determine the approach to abortion. Surgical abortion is preferred when mifepristone or methotrexate is contraindicated. Medication abortion may be preferred when lithotomy position is not possible or in patients with extreme obesity. Limited data suggest that women treated with anticoagulation therapy bleed more than other women during surgical abortion, although this additional bleeding may be clinically unimportant. The decision to temporarily discontinue anticoagulation therapy will depend on the agent used and the underlying risk of thrombosis. According to the American Heart Association, additional antibiotics are not recommended to prevent endocarditis in women with cardiac lesions during surgical abortion. We review specific recommendations for women with common medical conditions. In some women, highly effective postabortion contraception is essential to prevent pregnancy-related morbidity. The U.S. Medical Eligibility Criteria for Contraceptive Use, 2010, provides guidance for method selection for women with medical problems.

Database: Medline

2. Combined hormonal contraception and risk of venous thromboembolism within the first year following pregnancy. Danish nationwide historical cohort 1995-2009.

Author(s): Petersen, J F; Bergholt, T; Nielsen, A K; Paidas, M J; Løkkegaard, E C L

Source: Thrombosis and haemostasis; Jul 2014; vol. 112 (no. 1); p. 73-78

Publication Date: Jul 2014

Publication Type(s): Journal Article

PubMedID: 24499991

Abstract:Estimating the risk of venous thromboembolism (VTE) associated with combined hormonal contraceptives following early terminated pregnancies or birth, a Danish nationwide retrospective cohort observing a one-year follow-up was defined using three unique registries. All Danish women with confirmed pregnancies aged 15-49 during the period of 1995-2009 were included. The main outcomes were relative and absolute risks of first time venous thromboembolism in users as well as non-users of combined hormonal contraceptives. In 985,569 person-years, 598 venous thromboembolisms were recorded. After early terminated pregnancies and births, respectively, 113 and 485 events occurred in 212,552 and 773,017 person-years. After early terminated pregnancies, the crude VTE incidence ratios were similar, and the numbers needed to harm were equal between groups that did or did not use combined hormonal contraceptives throughout the follow-up year. After childbirth, individuals that used combined hormonal contraceptives were more likely than non-users to experience VTE depicted by crude incidence ratios; however, the difference was only significant after 14 weeks. This implied that the numbers needed to harm were lower for those that used compared to those that did not use combined oral contraceptives in the initial 14 weeks postpartum. In conclusion, the use of combined hormonal contraceptives after early terminated pregnancies was not detrimental, but during the puerperal period, they should be used with caution.

Database: Medline

3. Pregnancy-Associated Venous Thromboembolism: Prevention and Treatment

Author(s): Bates S.M.

Source: Seminars in Hematology; Oct 2011; vol. 48 (no. 4); p. 271-284

Publication Date: Oct 2011

Publication Type(s): Article

PubMedID: 22000093

Abstract:Pregnancy is associated with an increased risk of venous thromboembolism (VTE) and this condition remains an important cause of maternal morbidity and mortality. The use of anticoagulant therapy for treatment and prophylaxis of VTE during pregnancy is challenging because of the potential for fetal, as well as maternal, complications. Although evidence-based recommendations for the use of anticoagulants have been published, given the paucity of available data, guidelines are based largely upon observational studies and from data in nonpregnant patients. This article reviews the available literature and provides guidance for the management and prevention of VTE during pregnancy. © 2011 Elsevier Inc.

Database: EMBASE

4. Pregnancy and thrombotic risk.

Author(s): James, Andra H

Source: Critical care medicine; Feb 2010; vol. 38 (no. 2)

Publication Date: Feb 2010

Publication Type(s): Journal Article Review

PubMedID: 20083915

Available in full text at [Critical Care Medicine](#) - from Ovid

Abstract: Pregnancy increases the risk of thrombosis three-fold to four-fold. The main reason for the increased risk is hypercoagulability, which has likely evolved to protect women against the bleeding challenges associated with miscarriage and childbirth. The hypercoagulability of pregnancy is present as early as the first trimester and so is the increased risk of thrombosis. Factors that further increase the risk of thromboembolism in pregnancy include a history of thrombosis, inherited and acquired thrombophilia, certain medical conditions, and complications of pregnancy and childbirth. Candidates for anticoagulation are women with a current thrombosis, a history of thrombosis, thrombophilia, and a history of poor pregnancy outcome, or risk factors for postpartum thrombosis. For fetal reasons, the preferred agents for anticoagulation in pregnancy are heparins. There are no large trials of anticoagulation in pregnancy and recommendations are based on case series and the opinion of experts. Nonetheless, anticoagulation is believed to improve the outcome of pregnancy for women at risk.

Database: Medline

5. Immediate complications after medical compared with surgical termination of pregnancy

Author(s): Niinimäki M.; Pouta A.; Bloigu A.; Gissler M.; Hemminki E.; Suhonen S.; Heikinheimo O.

Source: Obstetrics and Gynecology; Oct 2009; vol. 114 (no. 4); p. 795-804

Publication Date: Oct 2009

Publication Type(s): Article

PubMedID: 19888037

Available in print at [Patricia Bowen Library and Knowledge Service West Middlesex university Hospital](#) - from Obstetrics and Gynecology

Available in full text at [Obstetrics and Gynecology](#) - from Ovid

Abstract: **OBJECTIVE:** To estimate the immediate adverse events and safety of medical compared with surgical abortion using high-quality registry data. **METHODS:** All women in Finland undergoing induced abortion from 2000-2006 with a gestational duration of 63 days or less (n=42,619) were followed up until 42 days postabortion using national health registries. The incidence and risk factors of adverse events after medical (n=22,368) and surgical (n=20,251) abortion were compared. Univariable and multivariable association models were used to analyze the risk of the three main complications (hemorrhage, infection, and incomplete abortion) and surgical (re)evacuation. **RESULTS:** The overall incidence of adverse events was fourfold higher in the medical compared with surgical abortion cohort (20.0% compared with 5.6%, P<.001). Hemorrhage (15.6% compared with 2.1%, P<.001) and incomplete abortion (6.7% compared with 1.6%, P<.001) were more common after medical abortion. The rate of surgical (re)evacuation was 5.9% after medical abortion and 1.8% after surgical abortion (P<.001). Although rare, injuries requiring operative treatment or operative complications occurred more often with surgical termination of pregnancy (0.6% compared with 0.03%, P<.001). No differences were noted in the incidence of infections (1.7% compared with 1.7%, P=.85), thromboembolic disease, psychiatric morbidity, or death. **CONCLUSION:** Both methods of abortion are generally safe, but medical termination is associated with a higher incidence of adverse

events. These observations are relevant when counseling women seeking early abortion. © 2009 by The American College of Obstetricians and Gynecologists.

Database: EMBASE

6. Venous thromboembolism in pregnancy

Author(s): James A.H.

Source: Arteriosclerosis, Thrombosis, and Vascular Biology; Mar 2009; vol. 29 (no. 3); p. 326-331

Publication Date: Mar 2009

Publication Type(s): Review

PubMedID: 19228606

Available in full text at [Arteriosclerosis, Thrombosis and Vascular Biology](#) - from Ovid

Available in full text at [Arteriosclerosis, Thrombosis, and Vascular Biology](#) - from Free Access Content

Available in full text at [Arteriosclerosis, Thrombosis, and Vascular Biology](#) - from Highwire Press

Abstract:The purpose of this review is to summarize the epidemiology of venous thromboembolism (VTE) in pregnancy and describe strategies used to prevent and treat it. The main reason for the increased risk of VTE in pregnancy is hypercoagulability. The hypercoagulability of pregnancy, which has likely evolved to protect women from the bleeding challenges of miscarriage and childbirth, is present as early as the first trimester and so is the increased risk of VTE. Other risk factors include a history of thrombosis, inherited and acquired thrombophilia, certain medical conditions, and complications of pregnancy and childbirth. Candidates for anticoagulation are women with a current thrombosis, a history of thrombosis, thrombophilia, and a history of poor pregnancy outcome, or postpartum risk factors for VTE. For fetal reasons, the preferred agents for anticoagulation in pregnancy are heparins. There are no large trials of anticoagulants in pregnancy and recommendations are based on case series and the opinion of experts. Nonetheless, anticoagulants are believed to improve the outcome of pregnancy for women who have or have had VTE. © 2009 American Heart Association, Inc.

Database: EMBASE

7. Hypercoagulability during pregnancy: evidences for a thrombophilic state

Author(s): Maiello, M; Torella, M; Caserta, L; Caserta, R; Sessa, M; Tagliaferri, A; Bernacchi, M; Napolitano, M; Nappo, C; De Lucia, D; Panariello, S

Source: Minerva ginecologica; Oct 2006; vol. 58 (no. 5); p. 417-422

Publication Date: Oct 2006

Publication Type(s): English Abstract Journal Article

PubMedID: 17006429

Abstract:AIMThe development of thrombotic disorders is a major threat for young women during pregnancy. It is one of the main causes of pregnancy-related disorders, which may also result in harm for the conceptus. Successful pregnancies require an even balance of coagulation and fibrinolysis, in order to secure stabilization of the basal plate as well as adequate placental perfusion. Broad spectrum assays which measure a range of thrombin/fibrin formation in serum have become an established means of identifying activation of blood coagulation and/or fibrinolysis. There is considerable interest in the application of these assays to the diagnosis of other hypercoagulable states, such as thrombophilia during pregnancy. We investigated coagulation/fibrinolysis parameters

for significant differences between pregnant women during their gestation (first, second and third trimester) with or without pregnancy loss and healthy nonpregnant women. **METHODS** Thirty-nine pregnant women, aged 24-39 years, were studied. They were subdivided according to pregnancy trimester: 15 patients in the first trimester; 13 in the second and 11 in the third. The selection of patients was carried out in cooperation with the Transfusion Center of the Second University of Naples in order to obtain a homogeneous sample group. The control group included 400 healthy patients. Biochemical and blood coagulation tests were performed for each patient and the results obtained were compared with the control group. **RESULTS** A decrease in free protein S (PS) and fibrinolysis (t-PA/PAI-1) activities and an increase in Factor VII, Factor VIII, prothrombin fragment 1+2 (F1+2), D-dimer (D-dimer) were observed in pregnant women during the follow-up of gestation. However, there were statistical differences between the groups of women with one or more pregnancy loss where it was found the lowest values in t-PA and PAI and the highest values in FVII and F1+2. Among subjects with more than one abortion, coagulation/fibrinolysis derangements before the partum were more prominent. A significant association exists between consecutive recurrent abortions and pregnancy complications such as placental abruption, hypertensive disorders and CS. This association persists after controlling for variables considered to coexist with recurrent abortions. **CONCLUSIONS** These findings suggest that an excessive hypercoagulable state is associated with the termination of pregnancy resulting into a moderate risk for thrombosis during the different trimesters of pregnancy. The follow-up of fibrinolytic markers could represent a useful diagnostic tool for termination of pregnancy.

Database: Medline

Strategy 229152

#	Database	Search term	Results
1	Medline	("venous thromboembolism" OR VTE).ti,ab,af	18512
2	Medline	(abortion* OR miscarriage*).ti,ab,af	87839
3	Medline	("first trimester" OR "1st trimester").ti,ab,af	20394
4	Medline	(1 AND 2 AND 3)	11
5	Medline	(thrombo*).ti,ab,af	301523
6	Medline	(2 AND 3 AND 5)	135
7	Medline	(hypercoagul*).ti,ab	5108
8	Medline	(2 AND 3 AND 7)	10
9	Medline	(thrombo*).ti	79835
10	Medline	(2 AND 3 AND 9)	14
11	Medline	(2 AND 9)	288
12	Medline	("Platelet Aggregation").af	65338
13	Medline	(2 AND 3 AND 12)	18
14	Medline	(anticoagul*).ti,ab,af	109806
15	Medline	(2 AND 3 AND 14)	113
16	Medline	(5 AND 15)	55
17	Medline	(Thrombophilia).ti,ab,af	8525
18	Medline	(2 AND 3 AND 17)	55
20	EMBASE	exp "VENOUS THROMBOEMBOLISM"/	125430

21	EMBASE	(VTE OR "venous thromboembolism").ti,ab	27022
22	EMBASE	(20 OR 21)	130319
23	EMBASE	(abortion* OR miscarriage* OR termin*).ti,ab	741082
24	EMBASE	exp "SPONTANEOUS ABORTION"/	35647
25	EMBASE	exp "INDUCED ABORTION"/	33473
26	EMBASE	(23 OR 24 OR 25)	764119
27	EMBASE	exp "FIRST TRIMESTER PREGNANCY"/	32834
28	EMBASE	("first trimester" OR "1st trimester").ti,ab	28313
29	EMBASE	(27 OR 28)	42658
30	EMBASE	(22 AND 26 AND 29)	94
31	EMBASE	exp HYPERCOAGULABILITY/	9197
32	EMBASE	(26 AND 29 AND 31)	0
33	EMBASE	(25 AND 31)	13
34	EMBASE	exp "SURGICAL ABORTION"/	599
35	EMBASE	exp "INCOMPLETE ABORTION"/	537
36	EMBASE	(34 OR 35)	1096
37	EMBASE	(22 AND 36)	6
38	EMBASE	exp "DILATION AND EVACUATION"/	544
39	EMBASE	(22 AND 38)	0
40	EMBASE	(thrombo*).ti,ab	439822

41	EMBASE	(36 AND 40)	11
42	EMBASE	(31 AND 36)	0
43	EMBASE	(31 AND 38)	0
44	EMBASE	exp ANTICOAGULATION/	43584
45	EMBASE	(38 AND 44)	0
46	EMBASE	(36 AND 44)	2
47	EMBASE	exp "BLOOD CLOTTING"/	200828
48	EMBASE	(36 AND 47)	8
49	EMBASE	(26 AND 29 AND 47)	82
50	CINAHL	exp "VENOUS THROMBOEMBOLISM"/	2791
51	CINAHL	exp "ABORTION, INCOMPLETE"/	60
52	CINAHL	(50 AND 51)	0
53	CINAHL	exp "DILATATION AND CURETTAGE"/	355
54	CINAHL	(50 AND 53)	0
55	CINAHL	exp "ABORTION, INDUCED"/	5220
56	CINAHL	(50 AND 55)	2
57	Medline	("Abortion, Induced").ti,ab,af	27892
58	Medline	(1 AND 57)	7
59	Medline	(termin* ADJ2 pregn*).ti,ab,af	9539
60	Medline	(1 AND 59)	11
61	EMBASE	(25 AND 31)	13

62	EMBASE	(31 AND 34)	0
63	EMBASE	(31 AND 34 AND 44)	0
64	EMBASE	(34 AND 44)	2
65	EMBASE	exp "BLOOD CLOTTING DISORDER"/	639379
66	EMBASE	(34 AND 65)	15
67	EMBASE	(38 AND 40)	8
68	EMBASE	(34 AND 40)	6