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Risk of VTE or PE in Gynaecological Laparoscopic Surgery

1. **Should Laparoscopy be Performed in the Morbidly Obese? An Expert Opinion Supporting Conventional Laparoscopy and Intraoperative Considerations for the Patient with Obesity with Benign Gynaecological Conditions.**

   Item Type: Journal Article

   Authors: Barbaresso R.;Parikh S. and Pasic, R.

   Publication Date: 2024

   Journal: Gynecology and Obstetrics Clinical Medicine 4(3) (pagination), pp. Article Number: e000049. Date of Publication: 07 Se 2024

   URL: https://libkey.io/libraries/2828/openurl?genre=article&sid=OVID:embase&id=pmid:&id=doi:10.1136%2Fgocm-2024-000049&issn=2667-1646&isbn=&volume=4&issue=3&spage=e000049&pages=&date=2024&title=Gynecology+and+Obstetrics+Clinical+Medicine&atitle=Should+Laparoscopy+be+Performed+in+the+Morbidly+Obese%3F+An+Expert+Opinion+Supporting+Conventional+Laparoscopy+and+Intraoperative+Considerations+for+the+Patient+with+Obesity+with+Benign+Gynaecological+Conditions&aulast=Barbaresso&pid=%3Cauthor%3EBarbaresso+R.%3BParikh+S.%3BPasic+R.%3C%2Fauthor%3E%3CAN%3E2037004470%3C%2FAN%3E%3CDT%3EEditorial%3C%

2FDT%3E

2. **Adverse events related to Trendelenburg position during laparoscopic surgery: Recommendations and review of the literature.**

Item Type: Journal Article

Authors: Arvizo C.;Mehta S.T. and Yunker, A.

Publication Date: 2018

Journal: Current Opinion in Obstetrics and Gynecology 30(4), pp. 272–278

Abstract: Purpose of review Laparoscopy is routinely performed for the treatment and management of gynaecologic disorders. During gynaecologic laparoscopy, the patient is placed in the Trendelenburg position to optimize visualization and access to the pelvis. The Trendelenburg position may result in complications in many organ systems. Recent findings Trendelenburg positioning may cause rare, potentially life-threatening complications of the respiratory and cardiovascular systems. Case reports of visual field loss and cognitive aberrations following Trendelenburg positioning have been published. Few intervention studies have been performed evaluating attenuation of changes in intraocular pressure and haemodynamics. Summary This review summarizes possible complications related to the Trendelenburg position and current evidence regarding interventions to minimize the risk of complications.Copyright © 2018 Wolters Kluwer Health, Inc.

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3. **Risk factors associated with venous thromboembolism in laparoscopic surgery in non-obese patients with benign disease.**

Item Type: Journal Article

Authors: Kano D.;Hu C.;Thornley C.J.;Cruz C.Y.;Soper N.J. and Preston, J. F.

Publication Date: 2023

Journal: Surgical Endoscopy 37(1), pp. 592–606

Abstract: Introduction: Few studies have focused on intraoperative positioning as a risk factor for venous thromboembolism (VTE). Positioning that places the legs in a dependent position may be a risk factor. We theorized that the reverse-Trendelenburg position specifically would increase the risk of postoperative VTE. Methods and procedures: 374,017 subjects undergoing laparoscopic surgery in the 2015-2018 NSQIP database were included. Diagnosis of cancer and BMI >= 30 were excluded. Subjects were grouped based on positioning: reverse-Trendelenburg (RT), supine (S), and Trendelenburg (T). Result(s): The RT, S, and T groups consisted of 117,887, 66,511, and 189,619 subjects, respectively. Overall median BMI was 25.7, and 82.8% of subjects were non-smokers. VTE within 30 days postoperative was seen in 0.25% RT, 0.23% S, and 0.4% T (p 106 min) vs 1st (106 min) vs 1st (Conclusion(s): Among other risk factors, inpatient procedures and longer operative times are associated with higher VTE risk in laparoscopic surgery performed for benign disease in non-obese patients. The risk was significantly different across the three positioning groups with lowest risk in the RT group and highest risk in the S group.Copyright © 2022, The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature.

4. **Incidence of and Risk Factors for Postoperative Venous Thromboembolism in Benign Hysterectomy.**

Item Type: Journal Article

Authors: Duyar S.;Mou T.;Mueller M.G.;Kenton K.S. and Bretschneider, C. E.

Publication Date: 2022

Journal: Journal of Minimally Invasive Gynecology 29(2), pp. 231–236.e1

Abstract: Study Objective: Describe the incidence of and risk factors associated with postoperative venous thromboembolism (VTE) in patients undergoing hysterectomy for benign indications with emphasis on the impact of route of surgery. Design(s): Retrospective cohort. Setting(s): National Surgical Quality Improvement Project Database. Participant(s): Data of women aged 18 years and older who underwent hysterectomy for benign indications between 2014 and 2018 were abstracted. Intervention(s): Cases were identified by Current Procedural Terminology codes and International Classification of Diseases codes. Patient demographics, preoperative comorbidities, American Society of Anesthesiologists (ASA) classification system scores, total operating time, length of stay, readmission, reoperation, VTE including deep vein thrombosis and pulmonary embolism were collected. Cases were stratified by route of hysterectomy. Measurements and Main Results: t test and multivariable logistic regression were used for analysis. A total of 94 940 patients underwent hysterectomy, of which 23 081 (24.3%) underwent abdominal hysterectomy, 56 656 (59.7 %) laparoscopic hysterectomy, and 15 203 (16.0%) vaginal hysterectomy. The overall incidence of VTE was 0.4%. The incidence of VTE was higher for abdominal (0.7%), than laparoscopic (0.3%, p Conclusion(s): Postoperative VTE after hysterectomy for benign indications is rare. The risk of postoperative VTE is higher in patients undergoing abdominal hysterectomy compared with minimally invasive hysterectomy including laparoscopic and vaginal routes of surgery. In addition, the risk of VTE may be higher with higher ASA class.Copyright © 2021 AAGL

5. **Validation of two risk assessment models for venous thromboembolism in patients undergoing gynecologic surgery.**

Item Type: Journal Article

Authors: Guo T.;Li M.;Sang C.Q.;Zhang Z.Y.;Guo R.;Lu R.;Qu P.;Cao W.;Zhao W.;Li B.;Wang J.L.;Zhai J.J.;Song L. and Zhang, Z. Q.

Publication Date: 2022

Journal: Annals of Translational Medicine 10(1) (pagination), pp. Article Number: 18. Date of Publication: 01 Jan 2022

Abstract: Background: According to published guidelines, gynecologic surgical patients should be stratified into different risk level groups to receive prophylaxis for venous thromboembolism (VTE), but the applicability of available risk assessment models (RAMs) in common gynecologic surgical patients remained to be confirmed. We aimed to validate the use of the Caprini RAM and gynecologic Caprini (G-Caprini) RAM for assessing postoperative VTE risk in gynecologic surgical patients. Method(s): The database of a randomized controlled trial (RCT) was used to select patients who underwent gynecologic surgeries for benignant and malignant diseases in five institutions in China between 2011 and 2018. The Caprini RAM version recommended by the American College of Chest Physicians (ACCP) was adopted. Participants were divided into four risk levels based on the Caprini and G-Caprini scores. For each risk level group, the incidence of VTE was calculated. The correlation between VET incidence and risk levels was assessed by Spearman's rank correlation coefficient (RS) value. Result(s): As a result, 800 patients in the data base were analyzed with an overall VTE incidence of 5.8%. Caprini RAM showed that the percentage of patients at very low risk, low risk, moderate risk, and high risk were 0%, 4.3%, 44.4%, and 51.4%, respectively, and the VTE incidence was 2.9%, 2.3%, and 9.0%, respectively. RS value between the risk stratification and VTE incidence was 0.500 (P=0.667). G-Caprini RAM showed that the percentage of patients at very low risk, low risk, moderate risk, and high risk were 7.8%, 28.0%, 32.0%, and 32.3%, respectively, and the VTE incidence was 0.0%, 2.9%, 2.3%, and 9.0%, respectively. RS value between the risk stratification and VTE incidence was 1.000 (PConclusion(s): The G-Caprini RAM was as suitable as the Caprini RAM for VTE risk assessment in gynecologic surgical patients. The gynecologic model has the advantages of ease of use and more accurate identification of low-risk groups.

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6. **Risk of deep vein thrombosis and pulmonary embolism after gynecological day surgery.**

Item Type: Journal Article

Authors: Jensen L.B.;Jeppesen U. and Bor, P.

Publication Date: 2022

Journal: European Journal of Obstetrics and Gynecology and Reproductive Biology 270, pp. 1–5

Abstract: Objective: To investigate the risk of venous thromboembolism (VTE) in Danish women operated within a day surgery setting and to evaluate whether the current use of thromboprophylaxis without using graduated elastic compression stockings (GCS) is an appropriate treatment to prevent VTE. Study design: A retrospective cohort study including women who underwent laparoscopic hysterectomy or vaginal prolapse operation for benign disease from January 2014 to December 2017 at the Gynecology Day Surgery Unit, Regional Hospital of Randers, Denmark. The primary outcome was VTE diagnosed within three months postoperatively. Only one dose of pharmacological thromboprophylaxis (PTP) was given to women stratified at high risk of VTE. None of the women used GCS. Result(s): A total of 671 women were included. Vaginal prolapse operations were performed on 626 women, and laparoscopic hysterectomy on 45 women. PTP was used for only 220 (32.8%) of these women. A total of 346 (51.5%) women were stratified as at high risk of VTE according to the national recommendations. Only 218 (63%) of these women received PTP, while 128 women (37%) did not receive PTP. The incidence of VTE within three months postoperatively was 0%. Only 13 (1.9%) of the women were readmitted within 14 days postoperatively due to hemorrhaging or hematoma; six out of these 13 women (46%) received PTP postoperatively. Re-operation was performed in seven (1%) women due to hemorrhaging, and three out of the seven (42.9%) had PTP postoperatively. Conclusion(s): The risk of VTE in Danish women operated within a day surgery setting is probably very low since we found no cases of VTE in our setup. The beneficial effect of routine use of GCS and one dose of PTP postoperatively given to all women who had undergone MIS in a day surgery setting are questioned. One dose of PTP postoperatively without GCS can be considered to only women stratified as high-risk of VTE until there is more evidence whether these women actually need thromboprophylaxis postoperatively at all. Precis: The incidence of VTE in women undergoing laparoscopic hysterectomy or vaginal prolapse operation in a day surgery setting without using graduated elastic compression stockings is very low.

URL: https://libkey.io/libraries/2828/openurl?genre=article&sid=OVID:embase&id=pmid:34998107&id=doi:10.1016%2Fj.ejogrb.2021.12.027&issn=0301-2115&isbn=&volume=270&issue=&spage=1&pages=1-5&date=2022&title=European+Journal+of+Obstetrics+and+Gynecology+and+Reproductive+Biology&atitle=Risk+of+deep+vein+thrombosis+and+pulmonary+embolism+after+gynecological+day+surgery&aulast=Jensen&pid=%3Cauthor%3EJensen+L.B.%3BJeppesen+U.%3BBor+P.%3C%2Fauthor%3E%3CAN%3E2016344091%3C%2FAN%3E%3CDT%3EArticle%3C%2FDT%3E

7. **Influence of steep Trendelenburg position on postoperative complications: a systematic review and meta-analysis.**

Item Type: Journal Article

Authors: Katayama S.;Mori K.;Pradere B.;Yanagisawa T.;Mostafaei H.;Quhal F.;Motlagh R.S.;Laukhtina E.;Grossmann N.C.;Rajwa P.;Aydh A.;Konig F.;Karakiewicz P.I.;Araki M.;Nasu Y. and Shariat, S. F.

Publication Date: 2022

Journal: Journal of Robotic Surgery 16(6), pp. 1233–1247

Abstract: Intraoperative physiologic changes related to the steep Trendelenburg position have been investigated with the widespread adoption of robot-assisted pelvic surgery (RAPS). However, the impact of the steep Trendelenburg position on postoperative complications remains unclear. We conducted a meta-analysis to compare RAPS to laparoscopic/open pelvic surgery with regards to the rates of venous thromboembolism (VTE), cardiac, and cerebrovascular complications. Meta-regression was performed to evaluate the influence of confounding risk factors. Ten randomized controlled trials (RCTs) and 47 non-randomized controlled studies (NRSs), with a total of 380,125 patients, were included. Although RAPS was associated with a decreased risk of VTE and cardiac complications compared to laparoscopic/open pelvic surgery in NRSs [risk ratio (RR), 0.59; 95% CI 0.51-0.72, p Copyright © 2021, The Author(s).

8. **Risk factors of deep vein thrombosis of lower extremity in patients undergone gynecological laparoscopic surgery: what should we care.**

Item Type: Journal Article

Authors: Tian Q. and Li, M.

Publication Date: 2021

Journal: BMC Women's Health 21(1) (pagination), pp. Article Number: 130. Date of Publication: 01 Dec 2021

Abstract: Background: Deep vein thrombosis (DVT) significantly influences the prognosis of patients. It's necessary to analyze the risk factors for postoperative DVT in patients undergone gynecological laparoscopic surgery. Method(s): Patients who underwent gynecological laparoscopic surgery from January 1, 2018 to May 31, 2020 were included. The characteristics and clinical data of DVT and non DVT patients were collected and analyzed. Logistic regression analysis was performed to identify the risk factors of DVT in patients undergone gynecological laparoscopic surgery. Result(s): A total of 355 patients undergone gynecological laparoscopic surgery were included, the incidence of postoperative DVT was 11.55%. There were significant differences in the age, hypertension, D-dimer, duration of surgery, intraoperative pneumoperitoneum pressure, duration of days in bed between DVT and non-DVT groups (all p 0.05). Age > 50 years (OR 4.246, 95% CI 1.234-7.114), hypertension (OR 2.219, 95% CI 1.153-4.591), D-dimer > 0.5 mg/L (OR 3.914, 95% CI 1.083-5.229), duration of surgery >= 60 min (OR 2.542, 95% CI 1.101-4.723), intraoperative pneumoperitoneum pressure >= 15 mmHg (OR 3.845, 95% CI 1.119-5.218), duration of days in bed > 3 days (OR 1.566, 95% CI 1.182-1.994) was the independent risk factors for DVT in patients undergone gynecological laparoscopic surgery (all p Conclusion(s): The incidence of postoperative DVT in patients undergone gynecological laparoscopic surgery is high, and those high-risk factors should be targeted to intervene in order to reduce the postoperative DVT.Copyright © 2021, The Author(s).

9. **Postoperative venous thromboembolism in gynecologic oncology patients undergoing minimally invasive surgery: Does modality matter?.**

Item Type: Journal Article

Authors: Wagar M.K.;Sobecki J.N.;Chandereng T.;Hartenbach E.M. and Wallace, S. K.

Publication Date: 2021

Journal: Gynecologic Oncology 162(3), pp. 751–755

Abstract: Objectives: Minimally invasive surgery (MIS) is increasingly utilized for gynecologic cancers. While incidence of venous thromboembolism (VTE) after MIS is low, some guidelines recommend extended chemoprophylaxis for these patients undergoing MIS. Our objectives were to determine incidence of postoperative VTE in patients undergoing MIS, evaluate differences in the incidence by MIS modality and assess the need for extended chemoprophylaxis. Method(s): We conducted a retrospective cohort study including all patients undergoing MIS (robot-assisted, multi-port laparoscopy, single-port laparoscopy) for gynecologic cancers between January 2014 and December 2018 at our institution. Demographic and perioperative variables were collected. Patients Method(s): We conducted a retrospective cohort study including all patients undergoing MIS (robot-assisted, multi-port laparoscopy, single-port laparoscopy) for gynecologic cancers between January 2014 and December 2018 at our institution. Demographic and perioperative variables were collected. Patients Result(s): We identified 806 patients who underwent MIS with median age 61. Most had Stage I disease (81.5%) and uterine cancer (81.5%). Five VTE events occurred within 90 days following surgery (0.6%). Incidence of 90-day VTE did not differ between MIS modalities (p = 0.6). Patients with longer OR times (p = 0.004) were more likely to experience VTE. Age, smoking status, BMI, type of cancer and stage were not significant risk factors for VTE. Conclusion(s): The incidence of postoperative VTE in patients with gynecologic cancers undergoing MIS is low and does not appear to differ by MIS modality. Given the very low incidence of postoperative VTE, extended chemoprophylaxis is unlikely to benefit patients with gynecologic malignancies undergoing MIS procedures.Copyright © 2021 Elsevier Inc.

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10. **Incidence and risk factors for venous thromboembolism events after different routes of pelvic organ prolapse repairs.**

Item Type: Journal Article

Authors: Chong W.;Bui A.H. and Menhaji, K.

Publication Date: 2020

Journal: American Journal of Obstetrics and Gynecology 223(2), pp. 268.e1–268.e26

Abstract: Background: Venous thromboembolism events, including deep venous thrombosis and pulmonary embolism are the most common cause of preventable deaths in hospitalized patients in the United States. Although the risk of venous thromboembolism events in benign gynecologic surgery is generally low, the potential for venous thromboembolism events in urogynecologic population is significant because most patients undergoing the pelvic organ prolapse surgery have increased surgical risk factors. Objective(s): This study aimed to investigate the incidence and risk factors for venous thromboembolism events within 30 days after different routes of the pelvic organ prolapse surgery in a large cohort population using the American College of Surgeons-National Surgical Quality Improvement Program. Study Design: This retrospective cohort study used Current Procedural Terminology codes to identify pelvic organ prolapse repairs with and without concurrent hysterectomy performed during 2011-2017 in the American College of Surgeons-National Surgical Quality Improvement Program database. Demographics, preoperative length of hospital stay, operative time, preoperative comorbidities, smoking status, American Society of Anesthesiologists classification system scores, along with other variables were collected. Postoperative 30-day complications, including readmission, reoperation, and mortality, were collected. The incidence rates of venous thromboembolism, as defined by American College of Surgeons-National Surgical Quality Improvement Program, were compared among different surgical routes. Descriptive statistics were used, and logistic regression was performed to identify associations. Result(s): Among 91,480 pelvic organ prolapse surgeries identified, 63,108 were analyzed: 43,279 (68.6%) were performed vaginally, 16,518 (26.2%) laparoscopically, and 3311 (5.2%) abdominally. A total of 34,698 (55.0%) underwent a concurrent hysterectomy. Of 63,108 subjects, 133 developed venous thromboembolism within 30 days after surgery (0.21%; 95% confidence interval, 0.18-0.25; P Conclusion(s): The overall incidence of venous thromboembolism after pelvic organ prolapse repairs based on a recent, large cohort database was very low, confirming the finding in previous smaller cohort studies. The highest venous thromboembolism risk was associated with abdominal route, and more than 60% of venous thromboembolism events occurred within 10 days after surgery. Thus, focus should be placed on risk-reducing strategies in the immediate postoperative period, with greater emphasis on patients undergoing abdominal surgery.Copyright © 2020 Elsevier Inc.

11. **The risk factors for perioperative venous thromboembolism in patients with gynecological malignancies: A meta-analysis.**

Item Type: Journal Article

Authors: Ma S.G.;Hu J. and Huang, Y.

Publication Date: 2020

Journal: Thrombosis Research 196, pp. 325–334

Abstract: Objective: This meta-analysis aimed to identify the risk factors for venous thromboembolism (VTE) in patients with gynecological malignancy during the perioperative period. Method(s): Studies on the risk factors for VTE in patients with gynecological malignancy during the perioperative period were collected from the Cochrane Library, MEDLINE, EMBASE, Web of Science, EBSCO, and several Chinese databases (from inception to September 2019). Two reviewers independently performed article screening, data extraction, and study quality evaluation. Review Manager 5.3 software was used for data analysis. Result(s): A total of 9555 articles were initially retrieved, including 7498 in Chinese and 1987 in English, and 22 articles were finally included, which were published from 2011 to 2019. The quality scores of the included studies ranged from 5 to 9, suggesting a relatively high quality. A total of 16,318 patients were included for analysis, 922 in the VTE group and 15,396 in the non-VTE group. A total of 20 risk factors related to surgery or with inconsistent conclusions in the current studies were pooled, and the results showed that age, body mass index (BMI > 26 kg/m2), platelet count, D-dimer, duration of surgery, postoperative days in bed, length of hospital stay, intraoperative blood loss, tumor differentiation (GREAD3), tumor staging (stage IV), and operative approach (laparotomy versus laparoscopy) were significant risk factors for VTE in patients with gynecological malignancy during the perioperative period. Conclusion(s): It is important to develop targeted prevention and treatment strategies against these risk factors to reduce the occurrence of VTE in patients with gynecological malignancy during the perioperative period.Copyright © 2020

12. **Evaluation of risk factors for venous thromboembolism in patients who underwent gynecological surgery and validation of a fast-rating assessment table.**

Item Type: Journal Article

Authors: Yang T.;Tian S.;Wang Y.;Zhao J.;Pei M.;Zhao M.;Wang L.;Guo Y. and Yang, X.

Publication Date: 2019

Journal: Medical Science Monitor 25, pp. 8814–8819

Abstract: Background: The aim of this study was to retrospectively analyze the risk factors for venous thromboembolism (VTE) in gynecological patients and verify the validity of a fast-rating assessment table. Material/Methods: From October 2015 to October 2017, 53 patients complicated with VTE after gynecological operations were analyzed, and a total of 106 patients with 2 adjacent operations were selected as the control group. Factors such as age, body mass index (BMI), and tumor type were analyzed by univariate and multivariate analysis. A fast-rating assessment table of VTE risk factors was constructed. This fast-rating assessment table and the Caprini score table were used to compare the scores of all patients. Result(s): In the univariate analysis, there were significant differences in BMI, tumor type, operation duration, blood loss, blood transfusion, bed rest time, and thrombus-related history between the 2 groups. In the multiple factor analysis, age >60 years old, BMI >28 kg/m2, malignant tumors, operation duration 33 hours, laparoscopic surgery and thrombus-related history were independent risk factors for VTE in patients. Both the fast-rating assessment table and the Caprini score table identified 90% of VTE patients as high-risk and very high-risk, and there was no significant difference between the tables. Conclusion(s): Patients with older age, high BMI, malignant tumors, longer operation duration, laparoscopic surgery, or history of thrombosis may be more prone to VTE after gynecologic surgery. The fast-rating assessment table is easy to operate and has a high recognition level for VTE. It can be applied widely.Copyright © Med Sci Monit, 2019; 25: 8814-8819

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13. **Guideline No. 386-Gynaecologic Surgery in the Obese Patient.**

Item Type: Journal Article

Authors: Yong P.J.;Thurston J.;Singh S.S. and Allaire, C.

Publication Date: 2019

Journal: Journal of Obstetrics and Gynaecology Canada 41(9), pp. 1356–1370.e7

Abstract: Objective: To provide gynaecologic surgeons with a contemporary review on the pre-, intra-, and postoperative issues of the obese patient and to provide guidance for optimization and strategies for safer surgical care. Intended Users: Physicians, including gynaecologists, family physicians, general surgeons; nurses, including registered nurses and nurse practitioners; medical trainees, including medical students, residents, and fellows; and all other health care providers. Target Population: Adult women (18 years and older) meeting criteria for obesity (body mass index >=30) and undergoing gynaecologic surgery. Outcome(s): Physiologic changes and comorbid conditions associated with obesity; the evidence for the impact of obesity on gynaecologic surgery; and preoperative, intraoperative, and postoperative interventions to reduce risk. Evidence: For this guideline, relevant studies were searched in the PubMed, EMBASE, Medline, and Cochrane databases. MeSH search terms included Gynecology, Obesity, Obesity/morbid, Overweight, Body mass index, Surgery, Laparoscopy, Laparotomy, Anesthesia, Intraoperative complications, Postoperative complications, Morbidity, and Mortality. Validation methods: The content and recommendations were drafted and agreed upon by the principal authors and members of the Gynaecology Committee. The Board of the Society of Obstetricians and Gynaecologists of Canada (SOGC) approved the final draft for publication. The quality of evidence was rated using the criteria described in the Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology framework. Benefits, Harms, and Costs: Obesity affects 1 in 5 Canadian adults. This guideline outlines strategies to improve outcomes in obese women undergoing gynaecologic surgery. Guideline Update: This SOGC clinical practice guideline will be automatically reviewed 5 years after publication. However, authors can propose another review date if they feel that 5 years is too short/long based on their expert knowledge of the subject matter. Sponsors: This guideline was developed with resources funded by the SOGC. SUMMARY STATEMENTS: 1 One in 5 Canadians is obese, with an increasing prevalence over time and with implications for multiple body systems (high). 2 Obesity is associated with widespread physiological changes and comorbid conditions that can impact the conduct of gynaecologic surgery (high). 3 Minimally invasive hysterectomy (vaginal, laparoscopic, robotic) is associated with fewer wound complications and shorter hospital stays compared with open hysterectomy in obese patients (moderate). 4 In women with benign conditions, increasing body mass index and obesity are associated with increased complications primarily with open hysterectomy, but less so with minimally invasive hysterectomy (high). 5 There is no evidence for continuing thromboprophylaxis after hospital discharge based solely on body mass index or obesity (very low). 6 Obese patients are prone to nerve injuries and pressure sores, particularly during long cases (strong). 7 Management of the panniculus depends on the patient's weight distribution, mobility of the panniculus, and surgeon preference (moderate). 8 In patients with elevated body mass index and central obesity, the umbilicus lies more caudally in relation to the aortic bifurcation when compared with lean counterparts (strong). RECOMMENDATIONS: 1 Surgical teams should measure body mass index as part of the preoperative evaluation (strong, high). 2 Surgical teams should recommend weight loss in obese patients, with consideration of referral to a dietitian or weight loss program; bariatric surgery may be an option with Class III obesity or Class II obesity with comorbidity (weak, very low). 3 Surgical teams should tailor preoperative investigations,

such as pulmonary and cardiac testing, in obese patients depending on current symptoms, comorbidities, and the type of surgery (weak, very low). 4 Surgical teams may consider screening for diabetes in obese patients based on symptoms, risk factors, and/or age; preoperative treatment of skin infections should be done in all obese patients, regardless of diabetic status (weak, low). 5 Surgical teams should counsel all obese patients to stop or wean smoking prior to gynaecologic surgery (strong, very low). 6 Surgical teams should identify patients with potential airway concerns (e.g. enlarged neck circumference) and consider referral to Anaesthesia for preoperative assessment (strong, very low). 7 Surgical teams should consider screening obese patients for obstructive sleep apnea (e.g., the STOP-BANG questionnaire) and make appropriate preoperative referral for those who screen positive (e.g., >=5) (strong, very low). 8 Wherever possible, surgeons should choose a minimally invasive approach to hysterectomy in obese patients, rather than laparotomy (strong, high). 9 Surgeons can consider using published weight-based dosing of cefazolin, gentamicin, and vancomycin; however, there is insufficient evidence to support re-dosing antibiotics intraoperatively or continuing postoperatively based on obesity alone (strong, low). 10 In obese patients undergoing gynaecologic surgery, surgical teams can use the Caprini score to estimate venous thromboembolism risk and thus whether to prescribe mechanical, pharmacological, or both types of thromboprophylaxis (strong, low). 11 For laparoscopy, patients should be positioned on a bed fitted to prevent slippage in Trendelenburg position, with the arms tucked at the sides and legs in low lithotomy position, using extra padding as necessary (strong, low). 12 Initial abdominal entry for laparoscopic cases should be based on several factors, including expertise of the surgeon, size and mobility of the panniculus, and selection of port placement to optimize triangulation and surgical visualization (strong, moderate). 13 Surgeons should have a low threshold to use the left upper quadrant for abdominal entry at laparoscopy in the obese patient (weak, low). 14 The abdomen can be insufflated initially to a high intraperitoneal pressure (25-30 mm Hg) for port placement and then should be maintained at or below 12-15 mm Hg, maintaining the lowest pressure possible that does not compromise visualization (strong, low). 15 In the admitted obese patient after gynaecologic surgery, surgical teams should optimize respiratory function including early ambulation, proper positioning, general respiratory care, opioid-sparing analgesics, and continuous positive airway pressure in selected cases (strong, very low).

14. **Incidence of venous thromboembolism after different modes of gynecologic surgery**

Item Type: Conference Proceeding

Authors: Jorgensen E.M., Li A., Modest A.M., Leung K., Moore Simas T.A. and Hur, H.C.

Publication Date: 2018
Lippincott Williams and Wilkins (E-mail: agents@lww.com),
Abstract: OBJECTIVE: To evaluate the incidence of postoperative venous thromboembolism after gynecologic surgery by mode of incision. METHOD(S): We conducted a retrospective cohort study of all patients who underwent gynecologic surgery from May 2006 to June 2015 at two tertiary care academic hospitals in Massachusetts. Billing and diagnosis codes were used to identify surgeries and cases of venous thromboembolism. RESULT(S): A total of 43,751 surgical encounters among 37,485 individual patients were noted during the study. The overall incidence of venous thromboembolism is 0.2% for all gynecologic surgeries, 0.7% for hysterectomy, and 0.2% for myomectomy. Compared with patients undergoing laparotomy, patients who underwent minimally invasive gynecologic surgery were less likely to develop venous thromboembolism (laparoscopy risk ratio 0.22, 95% CI 0.13-0.37; vaginal surgery risk ratio 0.07, 95% CI 0.04-0.12). This effect persisted when data were adjusted for other known venous thromboembolism risk factors such as age, race, cancer, medical comorbidities, use of pharmacologic thromboprophylaxis, admission status, and surgical time. CONCLUSION(S): Minimally invasive surgery is associated with a decreased risk of venous thromboembolism in patients undergoing gynecologic surgery, including hysterectomy and myomectomy. Although society guidelines and risk assessment tools do not currently account for mode of surgery when assessing venous thromboembolism risk and recommendations for prevention, there is a small but growing body of evidence in both general and gynecologic surgery literature that surgical approach affects a patient's risk of postoperative venous thromboembolism. Mode of surgery should be considered when assessing venous thromboembolism risk and planning venous thromboembolism prophylaxis for patients undergoing gynecologic surgery.Copyright © 2018 by the American College of Obstetricians and Gynecologists.

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3BHur+H.-C.%3C%2Fauthor%3E%3CAN%3E627083061%3C%2FAN%3E%3CDT%3EConference+Paper%3C%2FDT%3E

15. **Venous Thromboembolic Complications to Hysterectomy for Benign Disease: A Nationwide Cohort Study.**

Item Type: Journal Article

Authors: Kahr H.S.;ThorlaciusUssing O.;Christiansen O.B.;Skals R.K.;TorpPedersen C. and Knudsen, A.

Publication Date: 2018

Journal: Journal of Minimally Invasive Gynecology 25(4), pp. 715–723.e2

Abstract: AB Study Objective: To estimate the risk of venous thromboembolic complications after abdominal, laparoscopic, and vaginal hysterectomy when performed for benign disorders. Design(s): A nationwide cohort study (Canadian Task Force classification II-2). Setting(s): Data from Danish national registers on all women undergoing hysterectomy for benign conditions from 1996 to 2015.Patient(s): Women aged 18 years and older who underwent hysterectomy for benign disease were stratified into 3 groups according to the hysterectomy approach: abdominal, laparoscopic, or vaginal. Intervention(s): Hysterectomy. Measurements and Main Results: Eighty-nine thousand nine hundred thirty-one women met the inclusion criteria. Venous thromboembolism (VTE) as a diagnosis or cause of death was identified. The risk of postoperative VTE was examined with Cox proportional hazard models adjusting for age, surgical approach, and relevant comorbidities. The mean age was 49.9, 47.9, and 54.3 years for women with abdominal, laparoscopic, and vaginal hysterectomy, respectively. The crude incidences of VTE within 30 days after hysterectomy were 0.24% (n = 142), 0.13% (n = 12), and 0.10% (n = 21). The most important predictors of VTE were the approach to hysterectomy and a history of thromboembolic disease. In the multivariable analysis, the risk of VTE was significantly reduced with laparoscopic hysterectomy (hazard ratio [HR] = 0.51; 95% confidence interval [CI], 0.28-0.92; p =.03) and vaginal hysterectomy (HR = 0.39; 95% CI, 0.24-0.63; p <.001) when compared with the abdominal procedure. Data on postoperative heparin thromboprophylaxis were available in 53 566 patients, and the adjusted HR was 0.63 (95% CI, 0.42-0.96; p =.03) in patients receiving heparin thromboprophylaxis. Conclusion(s): The 30-day cumulative incidence of VTE after hysterectomy for benign conditions was low overall (0.19%). Laparoscopic hysterectomy and vaginal hysterectomy carry a lower risk than the abdominal procedure. Postoperative heparin thromboprophylaxis significantly reduces the risk of VTE and should be considered, especially if risk factors are present. Copyright © 2017 American Association of Gynecologic Laparoscopists

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Ussing+O.%3BChristiansen+O.B.%3BSkals+R.K.%3BTorp-Pedersen+C.%3BKnudsen+A.%3C%2Fauthor%3E%3CAN%3E620145348%3C%2FAN%3E%3CDT%3EArticle%3C%2FDT%3E

16. **Risk Factors for Venous Thromboembolism in Women Undergoing Hysterectomy**

Item Type: Conference Proceeding

Authors: Sedra S., Mallick R., Bougie O., Hopkins L., Singh S.S., Arendas K. and Chen, I.

Publication Date: 2018

Publication Details: Journal of Minimally Invasive Gynecology. Conference: 47th American Association of Gynecologic Laparoscopists (AAGL) Global Congress on Minimally Invasive Gynecologic Surgery (MIGS). MGM Grand Conference Center, Las Vegas United States. 25(7 Supplement) (pp S59-S60); Elsevier B.V.,
Abstract: Objective: To determine the incidence and risk factors for venous thromboembolism (VTE) in women undergoing hysterectomy for benign indication. Design(s): Retrospective cohort study. Setting(s): Hospitals participating in American College of Surgeons National Surgical Quality Improvement Program (NSQIP). Patient(s): Women who underwent hysterectomy for benign conditions between 2011 and 2016 in participating hospitals and included in participant use data file (PUF). Intervention(s): Data of eligible women was extracted from NSQIP PUF and women diagnosed with a venous thromboembolic event (pulmonary embolism and deep vein thrombosis) within thirty days of hysterectomy were compared with women who did not. Multivariate logistic regression models were constructed to control for clinical and perioperative factors. Measurements/Results: Between 2011 and 2016, 169,493 women underwent hysterectomy for benign indications. The overall incidence of VTE was 0.32%. Patient characteristics associated with increased risk of VTE included elevated body mass index (BMI) and ASA classification. Following adjustment for potential confounders, abdominal hysterectomy was associated with greater odds of VTE compared with laparoscopic (adjusted odds ratio 1.81; 95% CI 1.48-2.21) or vaginal approaches (aOR 2.31; 95% CI 1.62-3.28). Elevated odds of VTE were also observed with prolonged OR time (>150 vs Conclusion(s): Risk of VTE is low in women undergoing hysterectomy for benign indications. Patient risk factors include elevated BMI and ASA classification, while operative risk factors include abdominal route of surgery, blood transfusion, and longer operative time.Copyright © 2018

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17. **Thromboembolism prophylaxis in laparoscopic surgery for gynecologic benign diseases. Results of a single center experience in 922 procedures.**

Item Type: Journal Article

Authors: Sturlese E.;Triolo O.;Grasso R.;Lagana A.S.;Retto A.;Rossetti D.;Vitale S.G.;Sarpietro G. and De Dominici, R.

Publication Date: 2017

Journal: Annali Italiani Di Chirurgia 88, pp. 342–347

Abstract: AIM: The aim of this study is to assess the role of preoperative evaluation risk for venous tromboembolism (VTE) in patients submitted to laparoscopic surgery for gynecologic benign diseases. METHODS: Date from nine hundred twenty-two women affected by adnexal benign diseases treated with laparoscopic procedures were collected and included in this study. VTE risk was assessed by "on line Caprini score calculator". Patients with one or more negative risk factors for Caprini's score underwent to venous thromboembolism prophylaxis (VTP). The remainign of the patients did not recived any VTP. A survey was conducted after three months from the discharge in order to collect the follow up date. RESULTS: In our study 160 patients had a Caprini's score major than 2 and they have been subjected to VTP. A total of 762 patients were considered at low risk for VTE and they did not receive any VTP. In these patients was not registered any event of VTE. DISCUSSION: The results of this study suggest that laparoscopic approach, when carried out in non-oncological patients and without any previous thromboembolic risk factor, is associated with a very low risk of VTE. This study also confirm what was reported by Ageno et al. 6, Nick et al. 7 and ACCP guidelines in 2012 8 in which routine thromboprophylaxis is recommended for patients with additional risk factors. CONCLUSIONS: Laparoscopic surgery in women for gynecologic benign diseases is associated with a very low risk of thromboembolism and therefore it does not require any mechanical or pharmacological thromboprophylaxis in the absence of risk factors. The systematic evaluation of VTE risk with the help of a standard calculator is highly recommended. KEY WORDS: Gynaecology, Laparoscopic surgery, Thromboprophylaxis.

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18. **Venous thromboembolism in minimally invasive compared with open hysterectomy for endometrial cancer.**

Item Type: Journal Article

Authors: Barber E.L.;Gehrig P.A. and ClarkePearson, D. L.

Publication Date: 2016

Journal: Obstetrics and Gynecology 128(1), pp. 121–126

Abstract: OBJECTIVE: To evaluate whether minimally invasive surgery for endometrial cancer is independently associated with a decreased odds of venous thromboembolism compared with open surgery. METHOD(S): We performed a secondary analysis cohort study of prospectively collected quality improvement data and examined patients undergoing hysterectomy for endometrial cancer from 2008 to 2013 recorded in the National Surgical Quality Improvement Program database. Patients undergoing minimally invasive (laparoscopic or robotic) surgery were compared with those undergoing open surgery with respect to 30-day postoperative venous thromboembolism. Demographic and procedure variables were examined as potential confounders. Data regarding receipt of perioperative venous thromboembolism prophylaxis were not available. Bivariable tests and logistic regression were used for analysis. RESULT(S): Of 9,948 patients who underwent hysterectomy for the treatment of endometrial cancer, 61.9% underwent minimally invasive surgery and 38.1% underwent open surgery. Patients undergoing minimally invasive surgery had a lower venous thromboembolism incidence (0.7%, n47) than patients undergoing open surgery (2.2%, n80) (PCONCLUSION(S): Minimally invasive surgery for the treatment of endometrial cancer is independently associated with decreased odds of venous thromboembolism compared with open surgery.Copyright © 2016 by The American College of Obstetricians and Gynecologists. Published by Wolters Kluwer Health, Inc.

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19. **Risk of Venous Thromboembolism After Laparoscopic Surgery for Gynecologic Malignancy.**

Item Type: Journal Article

Authors: Mahdi, Haider;Aljebori, Qataralnada;Lockart, David and Moulton, Laura

Publication Date: Nov ,2016

Journal: Journal of Minimally Invasive Gynecology 23(7), pp. 1057–1062

Abstract: STUDY OBJECTIVE: To determine the incidence of venous thromboembolism (VTE) after laparoscopic surgery for gynecologic cancer. DESIGN: Retrospective analysis of the ACS-NSQIP database (Canadian Task Force Classification II.1). SETTING: Academic and community healthcare institutions across the United States. PATIENTS: Women who underwent at least 1 major laparoscopic surgery for uterine, ovarian, and cervical cancers. INTERVENTION: Data were collected on surgical procedures, patient demographic variables, type of malignancy and VTE, and mortality outcomes within 30 days of surgery. MEASUREMENTS AND MAIN RESULTS: VTE was defined as deep venous thrombosis requiring therapy and pulmonary embolism confirmed by imaging or autopsy within 30 days of surgery. Of the 2219 patients included in the final analysis, 15 patients (.7%) were diagnosed with VTE within 30 days after surgery. Six patients (.3%) were diagnosed before discharge, and 9 patients (.4%) were diagnosed after discharge. The median time from surgery to diagnosis was 6 days (range, 0-28 days). Although most patients included in the study had uterine cancer (86%, n = 1913), no difference was noted based on the site of cancer (.5% for cervical cancer, .7% for endometrial cancer, and .8% for ovarian cancer; p = .95). There was no difference in rate of VTE when stratified by age (p = .10), body mass index (p = .68), diabetes (p = .22), smoking (p = .60), respiratory morbidities (p = .55), cardiac disease (p = .22), hypertension (p = .13), preoperative blood transfusion (p = .90), or American Society of Anesthesiologists class (p = .10). There was a trend toward higher risk of VTE among patients with disseminated cancer compared with those with early cancers (3.6% vs .6%, p = .05). No difference was found in the risk of VTE based on operative time (.7% for 3 hours; p = .96). No difference was noted in the risk of VTE among those who underwent lymphadenectomy compared with those who did not (.9% vs .5%, p = .35). In multivariable logistic regression analysis adjusting age (p = .12), body mass index (p = .90), operative time (p = .71), and lymphadenectomy (p = .30), none of these variables was significantly associated with risk of VTE. In multivariable analysis adjusting for other confounders, VTE within 30 days was a significant predictor of higher 30-day mortality (OR, 26.0; 95% CI, 2.2-306.9; p = .01). CONCLUSION: The rate of VTE is low after major laparoscopic surgery for gynecologic cancers but is associated with increased 30-day mortality. Universal or extended thromboprophylaxis does not appear to be indicated for all patients. Further studies are needed to identify patients at high risk for postoperative VTE who may benefit from pharmacologic prophylaxis.

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20. **Risk of venous thromboembolism in abdominal versus minimally invasive hysterectomy for benign conditions.**

Item Type: Journal Article

Authors: Barber E.L.;Neubauer N.L. and Gossett, D. R.

Publication Date: 2015

Journal: American Journal of Obstetrics and Gynecology 212(5), pp. 609.e1–609.e7

Abstract: Objective We sought to describe the incidence of venous thromboembolism (VTE) following hysterectomy for benign conditions and to estimate if VTE incidence differs for abdominal and minimally invasive hysterectomy. Study Design Data for patients who underwent hysterectomy for benign conditions from 2010 through 2012 were abstracted from the American College of Surgeons National Surgical Quality Improvement Program database. Cases of VTE were compared to those without VTE. Minimally invasive hysterectomy was defined as both vaginal and laparoscopic hysterectomy. Pearson chi2 test, Student t test, and binary logistic regression were used for analysis. Results A total of 44,167 patients underwent hysterectomy; 12,733 (28.8%) underwent open hysterectomy, 22,559 (51.1%) underwent laparoscopic hysterectomy, and 8875 (20.1%) underwent vaginal hysterectomy. The incidence of VTE for open hysterectomy was higher (0.6%, 81/12,733) than minimally invasive hysterectomy (0.2% 73/31,434, P test, Student t test, and binary logistic regression were used for analysis. Results A total of 44,167 patients underwent hysterectomy; 12,733 (28.8%) underwent open hysterectomy, 22,559 (51.1%) underwent laparoscopic hysterectomy, and 8875 (20.1%) underwent vaginal hysterectomy. The incidence of VTE for open hysterectomy was higher (0.6%, 81/12,733) than minimally invasive hysterectomy (0.2% 73/31,434, P

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21. **Predicting of venous thromboembolism for patients undergoing gynecological surgery.**

Item Type: Journal Article

Authors: Qu H.;Li Z.;Zhai Z.;Liu C.;Wang S.;Guo S. and Zhang, Z.

Publication Date: 2015

Journal: Medicine (United States) 94(39), pp. e1653

Abstract: The purpose of this study was to determine the risk stratification of deep venous thrombosis (DVT) in patients undergoing gynecological surgery. A retrospective study was conducted with a cohort of 739 consecutive female patients undergoing gynecological surgery between May 2008 and July 2013 in Beijing Chao-yang hospital. DVT of the leg was detected using complete compression and color Doppler ultrasound. Pulmonary embolism (PE) was diagnosed by computed tomography pulmonary angiogram (CTPA). The overall incidence of DVT was 9.20% (68/739) in this patient population, including 16 (2.17%) symptomatic DVT and 52 (7.04%) silent DVT. A total of 66 (97.06%) DVT events were found within 7 days of surgery and 2 (2.94%) after 1 week. 94.82% thrombi were located in distal vein, and the rest 5.18% located in proximal and distal veins. Among the 68 patients with DVT, 46 patients with suspected PE received CTPA and 21 (45.65%) were confirmed with PE. Six independent factors including varicose vein, bed rest time >=48 h, length of operation >=3 h, laparotomy surgery, hypertension, and age >=50 years significantly increased the incidence of postoperative DVT on multivariate analysis. Patients with none risk factor are at low risk, with 1 or 2 risk factors are at moderate risk, and with >=3 factors are at high risk of DVT. The incidence of postoperative DVT and PE after gynecological surgery is high in patients with moderate or high-risk level. Noninvasive detection of DVT in 7 days after surgery is necessary because most patients showed no typical symptoms. Appropriate prophylaxis could be performed in patients at moderate or high risk of DVT.

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22. **Risk factors for venous thromboembolism after hysterectomy.**

Item Type: Journal Article

Authors: Swenson, Carolyn W.;Berger, Mitchell B.;Kamdar, Neil S.;Campbell, Darrell A. Jr and Morgan, Daniel M.

Publication Date: May ,2015

Journal: Obstetrics & Gynecology 125(5), pp. 1139–1144

Abstract: OBJECTIVE: To assess the prevalence of and risk factors for venous thromboembolism after hysterectomy. METHODS: This is a retrospective analysis of data from a voluntary, statewide surgical quality improvement collaborative. Demographics and perioperative data were obtained for hysterectomies performed from January 1, 2008, to April 4, 2014. Postoperative venous thromboembolism was defined as a deep vein thrombosis, pulmonary embolism, or both diagnosed within 30 days of hysterectomy. Significant variables related to postoperative venous thromboembolism were identified using bivariate analyses, and then logistic mixed modeling was used to develop a final model for venous thromboembolism. RESULTS: The rate of postoperative venous thromboembolism was 0.5% (110/20,496). Women who had a postoperative venous thromboembolism more frequently had a body mass index 35 or greater (40.0% compared with 25.2%, odds ratio [OR] 1.96, 95% confidence interval [CI] 1.08-3.56, P=.03), abdominal hysterectomy (referent nonabdominal hysterectomy; 61.8% compared with 29.9%, OR 2.67, 95% CI 1.46-4.86, P=.001), and gynecologic cancer as the indication for surgery (16.4% compared with 9.6%, OR 2.49, 95% CI 1.22-5.07, P=.01). Increasing surgical time (hours; referent 1 hour; OR 1.55, 95% CI 1.31-1.84, PCONCLUSION: Body mass index 35 or greater, abdominal hysterectomy, increasing surgical time, and cancer as the indication for surgery are risk factors for venous thromboembolism after hysterectomy. LEVEL OF EVIDENCE: III.

23. **Is venous thromboprophylaxis necessary in patients undergoing minimally invasive surgery for a gynecologic malignancy?.**

Item Type: Journal Article

Authors: BouchardFortier G.;Geerts W.H.;Covens A.;Vicus D.;Kupets R. and Gien, L. T.

Publication Date: 2014

Journal: Gynecologic Oncology 134(2), pp. 228–232

Abstract: Objectives Current recommendations for the use of venous thromboprophylaxis in patients undergoing minimally invasive surgery (MIS) for a gynecologic malignancy are derived from patients undergoing open surgery. Our objective was to determine the 30-day prevalence of symptomatic venous thromboembolism (VTE) after laparoscopic gynecologic oncology procedures in patients who received no thromboprophylaxis. Methods Between January 2006 and September 2013, women who underwent MIS for endometrial, cervical or ovarian cancer at a single institution were included. Data on patient demographics, diagnosis, comorbidities, perioperative characteristics, use of thromboprophylaxis, and diagnosis of VTE were collected retrospectively. Results Of the 419 patients who underwent MIS for a gynecologic cancer, 352 (84%) received no VTE prophylaxis. At least a total laparoscopic hysterectomy (simple or radical) or pelvic lymph node dissection was performed in 95% of these patients. The median length of surgery was 137 min and 95% of patients were discharged home within 1 day of surgery. The rate of VTE in the 352 untreated patients was 0.57% (1 pulmonary embolism and 1 deep vein thrombosis). There were no VTE diagnosed within 30 days of surgery in the 67 patients who received anticoagulant thromboprophylaxis. Conclusion The rate of VTE is low in patients undergoing minimally invasive surgery for a gynecologic malignancy despite no VTE prophylaxis. The benefits of routine use of VTE prophylaxis in this population are questionable. © 2014 Elsevier Inc.

24. **Gynecologic laparoscopy in patients aged 65 or more: Feasibility and safety in the presence of increased comorbidity.**

Item Type: Journal Article

Authors: Ciavattini A.;Di Giuseppe J.;Cecchi S.;Tsiroglou D.;Mancioli F.;Stevenazzi G.;Tranquilli A.L. and Litta, P.

Publication Date: 2014

Journal: European Journal of Obstetrics and Gynecology and Reproductive Biology 175(1), pp. 49–53

Abstract: Objectives: To evaluate the feasibility, operative outcome and postoperative complications of laparoscopic gynaecologic surgery in patients aged 65 or more, with increased comorbidity and obesity. Study design: The medical records of patients aged 65 or more with uterine or ovarian disease admitted to minimally invasive gynecologic surgery units from January 2009 to December 2011 were retrospectively analyzed in an observational cohort study. Surgical outcomes of the laparoscopic cohort (n = 65) were compared with the outcomes of those who had laparotomy (n = 67) at general gynecologic surgery units, and evaluated with respect to indication for surgery, medical comorbidity and obesity. Laparoscopic surgery was attempted in women who accepted minimally invasive management and who had no absolute contraindications to laparoscopy. Surgical inclusion criteria were benign and malignant uterine and adnexal pathologies; benign uterine pathologies when uterine size was less than 18 weeks' gestation or myoma smaller than 10 cm; malignancies in apparent early-stage disease. There was no attempt to use laparoscopy for tumor debulking and cytoreductive surgery. Exclusion criteria were patients with emergency operations or a concomitant urogynecologic procedure. Data were analyzed using Student's t-test, the Mann-Whitney U test, chi2 testing and the Fisher exact test. Result(s): Patients undergoing laparoscopy had a significantly shorter hospital stay (p Conclusion(s): According to the results of the study, laparoscopic surgery appears feasible and safe in elderly patients, regardless of medical comorbidity and obesity.

URL: https://libkey.io/libraries/2828/openurl?genre=article&sid=OVID:embase&id=pmid:24456844&id=doi:10.1016%2Fj.ejogrb.2013.12.035&issn=0301-2115&isbn=&volume=175&issue=1&spage=49&pages=49-53&date=2014&title=European+Journal+of+Obstetrics+and+Gynecology+and+Reproductive+Biology&atitle=Gynecologic+laparoscopy+in+patients+aged+65+or+more%3A+Feasibility+and+safety+in+the+presence+of+increased+comorbidity&aulast=Ciavattini&pid=%3Cauthor%3ECiavattini+A.%3BDi+Giuseppe+J.%3BCecchi+S.%3BTsiroglou+D.%3BMancioli+F.%3BStevenazzi+G.%3BTranquilli+A.L.%3BLitta+P.%3C%2Fauthor%3E%3CAN%3E52968162%3C%2FAN%3E%3CDT%3EArticle%3C%2FDT%3E

25. **Effects of patient position on lower extremity venous pressure during different types of hysterectomy.**

Item Type: Journal Article

Authors: Liu X.;Wang X.;Meng X.;Wang H. and An, Z.

Publication Date: 2014

Journal: Journal of Obstetrics and Gynaecology Research (pagination), pp. Date of Publication: 2014

Abstract: Aim: To explore the effects of different types of hysterectomy on lower extremity venous pressure. Method(s): Ninety-nine patients with benign uterine diseases who were indicated for hysterectomy were included in the present prospective study. Patients were divided into three groups according to their preferences: (i) total laparoscopic hysterectomy (TLH) group (n=36); (ii) transvaginal hysterectomy (TVH) group (n=32); and (iii) transabdominal hysterectomy (TAH) group (n=31). Lower extremity venous pressure was monitored using a pressure sensor during the surgery. Result(s): Compared with the supine position (TAH group, lower extremity venous pressure of intraoperative 16.50cmH2O), lower extremity venous pressure of the improved lithotomy position (TLH group, lower extremity venous pressure of intraoperative 53.27cmH2O) and conventional lithotomy position (TVH group, lower extremity venous pressure of intraoperative 42.09cmH2O) were significantly increased (PO) were significantly increased (PO) were significantly increased (PO) were significantly increased. Conclusion(s): Modified lithotomy position (TLH group) and conventional lithotomy position (TVH group) and CO2 pneumoperitoneum may result in increased lower extremity venous pressure during hysterectomy. Furthermore, elevated venous pressure can be altered by changing the intraoperative position. Specifically, intraoperative positioning of the lower extremities represents a modifiable risk factor for deep venous thrombosis. © 2014 Japan Society of Obstetrics and Gynecology.

26. **Lower extremity venous doppler evaluation in patients undergoing laparoscopic gynecological operations.**

Item Type: Journal Article

Authors: Kumbak B.;Poyraz A.K.;Baspinar M.;Sahin L. and Ozkan, Z. S.

Publication Date: 2013

Journal: Journal of Laparoendoscopic and Advanced Surgical Techniques 23(11), pp. 926–931

Abstract: Background: Laparoscopy is established as a standard of care in a variety of gynecological pathologies. Pneumoperitoneum and reverse Trendelenburg positioning during laparoscopy have been claimed to increase thrombosis risk, albeit these proposals are still controversial. The aim of this study was to assess lower extremity venous blood flow by Doppler sonography in patients undergoing laparoscopic gynecological surgeries. Patients and Methods: A prospective, nonrandomized, controlled study was designed to compare lower extremity venous Doppler measurements in patients undergoing diagnostic and operative gynecological laparoscopies. In the period from May 2010 to April 2011, in total, 96 patients operated on for various gynecological complaints excluding malignancy were enrolled in the study. Thirty-two of these patients underwent diagnostic laparoscopy, 34 underwent operative laparoscopy, and 30 underwent open surgery. Lower extremity venous blood flow was investigated by Doppler sonography in patients the day before surgery and 24 hours afterward. Preoperative and postoperative Doppler measurements were obtained from bilateral common and superficial femoral, bilateral great saphenous, and bilateral popliteal veins. Result(s): Lower extremity venous Doppler measurements were similar in diagnostic and operative laparoscopy groups. Femoral venous blood flow measurements were observed to be similar, but great saphenous and popliteal blood flows were found to be significantly decreased in the open surgery group compared with laparoscopic operations. Conclusion(s): The laparoscopic approach in gynecological surgery is not associated with an adverse effect on lower extremity blood flow and seems not to bring an additional risk of thrombosis. © 2013 Mary Ann Liebert, Inc.

27. **Venous thromboembolic events in minimally invasive gynecologic surgery.**

Item Type: Journal Article

Authors: Ramirez P.T.;Nick A.M.;Frumovitz M. and Schmeler, K. M.

Publication Date: 2013

Journal: Journal of Minimally Invasive Gynecology 20(6), pp. 766–769

Abstract: The rate of venous thromboembolic events (VTEs) including deep venous thrombosis and pulmonary embolism among women undergoing gynecologic surgery is high, particularly for women with a gynecologic malignancy. Current guidelines recommend VTE thromboprophylaxis in the immediate postoperative period for patients undergoing open surgery. However, the VTE prophylaxis recommendations for women undergoing minimally invasive gynecologic surgery are not as well established. The risk of VTEs in patients undergoing minimally invasive surgery appears to be low based on retrospective analyses. To date, there are no established guidelines that specifically provide a standard of care for patients undergoing minimally invasive gynecologic surgery for benign or malignant disease.

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28. **Patient characteristics and the incidence of postoperative venous thromboembolism in laparoscopy and laparotomy**

Item Type: Conference Proceeding

Authors: Datta M.S., Bump C., Peak G., Pilkinton M., Roy P., Moshier E.L. and Nezhat, F.R.

Publication Date: 2012

Publication Details: Journal of Minimally Invasive Gynecology. Conference: 41st Global Congress of Minimally Invasive Gynecology, AAGL 2012. Las Vegas, NV United States. 19(6 SUPPL. 1) (pp S42); Elsevier,
Abstract: Study Objective: To compare the characteristics and incidence of patients with postoperative venous thromboembolism (VTE) in gynecologic laparoscopy versus laparotomy. Design(s): Cross sectional study. Setting(s): Tertiary care university hospital. Patient(s): Fifteen women treated for VTE within six weeks after a gynecologic laparoscopy or laparotomy from July 2008 through July 2011. Intervention(s): Inpatient treatment of deep vein thrombosis or pulmonary embolism after undergoing laparoscopy or laparotomy for treatment of benign or oncologic gynecologic disease. Measurements and Main Results: Four women were treated for thromboembolism after laparoscopic surgery and eleven after laparotomy. These two groups were similar for age, body mass index, days postoperative, operative time, blood loss, malignancy, and sequential compression device use. The VTE incidence among 1106 laparotomies was 0.99% which was significantly greater than the VTE incidence of 0.19% among a total of 2104 laparoscopies (p = 0.0045). The incidence of VTE in a total of 1603 basic (Table Presented) The incidence of VTE in the Laparotomy group (0.99%) is 5.23 times greater than the incidence of VTE in the Laparoscopy group (0.19%); p = 0.0045. The incidence of VTE in the Basic Laparoscopy group (0.40%) is 3.20 times greater than the incidence of VTE in the Advanced Laparoscopy group (0.12%). However, this Relative Risk is not statistically significant; p = 0.2442. laparoscopy procedures was 0.40% and was not significantly different from a VTE incidence of 0.12% in 501 advanced laparoscopies consisting of hysterectomy, myomectomy and oncologic procedures. Conclusion(s): This preliminary data suggests the patients who underwent gynecologic laparoscopy or laparotomy and then experienced an embolic event appeared to be similar in certain basic criteria. However, the absolute incidence of VTE appeared greater in patients after laparotomy procedures. Also, the incidence of thromboembolism in basic and advanced laparoscopy did not differ. A prospective cohort study may elucidate the grave risk of VTE in gynecologic laparoscopy. A clarification of risk would assess the need for clinical exposures, such as modified VTE prophylaxis for laparoscopic surgical patients versus standard prophylaxis used during laparotomy procedures.

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29. **Incidence of venous thromboembolism after minimally invasive surgery in patients with newly diagnosed endometrial cancer.**

Item Type: Journal Article

Authors: Sandadi S.;Lee S.;Walter A.;Gardner G.J.;AbuRustum N.R.;Sonoda Y.;Brown C.L.;Jewell E.;Parameswaran R.;Barakat R.R. and Leitao, M. M.

Publication Date: 2012

Journal: Obstetrics and Gynecology 120(5), pp. 1077–1083

Abstract: Objective: To estimate the incidence of postoperative venous thromboembolism among patients undergoing minimally invasive surgery for endometrial cancer, and to characterize risk factors associated with the development of venous thromboembolism. Method(s): Patients with newly diagnosed endometrial cancer who were scheduled to undergo a planned minimally invasive surgery procedure from May 1, 2007 to December 31, 2010 were identified. The incidence of symptomatic postoperative venous thromboembolism was estimated in the patients who did not require conversion to laparotomy. Various clinicopathologic variables were tested for an association with the development of a postoperative venous thromboembolism using standard statistical tests. Result(s): A total of 573 cases were identified. Postoperative low molecular weight heparin was administered to 125 (22%) patients during their immediate postoperative hospital stay. All patients had sequential compression devices placed intraoperatively. Seven (1.2%) patients had development of a symptomatic venous thromboembolism. The factors associated with development of a postoperative venous thromboembolism were: body mass index (BMI) (P=.005); estimated blood loss (P=.03); and operative time (P=.01). A high-risk group was determined to be patients with BMIs of 40 or higher and an operative time of 180 minutes or more. In this group, the incidence of venous thromboembolism was 9.5% (4 of 42) compared with 0.6% (3 of 531) in all others (P=.001). Conclusion(s): The incidence of venous thromboembolism in patients with newly diagnosed endometrial cancer undergoing minimally invasive surgery is very low. There appears to be no clear justification for the routine use of a heparin for perioperative thromboprophylaxis in the majority of these patients. Thromboprophylaxis with heparin, however, may be a consideration in morbidly obese patients (BMI of 40 or higher) after a procedure that lasts 3 hours or more. © 2012 by The American College of Obstetricians and Gynecologists. Published by Lippincott Williams & Wilkins.

30. **Risk of thromboembolic disease in patients undergoing laparoscopic gynecologic surgery.**

Item Type: Journal Article

Authors: Nick A.M.;Schmeler K.M.;Frumovitz M.M.;Soliman P.T.;Spannuth W.A.;Burzawa J.K.;Coleman R.L.;Wei C.;Dos Reis R. and Ramirez, P. T.

Publication Date: 2010

Journal: Obstetrics and Gynecology 116(4), pp. 956–961

Abstract: Objective: To estimate the incidence of venous thromboembolism among patients undergoing gynecologic laparoscopy and characterize the risk of venous thromboembolism among patients with gynecologic malignancy. Method(s): Data were collected for patients who underwent laparoscopic gynecologic surgery from January 2000 to January 2009. Incidence of deep vein thrombosis (DVT) or pulmonary embolism diagnosed within 6 weeks of surgery was estimated. Fisher's exact test was used to estimate the association between the presence of perioperative venous thromboembolism and categorical variables. Result(s): Six (of 849) patients developed symptomatic venous thromboembolism (0.7%, 95% confidence interval: 0.024-1.44%). The median time to diagnosis of venous thromboembolism was postoperative day 15.5 (range, 1-41 days), median body mass index was 25.4 kg/m (range, 18.4-50 kg/m), median operative time was 176 minutes (range, 53-358 minutes), and median estimated blood loss was 125 mL (range, 10-250 mL). Five of 430 (1.2%) patients with a history of gynecologic malignancy developed postoperative thromboembolic events. Venous thromboembolism was diagnosed in three of 662 (0.5%) patients undergoing intermediate complexity procedures and three of 106 (2.8%) patients undergoing high-complexity procedures. Three patients with venous thromboembolism (50%) had a history of at least one previous modality of cancer treatment before laparoscopy. One patient (17%) had DVT only, four (67%) had pulmonary emboli without an identified DVT, and one (17%) had both. There were no associated mortalities. Conclusion(s): The incidence of thromboembolism in patients undergoing low-and intermediate- complexity, minimally invasive surgery was low, even among patients with a gynecologic malignancy. Patients undergoing high-complexity, minimally invasive procedures may benefit from postoperative anticoagulation. © 2010 by The American College of Obstetricians and Gynecologists. Published by Lippincott Williams and Wilkins.

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31. **Portomesenteric venous thrombosis after laparoscopic surgery: a systematic literature review**

Item Type: Journal Article

Authors: James, Aaron W.;Rabl, Charlotte;Westphalen, Antonio C.;Fogarty, Patrick F.;Posselt, Andrew M. and Campos, Guilherme M.

Publication Date: Jun ,2009

Journal: Archives of Surgery 144(6), pp. 520–526

Abstract: BACKGROUND: Portomesenteric venous thrombosis (PVT) is an uncommon but potentially lethal condition reported after several laparoscopic procedures. Its presentation, treatment, and outcomes remain poorly understood, and possible etiologic factors include venous stasis from increased intra-abdominal pressure, intraoperative manipulation, or damage to the splanchnic endothelium and systemic thrombophilic states. DESIGN: Systematic literature review. SETTING: Academic research. SUBJECTS: We summarized the clinical presentation and outcomes of PVT after laparoscopic surgery other than splenectomy in 18 subjects and reviewed the treatment strategies. MAIN OUTCOME MEASURES: Systematic review of the literature on PVT after laparoscopic procedures other than splenectomy. RESULTS: Eighteen cases of PVT following laparoscopic procedures were identified after Roux-en-Y gastric bypass (n = 7), Nissen fundoplication (n = 5), partial colectomy (n = 3), cholecystectomy (n = 2), and appendectomy (n = 1). The mean patient age was 42 years (age range, 20-74 years). Systemic predispositions toward venous thrombosis were identified in 11 patients. Clinical symptoms consisted primarily of abdominal pain manifested, on average, 14 days (range, 3-42 days) after surgery. Thrombus location varied, but 8 patients had a combination of portal and superior mesenteric venous thrombosis. Sixteen patients were treated with anticoagulation therapy. Ten patients underwent major interventions, including exploratory laparotomy in 6 patients and thrombolytic therapy in 4 patients. Six patients had complications, and 2 patients died. CONCLUSIONS: Portomesenteric venous thrombosis following laparoscopic surgery usually manifests as nonspecific abdominal pain. Computed tomography can readily provide the diagnosis and demonstrate the extent of the disease. Treatment should be individualized based on the extent of thrombosis and the presence of bowel ischemia but should include anticoagulation therapy. Venous stasis from increased intra-abdominal pressure, intraoperative manipulation of splanchnic vasculature, and systemic thrombophilic states likely converges to produce this potentially lethal condition. [References: 85]

32. **Dealing with complications in laparoscopy**

Item Type: Journal Article

Authors: Lam, Alan;Kaufman, Yuval;Khong, Su Yen;Liew, Andy;Ford, Stephen and Condous, George

Publication Date: Oct ,2009

Journal: Best Practice & Research in Clinical Obstetrics & Gynaecology 23(5), pp. 631–646

Abstract: With increasing adoption of laparoscopic surgery in gynaecology, there has been a corresponding rise in the types and rates of complications reported. This article sets out to classify complications associated with laparoscopy according to the phases of the surgery; assess the incidence, the mechanisms, the presentations; and recommend methods for preventing and dealing with complications in laparoscopic surgery. Its aim is to promote a culture of risk management based on the development of strategies to improve patient safety and outcome.

33. **The incidence of venous thromboembolism following gynecologic laparoscopy: A multicenter, prospective cohort study.**

Item Type: Journal Article

Authors: Ageno W.;Manfredi E.;Dentali F.;Silingardi M.;Ghezzi F.;Camporese G.;Bolis P. and Venco, A.

Publication Date: 2007

Journal: Journal of Thrombosis and Haemostasis 5(3), pp. 503–506

Abstract: Background: Information on the incidence of venous thromboembolism (VTE) following laparoscopic procedures is inadequate and there is currently no solid evidence to guide the use of thromboprophylaxis in this setting. Gynecologic laparoscopy is a common procedure, and is frequently performed in low-risk patients. To our knowledge, there are no clinical studies specifically designed to assess the incidence of VTE in this setting. Method(s): In a prospective cohort study, consecutive patients undergoing gynecologic laparoscopy underwent compression ultrasonography (CUS) and clinical assessment to evaluate the incidence of clinically relevant VTE. CUS was performed 7 +/- 1 and 14 +/- days postoperatively. A subsequent telephone contact was scheduled at 30 and 90 days. No patient received pharmacologic or mechanical prophylaxis. Patients with malignancy or previous VTE were excluded from the study. Result(s): We enrolled 266 consecutive patients; mean age was 36.3 years, range: 18-72. The most common indications for laparoscopy were ovarian cysts in 25.6% of patients, endometriosis in 21.0% of patients, unexplained adnexal masses in 12.4% of patients, and infertility in 7.5% of patients. The mean duration of the procedure was 60.5 min (range: 10-300 min). In particular, in 55.6% of patients the duration exceeded 45 min. There were neither episodes of CUS detected DVT (0/247; 0%, 95% CI 0-1.51%) or clinically relevant VTE after follow-up (0/256; 0%, 95% CI 0-1.48%). No patient died of fatal pulmonary embolism (0/266; 0%, 95% CI 0-1.42%). Conclusion(s): Gynecologic laparoscopy in non-cancer patients is a low-risk procedure for postoperative VTE. © 2007 International Society on Thrombosis and Haemostasis.

34. **Lower extremity venous changes in pneumoperitoneum during laparoscopic surgery.**

Item Type: Journal Article

Authors: Gulec B.;Oner K.;Yigitler C.;Kocaoglu M.;Aydin Y. and Saglam, M.

Publication Date: 2006

Journal: ANZ Journal of Surgery 76(10), pp. 904–906

Abstract: Background: The effect of pneumoperitoneum on veins of the lower limbs related to the intra-abdominal working pressures during laparoscopic cholecystectomy has not been thoroughly investigated. We tested the hypothesis that working pressures do not affect the venous haemodynamics in the lower limbs. Method(s): The cross-sectional area and peak flow rates of femoral and saphenous veins in the right groin were measured in 60 patients divided into two groups according to the intra-abdominal working pressures (11 vs 14 mmHg). All measurements were carried out preoperatively and at predetermined periods during and after laparoscopic cholecystectomy by colour Doppler ultrasonography. One-way anova and chi2 test were used for the analysis of demographic data. For the repeated measures, anova and Student's t-test were used for statistical analysis. The probabilities less than 0.05 were accepted as statistically significant. Result(s): The cross-sectional area of the veins increased, whereas the peak flow rate in veins decreased during pneumoperitoneum. Comparing the peak flow rate in the saphenous vein at the third intraoperative measurement, there is statistically significant difference between the two groups (P Result(s): The cross-sectional area of the veins increased, whereas the peak flow rate in veins decreased during pneumoperitoneum. Comparing the peak flow rate in the saphenous vein at the third intraoperative measurement, there is statistically significant difference between the two groups (P Conclusion(s): The degree of intra-abdominal pressure affects the haemodynamics of the peripheral veins. Pneumoperitoneum during laparoscopy causes stasis in the peripheral veins. It is reasonable to use routine prophylaxis for deep vein thrombosis, in the light of these findings. © 2006 Royal Australasian College of Surgeons.

35. **The lithotomy versus the supine position for laparoscopic advanced surgeries: A historical review.**

Item Type: Journal Article

Authors: Frezza, E. E.

Publication Date: 2005

Journal: Journal of Laparoendoscopic and Advanced Surgical Techniques - Part A 15(2), pp. 140–144

Abstract: Laparoscopic advanced surgery has been taught in many institutions in the United States. Initially, proctoring for the laparoscopic technique was performed by European surgeons; therefore, the lithotomy position was suggested as the preferred approach. Many American and European surgeons have adopted the supine position. Laparoscopy initially entered the clinical realm in the field of gynecology. Albert Decker, at the Knickerbocker and Gouverneur Hospital in New York, performed culdoscopy as early as 1928. This was done in the "knee-chest" position without the use of pneumoperitoneum. Raoul Palmer, at the Hopital Broca in Paris, popularized "colposcopie, " utilizing pneumoperitoneum, with the patient in the lithotomy position. Laparoscopy then advanced in Europe to the general surgery arena. As a result, patient positioning for laparoscopic procedures in Europe was performed in what is now referred to as the French position (i.e., lithotomy). Many of these procedures are modified to a side approach, or American position, when performed in the United States. There is a clear association between the dorsal lithotomy position and the development of postoperative compartment syndrome. Compartment syndrome occurs when elevated pressure in an osteofascial compartment compromises local perfusion, and often results in neurovascular damage and permanent disability. Many centers have adopted the lithotomy position for their laparoscopic advanced procedures. At our institution, however, we prefer all procedures be performed in the American position (patient supine and the surgeon at the side of the patient), since this resembles the position used for other, open surgeries. The advantage of this approach is that it eliminates the risks associated with placement of the patient in the lithotomy position. © Mary Ann Liebert, Inc.

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36. **Laparoscopic procedures as a risk factor of deep venous thrombosis, superficial ascending thrombophlebitis and pulmonary embolism--case report and review of the literature.**

Item Type: Journal Article

Authors: Holzheimer, R. G.

Publication Date: 2004

Journal: European Journal of Medical Research 9(9), pp. 417–422

Abstract: Since its introduction laparoscopic surgery has been used for many indications, e.g., cholecystolithiasis, hernia, appendicitis, fundoplication, benign large bowel disease and gynaecological disorders. It has been considered as safe and efficient procedure for most patients with only few contraindications, mostly heart-lung disease. When the initial enthusiasm has been replaced by a more critical observation, more complications of laparoscopy or laparoscopic surgery were not only discovered but also reported. In laparoscopic hernia repair there is a tendency for severe complications when compared to open surgery. There is a controversy on possible side-effects of laparoscopic surgery, e.g., thrombosis, and the increased necessity of prophylaxis for thromboembolic events. Recently a growing number of reports on thromboembolic complications in association with laparoscopic surgery were published. Thrombosis may be caused by detrimental effects of pneumoperitoneum on venous flow (increased abdominal pressure and negative Trendelenburg position) and activation of the haemostatic system. Further risk factors may contribute to the risk to develop venous thrombosis. It is well accepted that varicose veins are associated with an increased risk for the thrombosis. However, the association of varicose veins with complications of laparoscopic surgery is unclear. The possible impact of thrombotic complications makes an analysis of the association of varicose veins or a history of deep vein thrombosis on the development of thrombosis after laparoscopic surgery mandatory. Although this is the first report on ascending thrombophlebitis and thrombosis of the sapheno-femoral junction after laparoscopic surgery, the incidence of deep vein thrombosis or superficial thrombophlebitis after laparoscopic surgery or laparoscopy may be much higher according to the pathophysiological changes during and after these procedures. In many patients venous thrombosis may not be recognized or it appears when the patient is already discharged. CONCLUSION(S): Laparoscopy and laparoscopic procedures may have an increased risk for the development of thrombosis due to increased abdominal pressure and negative Trendelenburg position. Patients with varicose veins and a history of thromboembolism may aggravate laparoscopy associated risks for the development of thromboembolic complications. Superficial thrombophlebitis in the thigh is not a benign disease entity and may lead to deep vein thrombosis (DVT) and pulmonary embolism (PE). Urgent surgical treatment (high ligation) may be warranted together with low-molecular weight heparin (LMWH) and compressions therapy. Patients with varicose veins and a history of venous thrombosis may not be suitable candidates for laparoscopic surgery. Family practitioners may be confronted with this complication more often since patients are discharged earlier from hospital after laparoscopic interventions due to legislative regulations.

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imer+R.G.%3C%2Fauthor%3E%3CAN%3E39701547%3C%2FAN%3E%3CDT%3EReview%3C%2FDT%3E

37. **Symptomatic venous thromboembolism in Chinese patients after gynecologic surgery: Incidence and disease pattern.**

Item Type: Journal Article

Authors: Louis Y.S.C.;Pong M.Y.;Wing K.L. and Tze, K. L.

Publication Date: 2002

Journal: Acta Obstetricia Et Gynecologica Scandinavica 81(4), pp. 343–346

Abstract: Background. Venous thromboembolism is a common cause of postoperative morbidity and mortality in Caucasian populations, but it is widely believed that this complication is rare in Chinese. Methods. We conducted a retrospective study from January 1998 to December 2000. Women with thromboembolic diseases after gynecologic surgery were identified and their medical records were reviewed. Results. During the study period, thirty-one women were diagnosed as having thromboembolic disease after gynecologic surgery. Over the study period, the total number of operations was 6077, giving an incidence of 5.10/1000 operations. There were two cases of pulmonary embolism and the others had deep vein thrombosis of which 90% were limited to calf veins only. The incidences were significantly higher in 1999 and 2000 (7.59 and 6.85/1000 operations, respectively) than that in 1998 (1.7/1000 operations) (P = 0.015), after a case of maternal death due to pulmonary embolism in early 1999. Most cases of thromboembolism were diagnosed after major surgery for malignancy (n = 14) or benign conditions (n = 12). In the remaining cases, three had evacuation of the uterus for retained products of conception and two had laparoscopy for suspected ectopic pregnancies. Conclusions. Thromboembolic disease is not uncommon among Chinese women after gynecologic surgery. The incidence is similar to that of the Caucasian population, although the sites of vascular occlusion were different. The long belief that thromboembolism is rare among Chinese is at least partly due to under-diagnosis.

URL: https://libkey.io/libraries/2828/openurl?genre=article&sid=OVID:embase&id=pmid:11952466&id=doi:10.1034%2Fj.1600-0412.2002.810412.x&issn=0001-6349&isbn=&volume=81&issue=4&spage=343&pages=343-346&date=2002&title=Acta+Obstetricia+et+Gynecologica+Scandinavica&atitle=Symptomatic+venous+thromboembolism+in+Chinese+patients+after+gynecologic+surgery%3A+Incidence+and+disease+pattern&aulast=Louis&pid=%3Cauthor%3ELouis+Y.S.C.%3BPong+M.Y.%3BWing+K.L.%3BTze+K.L.%3C%2Fauthor%3E%3CAN%3E34450624%3C%2FAN%3E%3CDT%3EArticle%3C%2FDT%3E

38. **Incidence of deep venous thrombosis after gynaecological laparoscopy.**

Item Type: Journal Article

Authors: Feng L.;Song J.;Wong F. and Xia, E.

Publication Date: 2001

Journal: Chinese Medical Journal 114(6), pp. 632–635

Abstract: OBJECTIVE: To evaluate the incidence of deep venous thrombosis (DVT) after gynaecological laparoscopy. METHOD(S): The incidence of DVT was studied in 72 consecutive patients who underwent gynaecological laparoscopy in the Liverpool Health Service between May and September 1997. B-mode ultrasound supplemented by Doppler was used to examine venous patency and intraluminal echoes to diagnose DVT. Sixty-one patients who had pneumoperitoneum less than 60 minutes were classified a minor procedure and 11 who had pneumoperitoneum more than 60 minutes were classified as major procedure. Two Doppler ultrasound scans were planned for every patient. The first one was done within 24 hours and the second was performed on day 7 post-surgery. All 72 patients had the first scan and 40 out of 61 in the minor procedure group and 9 out of 11 in the major procedure had the second scan. Twenty-three patients who did not come for the second scan were followed up by phone. RESULT(S): No DVT was found in our study. CONCLUSION(S): This study confirms an impression that gynaecological laparoscopic procedure has a very low incidence of DVT. If it occurs, the diagnosis and treatment must be made as soon as possible so that the fatal complications such as pulmonary embolus can be avoided.

URL: https://libkey.io/libraries/2828/openurl?genre=article&sid=OVID:embase&id=pmid:11780442&id=doi:&issn=0366-6999&isbn=&volume=114&issue=6&spage=632&pages=632-635&date=2001&title=Chinese+medical+journal&atitle=Incidence+of+deep+venous+thrombosis+after+gynaecological+laparoscopy&aulast=Feng&pid=%3Cauthor%3EFeng+L.%3BSong+J.%3BWong+F.%3BXia+E.%3C%2Fauthor%3E%3CAN%3E35565782%3C%2FAN%3E%3CDT%3EArticle%3C%2FDT%3E

39. **Study of venous blood flow changes during laparoscopic surgery using a thermodilution technique.**

Item Type: Journal Article

Authors: Marshall, N. J.;Bessell, J. R. and Maddern, G. J.

Publication Date: Sep ,2000

Journal: Australian & New Zealand Journal of Surgery 70(9), pp. 639–643

Abstract: BACKGROUND: Many modalities exist to analyse those factors that contribute to venous stasis and deep venous thrombosis (DVT) during laparoscopic surgery. To the authors' knowledge intraoperative measurement of femoral venous blood flow has not yet been performed nor has the influence of sequential compression devices been assessed using this parameter. METHODS: The thermodilution technique similar to that employed in cardiac output measurement was used to determine changes in blood flow in the right femoral vein during laparoscopic cholecystectomy. Deep venous thrombosis prophylaxis involved perioperative use of sequential compression devices and subcutaneous heparin 5000 U. RESULTS: Pneumoperitoneum and the Trendelenburg position reduced femoral venous return in four of the six patients studied, but sequential compression devices failed to return blood flow to baseline in a predictable fashion. CONCLUSIONS: Although the measurement of blood flow using thermodilution is regarded as a reliable technique, during general anaesthesia the results may be susceptible to haemodynamic variations related to the anaesthetic agents as well as to the laparoscopic procedure. In addition sequential compression devices (when used alone) may not provide adequate prophylaxis against DVT because they do not predictably increase femoral blood flow.

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40. **Thromboembolism in laparoscopic surgery: Risk factors and preventive measures.**

Item Type: Journal Article

Authors: Catheline J.M.;Turner R.;Gaillard J.L.;Rizk N. and Champault, G.

Publication Date: 1999

Journal: Surgical Laparoscopy and Endoscopy 9(2), pp. 135–139

Abstract: The aim of this study was to assess the risk of clinical thromboembolism in laparoscopic digestive surgery. From June 1992 to June 1997, 2,384 consecutive patients were studied. All received perioperative prophylaxis with low-molecular-weight heparin (LMWH), which was continued until full mobility was regained. Eight cases (0.33%) of deep venous thrombosis were noted, but there were no cases of pulmonary embolus. In six cases (five cholecystectomies with reverse Trendelenburg position and one inguinal hernia repair), release of the pneumoperitoneum took longer than 2 hours, and in two cases (one rectopexy and one sigmoid colectomy for diverticulitis), longer than 3 hours. In six of the eight cases, the diagnosis of DVT was made after LMWH had been ceased and the patient had been discharged. All cases were diagnosed before the 10th postoperative day. Pneumoperitoneum is felt to predispose to deep venous thrombosis. Long operations and reverse Trendelenburg position are further potentiating factors. Thromboprophylaxis for laparoscopy should be the same as for conventional surgery, i.e., tailored to individual risk and continued for a minimum of 7 to 10 days. We also recommend using graduated compression stockings, maintaining a relatively low insufflation pressure, keeping use of the reverse Trendelenberg position to a minimum, and intermittently releasing the pneumoperitoneum in longer procedures.

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West Middlesex University Hospital

Search Strategy

Ovid MEDLINE(R) ALL <1946 to April 29, 2025>

1	exp Patient Positioning/	9346
2	Trendelenburg.tw,kw.	2364
3	(patient* adj3 position*).tw,kw.	18780
4	1 or 2 or 3	28121
5	exp Laparoscopy/	126018
6	laparoscop*.tw,kw.	168055
7	5 or 6	188207
8	(deep vein thrombo* or DVT or pulmonary emboli* or lung emboli* or venous thromboembol*).tw,kw.	91729
9	exp Venous Thrombosis/	62256
10	exp Pulmonary Embolism/	45475
11	8 or 9 or 10	146176
12	4 and 7 and 11	31
13	from 12 keep 4-5,19,22,24	5
14	exp Intra-Abdominal Hypertension/	890
15	abdominal pressure.tw,kw.	4398
16	(intraabdominal pressure or intra-abdominal pressure).tw,kw.	4224
17	14 or 15 or 16	5764
18	7 and 11 and 17	12
19	from 18 keep 5-7	3
20	13 or 19	7
21	exp Gynecologic Surgical Procedures/	95576
22	gyn?ecolog*.tw,kw.	131154
23	exp Genital Diseases, Female/su [Surgery]	72739
24	21 or 22 or 23	250738
25	7 and 11 and 24	167
26	from 20 keep 1-7	7
27	from 25 keep 33,42,45,57,79,93,106,123,136,141,151	11

28 exp Cardiovascular System/in [Injuries] 27183

29 4 and 7 and 28 10

30 exp Embolism, Air/ 6093

31 4 and 7 and 30 14

32 from 29 keep 4,7 2

33 from 31 keep 8 1

Embase <1974 to 2025 April 29>

1 Trendelenburg.tw,kw. 3844

2 exp patient positioning/ 25199

3 (patient adj3 position*).tw,kw. 17453

4 exp abdominal pressure/ 8938

5 (intra-abdominal pressure or intraabdominal pressure).tw,kw. 6091

6 1 or 2 or 3 or 4 or 5 50612

7 exp laparoscopy/ or exp laparoscopic surgery/ 228434

8 laparoscop*.tw,kw. 272548

9 7 or 8 323046

10 (deep vein thrombo* or DVT or pulmonary emboli* or lung emboli* or venous thromboembol*).tw,kw. 148289

11 exp deep vein thrombosis/ 91193

12 exp lung embolism/ 133071

13 exp venous thromboembolism/ 222993

14 10 or 11 or 12 or 13 247357

15 6 and 9 and 14 163

16 limit 15 to english language 156

17 from 16 keep 18,24,37,50,59,72,91,96,131,141,147 11

18 exp gynecologic surgery/ 202981

19 exp gynecologic disease/ 854792

20 gyn?ecolog*.tw,kw. 201418

21 18 or 19 or 20 1024959

22 9 and 14 and 211348

23 limit 22 to english language 1321

24 from 17 keep 1-11 11

25 from 23 keep 40,123,225,237,274,349,375,465,471,574,625,635,664,739,807,809,835,863,908,938,993,995,1057-1058,1123,1143 26

26 exp Trendelenberg position/ 123

27 9 and 14 and 264

28 ((intraoperative or intra-operative) adj3 position*).tw,kw. 1297

29 9 and 14 and 286