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Appendix:

1 - Are certain patients identified to be at greater risk for venous thromboembolism than others?

Search Terms:

venous thromboembolism
venous thrombosis
pulmonary embolism
deep vein thrombosis
orthopedics
orthopedic procedure
orthopedic procedure
orthopedic surgery
orthopaedic surgery
populations at greater risk

Total Results: 113 hits

Inclusion Criteria:

- Orthopedic procedures
- Venous thromboembolism rates reported in populations at greater risk
- Primary research

Exclusion Criteria:

- Non-orthopedic procedures
- Narrative review articles.

2 - Are there genetic predisposing factors for VTE?

Search Terms:

("Venous Thromboembolism"[Mesh]) AND ("Genetic Testing"[Mesh] OR "Genetic Predisposition to Disease"[Mesh]) OR ("venous thromboembolism" OR "venous thromboembolisms" OR "VTE") AND ("genetic predisposition" OR "genetic predisposing factors" OR "genetic predisposing factor") OR ("genetic risk factors" OR "genetic risk factor" OR "genetic factor" OR "genetic factors" OR "Genetic Predisposition" OR "Genetic Predispositions" OR "Genetic Susceptibility" OR "Genetic Susceptibilities" OR "Genetic Predictive Testing" OR "Genetic Screening" OR "Genetic Screenings")

Total Results: 217 hits

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not in English.

3 - Is there a correlation between age and the risk of VTE in patients undergoing orthopaedic procedures?

Search Terms:

((("Arthroplasty"[Mesh] OR Elbow Replacement OR Elbow Arthroplasties OR Elbow Arthroplasty OR Elbow Replacement Arthroplasties OR Elbow Replacement Arthroplasty OR Shoulder Replacement OR Shoulder Arthroplasties OR Shoulder Arthroplasty OR Shoulder Replacement Arthroplasties OR Shoulder Replacement Arthroplasty OR Orthopedic surgery Cancer OR Orthopedic surgeries Cancer OR Orthopedic surgery musculoskeletal OR Orthopedic surgeries musculoskeletal OR Fracture surgery OR Fracture surgeries OR Hip Replacement OR Hip Arthroplasties OR Hip Arthroplasty OR Hip Replacement Arthroplasties OR Hip Replacement Arthroplasty OR Knee Replacement OR Knee Arthroplasties OR Knee Arthroplasty OR Knee Replacement Arthroplasties OR Knee Replacement Arthroplasty) AND (((((((("Venous Thromboembolism"[Mesh]) OR ("Venous Thrombosis"[Mesh])) OR ("Pulmonary Embolism"[Mesh])) OR (pulmonary embolism OR pulmonary embolus OR pulmonary thromboembolism)) OR (Venous Thrombosis OR Venous Thromboses OR Venous Thromboembolism)) OR (Deep Venous Thrombosis OR Deep Venous Thromboses OR Deep Vein Thrombosis OR Deep Vein Thromboses)) OR (PE OR VTE OR DVT))) AND (Suergery OR Surgeries) AND ("Age"))

Total Results: 1,655 hits

Inclusion Criteria:

- Epidemiological, case-control or controlled cohort studies
- Reported estimate for the association between age and VTE incidence (OR 95%CI or RR 95%CI, or β -estimate 95%CI or even p-value for difference between the age-groups)
- Venous thromboembolism rates reported
- Primary research
- English articles

Exclusion Criteria:

- Studies focusing on small patient groups
- Editorials, comments, case reports, conference
- Narrative review articles
- Studies not in English.

4 - Is the risk of VTE following orthopaedic procedures related to ethnicity or race? If yes, should VTE prophylaxis be altered or changed based on race and/or ethnicity?

Search Terms:

((("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis" OR ("VTE")) AND (((orthopedics[MeSH Terms]) OR (orthopedic procedure[MeSH Terms]) OR (orthopedic procedure*) OR (orthopaedic procedure*) OR (orthopedic surger*) OR (orthopaedic surger*)))) AND (((((((ethnic group[MeSH Terms]) OR (ethnic group*)) OR (ethnicit*) OR (ethnic*) OR "continental population groups"[MeSH Terms]) OR (race)) OR (racial)) OR ("race ethnicity"))

Total Results: 126 hits

Inclusion Criteria:

- Orthopedic procedures

- Venous thromboembolism rates reported in relation to race and/or ethnicity
- Primary research
- English articles

Exclusion Criteria:

- Non-orthopedic procedures
- Narrative review articles
- Not in English.

5 - Is there a definite association between BMI and VTE?

Search Terms:

((("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND (((((((((Association[MeSH Terms]) OR (correlation of data[MeSH Terms])) OR (association[Title/Abstract])) OR (associations[Title/Abstract])) OR (correlation[Title/Abstract])) OR (correlations[Title/Abstract])) OR (risk factors[MeSH Terms])) OR (risk[Title/Abstract])) OR (risk factor[Title/Abstract])) OR (risk factors[Title/Abstract])) AND (((((((((body mass index[MeSH Terms]) OR (obesity[MeSH Terms]) OR (Body Weights and Measures[Mesh Terms]) OR (overweight[MeSH Terms])) OR (body mass index[Title/Abstract])) OR (obesity[Title/Abstract])) OR (overweight[Title/Abstract])) OR (obese[Title/Abstract])) OR (underweight[Title/Abstract])) OR (weight status[Title/Abstract])) AND (((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)))

Total Results: 283 hits

Inclusion Criteria:

- Original studies
- Meta-analyses

Exclusion Criteria:

- Case series
- Narrative review articles.

6 - Does a history of prior VTE influence the rate of subsequent VTE in pts undergoing orthopaedic procedures?

Search Terms:

((Prior) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis")) AND ((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND (orthopaedic surgery)

Total Results: 22,080 hits

Inclusion Criteria:

- Original studies
- Meta-analyses

Exclusion Criteria:

- Case series

- Narrative review articles.

7 - Does the type (DVT vs. PE) or timing (remote vs. recent) of prior VTE influence the risk of subsequent VTE following orthopaedic procedures?

Search Terms:

DVT Only:

(((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure))) AND ((("Venous Thrombosis"[Mesh]) OR ("deep vein thrombosis") OR ("vein thrombosis")))) AND (((recent[Title/Abstract]) OR (remote[Title/Abstract]) OR (new onset[Title/Abstract]) OR (timing[Title/Abstract]) OR (time of presentation[Title/Abstract])))) AND (((((((((((subsequent VTE) OR (repeat* VTE)) OR (future VTE)) OR (following VTE)) OR (successive VTE)) OR (subsequent thromboembolism)) OR (repeat* thromboembolism)) OR (future thromboembolism)) OR (following thromboembolism)) OR (successive thromboembolism)) OR (subsequent venous thromboembolism)) OR (repeat* venous thromboembolism)) OR (future venous thromboembolism)) OR (following venous thromboembolism)) OR (successive venous thromboembolism)))

PE Only:

(((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure))) AND ((("Pulmonary Embolism"[Mesh]) OR (Pulmonary embolism)) AND (((recent[Title/Abstract]) OR (remote[Title/Abstract]) OR (new onset[Title/Abstract]) OR (timing[Title/Abstract]) OR (time of presentation[Title/Abstract])))) AND (((((((((((subsequent VTE) OR (repeat* VTE)) OR (future VTE)) OR (following VTE)) OR (successive VTE)) OR (subsequent thromboembolism)) OR (repeat* thromboembolism)) OR (future thromboembolism)) OR (following thromboembolism)) OR (successive thromboembolism)) OR (subsequent venous thromboembolism)) OR (repeat* venous thromboembolism)) OR (future venous thromboembolism)) OR (following venous thromboembolism)) OR (successive venous thromboembolism)))

DVT and PE:

(((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure))) AND ((("Venous Thrombosis"[Mesh]) OR ("deep vein thrombosis") OR ("vein thrombosis")) AND ((("Pulmonary Embolism"[Mesh]) OR (Pulmonary embolism)) AND (((recent[Title/Abstract]) OR (remote[Title/Abstract]) OR (new onset[Title/Abstract]) OR (timing[Title/Abstract]) OR (time of presentation[Title/Abstract])))) AND (((((((((((subsequent VTE) OR (repeat* VTE)) OR (future VTE)) OR (following VTE)) OR (successive VTE)) OR (subsequent thromboembolism)) OR (repeat* thromboembolism)) OR (future thromboembolism)) OR (following thromboembolism)) OR (successive thromboembolism)) OR (subsequent venous thromboembolism)) OR (repeat* venous thromboembolism)) OR (future venous thromboembolism)) OR (following venous thromboembolism)) OR (successive venous thromboembolism)))

DVT or PE:

(((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure))) AND (("Venous Thrombosis"[Mesh]) OR ("deep vein thrombosis") OR ("vein thrombosis") OR ("Pulmonary Embolism"[Mesh]) OR (Pulmonary embolism)) AND (((recent[Title/Abstract]) OR (remote[Title/Abstract]) OR (new onset[Title/Abstract]) OR (timing[Title/Abstract]) OR (time of presentation[Title/Abstract])))) AND (((((((((((subsequent VTE) OR (repeat* VTE)) OR (future VTE)) OR (following VTE)) OR (successive VTE)) OR (subsequent thromboembolism)) OR (repeat* thromboembolism)) OR (future thromboembolism)) OR (following thromboembolism)) OR (successive thromboembolism)) OR (subsequent venous thromboembolism)) OR (repeat* venous thromboembolism)) OR (future venous thromboembolism)) OR (following venous thromboembolism)) OR (successive venous thromboembolism))

Total Results: 65 hits

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Not discussing distal DVT
- Narrative review articles
- Not in English.

8 - Do patients with an underlying diagnosis of infection (local or systemic) undergoing orthopaedic procedures have an elevated risk for subsequent VTE?

Search Terms:

((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure)) AND ((infection [Mesh Terms]) OR (sepsis [Mesh Terms]) OR (Osteomyelitis [Mesh Terms]) OR (Arthritis, Infectious [Mesh Terms]) OR (PJI) OR (Periprosthetic infection)) AND ((Postoperative period[MeSH Terms]) OR (Postoperative period[Title/Abstract]) OR (Postoperative period) AND ((Venous Thrombosis[Mesh Terms]) OR (venous thromboembolism[MeSH Terms]) OR (pulmonary embolism [MeSH Terms]) OR (deep vein thrombosis) OR (DVT) OR (venous thromboembolism) OR (VTE)))

Total Results: 2,985 hits

Inclusion Criteria:

- Studies with any level of evidence
- Published in peer-reviewed journals in English language
- Studies investigating the role of infection as a preoperative diagnosis on venous thromboembolism (VTE) in orthopaedic procedures.

Exclusion Criteria:

- Studies in which data was not accessible or missing, or those without an available full-text article.
- Duplicate studies and studies with poor scientific methodology
- Abstracts, case reports, conference presentations, reviews, editorials, and expert opinions were also excluded.

9 - Does the presence of varicosities and/or superficial lower extremity thrombosis increase the risk of VTE in patients undergoing orthopedic procedures?

Search Terms:

("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND ("Risk"[Mesh] OR risk OR "Risk Factors"[Mesh]) AND ("Varicose Veins"[Mesh] OR (Varicose Vein) OR Varix OR Varices OR varicosities OR (superficial lower extremity thrombosis) OR (superficial AND ("Thrombophlebitis"[Mesh] OR Thrombophlebitis)))

Total Results: 31 hits

Inclusion Criteria:

- Original studies and meta-analyses
- Reported number, incidence or risk of VTE after orthopedic procedures
- Varicose veins assessed as a risk factor for postoperative VTE
- History of superficial vein thrombosis assessed as a risk factor for postoperative VTE

Exclusion Criteria:

- Case series
- Narrative review articles.

10 - (A) Do oral contraceptive medications increase the risk of VTE? (B) If so, should they be stopped prior to orthopaedic procedures?

Search Terms:

Medline:

((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure)) AND (contraceptives, oral[Mesh]) OR (oral contraceptive) OR (contraceptive pill) OR (contraception))

Cochrane:

(Orthopedic Procedures[MeSH Terms]) OR (orthopaedic procedure) OR (orthopaedic procedures) OR (orthopedic procedure) OR (orthopedic procedures) AND (Contraceptives, Oral[MeSH Terms]) OR (oral contraceptive) OR (contraceptive pill) OR (contraception) OR (oral contraceptives) OR (hormonal contraceptive)

Scopus:

INDEXTERMS(orthopedic procedure) OR TITLE-ABS-KEY(orthopedic procedure) OR TITLE-ABS-KEY(orthopaedic procedure) OR TITLE-ABS-KEY(orthopedic procedures) OR TITLE-ABS-KEY(orthopaedic procedures) AND INDEXTERMS(Oral Contraceptive) OR TITLE-ABS-KEY(Oral Contraceptive) OR TITLE-ABS-KEY(contraceptive pill) OR TITLE-ABS-KEY(contraception)

Web of Science:

Search all databases: TITLE-ABS-KEY (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedure) OR (orthopaedic procedures) AND TITLE-ABS-KEY (contraceptives) OR (oral contraceptive) OR (contraceptive pill) OR (contraception)

Total Results: 1,045 hits

Inclusion Criteria:

- Evaluation of undergoing recent orthopedic procedure before DVT or PE event (including: THA, TKA, Spine, Shoulder Arthroplasty or arthroscopy, LE arthroscopy or reconstruction surgery, foot and ankle surgery, major pelvic and LE Trauma Surgery)
- Evaluation of contraceptive medication use, prior to orthopaedic procedures
- Original investigation articles

Exclusion Criteria:

- Papers solely regarding non-surgical procedures, such as casts or other immobilizations
- Conference papers; proceedings; editorials; commentaries; reviews; guidelines, consensus and book chapters; technical papers; image quality-, and phantom studies; and unavailable full-text manuscripts.
- Review articles
- Sample size less than 20.

11 - Do oral hormonal therapy, used for cancer management, increase the risk of post-operative VTE in patients undergoing orthopaedic procedures? If so, should they be stopped prior to surgery?

Search Terms:

("Surgery" [Mesh]) AND ("Antineoplastic Agents, Hormonal"[Mesh]) AND (("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])).

Total Results: 301 hits

Inclusion Criteria:

- Published in peer-reviewed journals in English
- Both clinical and preclinical studies with any level of evidence
- Investigated the role of hormonal therapy on venous thromboembolism (VTE) after an orthopaedic procedure, with or without preventive intervention.

Exclusion Criteria:

- Data was not accessible or missing,
- Without an available full-text article
- Duplicates
- Studies with poor scientific methodology as per risk of bias assessment
- Abstracts, case reports, conference presentations, reviews, editorials, and expert opinions.

12 - Are patients, who traveled on airplanes or had long car rides prior to surgery, at an increased risk of VTE? If so, what is the optimal interval between travel and surgery?

Search Terms:

("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND (orthopaedic surgery) AND ("air flight" OR "flight" OR "air travel" OR "plane" OR "fly")

Total Results: 291 hits.

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Not discussing distal DVT
- Narrative review articles
- Not in English.

13 - Do all orthopaedic procedures have the same risk profile for DVT?

Search Terms:

(((((Venous Thrombosis OR Venous Thromboses OR Venous Thromboembolism)) OR (Deep Venous Thrombosis OR Deep Venous Thromboses OR Deep Vein Thrombosis OR Deep Vein Thromboses) AND ((orthopedic surgery[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]))) OR (orthopedic procedure[MeSH Terms])) OR (orthopedic surgeries[MeSH Terms])) AND (risk stratification OR risk classification)) AND venography OR asymptomatic deep venous thromb* AND symptomatic deep venous thromb*

Total Results: 134 hits

Inclusion Criteria:

- Orthopedic procedures or orthopedic surgeries performed
- Deep venous thrombosis rates reported
- English articles
- Spanish articles

Exclusion Criteria:

None.

14 - Does the duration of surgery influence the incidence of postoperative VTE?

Search Terms:

((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure)) AND ((operative time[Mesh Terms]) OR (operative time[Title/Abstract]) OR (surgery duration) OR (operative time[tw]) OR (duration of surgery) OR (surgery length)) AND ((Postoperative period[MeSH Terms]) OR (Postoperative period[Title/Abstract]) OR (Postoperative period[tw])) AND ((Venous Thrombosis[Mesh Terms]) OR (venous thromboembolism[MeSH Terms]) OR (pulmonary embolism) OR (deep vein thrombosis) OR (DVT) OR (venous thromboembolism) OR (VTE))

Total Results: 1,232 hits

Inclusion Criteria:

- Published in peer-reviewed journals in English
- Both clinical and preclinical studies with any level of evidence
- Investigated the role of hormonal therapy on venous thromboembolism (VTE) after an orthopaedic procedure, with or without preventive intervention.

Exclusion Criteria:

- Abstracts, case reports, conference presentations, reviews, editorials, and expert opinions.

15 - Does the volume of intraoperative blood loss influence the incidence of post-operative VTE in patients undergoing orthopaedic procedures?

Search Terms:

((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure) OR (THA) OR (TJA) OR (TKA) OR (ACDF) OR (Fracture) OR (Spine) OR (Hip Fractures[MeSH Terms])) AND ((surgical blood loss[Mesh Terms]) OR (surgical blood loss[Title/Abstract]) OR (blood loss volume[Title/Abstract]) OR (blood loss volume[tw]) OR (surgical blood loss[tw])) AND ((postoperative period[Mesh Terms]) OR (postoperative complications[Mesh Terms]) OR (postoperative risk) OR (postoperative venous thromboembolism)) AND ((Venous Thromboembolism[Mesh Terms]) OR (Venous Thrombosis[Mesh Terms]) OR (pulmonary embolism) OR (deep vein thrombosis) OR (DVT) OR (venous thromboembolism) OR (VTE))

Total Results: 1,632 hits

Inclusion Criteria:

- Studies evaluating blood loss or transfusion rates in patients with and without VTE
- Cohorts undergoing major orthopedic surgery (including THA, TKA, spine surgery, total shoulder arthroplasty, and major pelvic and lower extremity trauma surgery)

Exclusion Criteria:

- Studies primarily evaluating VTE rates based on other perioperative factors, including but not limited to the use of TXA or other anti-fibrinolytics, tourniquet use, or postoperative VTE prophylaxis.
- Cohorts with hemophilias or other conditions that would limit the generalizability of the present findings.
- Conference papers; proceedings; editorials; commentaries; reviews; guidelines and book chapters; technical papers; image quality-, and phantom studies; and unavailable full-text manuscripts.

16 - Does administration of allogeneic blood transfusion influence the incidence of post-operative VTE in patients undergoing orthopaedic procedures?

Search Terms:

((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure)) AND ((allogeneic blood transfusion[Title/Abstract]) OR (allogeneic blood transfusion[tw] OR (allogeneic blood transfusion)) AND ((Venous Thromboembolism[Mesh Terms]) OR (Venous Thrombosis[Mesh Terms]) OR (pulmonary embolism) OR (deep vein thrombosis) OR (DVT) OR (venous thromboembolism) OR (VTE))

Total Results: 144 hits

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Not discussing allogenic blood transfusions

- Not including surgical patients
- Narrative review articles
- Not in English.

17 - Does administration of tranexamic acid (TXA) to a patient undergoing orthopaedic procedures increase the risk of subsequent VTE?

Search Terms:

((("Orthopedics"[Mesh] OR "Orthopedic Procedures"[Mesh] OR "Arthroplasty, Replacement, Knee"[Mesh] OR "Arthroplasty, Replacement, Hip"[Mesh] OR Arthroplasty, Replacement, Shoulder"[Mesh] OR Knee Replacement OR Knee Arthroplasties OR Knee Arthroplasty OR Knee Replacement Arthroplasties OR Knee Replacement Arthroplasty OR Hip Replacement OR Hip Arthroplasties OR Hip Arthroplasty OR Hip Replacement Arthroplasties OR Hip Replacement Arthroplasty OR Shoulder Replacement OR Shoulder Arthroplasties OR Shoulder Arthroplasty OR Shoulder Replacement Arthroplasties OR Shoulder Replacement Arthroplasty OR Spinal Fusion OR Spine OR Orthopedic Spine OR Lumbar Spine OR Cervical Spine OR Adult Deformity Spine OR Fracture OR Hip Fracture OR Lower Extremity Surgery) AND (((((((("Venous Thromboembolism"[Mesh]) OR ("Venous Thrombosis"[Mesh])) OR ("Pulmonary Embolism"[Mesh])) OR (pulmonary embolism OR pulmonary embolus OR pulmonary thromboembolism)) OR (Venous Thrombosis OR Venous Thromboses OR Venous Thromboembolism)) OR (Deep Venous Thrombosis OR Deep Venous Thromboses OR Deep Vein Thrombosis OR Deep Vein Thromboses)) OR (PE OR VTE OR DVT OR Blood Clot OR Blood Clots)))) AND (Tranexamic acid))))

Total Results: 1,055 hits.

Inclusion Criteria:

- Patients undergoing orthopedic arthroplasty, spine, and trauma surgery
- Venous thromboembolism rates reported
- Primary research
- Articles written in English language

Exclusion Criteria:

- Narrative review articles
- Not in English.

18 - Does tourniquet applied to the lower extremity influence the incidence of post-operative VTE?

Search Terms:

((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure)) AND ((lower extremity[MeSH Terms]) OR ("lower extremities") OR (lower extremities[MeSH Terms]) OR ("lower limb") OR ("lower limbs") OR (leg)) AND ((tourniquet[Mesh Terms]) OR (tourniquet[Title/Abstract]) OR (tourniquet[tw]) OR (tourniquet)) AND ((Venous Thromboembolism[Mesh Terms]) OR (Venous Thrombosis[Mesh Terms]) OR (pulmonary embolism) OR (deep vein thrombosis) OR (DVT) OR (venous thromboembolism) OR (VTE))

Total Results: 37 hits

Inclusion Criteria:

- Tourniquet use for orthopedic surgery
- Reported rate of Venous Thromboembolism
- Primary research, systematic review or meta-analysis
- English articles

Exclusion Criteria:

- Narrative Review
- Expert Opinions
- Not in English.

19 - Does tourniquet applied to upper extremity influence the incidence of post-operative VTE?

Search Terms:

((upper extremity[MeSH Terms]) OR (upper extremity[Title/Abstract]) OR (upper extremity[tw]) OR (arm) OR (upper limb) OR (forearm) OR (hand)) AND ((tourniquet[Mesh Terms]) OR (tourniquet[Title/Abstract]) OR (tourniquet[tw]) OR (tourniquet)) AND ((Venous Thromboembolism[Mesh Terms]) OR (Venous Thrombosis[Mesh Terms]) OR (pulmonary embolism) OR (deep vein thrombosis) OR (DVT) OR (venous thromboembolism) OR (VTE))

Total Results: 39 hits.

Inclusion Criteria:

- Upper Extremity Surgery or Injury
- Primary research
- English articles

Exclusion Criteria:

- Case Reports
- Narrative review articles
- Not in English.

20 - Is intraoperative heparin effective and safe to prevent postoperative VTE in patients undergoing orthopaedic procedures?

Search Terms:

(((((care, intraoperative[MeSH Terms]) OR (intraoperative period[MeSH Terms])) OR (intraoperativ*[Text Word])) OR ("during surgery"[Text Word])) OR ("during surg*" [Text Word])) AND (((heparin[MeSH Terms]) OR (intravenous heparin[Text Word])) OR (intravenous hepar*[Text Word])) OR (hepar*[Text Word])) AND (((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) And ((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure)) AND ((During surger*) OR (intrasurgery) OR (intraprocedural) OR (intra procedure)) AND ((Intravenous Heparin[MeSH Terms]) OR (Intravenous Heparin[Title/Abstract]) AND (Intravenous Heparin) OR (Heparin infusion*) OR (Heparin injection*))

Total Results: 304 hits.

Inclusion Criteria:

- Any orthopedic surgery (including joint replacement, spine surgery)
- Heparin administered intravenously during surgery (with or without additional VTE prophylaxis postoperatively)

Exclusion Criteria:

- Review articles
- Conference papers
- Case reports.

21 - Does the type of anesthesia administered influence the risk of VTE in orthopedic surgery?

Search Terms:

Hip/Knee/Lower Extremity AND Neuraxial AND Humans NOT Pediatrics NOT Conference Abstracts/Letter/Editorial

(((((("Arthroplasty, Replacement, Hip"[Mesh] OR ("arthroplasty"[TW] OR "arthroplasties"[TW]) AND "replacement"[TW] AND "hip"[TW]) OR "hip replacement arthroplasty"[TW] OR "hip replacement arthroplasties"[TW] OR ("hip"[TW] AND "replacement"[TW]) OR "hip replacement"[TW] OR "hip replacements"[TW] OR ("total"[TW] AND "hip"[TW] AND ("arthroplasty"[TW] OR "arthroplasties"[TW])) OR "total hip arthroplasty"[TW] OR "total hip arthroplasties"[TW] OR "THA"[TW] OR "hip arthroplasty"[TW] OR "hip arthroplasties"[TW] OR ("hip"[TW] AND ("arthroplasty"[TW] OR "arthroplasties"[TW])) OR "Hip Prosthesis"[Mesh] OR "Hip Prosthesis"[TW] OR "Hip Prostheses"[TW] OR ("total joint replacement"[TW] OR "total joint replacements"[TW]) AND "hip"[TW] OR ("TJR"[TW] AND "hip"[TW]) OR ("total joint arthroplasty"[TW] OR "total joint arthroplasties"[TW]) AND "hip"[TW] OR ("TJA"[TW] AND "hip"[TW]) OR "total hip replacement"[TW] OR "total hip replacements"[TW] OR ("Arthroplasty"[Mesh] AND "Hip"[Mesh]) OR ("Arthroplasty, Replacement"[Mesh] AND "Hip"[Mesh]) OR "hip surgery"[TW] OR ("alloarthroplasty"[TW] AND "hip"[TW])) OR ("Arthroplasty, Replacement, Knee"[Mesh] OR ("arthroplasty"[TW] OR "arthroplasties"[TW]) AND "replacement"[TW] AND "knee"[TW]) OR "knee replacement arthroplasty"[TW] OR "knee replacement arthroplasties"[TW] OR ("knee"[TW] AND "replacement"[TW]) OR "knee replacement"[TW] OR "knee replacements"[TW] OR ("total"[TW] AND "knee"[TW] AND ("arthroplasty"[TW] OR "arthroplasties"[TW])) OR "total knee arthroplasty"[TW] OR "total knee arthroplasties"[TW] OR "TKA"[TW] OR "knee arthroplasty"[TW] OR "knee arthroplasties"[TW] OR ("knee"[TW] AND ("arthroplasty"[TW] OR "arthroplasties"[TW])) OR "Knee Prosthesis"[Mesh] OR "Knee Prosthesis"[TW] OR "Knee Prostheses"[TW] OR ("total joint replacement"[TW] OR "total joint replacements"[TW]) AND "knee"[TW] OR ("TJR"[TW] AND "knee"[TW]) OR ("total joint arthroplasty"[TW] OR "total joint arthroplasties"[TW]) AND "knee"[TW] OR ("TJA"[TW] AND "knee"[TW]) OR "total knee replacement"[TW] OR "total knee replacements"[TW] OR ("Arthroplasty"[Mesh] AND "Knee"[Mesh]) OR ("Arthroplasty, Replacement"[Mesh] AND "Knee"[Mesh]) OR ("knee surgery"[TW] OR ("alloarthroplasty"[TW] AND "knee"[TW])) OR (((("Lower Extremity"[Mesh] OR "Lower Extremity"[TW] OR "Lower Extremities"[TW]) AND ("Arthroplasty"[Mesh] OR "Arthroplasty"[TW] OR "Arthroplasties"[TW])) OR ("Lower joint"[TW] OR "Lower joints"[TW]) AND ("Arthroplasty"[Mesh] OR "Arthroplasty"[TW] OR

"Arthroplasties"[TW]) OR ("hip/knee"[TW] AND ("Arthroplasty"[Mesh] OR "Arthroplasty"[TW] OR "Arthroplasties"[TW])) OR ("knee/hip"[TW] AND ("Arthroplasty"[Mesh] OR "Arthroplasty"[TW] OR "Arthroplasties"[TW])))) AND ("Anesthesia, Local"[Mesh] OR "Anesthetics, Local"[Mesh] OR "Anesthesia, Spinal"[Mesh] OR "Anesthesia, Epidural"[Mesh] OR "Anesthesia, Conduction"[Mesh] OR "Analgesia, Epidural"[Mesh] OR "regional anesthesia"[TW] OR "regional anaesthesia"[TW] OR "regional Anesthetics"[TW] OR "regional analgesia"[TW] OR ("Anesthesia"[TW] AND "Conduction"[TW]) OR ("Analgesia"[TW] AND "Epidural"[TW]) OR "Spinal"[TW] OR "Epidural"[TW] OR "Neuraxial"[TW] OR "intrathecal"[TW] OR "peridural"[TW] OR "Combined Spinal Epidural"[TW] OR "CSE"[TW])) NOT ((animals[mesh] NOT humans[mesh])) NOT ("adolescent"[MeSH] OR "adolescent"[TW] OR "adolescents"[TW] OR "youth"[TW] OR "child"[MeSH] OR "child"[TW] OR "children"[TW] OR "teenager"[TW] OR "teenagers"[TW] OR "infant"[MeSH] OR "infant"[TW] OR "infants"[TW] OR "pediatrics"[MeSH] OR "pediatrics"[TW] OR "pediatric"[TW] OR "paediatric"[TW] OR "paediatrics"[TW] OR "juvenile"[TW] OR "high school"[TW] OR "immature"[TW])) NOT (comment[pt] OR editorial[pt] OR letter[pt] OR "historical article"[pt] OR addresses[pt] OR news[pt] OR "newspaper article"[pt] OR "case report"[ti])

Total Results: 5,553 hits.

Inclusion Criteria:

- Randomized controlled trials and observational prospective or retrospective studies in primary elective THA and TKA.
- Direct comparison of VTE and other outcomes between Neuraxial Anesthesia (NA) versus General Anesthesia (GA).
- GA was defined as total intravenous, inhalational, combination thereof or when termed specifically as “general anesthesia” by the study authors.
- NA was defined as spinal, extradural, combined spinal and extradural as well as caudal anesthesia.

Exclusion Criteria:

- Patients under 18 years of age.
- Studies not reporting postoperative outcomes of interest.
- Case reports and case series.
- Narrative review articles.
- Studies without control groups.
- Non-English studies.

22 - Does the use of PMMA cement during orthopaedic procedures influence the risk of subsequent VTE?

Search Terms:

((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure)) AND ((polymethyl methacrylate[MeSH Terms]) OR (polymethyl methacrylate[Title/Abstract]) OR (polymethylmethacrylate[Title/Abstract]) OR (polymethylmethacrylate cement) OR (bone cement)) AND ((Venous Thrombosis[Mesh Terms])

OR (venous thromboembolism[MeSH Terms]) OR (pulmonary embolism) OR (deep vein thrombosis) OR (DVT) OR (venous thromboembolism) OR (VTE))

Total Results: 369 hits.

Inclusion criteria:

- Orthopaedic procedures with adequate documentation of VTE events utilizing PMMA or comparing the use of PMMA versus cases without bone cement.
- Meta-analysis,
- Systematic Reviews
- Randomized Controlled Trials
- Cohort studies
- Case reports.

Exclusion criteria:

- Surgical procedures not classified as an orthopaedic surgery
- Studies with incomplete data regarding VTE events.
- Narrative reviews.

23 - Does the intra-operative positioning of a patient undergoing orthopaedic surgery influence the risk of subsequent VTE?

Search Terms:

("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure) AND (((patient positioning[MeSH Terms]) OR (patient positionings[MeSH Terms]) OR ("patient positioning"[tw]) OR ("patient positioning"[tw])) OR ((prone position[MeSH Terms]) OR (supine position[MeSH Terms]) OR ("lateral decubitus"[tw]) OR ("lateral position"[tw]))))

Total Results: 33 hits.

Inclusion Criteria:

- Orthopaedic procedures
- Intraoperative patient positioning described
- Venous thromboembolism rates reported

Exclusion Criteria:

- Personal opinion articles
- Not in English.

24 - Is there a validated risk stratification scoring system that can be used for determining VTE risk of a patient undergoing orthopaedic procedures?

Search Terms:

((("Risk Assessment"[Mesh] OR "risk assessment" OR "risk assessments" OR "risk analysis" OR "risk analyses" OR "risk score" OR "caprini" OR "sensitivity" OR "specificity" OR "sensitivity and specificity"[MeSH Terms] OR predict* OR model* OR diagnos* OR "diagnosis"[MeSH Terms] OR "diagnosis" [Subheading] OR "algorithm" OR "algorithms" OR "algorithms"[MeSH Terms] OR calculat*) AND (valid*)) AND (("Embolism and

Thrombosis"[Mesh] OR "thromboembolism" OR "thromboembolisms" OR "thrombosis" OR "thromboses" OR "embolism" OR "embolisms" OR "embolus" OR "emboli" OR "thrombus" OR "thrombi" OR "pe" OR "vte" OR "vtes" OR "dvt" OR "dvts" OR "blood clot" OR "blood clots")) AND (("hip replacement") OR ("hip replacements") OR ("knee replacement") OR ("knee replacements") OR ("joint replacement") OR ("joint replacements") OR ("arthroplasty") OR ("arthroplasties") OR ("Arthroplasty"[Mesh]) OR ("Orthopedic Procedures"[Mesh]) OR ("Orthopedic Procedure") OR ("Orthopedic Procedures") OR ("Orthopedic Surgical Procedures") OR ("Orthopedic Surgical Procedure") OR ("Orthopedic Surgery") OR ("Orthopedic Surgeries") OR ("Orthopedic Rehabilitation Surgery") OR ("Orthopedic Rehabilitation Surgeries") OR ("Orthopaedic Procedure") OR ("Orthopaedic Procedures") OR ("Orthopaedic Surgical Procedures") OR ("Orthopaedic Surgical Procedure") OR ("Orthopaedic Surgery") OR ("Orthopaedic Surgeries") OR ("Orthopaedic Rehabilitation Surgery") OR ("Orthopaedic Rehabilitation Surgeries") OR ("fracture") OR ("fractures") OR ("lower limb") OR ("lower limbs") OR ("lower extremity"[MeSH Terms]) OR ("lower extremity") OR ("lower extremities") OR ("Spinal Fusion"[Mesh]) OR (spinal fusion) OR (spinal fusions) OR ("spine surgery") OR ("spine surgeries") OR ("Spondylodesis") OR ("Spondylodeses") OR ("Spondylosyndesis") OR ("Spondylosyndeses") OR ("hip fractures"[MeSH Terms]))

Total Results: 513 hits.

Inclusion Criteria:

- Directly aimed to develop or validate a risk stratification model
- Venous thromboembolism rates and score performance reported
- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not in English
- No direct assessment of the performance of the scoring system
- Scoring systems for non-surgical orthopaedic patients
- Only preoperative VTE was assessed.

25 - Is there a risk stratification system for predicting major bleeding events following orthopaedic procedures?

Search Terms:

((((((((((((risk score[Text Word]) OR (risk stratification[Text Word])) OR (risk calculator[Text Word]) OR (risk assessment[Text Word])) OR (risk scoring[Text Word])) OR (risk scor*[Text Word])) OR (patient stratification[Text Word])) OR (risk stratif*[Text Word])) OR (patient stratific*[Text Word])) OR (bleeding[MeSH Terms])) AND (((hemorrhage[MeSH Terms]) OR (bleeding[MeSH Terms]) OR (intracranial hemorrhage[MeSH Terms]) OR (postoperative hemorrhage[MeSH Terms]) OR (hemorrhage*[Title/Abstract]) OR (bleeding[Title/Abstract]) OR ("bleeding complication*[Title/Abstract]) OR ("bleeding disorder*[Title/Abstract]) OR ("major bleeding"[Title/abstract])))) AND (((((clinical prediction rule[MeSH Terms]) OR (clinical prediction rules[MeSH Terms])) OR (clinical prediction rule)) OR (clinical prediction rules)) OR (predict*) OR ("predictive factor*")))) AND (((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR

((orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND
((follow up study[MeSH Terms]) OR (follow up studies[MeSH Terms]) OR (prospective study
[MeSH Terms]) OR (prospective studies[MeSH Terms]))

Total Results: 101 hits.

Inclusion Criteria:

- Orthopaedic surgical procedure (elective or trauma)
- Major bleeding reported as an outcome (measurements of surgical site blood loss or requirement for blood transfusion)
- Study attempted to stratify the risk of major post-operative bleeding
- Primary research
- Articles with full text in English

Exclusion Criteria:

- Non-Orthopaedic surgical procedure
- Narrative review articles
- Articles with full text not in English.

26 - Is there a role for stratification of patients undergoing orthopaedic procedures for risk of bleeding? If so, should VTE prophylaxis be altered based on bleeding risk profile?

Search Terms:

((((((((((risk score[Text Word]) OR (risk stratification[Text Word])) OR (risk calculator[Text Word])) OR (risk assessment[Text Word])) OR (risk scoring[Text Word])) OR (risk scor*[Text Word])) OR (patient stratification[Text Word])) OR (risk stratif*[Text Word])) OR (patient stratific*[Text Word])) AND (((hemorrhage[MeSH Terms]) OR (bleeding[MeSH Terms]) OR (intracranial hemorrhage[MeSH Terms]) OR (postoperative hemorrhage[MeSH Terms]) OR (hemorrhage*[Title/Abstract]) OR (bleeding[Title/Abstract]) OR ("bleeding complication*[Title/Abstract]) OR ("bleeding disorder*[Title/Abstract]) OR ("major bleeding"[Title/abstract])))) AND (((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure)))

Total Results: 398 hits.

Inclusion Criteria:

- Articles mentioning major or minor bleeding risk factors
- Articles comparing chemoprophylaxis agents for VTE
- Articles comparing chemoprophylaxis agents on risk for bleeding
- Articles in English
- Full-text available articles

Exclusion Criteria:

- Not in English
- Not available full text.

27 - Is Thromboelastography (TEG) useful in predicting the risk of VTE in patients undergoing orthopaedic procedures?

Search Terms:

((((thrombelastography[MeSH Terms]) OR (thromboelastometry[MeSH Terms])) AND ((orthopedic) OR (orthopaedic) OR (orthopaedic trauma) OR (orthopedic trauma)) AND ((venous thromboembolism[MeSH Terms]) OR (venous thrombosis[MeSH Terms]) OR (pulmonary embolism) OR (deep vein thrombosis))))

Total Results: 119 hits.

Inclusion Criteria:

- Clinical studies of any level of evidence,
- Published in a peer-reviewed journal,
- Full-text available in English, and
- Investigated the ability of TEG or ROTEM to predict VTE in orthopaedic perioperative patients.

Exclusion Criteria:

- Abstracts, case reports, editorials, expert opinions, narrative reviews, and conference presentations
- By risk of bias assessment, studies with poor methodology
- Full text was unavailable or not in English.

28 - Does lower extremity deep venous thrombosis arising after total joint arthroplasty propagate to cause pulmonary embolus?

((((((lower extremity[MeSH Terms]) OR ("lower limb")) OR ("lower limbs")) OR ("lower extremities")) AND (("Venous Thrombosis"[Mesh] OR "deep vein thrombosis"))) AND (((pulmonary embolism[MeSH Terms]) OR ("pulmonary embolism"))))

Search Terms:

Total Results: 1,316 hits.

Inclusion Criteria:

- Published in peer-reviewed journals in English
- Both clinical and preclinical studies with any level of evidence
- Investigated the incidence and prognosis of DVT after lower limb orthopaedic procedures, with further descriptive delineation of PE rates.

Exclusion Criteria:

- Data was not accessible or missing
- Without an available full-text article
- Duplicates
- Studies with poor scientific methodology as per risk of bias assessment
- Abstracts, case reports, conference presentations, reviews, editorials, and expert opinions.

29 - How should patients with post-operative proximal (popliteal or supra-popliteal) DVT be managed?

Search Terms:

((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND ("Venous Thrombosis"[Mesh] OR "deep vein thrombosis") AND ("Postoperative Period"[Mesh] OR "Postoperative Period" OR "Postoperative

Complications"[Mesh] OR "Postoperative Complications" OR postoperative OR post-operative OR post-surgery OR post-surgical) AND ("Disease Management"[Mesh] OR "Disease Management" OR "Therapeutics"[Mesh] OR Therapeutics OR Therapy OR Treatment OR management) AND (proximal OR "isolated proximal" OR calf OR (above-the-knee) OR (popliteal) OR (supra-popliteal) OR (suprapopliteal))

Total Results: 271 hits.

Inclusion Criteria:

- Both clinical and preclinical studies with any level of evidence
- Published in peer-reviewed journals in English
- Investigated the management of proximal (popliteal or suprapopliteal) DVT after lower limb orthopaedic procedures.

Exclusion Criteria:

- Data was not accessible or missing
- Without an available full-text article
- Duplicates
- Studies with poor scientific methodology as per risk of bias assessment
- Abstracts, case reports, conference presentations, reviews, editorials, and expert opinions.

30 - How should patients with post-operative distal DVT be managed?

Search Terms:

(((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND ("Venous Thrombosis"[Mesh] OR "deep vein thrombosis") AND ("Postoperative Period"[Mesh] OR "Postoperative Period" OR "Postoperative Complications"[Mesh] OR "Postoperative Complications" OR postoperative OR post-operative OR post-surgery OR post-surgical) AND ("Disease Management"[Mesh] OR "Disease Management" OR "Therapeutics"[Mesh] OR Therapeutics OR Therapy OR Treatment OR management) AND (distal OR "isolated distal" OR calf OR (below-the-knee) OR (infrapopliteal) OR (infra-popliteal) OR "anterior tibial" OR "posterior tibial" OR peroneal)

Total Results: 224 hits.

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Not discussing distal DVT
- Narrative review articles
- Not English language.

31 - How should a patient with a soleal vein thrombosis detected after an orthopaedic procedure be managed?

Search Terms:

(((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND ("Venous Thrombosis"[Mesh] OR "deep vein thrombosis") AND

("Postoperative Period"[Mesh] OR "Postoperative Period" OR "Postoperative Complications"[Mesh] OR "Postoperative Complications" OR postoperative OR post-operative OR post-surgery OR post-surgical) AND ("Disease Management"[Mesh] OR "Disease Management" OR "Therapeutics"[Mesh] OR Therapeutics OR Therapy OR Treatment OR management) AND (soleal OR soleus)

Total Results: 31 hits.

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Not discussing distal DVT
- Narrative review articles
- Not English language.

32 - When do VTE episodes occur after orthopaedic procedures?

Search Terms:

("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND (occurrence OR development OR timing OR time-to-event) AND ("Postoperative Period"[Mesh] OR "Postoperative Period" OR "Postoperative Complications"[Mesh] OR "Postoperative Complications" OR postoperative OR post-operative OR post-surgery OR post-surgical) AND ("epidemiology" [Subheading] OR Epidemiology)

Total Results: 1,130 hits.

Inclusion Criteria:

- Any orthopaedic surgery
- Time to VTE events, including either DVT or PE

Exclusion Criteria:

- Narrative review articles
- Not in English.

33 - Should a patient with active lower extremity DVT undergo an orthopaedic procedure?

Search Terms:

("manage"[All Fields] OR "managed"[All Fields] OR "management s"[All Fields] OR "managements"[All Fields] OR "managing"[All Fields] OR "management"[All Fields] OR "disease management"[MeSH Terms] OR ("disease"[All Fields] AND "management"[All Fields]) OR "disease management"[All Fields] OR "strategies"[All Fields] OR "strategy"[All Fields] OR "strategy s"[All Fields]) OR ("epidemiology"[MeSH Subheading] OR "epidemiology"[All Fields] OR "incidence"[All Fields] OR "incidence"[MeSH Terms] OR "prevalence" [All Fields] OR "prevalence" [MeSH Terms]) AND ("acute"[All Fields] OR "acutely"[All Fields] OR "acutes"[All Fields] OR "active"[All Fields] OR "actively"[All Fields] OR "actives"[All Fields] OR ("preoperation"[All Fields] OR "preoperational"[All Fields] OR "preoperations"[All Fields] OR "preoperative"[All Fields] OR "preoperatively"[All Fields]))

AND ("venous thrombosis"[MeSH Terms] OR ("venous"[All Fields] AND "thrombosis"[All Fields]) OR "venous thrombosis"[All Fields] OR ("deep"[All Fields] AND "vein"[All Fields] AND "thrombosis"[All Fields]) OR "deep vein thrombosis"[All Fields] OR ("venous thromboembolism"[MeSH Terms] OR ("venous"[All Fields] AND "thromboembolism"[All Fields]) OR "venous thromboembolism"[All Fields]) OR ("pulmonary embolism"[MeSH Terms] OR ("pulmonary"[All Fields] AND "embolism"[All Fields]) OR "pulmonary embolism"[All Fields])) AND ("orthopaedic"[All Fields] OR "orthopedics"[MeSH Terms] OR "orthopedics"[All Fields] OR "orthopedic"[All Fields] OR "orthopaedical"[All Fields] OR "orthopedical"[All Fields] OR "orthopaedics"[All Fields] OR "fracture s"[All Fields] OR "fractures, bone"[MeSH Terms] OR "fracture"[All Fields] OR "fractures"[All Fields])

Total Results: 1,186 hits.

Inclusion Criteria:

- Primary Research
- Preoperative Evaluation or Management of VTE
- Both Elective and Emergent/Urgent Nature of Intervention

Exclusion Criteria:

- Review Articles
- Postoperative Evaluation or Management of VTE
- Non-Orthopaedic Procedures
- Non-English Literature.

34 - How long after a diagnosed DVT and/or PE can a patient undergo elective orthopaedic procedure?

Search Terms:

((("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))) AND ((timing[Mesh]) OR (following[title/abstract]) OR (perioperative [title/abstract])) AND (elective)

Total Results: 170 hits.

Inclusion Criteria:

- Elective orthopaedic procedure
- Pre-operative DVT and/or PE
- Timing of DVT and/or PE reported
- Primary research
- English articles

Exclusion Criteria:

- Non-orthopaedic elective procedure
- Post-operative DVT
- Not in English.

35 - Are there adverse consequences of not treating acute lower extremity DVT in patients undergoing orthopaedic procedures?

Search Terms:

Raw Search Strategy:

(Deep-venous thrombosis[MeSH Terms]) AND ((Orthopedic procedures[MeSH Terms]) OR (Joint prosthesis [MeSH Terms]) OR (Orthopedic fixation device [MeSH Terms])) AND ((Phlebography [MeSH Terms] OR (ultrasonography [MeSH Terms])) (Deep-venous thrombosis[MeSH Terms])) AND ((Orthopedic procedures[MeSH Terms]) OR (Joint prosthesis [MeSH Terms]) OR (Orthopedic fixation device [MeSH Terms])) AND (Randomized controlled trial[Publication type])

TOPIC:

((Deep venous thrombosis) AND (venography OR ultrasonography))

Refined by: WEB OF SCIENCE CATEGORIES: (ORTHOPEDICS)

Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI Timespan=All years

* Search strategy: (arthroplasty OR replacement OR prosthesis OR amputation OR arthroscopy OR orthopedic OR fixation)

MEDLINE:

1. Deep-venous thrombosis [MeSH Terms]
2. Orthopedic procedures [MeSH Terms]
3. Joint prosthesis [MeSH Terms]
4. Orthopedic fixation device [MeSH Terms]
5. Phlebography [MeSH Terms]
6. Ultrasonography [MeSH Terms]
7. Randomized controlled trial [Publication type]

Search Results:

- 1: 56,306
- 1 AND 2: 1,987
- 1 AND (2 OR 3 OR 4): 2,484
- 1 AND (2 OR 3 OR 4) AND (5 OR 6): 435
- 1 AND (2 OR 3 OR 4) AND 7: 380

Web of Science:

1. Deep venous thrombosis [topic]
2. Venography [topic]
3. Ultrasonography [topic]
4. Orthopedics [Web of science categories]

Search Results:

- 1: 27,970
- 1 AND (2 OR 3): 3,537
- 1 AND (2 OR 3) AND 4: 291

Cochrane Library:

1. Deep-venous thrombosis [MeSH Terms]
2. Orthopedic procedures [MeSH Terms]
3. Specific orthopedic procedures*

Search Results:

- 1: 2762
- 1 AND 2: 13
- 1 AND 3: 112

Inclusion Criteria:

- Confirmed DVT through venography, ultrasonography or ¹²³I-fibrinogen scanning

Exclusion Criteria:

- Antithrombotic treatment after detection of DVT
- Editorials, commentaries, narrative reviews, conference papers, book chapters, technical papers
- Non-english articles
- Full-text unavailable.

36 - Should venous thromboembolism (VTE) screening be performed in asymptomatic patients undergoing orthopaedic surgery?

Search Terms:

asymptomatic AND orthopaedic AND thrombus AND screening
 (((("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND (((mass screening[MeSH Terms]) OR (screening [Text word]) OR (screen*[Text word]) OR ("venous thromboembolism screening"[Text word]) OR (ultrasound[Text word]) OR ("ultrasound screening"[Text word]) ("venous compression ultrasound"[Text word]) OR (VCU[Text word]) OR ("Duplex ultrasonography"[Text word]) OR ("Doppler ultrasonography"[Text word]) OR ("Computed tomography"[Text word]) OR ("Magnetic resonance"[Text word]) OR (CT[Text word]) OR (MR[Text word]) OR ("angiography"[Text word]) OR ("venography"[Text word])))) AND (((asymptomatic condition[MeSH Terms]) OR (asymptomatic disease[MeSH Terms]) OR (asymptomatic condition*[Text word]) OR (asymptomatic disease*[Text word]) OR ("asymptomatic venous thromboembolism"[Text word]) OR ("asymptomatic VTE"[Text word])))) AND (((orthopedic surgeries[MeSH Terms]) OR (orthopedic surgical procedure[MeSH Terms]) OR (orthopedic surger*) OR (orthopedic surgical procedure*))) ("Venous Thromboembolism"[MeSH Terms] OR ("venous thrombosis"[MeSH Terms] OR ("venous"[All Fields] AND "thrombosis"[All Fields]) OR "venous thrombosis"[All Fields] OR ("deep"[All Fields] AND "venous"[All Fields] AND "thrombosis"[All Fields]) OR "deep venous thrombosis"[All Fields]) OR "dvt"[All Fields]) AND ("symptomatic"[All Fields] OR "symptomatically"[All Fields] OR "symptomatically"[All Fields] OR ("asymptomatic"[All Fields] OR "asymptomatically"[All Fields] OR "asymptomatically"[All Fields])) AND ("arthroplasty"[MeSH Terms] OR "arthroplasty"[All Fields] OR "arthroplasties"[All Fields] OR ((("orthopaedic"[All Fields] OR "orthopedics"[MeSH Terms] OR "orthopedics"[All Fields] OR "orthopedic"[All Fields] OR "orthopaedical"[All Fields] OR "orthopedical"[All Fields] OR "orthopaedics"[All Fields]) AND ("surgery"[MeSH Subheading] OR "surgery"[All Fields] OR "surgical procedures, operative"[MeSH Terms] OR ("surgical"[All Fields] AND "procedures"[All Fields] AND "operative"[All Fields]) OR "operative surgical procedures"[All Fields] OR "general surgery"[MeSH Terms] OR ("general"[All Fields] AND "surgery"[All Fields]) OR "general surgery"[All Fields] OR "surgery s"[All Fields] OR "surgerys"[All Fields] OR "surgeries"[All Fields])))) AND (randomizedcontrolledtrial[Filter])

Total Results: 282 hits.

Inclusion Criteria:

- Patients: Orthopaedic surgery

- Intervention: systematic screening of VTE using ultrasound or other imaging methods currently used
- Comparator: no systematic screening of VTE (either with standard or extended thromboprophylaxis,
- Outcomes: Venous thromboembolism; Bleeding events
- Study design: randomized controlled trials (Primary research)
- English articles

Exclusion Criteria:

- None.

37 - Are there specific clinical findings that are indicative of lower extremity DVT?

Search Terms:

((("Indicative finding*[Text word]) OR ("clinical sign"[tw]) OR ("clinical manifestation"[tw]) OR ("symptoms") OR ("clinical finding") OR ("diagnosis"))) AND (("Venous Thrombosis"[Mesh] OR "deep vein thrombosis") OR ("lower extremity deep vein thrombosis") OR ("lower extremity DVT")) NOT (("upper extremity") OR ("serum biomarker") OR ("blood biomarker")))

Total Results: 274 hits.

Inclusion Criteria:

- Contents: usefulness or value of clinical findings in the diagnosis of lower extremity DVT (e.g., sensitivity, specificity, likelihood ratio, pretest probability)
- Study types: systematic review, meta-analysis, review

Exclusion Criteria:

- Literature clearly unrelated to this CQ; cerebral venous thrombosis, pulmonary embolism, d-dimer, cerebral artery occlusion, dilated epidural venous plexus, long-term clinical impact, obstructive sleep apnea, retinal vein occlusion, diagnostic accuracy of ultrasound, diagnostic accuracy of magnetic resonance venography, post-thrombotic syndrome, chronic venous disease, superficial thrombophlebitis, chronic or subacute subclavian vein thrombosis, real-time tissue elastography, CT venography, epidemiology, management, outcome, superficial vein thrombosis, children, prevention, physical activity, diagnostic value of CT, sepsis, treatment or therapeutic research.

38 - Are there any serological biomarkers for the diagnosis of DVT/PE?

Search Terms:

PubMed:

(((((("serology"[MeSH Terms] OR "serologic tests"[MeSH Terms] OR "serology"[Title/Abstract] OR "serologic tests"[MeSH Terms] OR ("serolog*[All Fields] AND "test*[Title/Abstract]) OR "serologic marker"[Title/Abstract] OR "biomarkers"[MeSH Terms] OR "biomarker*[Title/Abstract] OR "serology marker"[Title/Abstract] OR "serologic markers"[Title/Abstract] OR "serology markers"[Title/Abstract]) OR ("d-dimer")) OR ("plasmin-α2-antiplasmin complex")) OR ("soluble thrombomodulin")) OR ("thrombin-antithrombin")) OR ("tissue plasminogen activator inhibitor complex")) AND (((diagnosis[MeSH Terms]) OR (diagnos*[Title/Abstract])) OR (Diagnosis[MeSH Subheading]))) AND (((((((venous thrombosis[MeSH Terms]) OR (deep venous

thrombosis[MeSH Terms])) OR ("deep vein thrombosis")) OR ("DVT")) OR (venous thromboembolism[MeSH Terms])) OR ("venous thromboembolism")) OR (pulmonary embolism[MeSH Terms])) OR (pulmonary embolism*)) AND (((orthopedics[MeSH Terms]) OR (orthopedic procedure[MeSH Terms]) OR (orthopedic procedure*) OR (orthopaedic

S. No.	Search Words in Pubmed
1.	"serology"[MeSH Terms]
2.	"serologic tests"[MeSH Terms]
3.	"serology"[Title/Abstract]
4.	"serologic tests"[MeSH Terms]
5.	"serolog*"[All Fields] AND "test*"[Title/Abstract]
6.	"serologic marker"[Title/Abstract]
7.	"biomarkers"[MeSH Terms]
8.	"biomarker*"[Title/Abstract]
9.	"serology marker"[Title/Abstract]
10.	"plasmin-α2–antiplasmin complex"
11.	"soluble thrombomodulin"
12.	"thrombin–antithrombin"
13.	"tissue plasminogen activator inhibitor complex"
14.	OR/1-14
15.	diagnosis[MeSH Terms]
16.	diagnos*[Title/Abstract]
17.	Diagnosis[MeSH Subheading]
18.	OR/15-17
19.	"venous thrombosis"[MeSH Terms]
20.	"deep venous thrombosis"[MeSH Terms]
21.	"deep vein thrombosis"
22.	"DVT"
23.	"venous thromboembolism"[MeSH Terms]
24.	"venous thromboembolism"
25.	"pulmonary embolism"[MeSH Terms]
26.	"pulmonary embolism*"
27.	OR/19-27
28.	orthopedics[MeSH Terms]
29.	"orthopedic procedure"[MeSH Terms]
30.	"orthopedic procedure*"
31.	"orthopaedic procedure*"
32.	"orthopedic surger*"
33.	"orthopaedic surger*"
34.	OR/28-33
35.	#14 AND #18 AND #27 AND #34

procedure*) OR (orthopedic surger*) OR (orthopaedic surger*))

Table A38-1:

Cochrane Library:

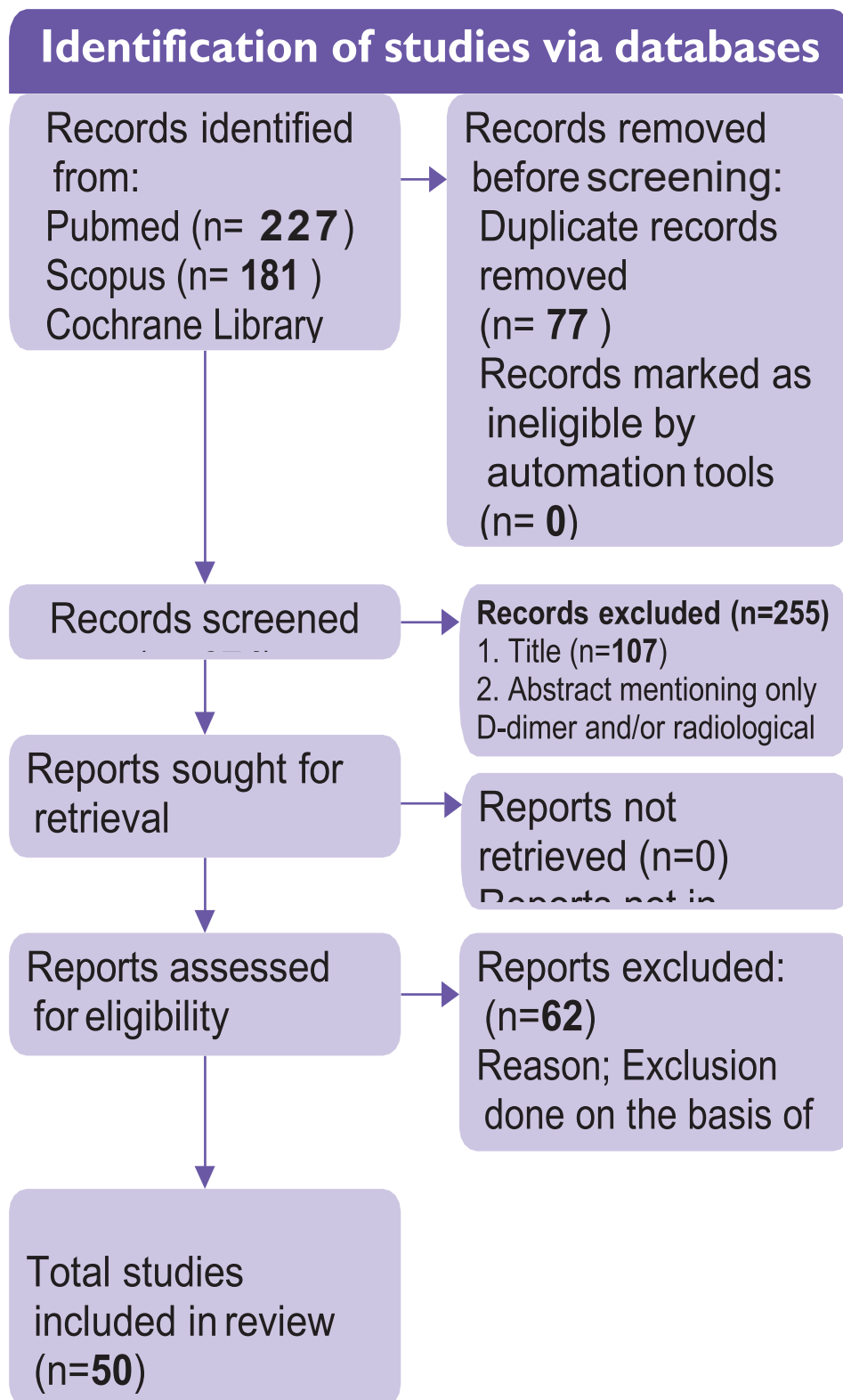
Search Name: **Markers in DVT (Cochrane Library)**

Date Run: 01/07/2021 06:13:35

Scopus:

TITLE-ABS-KEY(DVT OR VTE OR VENOUS THROMBOSIS OR THROMBOEMBOLISM
OR DEEP VEIN THROMBOSIS AND SEROLOGY OR MARKER OR BIOMARKER OR d-
dimer AND ORTHOPAEDIC OR ORTHOPEDIC OR FRACTURE OR ORTHO* SURGERY)

PRISMA Flowchart A38-1:



ID	Search Hits	No.
#1	MeSH descriptor: [Serology] this term only	5
#2	MeSH descriptor: [Serologic Tests] this term only	199
#3	MeSH descriptor: [Serologic Tests] explode all trees	1602
#4	MeSH descriptor: [Biomarkers] this term only	14572
#5	MeSH descriptor: [Diagnosis] explode all trees	342030
#6	(serology):ti,ab,kw	1535
#7	(serolog):ti,ab,kw	0
#8	(test):ti,ab,kw	261243
#9	(serologic marker):ti,ab,kw	69
#10	(serology markers):ti,ab,kw	116
#11	(d-dimer):ti,ab,kw	2200
#12	(plasmin- α 2-antiplasmin complex):ti,ab,kw	4
#13	(soluble thrombomodulin):ti,ab,kw	161
#14	(thrombin-antithrombin):ti,ab,kw	669
#15	(tissue plasminogen activator inhibitor complex):ti,ab,kw	110
#16	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15	550708
#17	MeSH descriptor: [Venous Thrombosis] this term only	1284
#18	MeSH descriptor: [Venous Thrombosis] this term only	1284
#19	(deep vein thrombosis):ti,ab,kw	5354
#20	(DVT):ti,ab,kw	2432
#21	(venous thromboembolism):ti,ab,kw	4406
#22	#17 OR #18 OR #19 OR #20 OR #21	9445
#23	MeSH descriptor: [Orthopedics] this term only	352
#24	MeSH descriptor: [Orthopedic Procedures] this term only	973
#25	(orthopedic procedure):ti,ab,kw	2071
#26	(orthopaedic surger):ti,ab,kw	3
#27	(orthopedic surger):ti,ab,kw	3
#28	#23 OR #24 OR #25 OR #26 OR #27	3160
#29	#16 AND #22 AND #28	43

Table A38-2:

Inclusion Criteria:

- Serological markers for DVT and/or PE
- Articles with serological markers other than D-dimer
- Orthopaedic surgeries
- Journals only

Exclusion Criteria:

- Editorials/case reports/letter to editors

- Articles pertaining to herbal medicine
- Animal studies
- Non-English articles
- Books, conference proceedings.

39 - What is the optimal imaging modality for detection of upper and lower extremity DVT for patients undergoing orthopaedic procedures?

Search Terms:

(((((diagnostic imaging[MeSH Terms]) OR (diagnos* imag*)) OR (imaging)) OR (Diagnosis[MeSH Subheading]))) AND (((((((((((venous thrombosis[MeSH Terms]) OR (venous thrombos*)) OR ("deep vein thrombosis")) OR ("DVT")) OR (upper extremity deep vein thrombosis[MeSH Terms])) OR ("upper extremity deep vein thrombosis")) OR ("upper extremity DVT")) OR ("upper limb deep vein thrombosis")) OR ("upper limb DVT")) OR (lower limb[MeSH Terms])) AND (deep vein thrombosis[MeSH Terms])) OR ("lower extremity deep vein thrombosis")) OR ("lower extremity DVT")) OR ("lower limb deep vein thrombosis")) OR ("lower limb DVT")) OR ("distal deep vein thrombosis")) OR ("distal DVT")) AND ((orthopedics[MeSH Terms]) OR (orthopedic procedure[MeSH Terms]) OR (orthopedic procedure*) OR (orthopaedic procedure*) OR (orthopedic surgeon*) OR (orthopaedic surgeon*))

Total Results: 900 hits

Inclusion Criteria:

- Describes at least one imaging modality
- Evaluates the diagnostic accuracy (i.e. sensitivity and specificity), cost, accessibility or potential adverse effects of the imaging modality
- Upper or lower extremity DVT
- Primary research
- English articles

Exclusion Criteria:

- Exclusively describes the treatment of DVT
- Describes the use of imaging in diagnosis of DVT in venous segments not within the upper or lower extremity
- Narrative reviews, case reports,
- Not in English.

40 - Is there a role for lower extremity venograms for the diagnosis of lower extremity DVT?

Search Terms:

((("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((phlebography[MeSH Terms]) OR (venogram*[Title/Abstract]) OR (phlebography[Title/Abstract]))) AND (("Lower Extremity"[Mesh] OR (lower extremit*[Title/Abstract]) OR (lower limb*[Title/Abstract])))

Total Results: 1,592 hits

Inclusion Criteria:

- Primary research

- English articles

Exclusion Criteria:

- Narrative review articles
- Not English language.

41 - What is the most optimal imaging modality for diagnosis of PE following orthopaedic surgery?

Search Terms:

(((((diagnostic imaging[MeSH Terms]) OR (diagnos* imag*)) OR ("imaging")) OR (Diagnosis[MeSH Subheading])) AND (((diagnosis[MeSH Terms]) OR (diagnos*)))) AND ((pulmonary embolism[MeSH Terms]) OR (pulmonary embolism*)) AND (((((orthopedics[MeSH Terms]) OR (orthopedic procedure[MeSH Terms]))) OR (orthopedic procedure*)) OR (orthopaedic procedure*)) OR (orthopedic surgery*)) OR (orthopaedic surgery*))

Total Results: 1,080 hits

Inclusion Criteria:

- Review articles
- Meta-analysis & systematic reviews
- Controlled cohort and epidemiological studies
- Rates of PE incidence reported
- Studies in English

Exclusion Criteria:

- Case reports, case series, and editorials
- Studies with small patient samples
- Abstract only available
- Studies not in English.

42 - Do pulmonary arterial filling defects seen on cross-sectional imaging of the lung always represent a PE?

Search Terms:

(((((("venous thromboembolism"[MeSH Terms]) OR ("angiography"[MeSH Terms])) OR ("computed tomography angiography"[MeSH Terms])) OR (pulmonary embolism[MeSH Terms])) OR (angiographies, magnetic resonance[MeSH Terms])) AND ("diagnosis"[MeSH Terms]))) AND ("pulmonary veins"[MeSH Major Topic])

Total Results: 1,009 hits

Inclusion Criteria:

- Published in peer-reviewed journals in English
- Both clinical and preclinical studies with any level of evidence
- Investigated the diagnostic role of the CT and MR angiogram for PEs
- Provided differential diagnosis for arterial filling defect found on imaging modalities.

Exclusion Criteria:

- Data was not accessible or missing
- Without an available full-text article

- Duplicates and studies with poor scientific methodology as per risk of bias assessment
- Abstracts, case reports, conference presentations, reviews, editorials, and expert opinions were excluded.

43 - Do all emboli detected on cross-sectional imaging of the lung lead to the same degree of oxygenation compromise (hypoxia)?

Search Terms:

((("pulmonary embolism"[MeSH Terms] OR ("pulmonary"[All Fields] AND "embolism"[All Fields]) OR "pulmonary embolism"[All Fields]) AND ("clot"[All Fields] AND ("burden"[All Fields] OR "burdened"[All Fields] OR "burdening"[All Fields] OR "burdens"[All Fields]))) OR "PaO2"[All Fields]) AND ("hypoxia"[MeSH Terms] OR "hypoxia"[All Fields] OR "hypoxia s"[All Fields] OR "hypoxias"[All Fields]) AND ("mortality"[MeSH Terms] OR "mortality"[All Fields] OR "mortalities"[All Fields] OR "mortality"[MeSH Subheading]))

Total Results: 6,980 hits

Inclusion Criteria:

- Published in peer-reviewed journals in English
- Both clinical and preclinical studies with any level of evidence
- Studies with confirmation of Acute Pulmonary Embolism through computed tomography pulmonary angiography (CTPA), including Massive, Submassive, Segmental, and Subsegmental emboli
- Included study types: systematic reviews, meta-analyses, randomized controlled trials, cohort studies, and case-controlled studies.

Exclusion Criteria:

- Data was not accessible or missing
- Without an available full-text article
- Duplicates and studies with poor scientific methodology as per risk of bias assessment
- Studies with sample sizes <20 patients
- Conference papers; proceedings; editorials; commentaries; guidelines and book chapters; technical papers; and unavailable full-text manuscripts
- Acute Pulmonary Embolism diagnosis not due to thromboembolism (i.e., fat embolism, amniotic fluid embolism, air embolism)
- Pulmonary Embolism Diagnosis by V/Q Scan.

44 - Is there an association between pulmonary embolus and secondary pulmonary hypertension after major orthopaedic surgery?

Search Terms:

PubMed Search Strategy:

("Pulmonary Embolism"[MeSH Terms] OR "Pulmonary Thromboembolisms"[Title/Abstract] OR "pulmonary embol*" [Title/Abstract] OR "Venous Thromboembolism"[MeSH Terms] OR "obliterative pulmonary vascular disease"[Title/Abstract])

AND

((("hypertension, pulmonary"[MeSH Terms:noexp] OR "Pulmonary Arterial Hypertension"[MeSH Terms] OR "Pulmonary Arterial Hypertension"[Title/Abstract] OR "pulmonary HTN"[Title/Abstract] OR "thromboembolic pulmonary

hypertension"[Title/Abstract] OR "pulmonary vascular resistance"[Title/Abstract] OR "CTEPH"[Title/Abstract] OR "pulmonary hypertension"[Title/Abstract]) NOT ("primary"[Title] OR "idiopathic"[Title]))

AND

((("Postoperative Complications"[MeSH Terms] OR "surgical procedures, operative"[MeSH Terms]) NOT ("Endarterectomy"[MeSH Terms] OR "Embolectomy"[MeSH Terms] OR "Thrombectomy"[MeSH Terms] OR "Angioplasty"[MeSH Terms] OR "Mechanical Thrombolysis"[MeSH Terms] OR "Thrombolytic Therapy"[MeSH Terms] OR "endarterectom*"[Title/Abstract] OR "thromboendarterectom*"[Title/Abstract] OR "embolectom*"[Title/Abstract] OR "thrombectom*"[Title/Abstract] OR "angioplast*"[Title/Abstract] OR "thromboly*"[Title/Abstract])) AND (humans[Filter]) AND (english[Filter]))

Total Results: 207 hits

Embase Search Strategy:

('lung embolism'/exp OR 'chronic lung embolism':ti,ab OR 'embolism, lung':ti,ab OR 'lung embolism':ti,ab OR 'lung embolization':ti,ab OR 'lung embolus':ti,ab OR 'lung embolus recurrence':ti,ab OR 'lung emboly':ti,ab OR 'lung microembolism':ti,ab OR 'lung microembolization':ti,ab OR 'lung microembolus':ti,ab OR 'lung thromboembolism':ti,ab OR 'microembolus, lung':ti,ab OR 'pulmonary embolism':ti,ab OR 'pulmonary embolization':ti,ab OR 'pulmonary embolus':ti,ab OR 'pulmonary microembolism':ti,ab OR 'pulmonary thromboembolic disease':ti,ab OR 'pulmonary thromboembolism':ti,ab OR 'thromboembolism, lung':ti,ab OR 'venous thromboembolism'/exp OR 'thromboembolism, venous':ti,ab OR 'vein thromboembolism':ti,ab OR 'venous thromboembolism':ti,ab OR 'obliterative pulmonary vascular disease':ti,ab)

AND

('pulmonary hypertension'/exp OR 'essential pulmonary hypertension':ti,ab OR 'hypertension, lung':ti,ab OR 'hypertension, pulmonary':ti,ab OR 'hypertensive pulmonary vascular disease':ti,ab OR 'idiopathic pulmonary arterial hypertension':ti,ab OR 'lung arterial hypertension':ti,ab OR 'lung artery hypertension':ti,ab OR 'lung hypertension':ti,ab OR 'pulmonary arterial hypertension':ti,ab OR 'pulmonary artery hypertension':ti,ab OR 'pulmonary fixed hypertension':ti,ab OR 'pulmonary hypertension':ti,ab OR 'pulmonary hypertensive disease':ti,ab OR 'pulmonary hypertensive diseases':ti,ab OR 'pulmonary hypertensive disorder':ti,ab OR 'pulmonary hypertensive disorders':ti,ab OR 'pulmonary htn':ti,ab OR 'thromboembolic pulmonary hypertension':ti,ab OR 'lung vascular resistance'/exp OR 'lung vascular impedance':ti,ab OR 'lung vascular resistance':ti,ab OR 'lung vessel resistance':ti,ab OR 'pulmonary vascular resistance':ti,ab OR 'pulmonary vascular tone':ti,ab OR 'vascular resistance, lung':ti,ab OR cteph:ti,ab) NOT 'idiopathic pulmonary hypertension'/exp

AND

('postoperative complication'/exp OR 'complication, postoperative' OR 'complication, surgical' OR 'post-operation complication' OR 'post-operative complication' OR 'post-operative complications' OR 'post-surgery complication' OR 'post-surgical complication' OR 'postoperation complication' OR 'postoperative complication' OR 'postoperative complications' OR 'postsurgery complication' OR 'postsurgical complication' OR 'surgical complication' OR 'surgery'/exp OR 'diagnosis, surgical' OR 'diagnostic techniques, surgical' OR 'operation' OR 'operation care' OR

'operative intervention' OR 'operative repair' OR 'operative restoration' OR 'operative surgery'
OR 'operative surgical procedure' OR 'operative surgical procedures' OR 'operative treatment'
OR 'research surgery' OR 'resection' OR 'specialties, surgical' OR 'surgery' OR 'surgery,
operative' OR 'surgical care' OR 'surgical correction' OR 'surgical diagnosis' OR 'surgical
diagnostic techniques' OR 'surgical exposure' OR 'surgical intervention' OR 'surgical
management' OR 'surgical operation' OR 'surgical practice' OR 'surgical procedures, operative'
OR 'surgical repair' OR 'surgical research' OR 'surgical restoration' OR 'surgical service' OR
'surgical speciality' OR 'surgical specialties' OR 'surgical specialty' OR 'surgical therapy' OR
'surgical treatment' OR 'orthopedic surgery'/exp OR 'bone surgery' OR 'orthopaedic operation'
OR 'orthopaedic procedures' OR 'orthopaedic surgery' OR 'orthopedic operation' OR 'orthopedic
procedures' OR 'orthopedic surgery' OR 'surgery, orthopaedic' OR 'surgery, orthopedic' OR
'surgical orthopaedics' OR 'surgical orthopedics' OR 'arthroplasty'/exp OR 'alloarthroplasty' OR
'arthroplasties' OR 'arthroplasty' OR 'joint reconstruction' OR 'splenectomy'/exp OR 'spleen
resection' OR 'splenectomy' OR 'splenectomy' OR 'hip arthroplasty'/exp OR 'arthroplasty, hip'
OR 'hip arthroplasties' OR 'hip arthroplasty' OR 'hip extracapsular arthroplasty' OR 'hip joint
alloplasty' OR 'hip joint arthroplasty' OR 'hip plasty' OR 'hiparthroplasty' OR 'knee
arthroplasty'/exp OR 'arthroplasty, knee' OR 'knee arthroplasties' OR 'knee arthroplasty' OR 'knee
reconstruction' OR 'reconstruction, knee' OR 'shoulder arthroplasty'/exp OR 'shoulder
arthroplasties' OR 'shoulder arthroplasty' OR 'shoulder replacement'/exp OR 'arthroplasty,
replacement, shoulder' OR 'shoulder replacement' OR 'shoulder replacement arthroplasty' OR
'shoulder replacements' OR 'leg injury'/exp OR 'injury, leg' OR 'leg injuries' OR 'leg injury' OR
'leg trauma' OR 'lower extremity injury' OR 'lower extremity trauma' OR 'trauma lower limb')
NOT ('endarterectomy'/exp OR 'end arteriectomy' OR 'endarterectomy' OR 'endarteriectomy' OR
'thrombendarterectomy' OR 'thromboendarterectomy' OR 'thromboendarteriectomy') NOT
('embolectomy'/exp OR 'embolectomy') NOT ('thrombectomy'/exp OR 'thrombectomy') NOT
('angioplasty'/exp OR 'angioplasty') NOT ('mechanical thrombectomy'/exp OR 'mechanical
embolectomy' OR 'mechanical thrombectomy' OR 'mechanical thrombolysis' OR
'pharmacomechanical thrombectomy') NOT ('fibrinolytic therapy'/exp OR 'fibrinolytic therapy'
OR 'fibrinolytic treatment' OR 'thrombolytic therapy' OR 'thrombolytic treatment') NOT ('blood
clot lysis'/exp OR 'blood clot lysis' OR 'clot lysis' OR 'thrombolysis')

AND

'human'/de

AND

[english]/lim

Total Results: 1,882 hits

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not English language.

45 - Is administration of any VTE prophylaxis effective in reducing the risk of fatal PE?

Search Terms:

PubMed

((((((("preventive medicine"[MeSH Terms])) OR (prevention)) OR (prevent)) OR (prophylaxis)) OR ("primary prevention"[MeSH Terms])) AND (((("pulmonary embolism"[MeSH Terms]) OR (pulmonary embol*)) OR (lung embol*))) AND (((((((("orthopedic procedures"[MeSH Terms]) OR ("orthopedics"[MeSH Terms])) OR (orthopedic)) OR (orthopaedic)) OR (orthopedic procedure)) OR (orthopaedic procedure)))) AND (((((((("fatal outcome"[MeSH Terms]) OR ("mortality"[MeSH Terms])) OR (fatal)) OR (fatal outcome)) OR (mortality) OR (death))

Medline

- 1) exp Primary Prevention/
- 2) prevention*.mp.
- 3) prevent*.mp.
- 4) prophylaxis.mp.
- 5) 1 or 2 or 3 or 4
- 6) exp Fatal Outcome/
- 7) exp Mortality/
- 8) exp Death/
- 9) fatal outcome.mp.
- 10) fatal*.mp.
- 11) mortality.mp.
- 12) death.mp.
- 13) 6 or 7 or 8 or 9 or 10 or 11 or 12
- 14) exp Pulmonary Embolism/
- 15) pulmonary embol*.mp.
- 16) lung embol*.mp.
- 17) 24 or 25 or 26
- 18) exp Orthopedics/
- 19) exp Orthopedic Procedures/
- 20) orthopedic*.mp.
- 21) orthopaedic*.mp.
- 22) orthopaedic procedure.mp.
- 23) orthopedic procedure.mp.
- 24) 18 or 19 or 20 or 21 or 22 or 23
- 25) 5 and 13 and 17 and 24

Cochrane

- #1 MeSH descriptor: [Primary Prevention] explode all trees
- #2 (prevention*)
- #3 (prevent*)
- #4 (prophylaxis*)
- #5 MeSH descriptor: [Fatal Outcome] explode all trees
- #6 MeSH descriptor: [Mortality] explode all trees
- #7 MeSH descriptor: [Death] explode all trees
- #8 (fatal outcome)
- #9 (fatal*)

- #10 (mortality*)
- #11 (death)
- #12 MeSH descriptor: [Pulmonary Embolism] explode all trees
- #13 (lung embol*)
- #14 (pulmonary embol*)
- #15 MeSH descriptor: [Orthopedic Procedures] explode all trees
- #16 (orthopedic procedure) OR (orthopaedic procedure) OR (orthopedic) OR (orthopaedic)
- #17 #1 or #2 or #3 or #4
- #18 #5 or #6 or #7 or #8 or #9 or #10 or #11
- #19 #12 or #13 or #14
- #20 #15 or #16
- #21 {AND #17-#21}

Scopus

(TITLE-ABS-KEY ("*lung embol**") OR TITLE-ABS-KEY ("*pulmonary embol**")
 AND TITLE-ABS-KEY ("*fatal outcome*") OR TITLE-ABS-KEY (*fatal*) OR TITLE-ABS-
 KEY (*death*) OR TITLE-ABS-KEY (*mortality*)
 AND TITLE-ABS-KEY (*prevention**) OR TITLE-ABS-KEY (*prevent**) OR TITLE-ABS-
 KEY (*prophylaxis*) OR TITLE-ABS-KEY ("*primary prevention*")
 AND TITLE-ABS-KEY (*orthopaedic*) OR TITLE-ABS-KEY (*orthopedic*) OR TITLE-
 ABS-KEY ("*orthopedic procedure**") OR TITLE-ABS-KEY ("*orthopaedic procedure**"))

Embase

- 1) exp prevention/
- 2) exp "prevention and control"/
- 3) exp primary prevention/
- 4) exp thrombosis prevention/ or exp embolism prevention/
- 5) exp prophylaxis/
- 6) prevention*.mp.
- 7) prevent*.mp.
- 8) prophylaxis*.mp.
- 9) 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8
- 10) exp fatality/
- 11) exp mortality/
- 12) fatal outcome.mp.
- 13) fatal*.mp.
- 14) mortality.mp.
- 15) exp death/
- 16) death.mp.
- 17) 10 or 11 or 12 or 13 or 14 or 15 or 16
- 18) exp lung embolism/
- 19) pulmonary embol*.mp.
- 20) lung embol*.mp.
- 21) 18 or 19 or 20
- 22) exp orthopedics/

- 23) exp orthopedic surgery/
- 24) orthopedic procedure.mp.
- 25) orthopaedic procedure.mp.
- 26) orthopedic.mp.
- 27) orthopaedic.mp.
- 28) 22 or 23 or 24 or 25 or 26 or 27
- 29) 9 and 17 and 21 and 28

Total Results: 1,921 hits

Inclusion Criteria:

- Confirmation of PE, confirmation of death or link to mortality, history of orthopaedic pathology in previous 3 months
- Systematic reviews, meta-analyses, randomized controlled trials, cohort studies, case controlled
- Date of publication (years): 1990-present all articles, pre-1990 RCT only
- Languages: English

Exclusion Criteria:

- Other cause of death, data not pertaining to fatality due to PE, other causes of fatal PE
- Case reports, narrative review, conference abstracts.

46 - What endpoint should be used to determine the efficacy of a VTE prophylactic agent?

Search Terms:

("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND (((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND ("Comparative Effectiveness Research"[Mesh] OR (Comparative Effectiveness Research) OR efficacy OR effectiveness OR advantage OR benefit) AND ("Outcome Assessment, Health Care"[Mesh] OR (Outcome Assessment, Health Care) OR "Endpoint Determination"[Mesh] OR (Endpoint Determination) OR endpoint OR outcome) AND ("Drug Therapy"[Mesh] OR (Drug Therapy))

Total Results: 352 hits

Inclusion Criteria:

- Both clinical and preclinical studies with any level of evidence
- Studies published in peer-reviewed journals in English
- Studies investigating endpoints to determine the efficacy of VTE prophylactic agents.

Exclusion Criteria:

- Data was not accessible or missing
- Without an available full-text article
- Duplicates and studies with poor scientific methodology as per risk of bias assessment
- Abstracts, case reports, conference presentations, reviews, editorials, and expert opinions were excluded.

NOTE: Same references as in main manuscript.

47 - What is the optimal duration of VTE prophylaxis following major orthopaedic procedures?

Search terms:

(((((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND ((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))) AND (("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis")))) AND (((((Duration of Therapy[MeSH Terms]) OR (duration of therapy[Text Word])) OR (Optimal duration[Text Word])) OR (duration of treatment[Text Word])) OR (optimal duration of treatment[Text Word]))

Total Results: 31 hits

Inclusion Criteria:

- Major orthopaedic surgery of the lower limb
- Direct comparison between short and long term VTE prophylaxis regimens
- Outcomes including: VTE, PE, major bleeding, minor bleeding

Exclusion Criteria:

- Narrative review articles.

Analysis

Total: 20 Studies: ^{1240; 1246-1248; 1251; 1254,1255}

Figure A47-1: Deep Venous Thrombosis RCTs: Hip fracture repair, THA, TKA

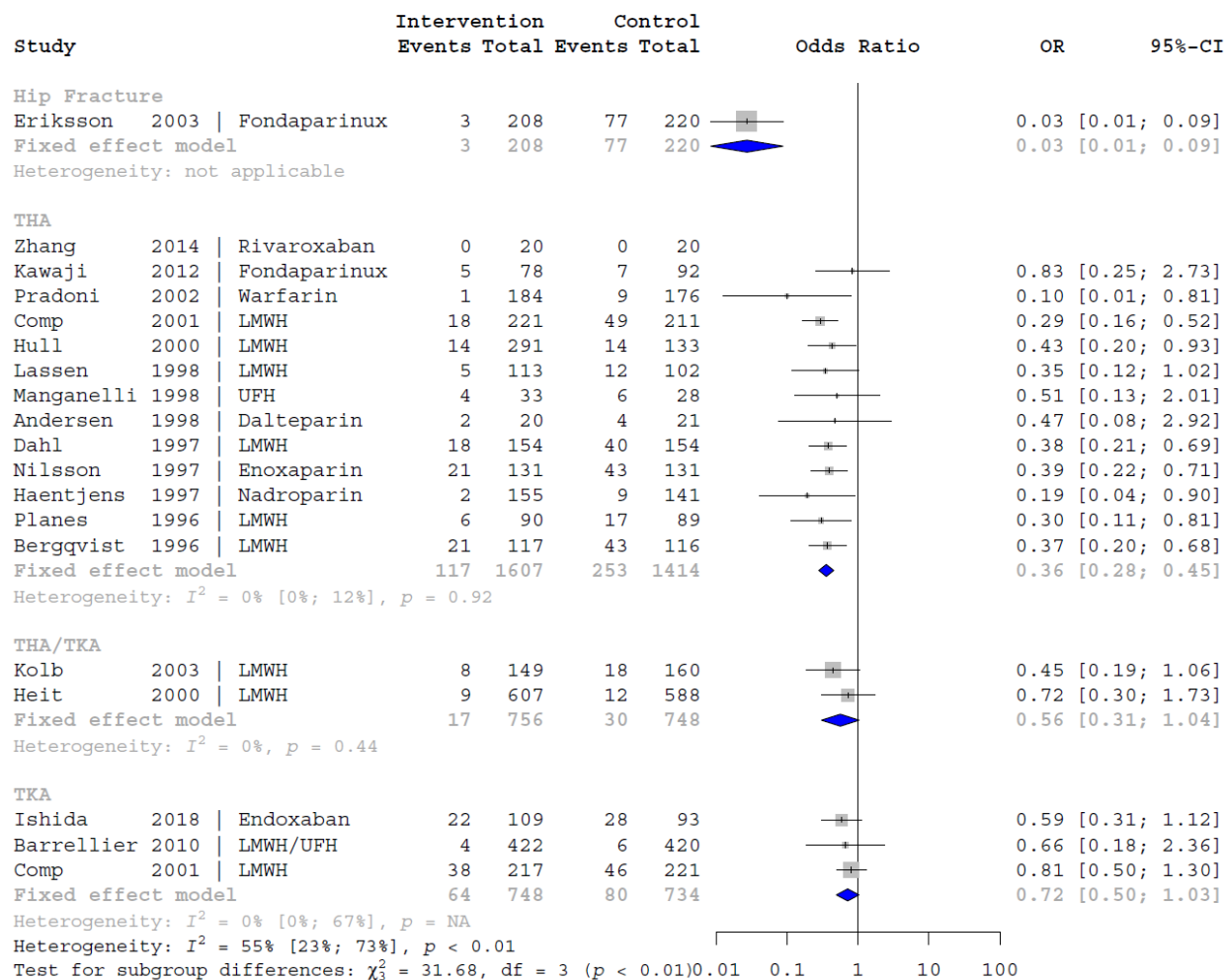


Figure A47-2: Deep Venous Thrombosis RCT: Arthroscopic Surgery (ACL repair)

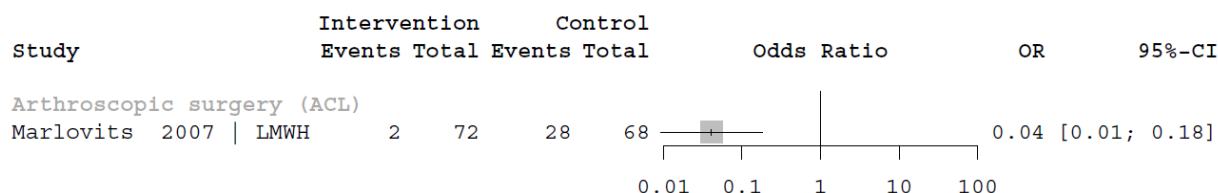


Figure A47-3: Deep Venous Thrombosis Observational: THA

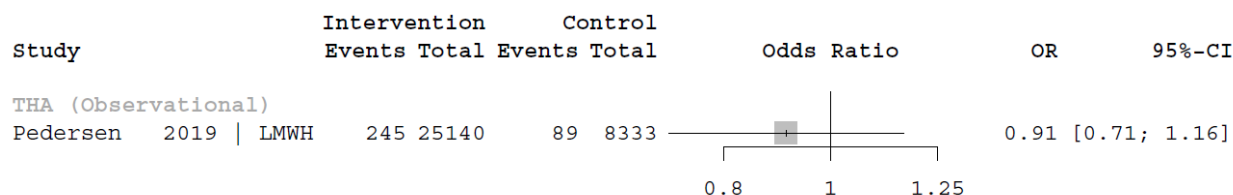


Figure A47-4: Major Bleeding RCTs: all studies

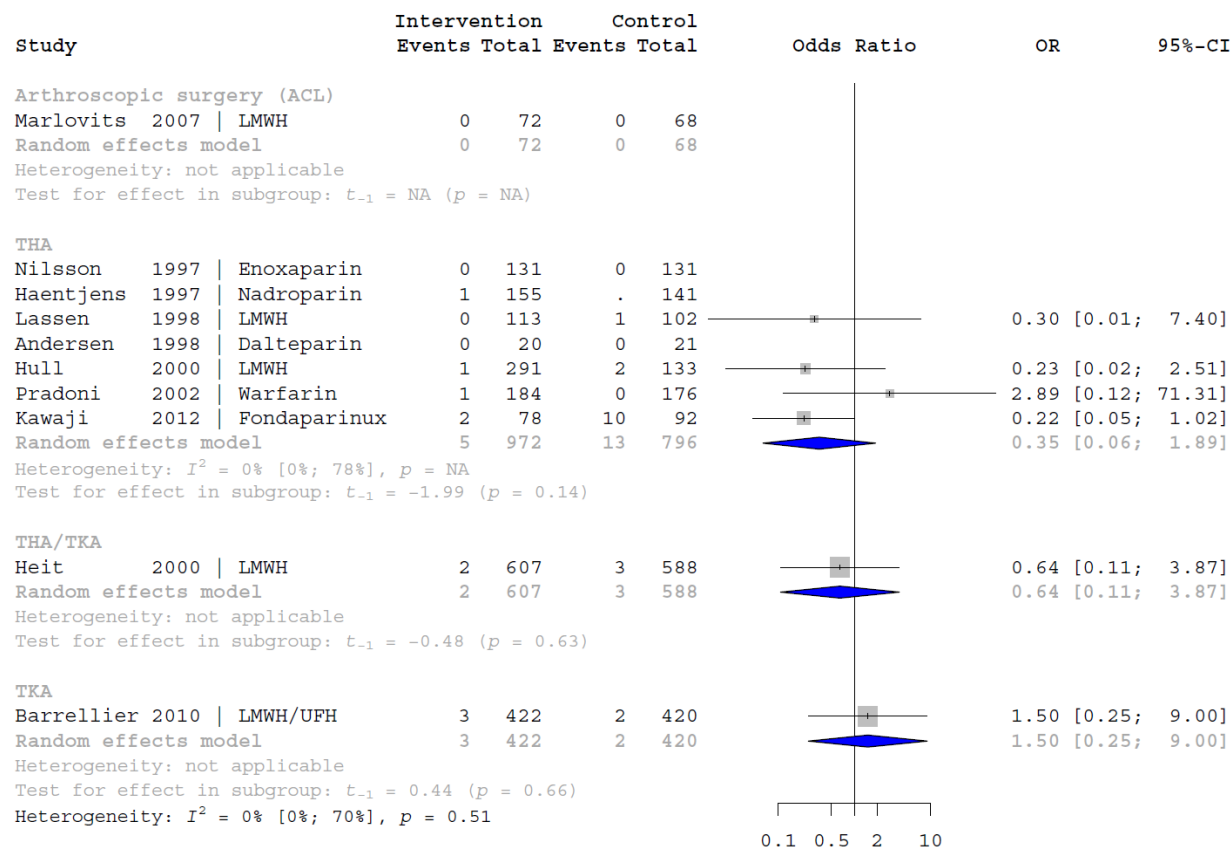
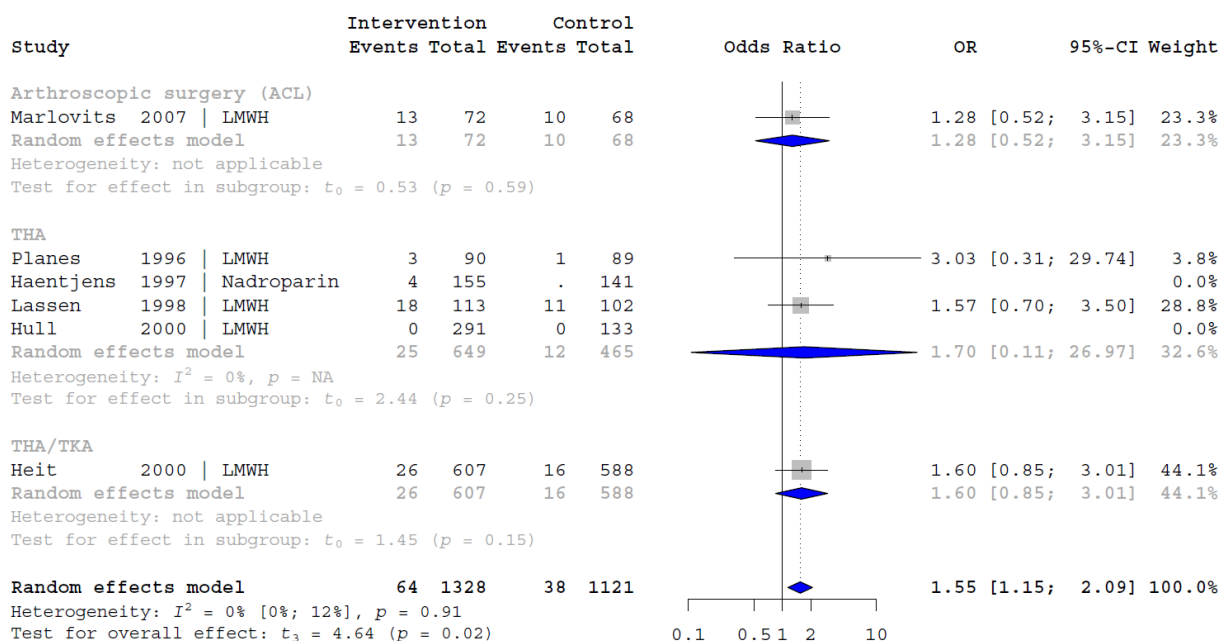


Figure A47-5: Minor Bleeding RCTs: all studies



48 - What is the cost-efficacy of each VTE prophylactic agent that may be used in patients undergoing orthopaedic surgery?

Search Terms:

(((((fibrinolytic agents[MeSH Terms]) OR (thrombolytic drugs[MeSH Terms])) OR ("venous thromboembolism prophylaxis")) OR ("VTE prophylaxis")) OR ("venous thromboembolism prevention")) OR ("VTE prevention")) OR (((("Anticoagulants"[Mesh] OR "Platelet Aggregation Inhibitors"[Mesh] OR "Fibrinolytic Agents"[Mesh]) OR ("LMWH"[tw] OR "low molecular weight heparin "[tw] OR "aspirin"[tw] OR "antithrombotics"[tw] OR "antiplatelet"[tw] OR " Vitamin K antagonists" [tw] OR "Factor Xa Inhibitors" [tw] OR "Adenosine diphosphate receptor antagonist"[tw] or "ADP receptor antagonist"[tw] or "Cyclooxygenase Inhibitor"[tw] or "Prostaglandine"[tw] or "Prostacycline"[tw] or "Glycoprotein IIb/IIIa antagonist"[tw] or "Glycoprotein IIb/IIIa inhibitor"[tw] or "Heparinoids"[tw] or "Fibrinolytic"[tw] or "Thrombin inhibitors"[tw])) OR (Adenosin-diphosphate ADP receptor antagonist)) AND ((orthopedics[MeSH Terms]) OR (orthopedic procedure[MeSH Terms]) OR (orthopedic procedure*) OR (orthopaedic procedure*) OR (orthopedic surger*) OR (orthopaedic surger*))) AND (((((((cost analysis[MeSH Terms]) OR (cost, cost analysis[MeSH Terms])) OR (analyses, cost benefit[MeSH Terms])) OR (analysis, cost benefit[MeSH Terms])) OR (cost efficacy[Title/Abstract])) OR (cost benefit analysis[Title/Abstract])) OR (cost benefit analyses[Title/Abstract])) OR (cost benefit[Title/Abstract]))

Total Results: 170 hits

Inclusion Criteria:

- Orthopedic surgery, including joint replacement
- Cost effectiveness analysis
- Outcomes: venous thromboembolism, bleeding, recurrent venous thromboembolism, post thrombotic syndrome, pulmonary hypertension, mortality, quality adjusted life year (QALY), incremental cost effectiveness ratio
- Primary research
- English articles
- Humans Only

Exclusion Criteria:

- Conference papers; proceedings; editorials; commentaries; Narrative review articles; guidelines and book chapters; technical papers; image quality, and phantom studies; and unavailable full-text manuscripts.
- Not in English.

49 - Are there differences between various VTE prophylaxis in terms of patient compliance/adherence?

Search Terms:

((((compression stocking[MeSH Terms]) OR (compression stocking[Title/Abstract])) OR ((Intermittent Pneumatic Compression Devices[MeSH Terms]) OR (Intermittent Pneumatic Compression Devices[Title/Abstract])) OR (mechanical compression device[Title/Abstract]) OR (((("Anticoagulants"[Mesh] OR "Platelet Aggregation Inhibitors"[Mesh] OR "Fibrinolytic Agents"[Mesh]) OR ("LMWH"[tw] OR "low molecular weight heparin "[tw] OR "aspirin"[tw] OR "antithrombotics"[tw] OR "antiplatelet"[tw] OR " Vitamin K antagonists" [tw] OR "Factor

Xa Inhibitors" [tw] OR "Cyclooxygenase Inhibitor"[tw] or "Prostaglandine"[tw] or "Prostacycline"[tw] or "Glycoprotein IIb/IIIa antagonist"[tw] or "Glycoprotein IIb/IIIa inhibitor"[tw] or "Heparinoids"[tw] or "Fibrinolytic"[tw] or "Thrombin inhibitors"[tw])))) AND (("Patient Compliance"[Title/Abstract]) OR (patient compliance[Title/Abstract])OR (patient adherence[Title/Abstract]))

Total Results: 383 hits

Inclusion Criteria:

- Studies assessing patient compliance or adherence to different thromboprophylaxis regimes
- Comparison of patient adherence for two or more thromboprophylaxis strategies
- Qualitative studies
- Quantitative studies
- English articles
- Spanish articles

Exclusion Criteria:

- None.

50 - Is there a role for sequential combination VTE prophylaxis in patients undergoing orthopaedic procedures?

Search Terms:

Medline:

(((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ("Drug Combinations"[Mesh] OR (Drugs combinations) OR "Drug Therapy, Combination"[Mesh] OR (Drug Therapy, Combination) OR (sequential combination)))

Embase:

Keywords included:

Orthopedic, Sequential, Combination, VTE, Thromboprophylaxis, chemoprophylaxis (including related terms and MESH terms)

Cochrane Library:

Keywords:

Orthopedic, Sequential, Combination, VTE, Thromboprophylaxis, chemoprophylaxis (including related terms and MESH terms)

Table A50-1:

Database	Date searched	Limits	Primary Hits	Notes
Medline/ PubMed	07/1/2021	English / Humans	67	Of the 67 from 1990 onwards, 3 fitted inclusion

				criteria and were suitable for analysis
Cochrane	7/1/2021	Same	4 reviews, 12 trials	None really dealt with the question of sequential combination
Embase	7/1/2021	Same	8436	Additional study identified for analysis

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not English language.

51 - Are there specific contraindications for the administration of each VTE prophylactic agent?

(((((("Contraindications"[Mesh] OR "Contraindications, Procedure"[Mesh] OR "Contraindications, Drug"[Mesh]) OR (contraindications[Title/Abstract])) AND (((((compression stocking[MeSH Terms]) OR (compression stocking[Title/Abstract])) OR (Intermittent Pneumatic Compression Devices[MeSH Terms])) OR (Intermittent Pneumatic Compression Devices[Title/Abstract])) OR (mechanical compression device[Title/Abstract])) OR ((("Anticoagulants"[Mesh] OR "Platelet Aggregation Inhibitors"[Mesh] OR "Fibrinolytic Agents"[Mesh]) OR ("LMWH"[tw] OR "low molecular weight heparin "[tw] OR "aspirin"[tw] OR "antithrombotics"[tw] OR "antiplatelet"[tw] OR " Vitamin K antagonists" [tw] OR "Factor Xa Inhibitors" [tw] OR "Adenosine-diphosphate (ADP) receptor antagonists"[tw] or "Cyclooxygenase Inhibitor"[tw] or "Prostaglandine"[tw] or "Prostacycline"[tw] or "Glycoprotein IIb/IIIa antagonist"[tw] or "Glycoprotein IIb/IIIa inhibitor"[tw] or "Heparinoids"[tw] or "Fibrinolytic"[tw] or "Thrombin inhibitors"[tw])))) AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw]))) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis")) AND ((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)))

Total Results: Literature search 1: 696 results, search 29 June 2021

Literature search 2: 359 results, search 7 July 2021

Inclusion Criteria:

- Patients undergoing orthopedic arthroplasty, spine, and trauma surgery
- Evaluated thromboprophylaxis
- Articles available in English language
- Articles published after 1990

- Relevant citations from the reference lists of reviewed articles were also included

Exclusion Criteria:

- Not in English
- Articles published before 1990.

52 - Does VTE prophylaxis in patients with chronic kidney disease need to be altered when undergoing orthopaedic procedures?

Search Terms:

((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure)) AND ("Renal Insufficiency, Chronic"[Mesh] OR "Kidney Failure, Chronic"[Mesh]) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis")

Total Results: 13 hits

((("Renal Insufficiency, Chronic"[Mesh] OR "Kidney Failure, Chronic"[Mesh]) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis"))) AND (prophylaxis)

Total Results: 87 hits

Inclusion Criteria:

- Original study, meta-analysis, review, guidelines
- Reporting or discussing the risk of VTE and bleeding in CKD patients
- Reporting or discussing VTE prophylaxis in CKD patients
- Discussing the use of different anticoagulants in CKD patients

Exclusion Criteria:

- Clinical cases.

53 - Does VTE prophylaxis in patients with chronic liver disease need to be altered when undergoing orthopaedic procedures?

Search Terms:

MEDLINE:

((("liver cirrhosis"[Title/Abstract] OR "hepatic+cirrhosis"[Title/Abstract] OR "cirrhosis+hepatis"[Title/Abstract] OR "cirrhosis"[Title/Abstract] OR "chronic+hepatopathy"[Title/Abstract] OR "chronic+hepatitis"[Title/Abstract] OR "end+stage+liver+insufficiency"[Title/Abstract] OR "end+stage+liver+dysfunction"[Title/Abstract] OR "end+stage+hepatic+insufficiency"[Title/Abstract] OR "end+stage+liver+failure"[Title/Abstract] OR "end+stage+hepatic+failure"[Title/Abstract] OR "end+stage+hepatic+dysfunction"[Title/Abstract] OR "end stage hepatic disease*"[Title/Abstract] OR "end stage liver disease*"[Title/Abstract] OR "chronic+hepatic+failure"[Title/Abstract] OR "chronic+liver+failure"[Title/Abstract] OR "liver+chronic+disease"[Title/Abstract] OR "chronic+liver+lesion"[Title/Abstract] OR "chronic+liver+disease"[Title/Abstract] OR "hepatitis, chronic"[MeSH Terms] OR "liver cirrhosis"[MeSH Terms] OR "End+Stage+Liver+Disease"[MeSH Terms] OR "Hepatic+Insufficiency"[MeSH Terms]) AND ("fracture+fixation"[Title/Abstract] OR

"bone+fracture+fixation"[Title/Abstract] OR "bone+fixation"[Title/Abstract] OR
"arthroscoPy"[Title/Abstract] OR "arthroscopic+procedures"[Title/Abstract] OR
"arthroscopic+procedure"[Title/Abstract] OR "traumatology"[Title/Abstract] OR
"traumatic+surgery"[Title/Abstract] OR "trauma+surgery"[Title/Abstract] OR
"replacement+arthroplasty"[Title/Abstract] OR "joint+replacement+surgery"[Title/Abstract] OR
"joint+replacement"[Title/Abstract] OR "arthroplasties"[Title/Abstract] OR
"joint+reconstruction"[Title/Abstract] OR "arthroplasty"[Title/Abstract] OR
"surgical+orthopedics"[Title/Abstract] OR "surgical orthopaedics"[Title/Abstract] OR
"orthopedic surger*"[Title/Abstract] OR "orthopedic procedure*"[Title/Abstract] OR
"orthopaedic surger*"[Title/Abstract] OR "Orthopedic+Procedures"[MeSH Terms] OR
"bone+surgery"[Title/Abstract] OR "orthopaedic+operation"[Title/Abstract] OR "orthopaedic
procedure*"[Title/Abstract]) AND ("complicances"[All Fields] OR "complicate"[All Fields] OR
"complicated"[All Fields] OR "complicates"[All Fields] OR "complicating"[All Fields] OR
"complication"[All Fields] OR "complication s"[All Fields] OR "complications"[MeSH
Subheading] OR "complications"[All Fields] OR "readmission"[All Fields] OR
"readmissions"[All Fields] OR "outcome*"[All Fields]).

Total Results: 169 hits

EMBASE:

('chronic liver disease'/exp OR 'chronic liver disease':ti,ab,kw OR 'chronic liver lesion':ti,ab,kw
OR 'liver chronic disease':ti,ab,kw OR 'chronic liver failure'/exp OR 'chronic hepatic
failure':ti,ab,kw OR 'chronic liver failure':ti,ab,kw OR 'end stage liver disease'/exp OR 'end stage
hepatic disease':ti,ab,kw OR 'end stage hepatic dysfunction':ti,ab,kw OR 'end stage hepatic
failure':ti,ab,kw OR 'end stage hepatic insufficiency':ti,ab,kw OR 'end stage liver
disease':ti,ab,kw OR 'end stage liver dysfunction':ti,ab,kw OR 'end stage liver failure':ti,ab,kw
OR 'end stage liver insufficiency':ti,ab,kw OR 'chronic hepatitis'/exp OR 'chronic
hepatitis':ti,ab,kw OR 'chronic hepatopathy':ti,ab,kw OR 'liver cirrhosis'/exp OR
'cirrhosis':ti,ab,kw OR 'cirrhosis hepatis':ti,ab,kw OR 'cirrhosis, liver':ti,ab,kw OR 'hepatic
cirrhosis':ti,ab,kw OR 'liver cirrhosis':ti,ab,kw) AND ('orthopedic surgery'/exp OR 'bone
surgery':ti,ab,kw OR 'orthopaedic operation':ti,ab,kw OR 'orthopaedic procedures':ti,ab,kw OR
'orthopaedic surgery':ti,ab,kw OR 'orthopedic operation':ti,ab,kw OR 'orthopedic
procedures':ti,ab,kw OR 'orthopedic surgery':ti,ab,kw OR 'surgery, orthopaedic':ti,ab,kw OR
'surgery, orthopedic':ti,ab,kw OR 'surgical orthopaedics':ti,ab,kw OR 'surgical
orthopedics':ti,ab,kw OR 'arthroplasty':ti,ab,kw OR 'joint reconstruction':ti,ab,kw OR
'arthroplasties':ti,ab,kw OR 'arthroplasty, replacement':ti,ab,kw OR 'joint replacement':ti,ab,kw
OR 'joint replacement surgery':ti,ab,kw OR 'replacement arthroplasty':ti,ab,kw OR 'replacement,
joint':ti,ab,kw OR 'trauma surgery':ti,ab,kw OR 'traumatic surgery':ti,ab,kw OR
'traumatology':ti,ab,kw OR 'arthroscoPy'/exp OR 'arthroscopic procedure':ti,ab,kw OR
'arthroscopic procedures':ti,ab,kw OR 'arthroscoPy':ti,ab,kw OR 'bone fixation':ti,ab,kw OR 'bone
fracture fixation':ti,ab,kw OR 'fixation, bone':ti,ab,kw OR 'fracture fixation':ti,ab,kw) AND
('venous thromboembolism'/exp OR 'thromboembolism, venous':ti,ab,kw OR 'vein
thromboembolism':ti,ab,kw OR 'venous thromboembolism':ti,ab,kw OR 'deep vein
thrombosis'/exp OR 'deep venous thrombosis':ti,ab,kw OR 'deep venous thrombus':ti,ab,kw OR
'deep vein thrombosis':ti,ab,kw OR 'vein thrombosis'/exp OR 'vein thrombosis':ti,ab,kw OR
'venous thrombosis':ti,ab,kw OR 'lung embolism'/exp OR 'lung embolism':ti,ab,kw OR 'lung

embolization':ti,ab,kw OR 'pulmonary embolism':ti,ab,kw OR 'pulmonary embolization':ti,ab,kw OR 'pulmonary embolus':ti,ab,kw OR 'lung thromboembolism':ti,ab,kw OR 'blood clot'/exp OR 'blood clot':ti,ab,kw OR dtv:ti,ab OR vte:ti,ab) AND [humans]/lim AND [english]/lim.

Total Results: 146 hits

Inclusion Criteria:

- Venous thromboembolism rates reported
- English articles

Exclusion Criteria:

- Narrative review articles
- Not in English.

54 - What are the indications for seeking a thrombosis specialist or a hematology consult for VTE prevention, in patients undergoing elective orthopaedic procedures?

Search Terms:

(((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))) AND (((("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") OR (venous thromboembolism[Title/Abstract])) OR (venous thrombosis[Title/Abstract])) OR (pulmonary embolism[Title/Abstract])) OR (deep vein thrombosis[Title/Abstract])) AND (((((((Referral and Consultation[MeSH Terms]) OR (consultation[Text Word])) OR (consult*[Text Word])) OR (haematological consultation[Text Word])) OR (hematological consultation[Text Word])) OR (haematological consult*[Text Word])) OR (haemat* consult*[Text Word]))) OR (hematology[MeSH Terms]))

(((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))) AND (((("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") OR (venous thromboembolism[Title/Abstract])) OR (venous thrombosis[Title/Abstract])) OR (pulmonary embolism[Title/Abstract])) OR (deep vein thrombosis[Title/Abstract])) AND (((((((Referral and Consultation[MeSH Terms]) OR (consultation[Text Word])) OR (consult*[All fields])) OR (appointment[All fields])) OR (hematological consultation[Text Word])) OR (haematological consult*[Text Word])) OR (haemat* consult*[Text Word]))) OR (hematology[MeSH Terms]))

Total Results: 43 hits

Inclusion Criteria:

- Patients: Orthopaedic surgery
- Intervention: Haematology Consult
- Comparator: Standard care
- Outcomes: Venous thromboembolism; Bleeding events
- Study design: randomized controlled trials (Primary research); observational studies

English articles

Exclusion Criteria:

- None.

55 - If a patient is in an "increased risk" group for the development of VTE, are there certain agents which have increased efficacy over other anticoagulants?

Search Terms:

- Venous thromboembolism
- Anticoagulants
- Treatment effectiveness
- Orthopedics
- Surgery
- Risk factors
- Perioperative period
- Pharmacotherapies
- Prophylaxis
- Increased risk
- Elderly
- Cancer
- Obese

Total Results: 183 hits

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Not in English.

56 - Should the perioperative VTE prophylaxis of a patient undergoing orthopaedic procedure and diagnosed with acute atrial fibrillation be altered?

Search Terms:

("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND "Orthopedic Procedures"[Mesh] AND ("Atrial Fibrillation"[Mesh])

Total Results: 45 hits

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not English language.

57 - What is the most optimal management of a patient with elevated coagulation parameters, such as high INR, undergoing emergency orthopaedic surgery?

Search Terms:

1. Hip Fractures/

2. hip fracture*.mp. or intertrochanter* fracture*.mp. or femoral neck fracture*.mp. or subtrochanter* fracture*.mp. or Bone Nails/ or Arthroplasty, Replacement, Hip/ or Fracture Fixation/ or Hemiarthroplasty/
3. exp Fracture Fixation, Intramedullary/ or exp Fracture Fixation, Internal/
4. 1 or 2 or 3
5. exp Anticoagulants/
6. warfarin.mp. or warfarin.mp. or vitamin K antagonist.mp.
7. 5 or 6
8. exp Plasma/ or Blood Coagulation Factors/ or PCC mp. or prothrombin complex concentrate.mp. or octuplex.mp or beriplex.mp or Vitamin K mp. or Vitamin K/
9. 4 and 7 and 8

Total Results: 114 hits

Inclusion Criteria:

- Urgent orthopedic surgery
- Patient on vitamin K antagonist
- At least one reversal agent used (Vitamin K, Fresh Frozen Plasma or Prothrombin Complex Concentrate)
- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not in English.

58 - What is the optimal VTE prophylaxis modality for patients with bleeding disorders such as hemophilia or Von Willebrand disease?

Search Terms:

"Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis" AND "Prevention and Control" [MeSH Subheading] OR "prevention[Title/Abstract]" OR "prevent*[Title/Abstract]" OR "prophylaxis"[Mesh] AND "Orthopedic Procedures"[Mesh] AND "Blood Coagulation Disorders"[Mesh]

Total Results: 87 hits

Inclusion Criteria:

- Venous thromboembolism or deep vein thrombosis prophylaxis reported
- At least one bleeding disorders described
- Orthopedic surgical procedures
- Primary research
- English articles

Exclusion Criteria:

- Non-orthopedic surgical procedures
- Single case reports and pediatric cases
- Narrative review articles
- Not in English.

59 - What is the optimal VTE prophylaxis modality for patients with clotting disorders such as thrombophilia?

Search Terms:

("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND "Orthopedic Procedures"[Mesh] AND ("Blood Coagulation Disorders"[Mesh])

Total Results: 141 hits.

Inclusion Criteria:

- Venous thromboembolism or deep vein thrombosis prophylaxis reported
- At least one bleeding disorders described
- Orthopedic surgical procedures
- Primary research
- English articles

Exclusion Criteria:

- Non-orthopedic surgical procedures
- Single case reports and pediatric cases
- Narrative review articles
- Not in English.

NOTE: Same references as in main manuscript.

60 - What are the indications for use of an IVC filter in patients undergoing orthopaedic procedures?

Search Terms:

(vena cava filters[MeSH Terms]) OR (IVCF[Title/Abstract]) OR (vena cava filter*[Title/Abstract])) AND (((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))

Total Results: 103 hits

Inclusion Criteria:

- English articles
- Trauma or orthopedic patients
- Rate of VTE reported
- Patients treated with IVC filter and/or chemoprophylaxis

Exclusion Criteria:

- Not in English
- Technique articles for IVC filter placement/removal
- Did not report rate of VTE.

Notes A60-1:

PE risk:

- For most patients, the rate of PE after orthopedic surgery is low (~ 0.5 - 1%)¹⁵²⁸.
- While the rate of PE is increasing, this may be due to increased detection on advanced imaging. A large portion of these PE do not cause significant morbidity¹⁵³⁰.

- Patients with history of PE or clotting disorder have a much higher rate of VTE (~ 11% DVT, 5% PE)¹⁵⁴³.
- In contrast, risk factors such as age, obesity, GCS < 8, and multiple long bone fractures have only shown a modest increased risk of PE (~ 2 - 2.5%)^{1535,1529}.

Benefits of filter

- IVC filters have been shown to reduce the overall rate of PE in high-risk groups
 - 0.8% vs 5.5% in patients with prior VTE¹⁵⁴³.
 - Spinal patients with fusions > 5 levels, anesthesia time > 8 hours, and prolonged immobilization (3.6% vs. 13.1%)^{1544,1545}.
 - Trauma patients with ISS > 15 with contraindication to anticoagulation had reduced rates of symptomatic PE with placement of IVC filter (0% vs. 14.7%)¹⁵⁴⁷.

Risks of filter

- Historically, there has been significant risk associated with implanting and removing IVC filter. 12% overall complication rate, and 10-20% of removal IVC filters are unable to be retrieved¹⁵²¹.
- IVC filters are also associated with long term complications, including post-thrombotic syndrome and increased risk of DVT^{1548,1549}.
- Safety associated with IVC filter placement and removal is improving. This may expand the indications for IVC filter use.
 - Complications in 2/219 patients¹⁵⁴⁵.
 - Successful removal in 96/96 patients¹⁵⁴³.
- IVC filter has not been shown to decrease rate of PE in patients also receiving anticoagulation¹⁵⁴⁹.

61 - Does the availability of reversal agents influence the choice of a selected chemical VTE prophylaxis agent?

Search Terms:

((("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND (((Prevention and Control[MeSH Subheading] OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw]))) AND (((availability[Text Word]) OR (supply and distribution[MeSH Subheading])) OR (availab*[Text Word])) OR (willingness[Text Word]))) AND (((("reversal agent"[Text Word]) OR (idarucizumab[Text Word]) OR (andexanet*[Text Word]) OR (antidote[Text Word]))

Total Results: 335 hits

((revers* agent*) OR (revers* therap*) OR (revers* drug*) OR (revers* effect*)) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((prevention and control[MeSH Terms]) OR (prevention therap*) OR (prevention agent*) OR (prophylaxis agent*) OR (prophylaxis therap*) OR (prophylaxis drug*) OR (thromboprophylaxis))

Total Results: 40 hits

anticoagulation AND reversal AND orthop*

Total Results: 182 hits

Inclusion Criteria:

- Studies focusing on the cost and availability of reversal agent(s) for common VTE chemoprophylaxis options (antiplatelet, heparin, LMWH, warfarin, DOACs)
- Studies focusing on their efficacy and safety profiles

Exclusion Criteria:

- Narrative review articles
- Not in English.

62 - Does post-operative rehabilitation protocol such as early ambulation influence the incidence of VTE after orthopaedic procedures?

Search Terms:

((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure)) AND ((Postoperative period[MeSH Terms]) OR (Postoperative period[Title/Abstract]) OR (Postoperative period[tw])) AND ((rehabilitation protocol) OR (early ambulation)) AND ((Venous Thrombosis[Mesh Terms]) OR (venous thromboembolism[MeSH Terms]) OR (pulmonary embolism) OR (deep vein thrombosis) OR (DVT) OR (venous thromboembolism) OR (VTE))

Total Results: 9 hits

Inclusion Criteria:

- Published in peer-reviewed journals in English
- Both clinical and preclinical studies with any level of evidence
- Investigated the role of post-operative rehabilitation protocol such as early ambulation on venous thromboembolism (VTE) after an orthopaedic procedure

Exclusion Criteria:

- Data was not accessible or missing
- Without an available full-text article
- Duplicates and studies with poor scientific methodology as per risk of bias assessment
- Abstracts, case reports, conference presentations, reviews, editorials, and expert opinions were excluded.

63 - What is the most optimal VTE prophylaxis for patients who are on strict bed rest pre- or post-operatively?

Search Terms:

((lower limb trauma OR lower-limb trauma OR lower-limb fracture OR lower limb fracture OR tibia fracture OR pelvic fracture OR acetabular fracture OR acetabulum fracture OR femur fracture OR patella fracture OR foot and ankle fracture OR hip fracture OR calcaneal fracture OR fibula fracture OR undisplaced fracture) OR (preoperative OR postoperative OR pre-operative OR post-operative) AND ("bedrest"[Mesh] OR bed rest OR bed-bound OR bedbound OR "immobilization" [Mesh] OR strict bedrest OR strict bed-rest) AND (orthopaedic OR orthopedic) AND (((((((("Venous Thromboembolism"[Mesh]) OR ("Venous Thrombosis"[Mesh])) OR ("Pulmonary Embolism"[Mesh])) OR (pulmonary embolism OR pulmonary embolus OR pulmonary thromboembolism)) OR (Venous Thrombosis OR Venous Thromboses OR Venous Thromboembolism)) OR (Deep Venous Thrombosis OR Deep Venous Thromboses OR Deep Vein Thrombosis OR Deep Vein Thromboses)) OR (PE OR VTE OR

DVT OR Blood Clot OR Blood Clots))) AND ((((((VTE Prophylaxis OR Thromboprophylaxis OR DVT Prophylaxis) OR ("Anticoagulants"[Mesh] OR Anticoagulants OR Anticoagulant OR anticoagulation OR anti-coagulation OR Antithrombins OR Factor Xa Inhibitor OR Factor XaInhibitors)) OR (Thrombin Inhibitor OR Thrombin Inhibitors)) OR ("Heparin"[Mesh] OR Heparin OR Dalteparin OR Enoxaparin OR Nadroparin OR Tinzaparin)) OR ("Warfarin"[Mesh] OR Warfarin OR Coumadine OR Coumadin)) OR ("Aspirin"[Mesh] OR Aspirin))

Total Results: 34 hits

Inclusion Criteria:

- Patients requiring strict bed-rest pre- or post-surgery
- Clinical guidelines for prevention of VTE in patients with acute-illness and requiring immobilization
- Venous thromboembolism rates reported
- Primary research
- English articles

Exclusion Criteria:

- Patients not requiring strict bed-rest
- Case Reports
- Not in English.

64 - Is there a role for the use of intermittent compression devices as VTE prophylaxis for patients undergoing orthopaedic procedures?

Search Terms:

((("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((intermittent pneumatic compression devices[MeSH Terms]) OR (compression devices, intermittent pneumatic[MeSH Terms]) OR (intermittent compression[Title/Abstract]))) AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract]) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw]))) AND ((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))

Total Results: 107 hits

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Editorials, comments, case reports, conference
- Narrative review articles
- Studies not in English.

65 - Is a foot pump as effective as a lower extremity intermittent compression device for VTE prophylaxis?

((("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((intermittent pneumatic compression devices[MeSH Terms]) OR (foot compression devices, intermittent pneumatic[MeSH Terms]))

OR (foot pump devices) OR (intermittent compression[Title/Abstract])) AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND (((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))

Total Results: 124 hits

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Editorials, comments, case reports, conference
- Narrative review articles
- Studies not in English.

66 - Is there a role for the use of compression stockinette in patients undergoing orthopaedic procedures?

Search Terms:

(((((compression stocking[MeSH Terms]) OR (compression stocking[Title/Abstract])) AND (((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))) AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])))) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis"))

Total Results: 59 hits

Inclusion Criteria:

- Focuses partially or totally on adult orthopaedic surgery
- Includes analysis of the use of elastic stockings
- Clinical trials, meta-analyses, RCTs, systematic reviews
- English articles

Exclusion Criteria:

- Narrative review articles
- Book chapters and other documents
- Not in English
- Analysis that combines multiple forms of mechanical prophylaxis (stockings, IPC, VCF).

67 - Is there a difference between different types of intermittent pneumatic compression devices (IPCD)?

Search Terms:

((((((compression stocking[MeSH Terms]) OR (compression stocking[Title/Abstract])) OR (Intermittent Pneumatic Compression Devices[MeSH Terms])) OR (Intermittent Pneumatic Compression Devices[Title/Abstract])) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis")) AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR

(prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND ((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))

Total Results: 143 hits

Inclusion Criteria:

- Patients hospitalized for orthopedic surgeries including arthroplasty and fracture surgery with risk of VTE.
- Intermittent pneumatic compression devices (IPCD) used for more than 24 hours, with or without pharmacological prophylaxis
- Studies must report effect of IPCD on at least one of the following relevant outcomes: VTE events (DVT and/or PE) regardless of symptoms, mortality, adverse events, and staff- or patient-reported ease of use or adherence.

Exclusion Criteria:

- Surgeries with low risk of VTE
- Outpatients conducted studies
- Conference papers; proceedings; editorials; commentaries; guidelines and book chapters; technical papers; image quality-, and phantom studies; and unavailable full-text manuscripts.

68 - In patients with confirmed acute distal DVT, should a mechanical compression device be discontinued in the affected limb?

Search Terms:

("Arthroplasty / Adverse effects "[Mesh] OR "Arthroplasty, Replacement, Hip / Adverse effects") OR ("Arthroplasty, Replacement, Knee / adverse effects") AND ("Intermittent Pneumatic Compression Devices" OR "Intermittent Pneumatic Compression Devices / adverse effects") OR ("Postoperative Complications / prevention & control") OR ("Randomized Controlled Trials as Topic") AND ("Venous Thromboembolism / prevention & control") OR Angiography OR ("Leg / blood supply") AND ("Pulmonary Embolism / diagnostic imaging") OR ("Pulmonary Embolism / etiology") OR ("Venous Thrombosis / complications" OR "Venous Thrombosis / therapy") OR ("Venous Thromboembolism / diagnosis") OR ("Venous Thromboembolism / etiology") AND ("Venous Thromboembolism / prevention & control OR Venous Thrombosis / diagnosis") OR ("Venous Thrombosis / etiology") AND ("Venous Thrombosis / prevention & control") OR Treatment Outcome OR ("Postthrombotic Syndrome / diagnosis") AND ("Postthrombotic Syndrome / prevention & control ") OR ("Postthrombotic Syndrome / therapy") AND ("Postthrombotic Syndrome / pathology" OR "Postthrombotic Syndrome / prevention & control")

Total Results: 124 hits

Inclusion Criteria:

- English Articles
- Compression therapy (including Intermittent Pneumatic Compression)
- Post thrombotic syndrome prevention
- Deep venous thrombosis management
- Outcomes of pulmonary embolism after deep venous thrombosis

Exclusion Criteria:

- Not in English
- Chronic Deep Venous Thrombosis
- Expert Opinions
- Gradual Compression Stockings as only compression therapy.

69 - What is the optimal management of patients who are on antiplatelet medications prior to an elective orthopaedic procedure?

Search Terms:

(((((disease management) OR (disease management)) OR (management)) OR (treatment)) OR (therapy)) AND (((((orthopedic procedure) OR (orthopedic procedures)) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))) AND (((((Platelet Aggregation Inhibitors) OR (Platelet Aggregation Inhibitors)) OR (antiplatelet)) OR (aspirin)) OR (aspirin))) AND (((((((care, perioperative) OR (period, perioperative)) OR (periods, perioperative)) OR (perioperative)) OR (care, preoperative)) OR (period, preoperative)) OR (preoperative care)) OR (preoperative period)) OR (preoperative))

Total Results: 45 hits

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not English language.

70 - What is the optimal management of patients who are on antiplatelet medications prior to an emergency orthopaedic procedure?

Search Terms:

((((((((((orthopedic procedure) OR (orthopedic procedures)) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures) AND (urgent OR emergency OR non-elective)) OR (emergency orthopedic surgery)) OR (emergency orthopaedic surgery))) AND (((((((antiplatelet agents) OR (antiplatelet drugs)) OR (antiplatelet medications)) OR (blood platelet aggregation inhibitors)) OR (platelet aggregation inhibitors)) OR (platelet aggregation inhibitor)) OR (aspirin)) OR (cardioaspirin))) AND (((((disease management) OR (disease managements)) OR (disease management)) OR (treatment)) OR (therapy))

Total Results: 43 hits

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not English language.

71 - Should aspirin be stopped pre-operatively in patients undergoing orthopaedic procedures?

Search Terms:

((((((((((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))) OR (orthopedic procedure*[Title/Abstract])) OR (orthopaedic procedure*[Title/Abstract])) AND (((aspirin[MeSH Terms]) OR (acetylsalicylic acid[MeSH Terms])) OR (acetylsalicylic acid[Title/Abstract])) OR (aspirin[Title/Abstract])) AND (((((((care, perioperative[MeSH Terms]) OR (period, perioperative[MeSH Terms])) OR (periods, perioperative[MeSH Terms])) OR (perioperative[Title/Abstract])) OR (care, preoperative[MeSH Terms])) OR (period, preoperative[MeSH Terms])) OR (preoperative care[MeSH Terms])) OR (preoperative period[MeSH Terms])) OR (preoperative[Title/Abstract]))

Total Results: 161 hits

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not English language.

72 - When should chronic anticoagulation be stopped in patients undergoing elective orthopaedic procedures?

Search Terms:

('anticoagulant agent'/exp OR 'anticoagulant agent') AND ('orthopedic surgery'/exp OR 'orthopedic surgery') AND ('preoperative period'/exp OR 'preoperative period')

Total Results: 1,290 hits

Inclusion Criteria:

- Studies had to include orthopaedic surgery patients or compare different anticoagulant discontinuation times if non-orthopaedic patients were studied
- Studies had to be in English

Exclusion Criteria:

- Articles for which an electronic downloadable version was not available were excluded
- Case reports, case series, and reviews were excluded.

73 - Should bridging by an injectable anticoagulation be considered in patients who are on chronic anticoagulation prior to undergoing elective orthopaedic procedures?

Search Terms:

((((((((((anticoagulant agents[MeSH Terms]) OR (anticoagulant drugs[MeSH Terms])) OR (anticoagulants[MeSH Terms])) OR (anticoagulant*[Title/Abstract])) OR (anticoagulant drug*[Title/Abstract])) OR (anticoagulant agent*[Title/Abstract])) OR (bridging[Title/Abstract])) OR (bridging anticoagulation*[Title/Abstract])) AND (((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) OR (elective surgical procedure[MeSH Terms])) OR (elective surgical procedures[MeSH Terms])) AND (((chronic[Title/Abstract]) OR (chronic

assumption*[Title/Abstract])) OR (chronic intake[Title/Abstract])) OR (chronic use*[Title/Abstract]))

Total Results: 130 hits

Inclusion Criteria:

- English language articles
- Primary research articles
- Patients receiving LMWH or IV unfractionated heparin as bridging from an oral anticoagulant
- Patients undergoing elective orthopaedic procedures

Exclusion Criteria:

- Narrative Reports
- Review Artless
- Case Reports.

74 - Is there a difference between low dose and regular dose aspirin for the prevention of VTE following orthopaedic procedures?

Search Terms:

Medline

((((((((((orthopedic procedure[MeSH Terms]) OR (arthroplasties[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) OR (orthopaedic)) OR (orthopedic)) OR (orthopedic surgery)) OR (orthopaedic surgery)) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis" or "thromboembolism" or "VTE" or "PE" or "DVT") AND ("Aspirin"[Mesh] OR aspirin OR (Acetylsalicylic Acid))

Cochrane

[mh "orthopedic procedure"] OR [mh "orthopaedic procedure"] OR "orthop*dic procedure" OR "orthop*dic" OR "orthop*dic surgery" AND "Thromboembolisms, Pulmonary" OR "PE" OR "Pulmonary embolus" OR [mh "Venous Thromboembolism"] OR "venous thromboembolism" OR "thromboembolism" OR "VTE" OR [mh "Deep Vein Thrombosis"] OR "Deep Vein Thrombosis" OR "DVT" AND [mh "aspirin"] OR "aspirin" OR "Acetylsalicylic Acid"

Scopus

INDEXTERMS ("orthopedic surgery") OR TITLE-ABS-KEY(orthopedic surgery) OR TITLE-ABS-KEY(orthopedic surgery) OR **INDEXTERMS** ("orthopedic procedure") OR TITLE-ABS-KEY(orthopedic procedure) OR **INDEXTERMS** ("arthroplasty") OR TITLE-ABS-KEY(arthroplasty) AND TITLE-ABS-KEY (Venous thromboembolism) OR TITLE-ABS-KEY (Thromboembolism) OR TITLE-ABS-KEY (VTE) OR **INDEXTERMS** ("pulmonary embolism") OR TITLE-ABS-KEY (PE) OR TITLE-ABS-KEY (pulmonary embolus) OR **INDEXTERMS** ("deep vein thrombosis") OR TITLE-ABS-KEY (DVT) OR TITLE-ABS-KEY (Deep Vein Thrombosis) AND **INDEXTERMS** ("aspirin") OR TITLE-ABS-KEY (aspirin) OR TITLE-ABS-KEY (Acetylsalicylic Acid)

Total Results: 2,884 hits

To determine eligibility: from 2,884 to 35 results.

Inclusion Criteria:

- Includes patients undergoing an orthopaedic procedure
- Includes aspirin as a form of chemoprophylaxis, with potential for there to be more than two doses used.
- Indicates VTE rates were captured
- Cohort studies and clinical trials included
- Review papers, meta-analyses included if after 2016 (arbitrarily within the last 5 years – this limit was used given time constraints)
- Letters to editor and replies included.

Exclusion Criteria:

- Animal studies.
- Case studies.
- Studies where it was clear only one dose of aspirin was used, or the dose of aspirin was not captured or reported.

To determine papers finally included, after full PDF review: from 35 to 12 results.

One additional paper was included for its findings regarding compliance and degree of gastrointestinal symptoms attributed to both dosing regimens.

Inclusion Criteria:

- Must include a cohort undergoing an orthopaedic procedure
 - In this cohort, must compare at least two groups using aspirin as a sole chemoprophylactic agent (with/without mechanical prophylaxis), at different doses.
- Doses of aspirin must be specified.
- Must report symptomatic VTE rate, within a specified time period e.g., 1 month, 90 days.
- Must compare symptomatic VTE rate between the cohorts using aspirin at different doses.
- Must be available in full text, in English.
- Cohort studies and clinical trials included, as well as letters to editor (if sufficient information is available on any new unpublished data), as well as any relevant data in replies to queries on published papers.
- Review papers, meta-analyses (if after 2016).

Exclusion Criteria:

- Animal studies.
- Studies not available in English.
- Case studies.

75 - What VTE prophylaxis should be administered to a patient who is allergic to aspirin?

Search Terms:

((((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis")) AND ("Aspirin"[Mesh] OR aspirin OR (Acetylsalicylic Acid)) AND ("Hypersensitivity"[Mesh] OR Hypersensitivity OR Allergy OR (Allergic Reaction)))

Total Results: 6 hits

Inclusion Criteria:

- Aspirin used as a chemoprophylactic agent described
- Venous thromboembolism rates reported
- English articles

Exclusion Criteria:

- Not in English.

76 - Can NSAID be used as prophylactic agents against VTE in patients undergoing orthopaedic procedures?

Search Terms:

PubMed Database:

(((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract])) OR (prophylaxis[tw])) AND ("Anti-Inflammatory Agents, Non-Steroidal"[Mesh] OR (Anti-Inflammatory Agents, Non-Steroidal) OR NSAID)

Total Results: 259 hits

Embase Database:

('orthopedic surgery'/exp OR 'orthopedic surgery') AND ('venous thromboembolism'/exp OR 'venous thromboembolism' OR 'lung embolism'/exp OR 'lung embolism' OR 'deep vein thrombosis'/exp OR 'deep vein thrombosis') AND ('prophylaxis'/exp OR 'prophylaxis') AND ('nonsteroid antiinflammatory agent'/exp OR 'nonsteroid antiinflammatory agent' OR 'acemetacin'/exp OR 'acemetacin' OR 'amfenac'/exp OR 'amfenac' OR 'celecoxib'/exp OR 'celecoxib' OR 'diclofenac'/exp OR 'diclofenac' OR 'emorfazone'/exp OR 'emorfazone' OR 'epirizole'/exp OR 'epirizole' OR 'ethenzamide'/exp OR 'ethenzamide' OR 'etodolac'/exp OR 'etodolac' OR 'flufenamate aluminum'/exp OR 'flufenamate aluminum' OR 'flurbiprofen'/exp OR 'flurbiprofen' OR 'ibuprofen'/exp OR 'ibuprofen' OR 'indometacin'/exp OR 'indometacin' OR 'ketoprofen'/exp OR 'ketoprofen' OR 'lornoxicam'/exp OR 'lornoxicam' OR 'loxoprofen'/exp OR 'loxoprofen' OR 'mefenamic acid'/exp OR 'mefenamic acid' OR 'meloxicam'/exp OR 'meloxicam' OR 'mofezolac'/exp OR 'mofezolac' OR 'nabumetone'/exp OR 'nabumetone' OR 'naproxen'/exp OR 'naproxen' OR 'oxaprozin'/exp OR 'oxaprozin' OR 'piroxicam'/exp OR 'piroxicam' OR 'pranoprofen'/exp OR 'pranoprofen' OR 'proglumetacin maleate'/exp OR 'proglumetacin maleate' OR 'salicylamide'/exp OR 'salicylamide' OR 'salicylate sodium'/exp OR 'salicylate sodium' OR 'sulindac'/exp OR 'sulindac' OR 'tiaprofenic acid'/exp OR 'tiaprofenic acid' OR 'tiaramide'/exp OR 'tiaramide' OR 'zaltoprofen'/exp OR 'zaltoprofen') AND ([article]/lim OR [article in press]/lim OR [editorial]/lim OR [letter]/lim OR [review]/lim OR [short survey]/lim) AND [humans]/lim AND [english]/lim AND [clinical study]/lim AND [embase]/lim

Total Results: 565 hits

Inclusion Criteria:

- Studies using NSAIDs in patients who undergo orthopedic surgeries
- Primary studies

- Articles published in English language

Exclusion Criteria:

- Studies that used aspirin as VTE prophylaxis
- Studies that do not include patients undergoing orthopedic operations
- Narrative review articles
- Articles not in English.

77 - Can NSAID be co-administered with aspirin, when used as a VTE prophylaxis, in patients undergoing orthopaedic procedures?

Search Terms:

(((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND ("Anti-Inflammatory Agents, Non-Steroidal"[Mesh] OR (Anti-Inflammatory Agents, Non-Steroidal) OR NSAID) AND ("Aspirin"[Mesh] OR aspirin OR (Acetylsalicylic Acid)) AND ("Drug Combinations"[Mesh] OR (Drugs combinations) OR "Drug Therapy, Combination"[Mesh] OR (Drug Therapy, Combination) OR coadministration OR combination) OR (non-steroidal antiinflammatory drug)

Total Results: 96 hits

Inclusion Criteria:

- Articles comparing non-steroidal anti-inflammatory drug and/or with aspirin
- Studies performed on humans
- Articles in English
- Primary research
- Full Text Available Articles

Exclusion Criteria:

- Animal studies
- Articles not in English
- Not available full text
- Abstracts, case reports, conference presentations, editorials, and expert opinions.

78 - Are there differences between various factor Xa inhibitors for management of VTE with regard to efficacy and safety profile?

Search Terms:

((Factor Xa Inhibitors[MeSH Terms]) OR (Factor Xa Inhibitor*[Title/Abstract]) OR (Factor Xa Inhibitor*) OR (Apixaban) OR (edoxaban) OR (Rivaroxaban)) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND (((Patient safety[MeSH Terms]) OR (Safety[Title/Abstract]) OR (Safety)) AND ((Treatment Outcome[MeSH Terms]) OR (Therp* Efficacy) OR (Treatment* Efficacy)) OR (Therapeutic Equivalency[MeSH Terms])) AND ((orthopedic procedure[MeSH

Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure))

Total Results: 99 hits

Inclusion Criteria:

- Studies reporting multiple factor Xa inhibitors
- Venous thromboembolism rates reported
- Primary research
- English articles

Exclusion Criteria:

- Non orthopaedic surgery
- Narrative review articles
- Not in English.

79 - Are there any blood tests that can be used to monitor the activity/efficacy of factor Xa inhibitors used as VTE prophylaxis?

Search Terms:

"Venous Thromboembolism/prevention and control"[Mesh] AND ("Factor Xa Inhibitors"[Mesh] OR Direct Acting Oral Anticoagulant OR Direct Acting Oral Anticoagulants OR "Apixaban" OR "Fondaparinux" OR "Edoxaban" OR "Rivaroxaban"[Mesh]) AND (monitoring OR measurement OR laboratory OR anti-Xa OR anti-factor Xa OR "Hematologic Tests"[Mesh] OR "Drug Monitoring/methods"[Mesh] OR "blood test" OR "blood tests") NOT ("Neoplasms"[Mesh] OR "Bariatrics"[Mesh] OR "COVID-19"[Mesh] OR "SARS-CoV-2"[Mesh] OR "Pregnancy"[Mesh])

Total Results: 534 hits

Inclusion Criteria:

- Assays of patients' blood samples in order to determine activity/efficacy of factor Xa inhibitorsactivity/efficacy of factor Xa inhibitors
- VTE prophylaxis prescribed following Major Orthopedic Surgery (THA, TKA, Spine, Total Shoulder Arthroplasty, and Major Pelvic and LE Trauma Surgery)
- Primary research
- English articles

Exclusion Criteria:

- Other causes of VTE prophylaxis not connected with (Cancer; Heart disease; Renal disease; COVID-19; Blood and other rare disorders)
- Non-major Orthopedic Surgeries
- Conference papers; proceedings; editorials; commentaries; reviews; book chapters; technical papers; image quality-, and phantom studies; and unavailable full-text manuscripts.

80 - Does warfarin cause hypercoagulable state during initial administration?

Search Terms:

((warfarin[MeSH Terms]) OR (warfarin[Text Word]) OR (warfarin[Text Word]) OR (vitamin K inhibit*[Text Word])) AND ((early management) OR (early response) OR (early phase) OR (early) OR (initial)) AND ((hypercoagulable state[Text Word]) OR (hypercoagulable*[Text

Word]) OR (hypercoagula*[Text Word]) OR (procoagulation[Text Word]) OR (procoagulat*[Text Word]))

Total Results: 145 hits

Inclusion Criteria:

- Warfarin or warfarin administration described
- Description/Review of mechanism of action
- Assessment of hypercoagulability
- English articles

Exclusion Criteria:

- Description of other anticoagulants
- Not in English.

81 - Is there a role for bridging with another therapeutic anticoagulant after orthopaedic surgery when warfarin is used for VTE prophylaxis?

Search Terms:

("Warfarin"[Mesh] OR Warfarin OR Coumadin) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND (((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND ("Postoperative Period"[Mesh] OR "Postoperative Period" OR postoperative OR post-operative OR post-surgery OR post-surgical OR "after surgery") AND ("Drug Combinations"[Mesh] OR (Drug Combination) OR bridge OR bridging OR "Drug Therapy, Combination"[Mesh] OR (Combination Drug Therapy))

Total Results: 13 hits

Inclusion Criteria:

- Studied bridging therapy for patients utilizing Warfarin for primary VTE prophylaxis after total hip/knee replacement
- Primary research
- English articles

Exclusion Criteria:

- Did not address bridging therapy to Warfarin VTE prophylaxis
- Not in English.

82 - Are there differences between various injectable agents for pharmacological VTE prophylaxis with regard to efficacy and safety profile?

Search Terms:

PubMed Database

Safety

((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract]) OR ("Chemoprevention"[Mesh] OR Chemoprevention OR

Chemoprophylaxis)) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND (("Anticoagulants"[Mesh] OR "Platelet Aggregation Inhibitors"[Mesh] OR "Fibrinolytic Agents"[Mesh]) OR ("LMWH"[tw] OR "low molecular weight heparin "[tw] OR "aspirin"[tw] OR "antithrombotics"[tw] OR "antiplatelet"[tw] OR " Vitamin K antagonists" [tw] OR "Factor Xa Inhibitors" [tw] OR "Adenosin-diphosphate ADP receptor antagonist"[tw] or "Cyclooxygenase Inhibitor"[tw] or "Prostaglandine"[tw] or "Prostacycline"[tw] or "Glycoprotein IIb/IIIa antagonist"[tw] or "Glycoprotein IIb/IIIa inhibitor"[tw] or "Heparinoids"[tw] or "Fibrinolytic"[tw] or "Thrombin inhibitors"[tw])) AND ("Injections"[Mesh] OR Injection OR Injectable) AND ("Safety"[Mesh] OR Safety) AND ("Therapeutic Equivalency"[Mesh] OR (Therapeutic Equivalency) OR comparison OR difference)

Total Results: 24 hits

Efficacy

(((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract]) OR ("Chemoprevention"[Mesh] OR Chemoprevention OR Chemoprophylaxis)) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND (("Anticoagulants"[Mesh] OR "Platelet Aggregation Inhibitors"[Mesh] OR "Fibrinolytic Agents"[Mesh]) OR ("LMWH"[tw] OR "low molecular weight heparin "[tw] OR "aspirin"[tw] OR "antithrombotics"[tw] OR "antiplatelet"[tw] OR " Vitamin K antagonists" [tw] OR "Factor Xa Inhibitors" [tw] OR "Adenosin-diphosphate ADP receptor antagonist"[tw] or "Cyclooxygenase Inhibitor"[tw] or "Prostaglandine"[tw] or "Prostacycline"[tw] or "Glycoprotein IIb/IIIa antagonist"[tw] or "Glycoprotein IIb/IIIa inhibitor"[tw] or "Heparinoids"[tw] or "Fibrinolytic"[tw] or "Thrombin inhibitors"[tw])) AND ("Injections"[Mesh] OR Injection OR Injectable) AND ("Comparative Effectiveness Research"[Mesh] OR (Comparative Effectiveness Research) OR "Treatment Outcome"[Mesh] OR (Treatment Outcome) OR efficacy OR effectiveness OR advantage OR benefit) AND ("Therapeutic Equivalency"[Mesh] OR (Therapeutic Equivalency) OR comparison OR difference)

Total Results: 63 hits

Inclusion Criteria:

- Studies using injectable chemoprophylaxis for VTE in patients who undergo orthopedic surgeries
- Primary studies
- Articles published in English language

Exclusion Criteria:

- Studies that used other modalities in VTE prophylaxis as oral anticoagulants or mechanical prophylaxis
- Studies that do not include patients undergoing orthopedic operations
- Narrative review articles
- Articles not in English.

Table A82-1: Efficacy of various injectable agents for prevention of VTE in orthopaedic patients.

Paper	Surgery	Treatment 1	Treatment 2	Treatment 3	efficacy	Conclusion
1-Shorr et al. 2007.	THR, TKR, hip fracture surgery	Fondaparinux (N=12,532)	Dalteparin (N=16,109)	Enoxaparin (N=97,827) UFH (N=18,338)	<u>VTE:</u> Fondaparinux 1.5%(184/12,532) vs Dalteparin 2.1%(344/16,109) vs Enoxaparin 2.3%(2292/97,827)) vs UFH 4.2%(766/18,338)	Fondaparinux more effective
2-Turpie et al. 2002	major orthopaedic surgery	Enoxaparin (N=2,703)	Fondaparinux (N=2,682)		<u>VTE :</u> Enoxaparin 13.7%(371/2,703) Vs Fondaparinux 6.7%(182/2,682)	Fondaparinux more effective
3- Lassen et al. 2002	THR	Enoxaparin (N=919)	Fondaparinux (N=908)		<u>VTE :</u> Enoxaparin 9%(85/919) Vs Fondaparinux 4%(37/908) <u>DVT:</u> Enoxaparin 9% (83/918)vs Fondaparinux 4% (36/908) <u>Proximal DVT :</u> Enoxaparin 2%(23/927) Vs Fondaparinux 1%(6/922) <u>Distal DVT:</u> Enoxaparin 7%(67/917) Vs Fondaparinux 3% (30/909) <u>Symptomatic DVT:</u> Enoxaparin 0.3%%(5/1129)	Fondaparinux more effective

					)Vs Fondaparinux 0.4% (3/1123)	
4-Turpie et al.2002	THR	Enoxaparin (N=797)	Fondaparinux (N=787)		<u>VTE:</u> Enoxaparin 8%(66/797) vs Fondaparinux 6%(48/787) <u>DVT:</u> Enoxaparin 8%(65/796) Vs Fondaparinux 6%(44/784) <u>proximal DVT:</u> Enoxaparin 1%(10/830) vs Fondaparinux 2%(14/816) <u>distal DVT :</u> Enoxaparin 7%(54/800) vs Fondaparinux 4%(34/796) <u>symptomatic VTE :</u> Enoxaparin 0.1%(1/1128) vs Fondaparinux 1%(10/1126)	Fondaparinux was not significantly more effective than enoxaparin ,the 26% reduction in risk recorded for Fondaparinux was clinically important
5-Ishibe et al. 2011	THR	Enoxaparin (N=509)	Fondaparinux (N=547)		<u>VTE :</u> Enoxaparin 0.8% (4/509) vs Fondaparinux 0	Equally effective
6-Yokote et al. 2011	THR	Placebo (N=83) +mechanical prophylaxis	Fondaparinux (N=84) + mechanical prophylaxis	Enoxaparin (N=83) + mechanical prophylaxis	<u>VTE:</u> placebo 7.2%(6/83) vs Fondaparinux 7.1%(6/84) vs Enoxaparin 6% (5/83) <u>DVT:</u> Placebo 7.2%(5/83)vs Fondaparinux 7.1%(6/84) vs	Equal effectiveness of mechanical thromboprophylaxis to anticoagulant drugs

					Enoxaparin 6%(6/83)	
7- Sasaki et al. 2009	hip fracture surgeries (Femoral neck , Trochant eric , Sub-trochant eric)	Non Fondaparinux (N=38) (unidentifie d)	Fondaparinux (N=38)		<u>DVT:</u> Non Fondaparinux 13.1%(5/38) vs Fondaparinux 2.6%(1/38)	FPX has positive effects on the prevention of VTE after HFS
8- Sasaki et al. 2011	hip fracture OP	Enoxaparin (N= 28)	Fondaparinux (N=27)		<u>Total DVT:</u> Enoxaparin 57.1%(16/28) vs Fondaparinux 25.9%(7/27) <u>Proximal DVT:</u> Enoxaparin 7.1%(2/28) vs Fondaparinux 3%(1/27) <u>Distal DVT:</u> Enoxaparin 53.5%(15/28) vs Fondaparinux 25.9%(7/27)	Fondaparinux more effective
9- Planés' et al. 1999	THR	Tinzaparin (N= 221)	Enoxaparin (N=219)		<u>DVT :</u> Tinzaparin 21.7%(48/221) vs Enoxaparin 20.1%(44/219) <u>Proximal:</u> Tinzaparin 9.5%(21/221) vs Enoxaparin 10.5%(23/219) <u>Distal:</u> Tinzaparin 12.2%(27/221) vs Enoxaparin 9.6%(21/219)	Equally effective
10- Quilis et al. 2003	TKR	Bemiparin (N=165)	Enoxaparin (N=168)		<u>Total DVT:</u>	Equally effective

					Bemiparin 32.1%(53/165) vs Enoxaparin 36.3%(61/168) <u>Proximal DVT:</u> Bemiparin 1.8% (3/165) vs Enoxaparin 4.2%(7/168) <u>Distal DVT:</u> Bemiparin 30.3%(50/165) vs Enoxaparin 32.1%(54/168)	
11- Senaran et al. 2006	THR	Enoxaparin (N=50) 40 mg QD given 12 h pre-op	UFH (N=50) SC 8 h pre-op 5,000 IU , continued to 15,000 IU TID		<u>DVT:</u> Enoxaparin 0 vs UFH 4%(2/50) <u>Late DVT:</u> Enoxaparin 4% (2/50)vs UFH 0	Enoxaparin and UFH equally effective
12- Kakkar et al. 2000	THR	Bemiparin (N=125) 3,500 IU +placebo Qd	UFH (N=134) 5,000 IU BID		<u>VTE :</u> Bemiparin 7.2%(9/125) vs UFH 18.7%(25/134) <u>PE:</u> Bemiparin 0.8%(1/125) vs UFH 1.5%(2/134) <u>DVT:</u> Bemiparin 8.9%(9/125) vs UFH 20.7%(24/134)	Bemiparin more effective
13-Lassen et al.2009	TKR	Enoxaparin 40mg Qd (N=81)	Semuloparin 5mg (N=70) 10mg (N=59)		<u>VTE:</u> 35.8% (29/81) vs 40% (28/70) 35.8% (29/81) vs 44% (26/59)	Semuloparin doses 20, 40, and 60 mg more effective

			20mg (N=90) 40mg (N=88) 60mg (N=76)		35.8% (29/81) vs 15.6% (14/90) * 35.8% (29/81) vs 13.6% (12/88) * 35.8% (29/81) vs 5.3% (4/76) *	than enoxaparin
14- Lapidus et al. 2007	Ankle fracture repair (surgical ly treated and subseque ntly immobili zed in plaster cast)	placebo (N=136)	Dalteparin (N=136)		<u>DVT</u> <u>Phlebography,</u> <u>ITT analysis :</u> placebo 28%(27/96) Vs Dalteparin 21%(21/101) <u>Phlebography +</u> <u>CDS, ITT</u> <u>analysis:</u> placebo 31%(34/109) Vs Dalteparin 21%(24/117) <u>Phlebography, PP</u> <u>analysis :</u> placebo 26%(17/65) Vs Dalteparin 17%(13/75).	Equally effective
15- Greinacher et al. 2003	THR	Desirudin (N=112)	Lepirudin (N=198) Only for HIT		<u>VTE :</u> Desirudin 9.8% (11/112) vs Lepirudin 30% (61/198) of P =0.113	Equally effective

THR: Total hip replacement, TKR: Total knee replacement, UFH: Unfractionated heparin

Table A82-2: Safety of various injectable agents for prevention of VTE in orthopaedic patients.

Paper	Surgery	Treatment 1	Treatment 2	Treatment 3	Safety parameters	Conclusion
1- Shorr et al. 2007	Orthopae dic surgeries	Fondaparinux (N=12,532)	Deltaparin (N=16,109)	Enoxaparin (N=97,827) UFH (N=18,338)	<u>Major bleeding :</u> Fondaparinux 1.5%(192/12,532) VS Deltaparin 1.1%(182/16,109) VS Enoxaparin 1.5% (1486 /97,827)VS	Deltaparin is safer

					UFH 1.9%(345/18,338)	
2-Turpie et al. 2002	THR	Fondaparinux N=1128	Enoxaparin (N=1129)		<u>Bleeding with a bleeding index more of 2:</u> Fondaparinux 2%(18/1128) VS Enoxaparin 0.7%(8/1129) <u>Transfusions:</u> Fondaparinux 53%(593/1128) VS Enoxaparin 49%(555/1129) <u>Mortality:</u> Fondaparinux 0.08 % (1/1128) vs enoxaparin 0.1% (2/1129)	Fondaparinux is safer
3-Lassen et al. 2002	THR	Fondaparinux (N=1140)	Enoxaparin (N=1133)		<u>Bleeding with a bleeding index more than 2 :</u> Fondaparinux 4% (42/1140) VS Enoxaparin 3 % (29/1133) <u>Transfusion:</u> Fondaparinux 63% (714/1140) VS Enoxaparin 61%(690/1133)	Equally safe
4-Turpie et al. 2002	Meta-analysis	Enoxaparin (N=3621)	Fondaparinux (N=3616)		<u>Bleeding of index more than 2:</u> Enoxaparin 1.4%(53/3621) Vs Fondaparinux 2.3%(84/3616) <u>Mortality:</u> Enoxaparin 0.4% (4/3621) Vs Fondaparinux 0.2% (2/3616)	Equally safe

5-Yokote et al. 2011	THR	Enoxaparin (N=85)	Fondaparinux (N=85)	Placebo (N=85)	No major bleeding in both groups. <u>Hematoma more than 5 cm</u> : 3.6%(3) patients in each group vs placebo 1.2%(1)	Equally safe
6- Planés et al. 1999	THR	Enoxaparin (N=248)	Tinzaparin (N=251)		<u>Major bleed:</u> Enoxaparin 1.6%(4/248) VS Tinzaparin 0.7%(2/251) <u>Minor bleed</u> : Enoxaparin 8.4%(21/248) VS Tinzaparin 5.1%(13/251) <u>Mortality:</u> Enoxaparin 0.4%(1/248) vs Tinzaparin 0	Equally safe
7-Quilis et al. 2003	TKR	Bemiparin (N=189)	Enoxaparin (N=191)		<u>Major bleeding</u> : Bemiparin 1.6%(3/189) vs Enoxaparin 1.6%(3/191) <u>transfusion</u> : Bemiparin 58.6%(109/189) vs Enoxaparin 52.1%(98/191) <u>Mortality:</u> Non in both groups	Equally safe
8- Senaran et al. 2006	THR	Enoxaparin (N=50)	UFH (N=50)		<u>Major hematoma:</u> Enoxaparin 4 %(2/50) vs UFH 0 <u>Minor bleeding:</u> Enoxaparin 2%(1/50) vs UFH 8%(4/50)	Equally safe

					<u>Mortality: non in both groups</u>	
9-Kakkar et al.2000	THR	Bemiparin (N=149)	UFH (N=149)		<u>Wound hematoma:</u> Bemiparin 5.4%(8/149)vs UFH 4.7%(7/149) <u>Transfusion :</u> Bemiparin 49.7%(74/149) vs UFH 44.3 %(66/149) <u>Mortality:</u> Bemiparin2%(3/149)vs UFH 0.6% (1/149)	Equally safe

83 - What is the optimal timing for the start of LMWH as a VTE prophylaxis in patients undergoing orthopaedic procedures?

Search Terms:

(((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure)) AND (((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ("Heparin, Low-Molecular-Weight"[Mesh] OR (Heparin, Low-Molecular-Weight) OR LMWH) AND ("Drug Administration Schedule"[Mesh] OR (Drug Administration Schedule) OR "Time-to-Treatment"[Mesh] OR (Time-to-Treatment) OR timing OR (start time))

Total Results: 752 hits

Inclusion Criteria:

- Published in peer-reviewed journals in English
- Both clinical and preclinical studies with any level of evidence
- Investigated the optimal timing for the start of LMWH as a VTE prophylaxis in patients undergoing orthopaedic procedures.

Exclusion Criteria:

- Data was not accessible or missing
- Without an available full-text article
- Duplicates and studies with poor scientific methodology as per risk of bias assessment
- Abstracts, case reports, conference presentations, editorials, and expert opinions were excluded.

84 - Should the dose of LMWH for the prevention of VTE be weight-adjusted?

Search Terms:

Should the use of LMWH (low molecular weight heparin) for the prevention of VTE (venous thromboembolism) be weight-adjusted? – 1990-2021

Search Results:

S1	"Venous Thromboembolism/prevention and control"[MeSH]	4,855
S2	("Thromboembolism/prevention and control" [MeSH] AND "venous") OR ("thromboembolism" AND "venous") AND "prevention"	11,364
#3	("thromboembolism" [MeSH] AND "venous") OR "venous thromboembolism" OR "VTE"	31,938
S4	#1 OR #2 OR #3	32,337
S5	"low-molecular-weight heparin" OR "heparin, low molecular weight"[MeSH] OR "LMW heparin" OR "LMWH"	14,483
S6	("body weight" [mesh] OR "body weight")	493,462
S7	"weight-based" OR "weight-adjusted"	4,814
S8	#6 OR #7	496,297
S9	#4 AND #5 AND #8	281

Should the use of LMWH (low molecular weight heparin) for the prevention of VTE (venous thromboembolism) be weight-adjusted? - Beginning-1989

Search Results:

S1	("Thromboembolism" [MeSH] AND "venous") OR ("thromboembolism" AND "venous") OR VTE Note: Venous Thromboembolism - Mesh introduced: 2008	1,532
S5	"low-molecular-weight heparin" OR "heparin, low molecular weight"[MeSH] OR "LMW heparin" OR "LMWH"	415
S6	("body weight" [mesh] OR "body weight")	129,785
S7	"weight-based" OR "weight-adjusted"	163
S8	#6 OR #7	129,874
S9	#4 AND #5 AND #8	1

Total Results: 282 hits:

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Not in English
- Narrative reviews.

85 - Does the administration of VTE prophylaxis to patients undergoing orthopedic procedures increase the rate of post-operative non-VTE complications?

Search Terms:

("complicances"[All Fields] OR "complicate"[All Fields] OR "complicated"[All Fields] OR "complicates"[All Fields] OR "complicating"[All Fields] OR "complication"[All Fields] OR "complication s"[All Fields] OR "complications"[MeSH Subheading] OR "complications"[All Fields]) AND ("venous thromboembolism"[MeSH Terms] OR ("venous"[All Fields] AND "thromboembolism"[All Fields]) OR "venous thromboembolism"[All Fields]) AND ("prevention and control"[MeSH Subheading] OR ("prevention"[All Fields] AND "control"[All Fields]) OR

"prevention and control"[All Fields] OR "prophylaxis"[All Fields] OR "prophylaxies"[All Fields] OR "prophylaxy"[All Fields]) AND ("orthopaedic procedure"[All Fields] OR "orthopedic procedures"[MeSH Terms] OR ("orthopedic"[All Fields] AND "procedures"[All Fields]) OR "orthopedic procedures"[All Fields] OR ("orthopedic"[All Fields] AND "procedure"[All Fields]) OR "orthopedic procedure"[All Fields])

Total: 1,027 results (years 1990-2021)

("complicances"[All Fields] OR "complicate"[All Fields] OR "complicated"[All Fields] OR "complicates"[All Fields] OR "complicating"[All Fields] OR "complication"[All Fields] OR "complication s"[All Fields] OR "complications"[MeSH Subheading] OR "complications"[All Fields]) AND ("venous thromboembolism"[MeSH Terms] OR ("venous"[All Fields] AND "thromboembolism"[All Fields]) OR "venous thromboembolism"[All Fields]) AND ("prevention and control"[MeSH Subheading] OR ("prevention"[All Fields] AND "control"[All Fields]) OR "prevention and control"[All Fields] OR "prophylaxis"[All Fields] OR "prophylaxies"[All Fields] OR "prophylaxy"[All Fields]) AND ("total"[All Fields] OR "totaled"[All Fields] OR "totaling"[All Fields] OR "totalled"[All Fields] OR "tallling"[All Fields] OR "totals"[All Fields]) AND ("hip"[MeSH Terms] OR "hip"[All Fields]) AND ("arthroplasty, replacement, knee"[MeSH Terms] OR ("arthroplasty"[All Fields] AND "replacement"[All Fields] AND "knee"[All Fields]) OR "knee replacement arthroplasty"[All Fields] OR ("knee"[All Fields] AND "arthroplasty"[All Fields]) OR "knee arthroplasty"[All Fields])

Total Results: 313 hits

Inclusion Criteria:

- Clinical studies with any level of evidence
- Published in peer-reviewed journals in English
- Which investigated the risk of complication after prophylactic treatment of venous thromboembolism for an orthopedic procedure

Exclusion Criteria:

- Data was not accessible or missing
- Without an available full-text article
- Duplicates and studies with poor scientific methodology as per risk of bias assessment
- Abstracts, case reports, conference presentations, editorials, and expert opinions were excluded.

86 - Does the administration of VTE prophylaxis increase the risk for intracranial bleeding in patients undergoing orthopaedic procedures? If so, are there differences between the various prophylactic agents?

Search Terms:

String 1

(((((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis")) AND (((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))) AND (((((((((((cerebral hemorrhage[MeSH Terms]) OR (cerebral bleeding[Title/Abstract])) OR (cerebral bleeding*[Title/Abstract])) OR (cerebral

hemorrhage*[Title/Abstract])) OR (intracranial hemorrhage[MeSH Terms])) OR (intracranial hemorrhages[MeSH Terms])) OR (cranial epidural hematoma[MeSH Terms])) OR (cranial epidural hematomas[MeSH Terms])) OR (cranial hematoma[Title/Abstract])) OR (cranial hematoma*[Title/Abstract])) OR (epidural hematoma[Title/Abstract])) OR (epidural hematoma*[Title/Abstract]))

Total Results: 25 hits

String 2:

((((((((((cerebral hemorrhage[MeSH Terms]) OR (cerebral bleeding[Title/Abstract])) OR (cerebral bleeding*[Title/Abstract])) OR (cerebral hemorrhage*[Title/Abstract])) OR (intracranial hemorrhage[MeSH Terms])) OR (intracranial hemorrhages[MeSH Terms])) OR (cranial epidural hematoma[MeSH Terms])) OR (cranial epidural hematomas[MeSH Terms])) OR (cranial hematoma[Title/Abstract])) OR (cranial hematoma*[Title/Abstract])) OR (epidural hematoma[Title/Abstract])) OR (epidural hematoma*[Title/Abstract])) AND (((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))) AND (("Anticoagulants"[Mesh] OR "Platelet Aggregation Inhibitors"[Mesh] OR "Fibrinolytic Agents"[Mesh]) OR ("LMWH"[tw] OR "low molecular weight heparin "[tw] OR "aspirin"[tw] OR "antithrombotics"[tw] OR "antiplatelet"[tw] OR " Vitamin K antagonists" [tw] OR "Factor Xa Inhibitors" [tw] OR "Adenosin-diphosphate ADP receptor antagonist"[tw] or "Cyclooxygenase Inhibitor"[tw] or "Prostaglandine"[tw] or "Prostacycline"[tw] or "Glycoprotein IIb/IIIa antagonist"[tw] or "Glycoprotein IIb/IIIa inhibitor"[tw] or "Heparinoids"[tw] or "Fibrinolytic"[tw] or "Thrombin inhibitors"[tw]))

Total Results: 87 hits.

Inclusion Criteria:

- Major and non-major orthopedic surgery
- At least one prophylactic agent described
- Venous thromboembolism rates reported
- Primary research
- English articles

Exclusion Criteria:

- Spine surgery
- Narrative review articles
- Not in English.

87 - Does the administration of VTE prophylaxis increase the risk for epidural hematoma in patients undergoing orthopaedic procedures? If so, are there differences between the various agents?

Search Terms:

(((((Prevention and Control[MeSH Subheading]) OR (prevention[Title/Abstract])) OR (prevent*[Title/Abstract]) OR (prophylaxis[tw])) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis")) AND (((((((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms])) OR (orthopedic procedure)) OR (orthopedic procedures)) OR (orthopaedic procedures)) OR (orthopaedic procedure))) AND (((((((cranial epidural hematoma[MeSH Terms]) OR

((intracranial subdural hematoma[MeSH Terms])) OR (acute subdural hematoma[MeSH Terms]))
 OR (hematoma, spinal epidural[MeSH Terms])) OR (spinal epidural hematomas[MeSH Terms]))
 OR ("cranial epidural hematoma")) OR ("cranial subdural hematoma")) OR ("epidural
 hematoma")) OR ("subdural hematoma"))

Total Results: 22 hits

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not English language.

88 - Does the risk of post-operative wound problems in patients undergoing orthopaedic procedures differ between various VTE prophylactic agents?

("wound"[All Fields] OR "complicate"[All Fields] OR "complicated"[All Fields] OR
 "complicates"[All Fields] OR "complicating"[All Fields] OR "complication"[All Fields] OR
 "complication s"[All Fields] OR "complications"[MeSH Subheading] OR "complications"[All
 Fields]) AND ("venous thromboembolism"[MeSH Terms] OR ("venous"[All Fields] AND
 "thromboembolism"[All Fields]) OR "venous thromboembolism"[All Fields]) AND ("prevention
 and control"[MeSH Subheading] OR ("prevention"[All Fields] AND "control"[All Fields]) OR
 "prevention and control"[All Fields] OR "prophylaxis"[All Fields] OR "prophylaxies"[All
 Fields] OR "prophylaxy"[All Fields]) AND ("orthopaedic procedure"[All Fields] OR
 "orthopedic procedures"[MeSH Terms] OR ("orthopedic"[All Fields] AND "procedures"[All
 Fields]) OR "orthopedic procedures"[All Fields] OR ("orthopedic"[All Fields] AND
 "procedure"[All Fields]) OR "orthopedic procedure"[All Fields])

Total: 1,083 results (years 1990-2021)

("superficial infection"[All Fields] OR "complicate"[All Fields] OR "complicated"[All Fields]
 OR "complicates"[All Fields] OR "complicating"[All Fields] OR "complication"[All Fields] OR
 "complication s"[All Fields] OR "complications"[MeSH Subheading] OR "complications"[All
 Fields]) AND ("venous thromboembolism"[MeSH Terms] OR ("venous"[All Fields] AND
 "thromboembolism"[All Fields]) OR "venous thromboembolism"[All Fields]) AND ("prevention
 and control"[MeSH Subheading] OR ("prevention"[All Fields] AND "control"[All Fields]) OR
 "prevention and control"[All Fields] OR "prophylaxis"[All Fields] OR "prophylaxies"[All
 Fields] OR "prophylaxy"[All Fields]) AND ("total"[All Fields] OR "totalled"[All Fields] OR
 "totaling"[All Fields] OR "totalled"[All Fields] OR "tallling"[All Fields] OR "totals"[All
 Fields]) AND ("hip"[MeSH Terms] OR "hip"[All Fields]) AND ("arthroplasty, replacement,
 knee"[MeSH Terms] OR ("arthroplasty"[All Fields] AND "replacement"[All Fields] AND
 "knee"[All Fields]) OR "knee replacement arthroplasty"[All Fields] OR ("knee"[All Fields]
 AND "arthroplasty"[All Fields]) OR "knee arthroplasty"[All Fields])

Total 325 Results.

The PubMed, EMBASE and Cochrane database of systematic reviews were reviewed using the
 following Medical Subject Heading (MeSH) terms: “anticoagulation”, “arthroplasty”, “infection”

Total Results: 1,408 hits.

Inclusion Criteria:

- Retrospective and prospective studies
- Published in peer-reviewed journals in English
- Articles investigating the association between venous thromboembolism (VTE) prophylactic agents and wound problems.

Exclusion Criteria:

- Data was not accessible or missing
- Duplicates, abstracts, case reports, conference presentations, reviews, meta-analysis, editorials, and expert opinions
- Studies not in English.

89 - Should the VTE prophylaxis be altered in patients undergoing orthopaedic procedures who develop wound related problems?

Search Terms:

((("thrombotic Prophylaxis"[Mesh]) AND "Orthopedic Procedures"[Mesh]) AND ("Surgical Wound"[Mesh] AND "Surgical Wound Dehiscence"[Mesh])) AND "persistent Wound drainage"[Mesh]
 ("Anticoagulants"[Mesh] OR "Platelet Aggregation Inhibitors"[Mesh] OR "Fibrinolytic Agents"[Mesh])AND ((orthopedic procedure[MeSH Terms]) OR (orthopedic procedures[MeSH Terms]) OR (orthopedic procedure) OR (orthopedic procedures) OR (orthopaedic procedures) OR (orthopaedic procedure)) AND ((wound complications) OR (wound drainage) OR ("Surgical Wound Dehiscence"[Mesh]) OR("Surgical Wound Infection"[Mesh]) OR ("Wound Healing"[Mesh]))

Total Results: 2,192 hits

Inclusion criteria:

- Languages: English, Spanish.
- Clinical studies.
- Patient selection: patients who developed wound related problems and underwent an orthopedic intervention / alteration in the use of anticoagulants.

Exclusion criteria:

- *In vitro* studies
- Animal studies
- Narrative reviews
- Clinical articles published prior to 1991 unless RCTs.

90 - Does the development of a hematoma as a result of the administration of VTE prophylaxis increase the risk of subsequent arthrofibrosis?

Search Terms:

First Search String: VTE prophylaxis drugs and arthrofibrosis: 113 results

((("Anticoagulants"[Mesh] OR "Platelet Aggregation Inhibitors"[Mesh] OR "Fibrinolytic Agents"[Mesh]) OR ("LMWH"[tw] OR "low molecular weight heparin "[tw] OR "aspirin"[tw] OR "antithrombotics"[tw] OR "antiplatelet"[tw] OR " Vitamin K antagonists" [tw] OR "Factor Xa Inhibitors" [tw] OR "Adenosin-diphosphate ADP receptor antagonist"[tw] or "Cyclooxygenase Inhibitor"[tw] or "Prostaglandine"[tw] or "Prostacycline"[tw] or "Glycoprotein IIb/IIIa antagonist"[tw] or "Glycoprotein IIb/IIIa inhibitor"[tw] or "Heparinoids"[tw] or "Fibrinolytic"[tw] or "Thrombin inhibitors"[tw])) AND AND ((

arthrofibrosis[Text Word]) OR (joint fibrosis[Text Word]) OR (ankylosis[Text Word]) OR (ankylosis[MeSH Terms]) OR (ankyloses[MeSH Terms]))

Second Search String: haematoma formation and arthrofibrosis: 165 results

((Hematoma[MeSH Terms]) OR (hematoma[Text Word]) OR (haematoma[Text Word]) OR (joint bleeding[tw]) OR (knee bleeding[tw]) OR (hip bleeding[tw]) OR (articular bleeding) OR (Hemarthrosis[Mesh])) AND ((arthrofibrosis[Text Word]) OR (joint fibrosis[Text Word]) OR (ankylosis[Text Word]) OR (ankylosis[MeSH Terms]) OR (ankyloses[MeSH Terms]))

Third search string: haematoma formation and arthrofibrosis: 767 results

((Hematoma[MeSH Terms]) OR (hematoma[Text Word]) OR (haematoma[Text Word]) OR (joint bleeding[tw]) OR (knee bleeding[tw]) OR (hip bleeding[tw]) OR (articular bleeding) OR (Hemarthrosis[Mesh])) AND ((arthrofibrosis[Text Word]) OR (fibrosis[MeSH Terms]) OR (joint fibrosis[Text Word]) OR (ankylosis[Text Word]) OR (ankylosis[MeSH Terms]) OR (ankyloses[MeSH Terms]))

Fourth search string: 4494 results anticoagulant drugs and haemarthrosis or haematoma

((("Anticoagulants"[Mesh] OR "Platelet Aggregation Inhibitors"[Mesh] OR "Fibrinolytic Agents"[Mesh]) OR ("LMWH"[tw] OR "low molecular weight heparin "[tw] OR "aspirin"[tw] OR "antithrombotics"[tw] OR "antiplatelet"[tw] OR " Vitamin K antagonists" [tw] OR "Factor Xa Inhibitors" [tw] OR "Adenosin-diphosphate ADP receptor antagonist"[tw] or "Cyclooxygenase Inhibitor"[tw] or "Prostaglandine"[tw] or "Prostacycline"[tw] or "Glycoprotein IIb/IIIa antagonist"[tw] or "Glycoprotein IIb/IIIa inhibitor"[tw] or "Heparinoids"[tw] or "Fibrinolytic"[tw] or "Thrombin inhibitors"[tw])) AND ((Hematoma[MeSH Terms]) OR (hematoma[Text Word]) OR (haematoma[Text Word]) OR (joint bleeding[tw]) OR (knee bleeding[tw]) OR (hip bleeding[tw]) OR (articular bleeding) OR (Hemarthrosis[Mesh]))

Total Results: 5,539 hits

Inclusion Criteria:

- Primary research
- Systematic review or meta-analysis

Exclusion Criteria:

- Non-English language papers.

91 - Is there a role for empirical treatment of patients with suspected, but not confirmed, VTE in the post-operative period?

Search Terms:

Table A91-1:

#	Database	Search term	Results
1	Medline	(VTE OR "venous thromboembolism").ti,ab	23790
2	Medline	"VENOUS THROMBOEMBOLISM"/	12044
3	Medline	(1 OR 2)	25927

4	Medline	(suspected NOT confirmed).ti,ab	177532
5	Medline	(3 AND 4)	740
6	Medline	(orthopaedic OR orthopedic).ti,ab	78334
7	Medline	exp "ORTHOPEDIC PROCEDURES"/	322745
8	Medline	(6 OR 7)	377436
9	Medline	(5 AND 8)	26
10	Medline	(postoperative AND (care OR period OR complication*)).ti,ab	247870
11	Medline	"POSTOPERATIVE CARE"/	60097
12	Medline	"POSTOPERATIVE PERIOD"/	53355
13	Medline	"POSTOPERATIVE COMPLICATIONS"/	377109
14	Medline	(following OR post).ti,ab	2424883
15	Medline	(10 OR 11 OR 12 OR 13 or 14)	628651
16	Medline	(9 AND 15)	13
17	PubMed	(VTE OR "venous thromboembolism").ti,ab	26967
18	PubMed	(suspected NOT confirmed).ti,ab	176534
19	PubMed	(17 AND 18)	766
20	PubMed	(orthopaedic OR orthopedic).ti,ab	368148
21	PubMed	(Acetabuloplasty OR Amputation OR Arthrodesis OR Arthroplasty OR Arthroscopy OR Cementoplasty OR Disectomy OR Fixation OR Laminectomy OR Laminoplasty OR Meniscectomy OR Manipulation OR Osteotomy OR "Ligament	582094

		reconstruction" OR Tenodesis OR Synovectomy OR Tenotomy).ti,ab	
22	PubMed	(20 OR 21)	814074
23	PubMed	(19 AND 22)	43
24	PubMed	(postoperative AND (care OR period OR complication*).ti,ab	76501
25	PubMed	(following OR post).ti,ab	2564949
26	PubMed	(24 OR 25)	2625609
27	PubMed	(23 AND 26)	12
28	Embase	(VTE OR "venous thromboembolism").ti,ab	40271
29	Embase	"VENOUS THROMBOEMBOLISM"/ OR "DEEP VEIN THROMBOSIS"/ OR "LOWER EXTREMITY DEEP VEIN THROMBOSIS"/ OR "UPPER EXTREMITY DEEP VEIN THROMBOSIS"/ OR "VENOUS THROMBOSIS"/	111660
30	Embase	(28 OR 29)	119550
31	Embase	(suspected NOT confirmed).ti,ab	261012
32	Embase	(30 AND 31)	3410
33	Embase	(orthopaedic OR orthopedic).ti,ab	105354
34	Embase	exp "ORTHOPEDIC SURGERY"/	502324
35	Embase	(33 OR 34)	561842
36	Embase	(32 AND 35)	155
37	Embase	(postoperative AND (care OR period OR complication*).ti,ab	352364
38	Embase	(following OR post).ti,ab	3479351

39	Embase	"POSTOPERATIVE CARE"/	91731
40	Embase	"POSTOPERATIVE PERIOD"/	224744
41	Embase	"POSTOPERATIVE COMPLICATION"/	346745
42	Embase	(37 OR 38 OR 39 OR 40 OR 41)	4078425
43	Embase	(36 AND 42)	77

Databases: Medline, Embase and PubMed. Cochrane library and CENTRAL clinical trials database searched for systematic reviews and clinical trials

Search Results: 56 results were generated using this search strategy. 22 results were subsequently excluded as conference papers and/or case reports. Title and abstract review of the remaining 34 studies did not identify any articles reporting outcomes relating to the treatment of suspected VTE in the post-operative orthopaedic patient.

Inclusion Criteria:

- All published studies relating to the treatment of suspected VTE in the post-operative orthopaedic patient.
- Reported primary outcomes, defined as i) bleeding-associated complications ii) VTE and VTE-associated complications iii) overall patient mortality.

Exclusion Criteria:

- Case reports and conference abstracts.

92 - What is the most appropriate method to monitor patients with confirmed post-operative VTE?

Search Terms:

((("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis") AND ((Postoperative period[MeSH Terms]) OR (Postoperative period[Title/Abstract]) OR (Postoperative*[Title/Abstract]) OR (Postoperative management[Text Word]) OR (Postoperative care[Title/Abstract]))) AND ((Monitoring, Physiologic[MeSH Terms]) OR (Monitor[Title/Abstract]) OR (Monitor*[Title/Abstract]) OR (Observe[Title/Abstract]) OR (Surveil*[Title/Abstract]) OR (Track[Title/Abstract])))

Total Results: 139 hits.

Inclusion Criteria:

- Venous thromboembolism after surgery
- Time of anticoagulation therapy reported
- Provoked VTE
- Primary research
- English articles

Exclusion Criteria:

- Unprovoked VTE
- Narrative review articles

- Level of evidence III and IV
- Not in English.

93 - Should the post-operative rehabilitation of a patient with confirmed PE be modified?

Search Terms:

(((((pulmonary embolism[MeSH Terms]) OR (pulmonary embolisms[MeSH Terms])) OR (pulmonary embolism*[Title/Abstract])) AND ((rehabilitation[MeSH Terms]) OR (rehabilitation[Title/Abstract]))) AND (((((period, perioperative[MeSH Terms]) OR (periods, perioperative[MeSH Terms])) OR (care, postoperative[MeSH Terms])) OR (period, postoperative[MeSH Terms])) OR (postoperative[Title/Abstract]))

Total Results: 157 hits

Inclusion Criteria:

- Orthopaedic surgery, including joint replacement
- Rehabilitation
- Pulmonary embolism
- Outcomes: recurrent venous thromboembolism, bleeding, mortality, quality of life, exercise tolerance
- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not in English.

94 - Should the post-operative rehabilitation of patients who have confirmed symptomatic DVT be modified?

Search Terms:

(((((period, peri-operative [MeSH Terms]) OR (periods, peri-operative[MeSH Terms])) OR (care, postoperative[MeSH Terms])) OR (period, post-operative [MeSH Terms])) OR (post-operative[Title/Abstract])) AND ((rehabilitation[MeSH Terms]) OR (rehabilitation[Title/Abstract])) AND (((((((deep vein thromboses[MeSH Terms]) OR (deep vein thrombosis[MeSH Terms])) OR (deep venous thromboses[MeSH Terms])) OR (deep venous thrombosis[MeSH Terms])) OR (deep venous thromboses[Title/Abstract])) OR (deep venous thrombosis[Title/Abstract])) OR (deep vein thromboses[Title/Abstract])) OR (deep vein thrombosis[Title/Abstract]))

Total Results: 100 hits

Inclusion Criteria:

- Retrospective cohort studies, prospective cohort studies, retrospective comparative studies, prospective comparative studies, and randomized controlled studies
- Study population: patients with symptomatic deep vein thrombosis after orthopaedic surgery
- Intervention: change in rehabilitation after the onset of symptomatic deep vein thrombosis
- Outcomes: mortality, pulmonary embolism, aggravation of deep vein thrombosis.

Exclusion Criteria:

- Data was not accessible or missing
- Without an available full-text article
- Duplicates and studies with poor scientific methodology as per risk of bias assessment
- Abstracts, case reports, conference presentations, editorials, and expert opinions were excluded.

95 - Is there a role for thrombolysis in the management of patients with post-operative VTE?

Search Terms:

((therapy, thrombolytic[MeSH Terms]) OR (mechanical thrombolysis[MeSH Terms]) OR (thrombolysis[Title/Abstract]) OR (thromboly*) OR (fibrinolytic agents[MeSH Terms]) OR (fibrinolytic drugs[MeSH Terms])) AND ((Postoperative period[MeSH Terms]) OR (Postoperative period[Title/Abstract]) OR (Postoperative*[Title/Abstract]) OR (Postoperative management[Text Word]) OR (Postoperative care[Title/Abstract])) AND (("Venous Thromboembolism"[Mesh]) OR ("Venous Thrombosis") OR ("pulmonary embolism") OR ("deep vein thrombosis")))

Total Results: 549 hits

Inclusion Criteria:

- Post-operative VTE
- Thrombolysis described
- English articles

Exclusion Criteria:

- Unavailable full-text manuscripts.

96 - Are patients with prior history of COVID - 19 who undergo orthopaedic procedures at an increased risk of VTE? If so, should their post-operative anticoagulation regiment be altered?

Search Terms:

((((((((((("sars-cov-2"[MeSH Terms] OR "covid-19"[MeSH Terms]) OR ("severe acute respiratory syndrome coronavirus 2")) OR ("coronavirus disease 2019")) OR ("sars-cov-2")) OR ("covid-19")) OR ("Corona virus disease 2019")) OR ("coronavirus disease")) OR ("corona virus disease")) OR ("sars-cov-2 infection")) AND (((orthopedics[MeSH Terms]) OR (orthopedic procedure[MeSH Terms]) OR (orthopedic procedure*) OR (orthopaedic procedure*) OR (orthopedic surger*) OR (orthopaedic surger*)))) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis" OR ("VTE")))

Total Results: 22 hits

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not English language.

97 - Does the risk for VTE increase after COVID - 19 vaccination?

Search Terms:

((("sars-cov-2"[MeSH Terms] OR "covid-19"[MeSH Terms] OR covid[Text Word]) AND ("vaccines"[MeSH Terms] OR vaccine[Text Word])) AND (((orthopedics[MeSH Terms] OR (orthopedic procedure[MeSH Terms]) OR (orthopedic procedure*) OR (orthopaedic procedure*) OR (orthopedic surger*) OR (orthopaedic surger*)))) AND ("Venous Thromboembolism"[Mesh] OR "Venous Thrombosis"[Mesh] OR "pulmonary embolism" OR "deep vein thrombosis" OR ("VTE")) Only COVID VACCINE + ORTHO= (((((((("sars-cov-2"[MeSH Terms] OR "covid-19"[MeSH Terms] OR covid[Text Word]) AND ("vaccines"[MeSH Terms] OR vaccine[Text Word])) OR (covid-19 vaccines[MeSH Terms])) OR ("sars-cov-2 vaccine*")) OR ("covid-19 vaccine*")) OR ("covid vaccine*")) OR ("coronavirus disease vaccine*")) OR ("coronavirus vaccine*")) OR ("SARS Coronavirus 2 Vaccine*")) AND (((orthopedics[MeSH Terms] OR (orthopedic procedure[MeSH Terms]) OR (orthopedic procedure*) OR (orthopaedic procedure*) OR (orthopedic surger*) OR (orthopaedic surger*))))

Total Results: 201 hits.

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not English language.

98 - Do clinical practice guidelines set the standard of care for VTE prophylaxis?

(((((Legal) AND (Guidelines)) AND (DVT)) AND (VTE)) AND (PE) AND (Orthopaedics)

Total Results: 3 hits.

Inclusion Criteria:

- Primary research
- English articles

Exclusion Criteria:

- Narrative review articles
- Not English language.