Table 18. Major and minor bleeding from randomized controlled trials evaluating patients who had major orthopedic surgery

| Study, Year  | Group | Major Bleedingn/N  | Major Bleeding Definition  | Minor Bleedingn/N  | Minor Bleeding Definition |
| --- | --- | --- | --- | --- | --- |
| Yokote, 2011 | Fondaparinux | 0/85 | Retroperitoneal, intracranial, intraocular, if it was associated with either death, transfusion of more than 2 Units of packed RBCs or whole blood, a reduction in the level of Hb >2g/dL or a serious life threatening clinical event requiring medical intervention | 7/85 | One of the following: epistataxis lasting >5min or requiring intervention, ecchymosis or hematoma with maximum size of >5 cm hematuria not associated with trauma from urinary catheter, GI hemorrhage not related to intubation or passage of a nasogastric tube, wound hematoma, or hemorrhagic wound complication, not associated with major hemorrhage or subconjunctival hemorrhage requiring cessation of medications |
|  | Enoxaparin | 0/85 |  | 6/85 |  |
|  | Placebo | 0/85 |  | 2/85 |  |
| Fuji, 2010 | Dabigatran 150mg | 0/126 | Fatal bleeding; clinically overt bleeding associated with a fall ≥Hb 20g/L, transfusion of ≥2U PRBC or whole blood, retroperitoneal or intracranial bleeding, bleeding warranting treatment cessation | 12/126 | Per European guidelines |
|  | Dabigatran 220mg | 3/129 |  | 9/129 | --- |
|  | Placebo | 1/124 |  | 6/124 | --- |
| Chin, 2009 | Enoxaparin | --- | --- | --- | --- |
|  | Control | --- | --- | --- | --- |
| Ginsberg, 2009 | Dabigatran 150mg  | 5/8712/871\* | Fatal bleeding; clinically overt bleeding in excess of expected and associated with a fall of 2g/L of Hb and/or leading to transfusion of ≥2U packed cells or whole blood; symptomatic retroperitoneal, intracranial, intraocular, or intraspinal bleeding; bleeding requiring treatment cessation and/or operation | 22/8715/871\*  | Spontaneous skin hematoma >25 cm2; wound hematoma >100 cm2; spontaneous nose bleeding or gingival bleeding lasting >5 min; spontaneous rectal bleeding creating more than a spot on toilet paper; macroscopic hematuria either spontaneous or, if associated with an intervention (e.g. Foley catheter) lasting >24h; other bleeding event considered clinically relevant by the investigator not qualifying as a major bleed |
|  | Dabigatran 220mg | 5/8571/857\* |  | 23/8576/857\* |  |
|  | Enoxaparin | 12/8680/868\* |  | 21/8683/868\* |  |
| Edwards, 2008 THA | Enoxaparin + IPC | --- | --- | --- | --- |
|  | Enoxaparin | --- | --- | --- | --- |
| Edwards, 2008 TKA | Enoxaparin + IPC | --- | --- | --- | --- |
|  | Enoxaparin | --- | --- | --- | --- |
| Fuji, 2008 THA  | Enoxaparin 40mg QD | 2/102 | Retroperitoneal, intracranial, or intraocular; associated with death, transfusion of ≥2U of PRBC or whole blood (not autologous), reduction in Hb ≥2 g/dl; serious or life-threatening clinical event that required medical intervention | 7/102 | Epistaxis lasting >5 min or requiring intervention; ecchymosis or hematoma with a maximum size of >5 cm; hematuria not associated with urinary catheter trauma; GI hemorrhage not related to intubation or NG tube; wound hematoma or hemorrhagic wound complications not associated with major hemorrhage; subconjunctival hemorrhage requiring cessation of medication |
|  | Enoxaparin 20mg BID | 3/104 |  | 4/104 |  |
|  | Placebo  | 0/101 |  | 2/101 |  |
| Fuji, 2008 TKA  | Enoxaparin 40mg QD | 1/91 | Retroperitoneal, intracranial, or intraocular; associated with death, transfusion of ≥2U of PRBC or whole blood (not autologous), reduction in Hb ≥2 g/dl; serious or life-threatening clinical event that required medical intervention | 6/91 | Epistaxis lasting >5 min or requiring intervention; ecchymosis or hematoma with a maximum size of >5 cm; hematuria not associated with urinary catheter trauma; GI hemorrhage not related to intubation or NG tube; wound hematoma or hemorrhagic wound complications not associated with major hemorrhage; subconjunctival hemorrhage requiring cessation of medication |
|  | Enoxaparin 20mg BID | 3/95 |  | 10/95 |  |
|  | Placebo  | 4/89 |  | 4/89 |  |
| Thorey, 2008 | Early release tourniquet | --- | --- | --- | --- |
|  | Late release tourniquet | --- | --- | --- | --- |
| Eriksson, 2007a | Dabigatran 150mg QD | 9/703 | Defined according to accepted guidelines | 59/703 | Defined according to accepted guidelines |
|  | Dabigatran 220mg QD | 10/679 |  | 60/679 |  |
|  | Enoxaparin | 9/694 |  | 69/694 |  |
| Eriksson, 2007b | Dabigatran 150mg QD | 15/1163 | Defined according to accepted guidelines | 72/1163 | Defined according to accepted guidelines |
|  | Dabigatran 220mg QD | 23/1146 |  | 70/1146 |  |
|  | Enoxaparin | 18/1154 |  | 74/1154 |  |
| Lassen, 2007 | Enoxaparin | 0/149 | Accompanied by a reduction in Hb of >2 g/dl (relative to the postsurgical value) and/or a requirement for transfusion of > 2U of blood product; need to discontinue study medication; intracranial, intraspinal, retroperitoneal, or in the operated joint necessitating re-operation or intervention, intrapericardial, intraocular or fatal | 6/149 | Defined as other bleeding not meeting the definition of “major” |
|  | Warfarin | 0/151 |  | 8/151 |  |
| Bonneux, 2006 | Fondaparinux | --- | --- | --- | --- |
|  | Enoxaparin | --- | --- | --- | --- |
| Senaran, 2006 | Enoxaparin | 2/50 | Overt bleeding associated with ≥1 of the following events: death or a life-threatening clinical event; bleeding confirmed to be retroperitoneal, intracranial, intraocular; postoperative transfusion of >2U of PRBC or whole blood; decrease in the Hb > 20g/L compared with the relevant postoperative level | 1/50 | Overt bleeding episode that did not meet the criterion for classification as a major bleeding episode, or absence of any simultaneous bleeding other than the surgical wound |
|  | Heparin | 0/50 |  | 4/50 |  |
| Westrich, 2006 | Minimum hyperflexed knee | --- | --- | --- | --- |
|  | Standard hyperflexed knee | --- | --- | --- | --- |
| Eriksson, 2005 THR | Dabigatran 50mg BID | 0/265  | Clinically overt bleeding associated with > 20 g/L fall in Hb; clinically overt leading to transfusion of >2U packed cells or whole blood; fatal, retroperitoneal, intracranial, intraocular or intraspinal bleeding; bleeding warranting treatment cessation or leading to reoperation | 11/265  | Minor bleeding events were defined as those not fulfilling the criteria of major or clinically significant bleeding |
|  | Dabigatran 150mg BID | 10/266  |  | 23/266  |  |
|  | Dabigatran 300mg QD | 12/258  |  | 22/258  |  |
|  | Dabigatran 225mg BID | 12/270  |  | 28/270  |  |
|  | Enoxaparin | 6/270  |  | 14/270  |  |
| Eriksson, 2005 TKR | Dabigatran 50mg BID | 1/124  | Clinically overt bleeding associated with >20 g/L fall in Hb; clinically overt leading to transfusion of >2U packed cells or whole blood; fatal, retroperitoneal, intracranial, intraocular or intraspinal bleeding; bleeding warranting treatment cessation or leading to reoperation | 7/124  | Minor bleeding events were defined as those not fulfilling the criteria of major or clinically significant bleeding |
|  | Dabigatran 150mg BID | 6/124  |  | 8/124  |  |
|  | Dabigatran 300mg QD | 6/127  |  | 15/127  |  |
|  | Dabigatran 225mg BID | 3/123  |  | 10/123  |  |
|  | Enoxaparin | 2/122  |  | 11/122  |  |
| Farag, 2005 | Epidural Anesthesia | --- | --- | --- | --- |
|  | Spinal Anesthesia | --- | --- | --- | --- |
| Lachiewicz, 2004 | IPC (Venaflow) | --- | --- | --- | --- |
|  | IPC (Kendal) | --- | --- | --- | --- |
| Silbersack, 2004 | Enoxaparin + IPC | --- | --- | --- | --- |
|  | Enoxaparin + GCS | --- | --- | --- | --- |
| Eriksson, 2003 | Extended fondaparinux | 8/327 | Fatal, retroperitoneal, intracranial, or intraspinal bleeding; bleeding that involved any other critical organ; bleeding leading to reoperation; overt bleeding with a bleeding index ≥ 2  | 5/327 | --- |
|  | Fondaparinux | 2/329 |  | 2/329 | --- |
| Kim, 2003 | Cemented | --- | --- | --- | --- |
|  | Non-cemented | --- | --- | --- | --- |
| Lassen, 2002 | Fondaparinux | 47/1140 | Fatal, retroperitoneal, intracranial, or intraspinal bleeding; bleeding that involved any other critical organ; bleeding leading to reoperation; overt bleeding with a bleeding index ≥ 2 | --- | --- |
|  | Enoxaparin | 32/1133 |  | --- | --- |
| Pitto, 2002 | Bone vaccum cement technique | 0/65 | Major bleeding from a wound (wound hematoma requiring operative decompression), or major bleeding not related to a wound (gastrointestinal or intracerebral hemorrhage). | 5/65 | Minor bleeding from a wound (bleeding at the injection site, epistaxis, or wound hematoma not requiring operative decompression) |
|  | Standard cement technique | 0/65 |  | 4/65 |  |
| Prandoni, 2002 | Extended warfarin | 1/184 | Clinically overt bleeding associated with either a decrease in Hb ≥2 g/dL or a need for a transfusion of ≥2U RBC; intracranial or retroperitoneal; resulted in the permanent discontinuation of anticoagulation | --- | --- |
|  | Warfarin | 0/176 |  | --- | --- |
| Turpie, 2002 | Fondaparinux | 20/1128 | Fatal, retroperitoneal, intracranial, or intraspinal bleeding; bleeding that involved any other critical organ; bleeding leading to reoperation; overt bleeding with a bleeding index ≥ 2 | --- | --- |
|  | Enoxaparin | 11/1129 |  | --- | --- |
| Warwick, 2002 | Enoxaparin | --- | --- | --- | --- |
|  | VFP | --- | --- | --- | --- |
| Barden, 2001 | Modified position | --- | --- | --- | --- |
|  | Conventional figure four positioning | --- | --- | --- | --- |
| Bauer, 2001 | Fondaparinux | 11/517 | Fatal, retroperitoneal, intracranial, or intraspinal bleeding; bleeding that involved any other critical organ; bleeding leading to reoperation; overt bleeding with a bleeding index ≥ 2 | --- | --- |
|  | Enoxaparin | 1/517 |  | --- | --- |
| Comp, 2001 THR | Extended enoxaparin | 0/224 | Clinically overt bleeding resulting in death, transfusion of ≥2U blood products, decrease in the Hb level of ≥2.0 g/dL (≥20g/L) compared with the most recent preceding postoperative value; serious or life-threatening clinical event; one requiring surgical intervention; retroperitoneal, intracranial, or intraocular in location | --- | Overt bleeding that did not meet the criteria for major hemorrhage and associated with ≥1 of the following: epistaxis lasting more than 5min or requiring intervention, ecchymosis or hematoma >5cm at its greatest dimension, hematuria not associated with urinary catheter related trauma, GI hemorrhage not related to intubation or placement of a NG tube, wound hematoma or complications, subconjunctival hemorrhage necessitating cessation of medication |
|  | Enoxaparin | 0/211 |  | --- |  |
| Comp, 2001 TKR | Extended enoxaparin | 0/217 | Clinically overt bleeding resulting in death, transfusion of ≥2U blood products, decrease in the Hb level of ≥2.0 g/dL (≥20g/L) compared with the most recent preceding postoperative value; serious or life-threatening clinical event; one requiring surgical intervention; retroperitoneal, intracranial, or intraocular in location | --- | Overt bleeding that did not meet the criteria for major hemorrhage and associated with ≥1 of the following: epistaxis lasting more than 5min or requiring intervention, ecchymosis or hematoma >5cm at its greatest dimension, hematuria not associated with urinary catheter related trauma, GI hemorrhage not related to intubation or placement of a NG tube, wound hematoma or complications, subconjunctival hemorrhage necessitating cessation of medication |
|  | Enoxaparin | 1/221 |  | --- |  |
| Eriksson, 2001 | Fondaparinux | 18/831 | Fatal, retroperitoneal, intracranial, or intraspinal bleeding; bleeding that involved any other critical organ; bleeding leading to reoperation; overt bleeding with a bleeding index ≥ 2 | 34/831 | Overt bleeding that did not meet the criteria for major bleeding |
|  | Enoxaparin | 19/842 |  | 18/842 |  |
| Fitzgerald, 2001 | Warfarin | 4/176 | Fulfilled ≥1 of the following: resulted in transfusion of ≥2U PRBC; resulted in a decrease in the Hb ≥20 g/L compared with the postoperative Hb concentration before the administration of any study medication; retroperitoneal, intracranial, or intraocular; resulted in a serious life-threatening clinical event or death | 37/176 | --- |
|  | Enoxaparin | 9/173 |  | 49/173 |  |
| Hull, 2000 | Dalteparin (pre-operative) | 33/496† 11/496‡ | Clinically overt and associated with a decrease in Hb≥20 g/L or required transfusion of ≥ 2U of blood; intracranial, intraocular, intraspinal or retroperitoneal; occurred into a prosthetic joint | 3/496†6/496‡ | Clinically overt without meeting the major bleeding criteria and as trivial if it was clearly ofno consequence |
|  | Dalteparin (post-operative) | 28/487†4/487‡ |  | 3/487†8/487‡ |  |
|  | Warfarin | 20/489†2/489‡ |  | 2/489†8/489‡ |  |
| Kennedy, 2000 | Aspirin | --- | --- | --- | --- |
|  | VFP | --- | --- | --- | --- |
| Colwell, 1999  | Enoxaparin | 18/1516 | Overt bleeding associated with ≥1 of the following: death or life threatening clinical event; bleeding confirmed to be retroperitoneal, intracranial, or intraocular; post-operative blood transfusion ≥2U PRBC or whole blood; decrease in Hb>20g/L | 143/1516 | Overt bleeding that did not meet the criteria for major bleeding |
|  | Warfarin | 8/1495 |  | 106/1495 |  |
| Levy, 1999 | Fibrin adhesive | --- | --- | --- | --- |
|  | No fibrin adhesive | --- | --- | --- | --- |
| Planes, 1999 | Enoxaparin | 4/248 | Overt and associated with either a fall in Hb≥2g/dl, need for transfusion of ≥2U blood, or if retroperitoneal, intracranial, or intraocular | 21/248 | Overt bleeding not meeting the criteria for major bleeding |
|  | Tinzaparin | 2/251 |  | 13/251 |  |
| TIFDED Study Group, 1999 | Enoxaparin | 2/66 | Bleeding leading to death or re-operation; intracranial bleeding; bleeding into organs; associated with a decrease in Hb>32g/L within 72h | --- | Other bleedings (e.g. small wound hematoma or oozing) |
|  | Dalteparin | 1/66  |  | --- |  |
| Wakankar, 1999 | Tourniquet | --- | --- | --- | --- |
|  | No tourniquet | --- | --- | --- | --- |
| Kim, 1998 | Aspirin | 0/50 | --- | --- | --- |
|  | Control | 0/50 | --- | --- | --- |
| Lassen, 1998 | Extended dalteparin | 0/140 | --- | 18/140 | --- |
|  | Dalteparin | 1/141 | --- | 11/141 | --- |
| Rader, 1998 | Heparin  | --- | --- | --- | --- |
|  | Enoxaparin  | --- | --- | --- | --- |
| Ryan, 1998 | IPC (Kendal) | --- | --- | --- | --- |
|  | GCS  | --- | --- | --- | --- |
| Warwick, 1998 | Enoxaparin | --- | --- | --- | --- |
|  | VFP | --- | --- | --- | --- |
| Andersen, 1997 | Extended dalteparin | --- | --- | --- | --- |
|  | Dalteparin | --- | --- | --- | --- |
| Dahl, 1997 | Extended dalteparin | --- | --- | --- | --- |
|  | Dalteparin | --- | --- | --- | --- |
| Eriksson,1997a | Desirudin | --- | --- | --- | --- |
|  | UFH | --- | --- | --- | --- |
| Eriksson, 1997b | Desirudin | 20/1028 | Serious bleeding defined as any of the following: perioperative transfusion of ≥5U of whole blood, red-cell concentrate, or both; transfusion of ≥7U whole blood, red-cell concentrate, or both, at any time; transfusion of a total of >3500 mL of blood | --- | --- |
|  | Enoxaparin | 20/1023 |  | --- | --- |
| Francis, 1997 | Dalteparin | 6/271 | Bleeding which was fatal or if they required a transfusion, reoperation, or prolonged hospital stay  | 16/271 | Minor bleeding in the GI or urinary tract and hematoma at the site of an injection |
|  | Warfarin | 4/279 |  | 10/279 |  |
| Nilsson, 1997 | Extended enoxaparin | --- | --- | --- | --- |
|  | Enoxaparin  | --- | --- | --- | --- |
| Planes, 1997 | Extended enoxaparin | 0/90 | Overt bleeding associated with a decrease in Hb ≥2 g/dL compared with the last postoperative value; need for transfusion of ≥2U PRBC; retroperitoneal or intracranial | 17/90 | Overt bleeding that did not meet the criteria for major hemorrhage |
|  | Enoxaparin | 0/89 |  | 4/89 |  |
| Samama, 1997 | Enoxaparin | 1/78 | Overt, associated with decrease in Hb ≥ 2/dl or required ≥2 transfusions; Intracranial, retroperitoneal, or led to surgical intervention or death | 32/78 | Overt but did not meet criteria for “major” |
|  | Placebo | 1/75 |  | 21/75 |  |
| Eriksson, 1996 | Desirudin | --- | --- | --- | --- |
|  | UFH | --- | --- | --- | --- |
| Kalodiki, 1996 | Enoxaparin + GCS | --- | --- | --- | --- |
|  | Enoxaparin | --- | --- | --- | --- |
|  | Placebo | --- | --- | --- | --- |
| Laupacis, 1996 | Cemented | --- | --- | --- | --- |
|  | Non-cemented | --- | --- | --- | --- |
| Leclerc, 1996 | Enoxaparin | 7/336 | Overt bleeding that decreased the Hb ≥20 g/L, necessitated transfusion of ≥2U packed red cells, hemarthrosis requiring evacuation, discontinuation of prophylaxis, or interruption of physiotherapy for at least 24 hours | 94/336 | Overt bleeding not meeting the criteria for major hemorrhage |
|  | Warfarin  | 6/334 |  | 83/334 |  |
| Lotke, 1996 | Aspirin | --- | --- | --- | --- |
|  | Warfarin | --- | --- | --- | --- |
| Schwartsmann, 1996 | Enoxaparin | --- | --- | --- | --- |
|  | UFH | --- | --- | --- | --- |
| Stannard, 1996  | UFH then aspirin + VFP | --- | --- | --- | --- |
|  | UFH then aspirin | --- | --- | --- | --- |
|  | VFP | --- | --- | --- | --- |
| Stone, 1996 | Enoxaparin | --- | --- | --- | --- |
|  | IPC | --- | --- | --- | --- |
| Westrich, 1996 | Aspirin + VFP | 0/61 | --- | 0/61 | --- |
|  | Aspirin | 0/61 | --- | 0/61 | --- |
| Williams-Russo, 1996 | General Anesthesia | --- | --- | --- | --- |
|  | Regional Anesthesia | --- | --- | --- | --- |
| Abdel-Salam, 1995  | Tourniquet | --- | --- | --- | --- |
|  | No tourniquet | --- | --- | --- | --- |
| Avikainen, 1995 | Enoxaparin | --- | --- | --- | --- |
|  | UFH | --- | --- | --- | --- |
| Colwell, 1995 | Enoxaparin | 3/228 | --- | 43/228 | --- |
|  | Heparin | 3/225 | --- | 49/225 | --- |
| Warwick, 1995 | Enoxaparin | --- | --- | --- | --- |
|  | Control | --- | --- | --- | --- |
| Colwell, 1994 | Enoxaparin 30mg Q12h | 8/195 | Overt bleeding associated with ≥1of the following: death or a life threatening clinical event; acute MI or stroke; bleeding at the operative site; retroperitoneal, intracranial or GI; postoperative transfusion >2U PRBC; decrease in Hb >20g/L compared with the relevant post-operative value | 16/195 | Overt bleeding episode that did not meet the criteria for classification of a major episode |
|  | Enoxaparin 40mg QD | 3/203 |  | 18/203 |  |
|  | UFH | 13/209 |  | 12/209 |  |
| Fauno, 1994 | Enoxaparin | --- | --- | --- | --- |
|  | UFH | --- | --- | --- | --- |
| Leiberman, 1994  | Aspirin + IPC | --- | --- | --- | --- |
|  | Aspirin | --- | --- | --- | --- |
| Menzin, 1994 | UFH | 13/209 | Overt and associated with death or life threatening clinical event, a decrease in Hb from baseline of >20g/L or a post-operative transfusion>2U of non-autologous blood | --- | --- |
|  | Enoxaparin 40mg QD | 3/202 |  | --- | --- |
|  | Enoxaparin 30mg Q12h | 8/192 |  | --- | --- |
| Santori, 1994 | Heparin | --- | --- | --- | --- |
|  | VFP | --- | --- | --- | --- |
| Hull, 1993 THR | Tinzaparin  | 11/398 | --- | 5/398 | --- |
|  | Warfarin | 6/397 | --- | 9/397 | --- |
| Hull, 1993 TKR  | Tinzaparin  | 9/317 | --- | 5/317 | --- |
|  | Warfarin  | 3/324 | --- | 5/324 | --- |
| Fordyce, 1992 | VFP | --- | --- | --- | --- |
|  | Control | --- | --- | --- | --- |
| Francis, 1992 | Warfarin | --- | --- | 3/103 | Hematemesis , hemoptysis, hematuria |
|  | IPC | --- | --- | 4/98 |  |
| Jorgensen, 1992 | Dalteparin | --- | --- | --- | --- |
|  | Placebo | --- | --- | --- | --- |
| Wilson, 1992 | VFP | --- | --- | --- | --- |
|  | Control | --- | --- | --- | --- |
| Bailey, 1991 | Warfarin | --- | --- | --- | --- |
|  | IPC | --- | --- | --- | --- |
| Eriksson, 1991 | Dalteparin | 0/67 | --- | --- | --- |
|  | UFH | 0/69 | --- |  |  |
| Jorgensen, 1991 | General Anesthesia | --- | --- | --- | --- |
|  | Epidural Anesthesia | --- | --- | --- | --- |
| Lassen, 1991 | Tinzaparin | --- | --- | --- | --- |
|  | Placebo | --- | --- | --- | --- |
| Levine, 1991 | Enoxaparin | 11/333 | Overt and associated with either a fall in Hb level ≥2g/L, a need for transfusion of ≥2U of blood, or retroperitoneal or intracranial | 6/333 | Overt bleeding not meeting criteria for major bleeding |
|  | UFH | 19/332 |  | 12/332 |  |
| Mitchell, 1991 | General Anesthesia | --- | --- | --- | --- |
|  | Epidural Anesthesia | --- | --- | --- | --- |
| Planes, 1991 | General Anesthesia + Enoxaparin | 2/62 | NR | 0/62 | NR |
|  | Epidural Anestheisa + Enoxaparin | 1/61 |  | 0/61 |  |
|  | Epidural Anesthesia alone | 1/65 |  | 0/65 |  |
| Torholm, 1991 | Dalteparin | --- | --- | --- | --- |
|  | Placebo | --- | --- | --- | --- |
| Woolson, 1991  | Aspirin + IPC | --- | --- | --- | --- |
|  | Warfarin + IPC | --- | --- | --- | --- |
|  | IPC | --- | --- | --- | --- |
| Haas, 1990 Unilateral TKA | Aspirin | --- | --- | --- | --- |
|  | IPC | --- | --- | --- | --- |
| Haas, 1990 Bilateral TKA | Aspirin | --- | --- | --- | --- |
|  | IPC | --- | --- | --- | --- |
| Sorensen, 1990 | Tinzaparin | --- | --- | --- | --- |
|  | Placebo  | --- | --- | --- | --- |
| Dechavanne, 1989 | Dalteparin 2500U Q12h | --- | --- | --- | --- |
|  | Dalteparin 5000U QD  | --- | --- | --- | --- |
|  | Heparin | --- | --- | --- | --- |
| Monreal, 1989 | Dalteparin | --- | --- | --- | --- |
|  | Heparin | --- | --- | --- | --- |
| Powers, 1989 | Warfarin | 5/65 | Overt and associated with a decrease in Hb ≥20g/l; led to transfusion of ≥2U of blood; retroperitoneal or intracranial bleeding | --- | --- |
|  | Aspirin | 1/66 |  | --- | --- |
|  | Placebo | 5/63 |  | --- | --- |
| Planes, 1988 | Enoxaparin | 2/124 | Overt and associated with either a fall in Hb level ≥2g/dl, need for transfusion of ≥2U of blood, or if it was retroperitoneal or intracranial  | 1/124 | Overt but did not meet the other criteria for major bleeding |
|  | Heparin | 0/112 |  | 2/112 |  |
| Barre, 1987 | Dalteparin | --- | --- | --- | --- |
|  | Heparin | --- | --- | --- | --- |
| Paiement, 1987 | Warfarin | 0/72 | Overt and associated with a decrease in the Hb ≥2 g/dL; led to transfusion of ≥2U of blood; retroperitoneal, intracranial or occurred in a major prosthetic joint | 3/72 | Minor post-operative wound bleed |
|  | IPC | 0/66 |  | 3/66 |  |
| Alfaro, 1986 | Aspirin 250mg/d | --- | --- | --- | --- |
|  | Aspirin 1g/d | --- | --- | --- | --- |
|  | Control | --- | --- | --- | --- |
| Turpie, 1986 | Enoxaparin | 1/50 | Overt, associated with decrease in Hb ≥2/dL; required transfusion of ≥2U of blood; intracranial or retroperitoneal | 1/50 | Overt bleeding that did not meet criteria for “major” |
|  | Placebo  | 2/50 |  | 0/50 |  |
| McKenzie, 1985 | General Anesthesia | --- | --- | --- | --- |
|  | Spinal Anesthesia | --- | --- | --- | --- |
| Welin-Berger, 1982  | Heparin | --- | --- | --- | --- |
|  | Control | --- | --- | --- | --- |
| Modig, 1981 | General Anesthesia | --- | --- | --- | --- |
|  | Epidural Anesthesia | --- | --- | --- | --- |
| McKenna, 1980 | Aspirin | --- | --- | --- | --- |
|  | Placebo | --- | --- | --- | --- |

\*After study period-90days
†Days 0-1
‡Days 2-8

Abbreviations: BID=twice daily; cm=centimeters; d=day; dL=deciliter; DVT=deep vein thrombosis; g=gram; GCS=graduated compression stockings; GI=gastrointestinal; h=hours; Hb=hemoglobin; HFS=hip fracture surgery; IPC=intermittent pneumatic compression; mg=milligram; min=minutes; mL=mililiter; N=number of participants; n=number of participants with the event; NG=nasogastric; PRBC=packed red blood cells; QD= once daily; RBC=red blood cell; THA=total hip arthroplasty; THR=total hip replacement; TKA=total knee arthroplasty; TKR=total knee replacement; U=units; UFH=unfractionated heparin; VFP= venous foot pump