Thromboembolic Complications of THR

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Reducing the risk of VTE by type of surgery:

Orthopaedic Surgery

2.2.3.1. Patients having elective orthopaedic surgery should be offered mechanical prophylaxis and either LMWH or fondaparinux.

LMWH or fondaparinux therapy should be continued for 4 weeks after hip fracture surgery.

NICE clinical guideline 46 – Venous thromboembolism

Key Priorities for implementation (1)

- **Patients should be assessed to identify their risk factors for developing venous thromboembolism (VTE)**
- **Patients should be given information on the risk of VTE and effectiveness of prophylaxis**
- **On discharge, patients should be given information on the signs and symptoms of DVT and PE, and the correct use of prophylaxis at home if required**

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Key Priorities for implementation (2)

- All patients requiring prophylaxis post-discharge must be given training on the correct use of prophylaxis supplied
- Surgical patients on pre-existing anticoagulation or antiplatelet therapy should be advised to stop their therapy prior to surgery
- Inform all patients that immobility associated with continuous travel of more than 3 hours in the 4 weeks before or after surgery may increase risk of VTE

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Patient-related risk factors for VTE

- Active cancer/cancer treatment
- Active heart/respiratory failure
- Acute medical illness
- Age > 60 years
- Antiphospholipid syndrome
- Behcet's disease
- Central venous catheter in situ
- Continuous travel of more than 3 hours approximately 4 weeks before or after surgery
- Immobility e.g. paralysis or limb in plaster
- Myeloproliferative disease
- Myeloma
- Nephrotic syndrome
- IBD
- BMI > 30
- Paroxysmal nocturnal haemoglobinuria
- PMH/FH of VTE
- Pregnancy or puerperium
- Severe infection
- OCP/HRT
- Varicose veins with associated phlebitis
- Inherited thrombophilias

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	No patient related risk factors	1 or more patient related risk factors
Hip fracture	TEDs and LMWH Continue 28 days	TEDs and LMWH Continue 28 days
Elective hip replacement	TEDs and LMWH	TEDs and LMWH Continue 28 days
Other orthopaedic	TEDs and LMWH	TEDs and LMWH

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NICE clinical guideline 46 – Venous thromboembolism

NICE have analysed 587 studies to generate these guidelines.

The guidelines “describe the results of a combined meta-analysis that brings these studies together and allows comparisons to be made across methods.”

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Pharmacological methods of prophylaxis

Oral anticoagulants (OAC) - Warfarin

OAC vs no prophylaxis

- Effect on DVT: reduced the risk by 51%
- Effect on pulmonary embolism: reduced the risk by 82%
- Effect on proximal DVT: reduced the risk by 58%
- Effect on major bleeding: increased the risk by 58%

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Pharmacological methods of prophylaxis

Oral anticoagulants (OAC) - Warfarin

Duration of OAC prophylaxis beyond discharge

(Only one study, 360 pts, randomised to 4 weeks beyond discharge)

- Effect on pulmonary embolism: no significant difference
- Effect on proximal DVT: reduced the risk by 88%
- Effect on major bleeding: only one bleeding event out of 360 patients

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Pharmacological methods of prophylaxis

Oral anticoagulants (OAC) - Warfarin

OAC vs Aspirin

- Effect on DVT: no significant difference
- Effect on pulmonary embolism: no significant difference
- Effect on proximal DVT: no significant difference
- Effect on major bleeding: no significant difference

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Pharmacological methods of prophylaxis

Oral anticoagulants (OAC) - Warfarin

OAC vs LMWH

- Effect on DVT: LMWH signif reduces the risk compared to OAC
- Effect on pulmonary embolism: no significant difference
- Effect on proximal DVT: LMWH signif reduces the risk compared to OAC
- Effect on major bleeding: no significant difference

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Pharmacological methods of prophylaxis

LMWH

LMWH vs no prophylaxis

- Effect on DVT: reduced the risk by 51%
- Effect on pulmonary embolism: reduced the risk by 64%
- Effect on proximal DVT: reduced the risk by 62%
- Effect on major bleeding: increased the risk by 77%

Pharmacological methods of prophylaxis

LMWH

Pre- vs postop initiation of LMWH prophylaxis

(Only one study, 12hrs preop vs 12hrs postop)

- Effect on DVT: no significant difference
- Effect on pulmonary embolism: no events either arm of the study
- Effect on proximal DVT: no significant difference
- Effect on major bleeding: no significant difference

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Mechanical methods of prophylaxis

Compression devices

- Graduated compression stockings (GCS)
- Intermittent pneumatic compression (IPC)
- Foot impulse device (FIS) aka “foot pumps”

Non - compression devices

- Electrical stimulation (ES)

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Mechanical methods of prophylaxis

"In subgroup analysis we found no evidence of differences in the effectiveness of different types of mechanical thromboprophylaxis."

"…recommend the use of graduated compression stockings because they can be used during surgery, on the ward after surgery and at home after discharge."

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Future Research Recommendations

- Incidence of confirmed DVT/PE, major bleeding and other postop adverse outcomes in modern surgical practice
- Timing of administration of LMWH (?before or after surgery)
- Effectiveness of combining methods of mechanical prophylaxis

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http://www.nice.org.uk/nicemedia/pdf/VTEFullGuide.pdf

Thank you !