

The Role of Thromboprophylaxis in Elective Spinal Surgery

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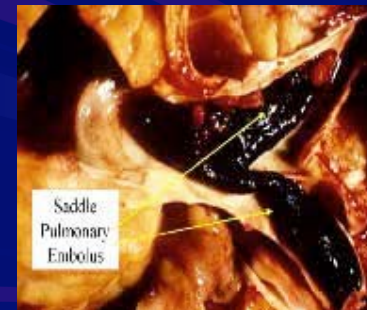
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Background

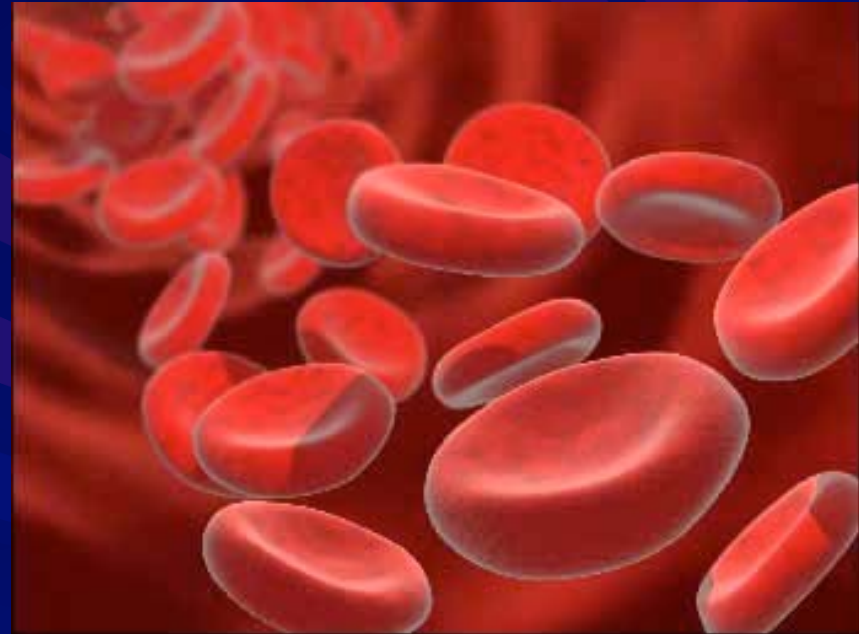
Background

- The high rate of venous thromboembolism complications following neurosurgical operations is well documented.
- The reported incidence rates of symptomatic thromboembolic disease in spinal surgery are estimated between 0.5-3.4%.
- Venous thromboembolism remains a serious post-operative complication resulting in significant morbidity, mortality and cost.



Background

- The use of thromboprophylaxis in surgery has been demonstrated to improve survival outcomes and is now recommended by the National Institute for Health and Clinical Excellence.
- However, on a practical level, these guidelines have not been universally implemented and its routine use is not standard practice in elective spinal surgery.



Venous Thromboembolism: Reducing The Risk in Surgical Inpatients. *Commissioned by the National Institute for Health and Clinical Excellence (2007)*

Objectives

Objective

To investigate and establish whether patients undergoing elective spinal surgery benefit from thromboprophylaxis and to analyse the effects of low molecular weight heparin on patient outcomes.



Materials and Methods

Materials and Methods

- Retrospective data analysis over a 6 month period was performed.
- A review of medical records, case notes and electronic database was performed.
- Data collected and recorded including:
 - Demographic data
 - Surgical approach (anterior, posterior)
 - Anatomical level of surgery (cervical, thoracic, lumbar)
 - Type of Procedure (primary or revision)
 - Duration of surgery
 - Start of treatment
 - Presence of pre-existing risk factors
 - Outcomes

Material and Methods

- All patients were given mechanical prophylaxis & low molecular weight heparin (enoxaparin *40mg*) on their operative day.
- Treatment continued until the patients were fully mobile.

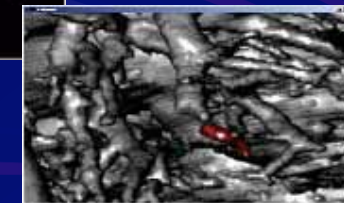
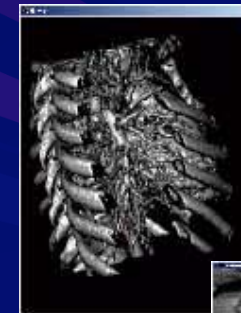
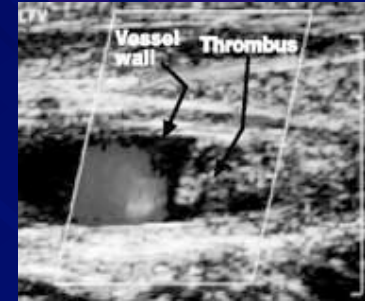
Materials and Methods

Inclusion criteria:

- All patients > 16 years of age who underwent elective spinal surgery were included.
- Patients who were considered high risk for thromboembolic disease were included and treated in a similar fashion.

Materials and Methods

- Symptomatic thromboembolic disease was investigated when patients showed clinical signs or symptoms of a deep venous thrombosis (DVT) or pulmonary embolism (PE).
- Diagnosis of suspected deep venous thrombosis was confirmed by duplex scan of the lower limbs.
- Diagnosis of suspected pulmonary embolism was confirmed by CTPA.



Results

Results

There was no reported incidence rate of symptomatic thromboembolic disease in this population.

Results

3 Patients presented with clinical signs
& symptoms of deep venous thrombosis

All patients had negative duplex scans

Number of DVTs = 0

2 Patients were investigated for
symptomatic pulmonary embolisms

Investigations revealed:
lower lobe pneumonia &
pulmonary effusion, respectively.

Number of PEs = 0

Results



1 patient was investigated for a spinal haematoma for evolving neurological signs, which in turn the underlying lesion was excluded.

Results

A total of 5 patients suffered direct adverse events when given low molecular weight heparin:

- **Minor bleeding** (haemoglobin drop ≤ 2 g/dL or transfusion ≤ 2 or more units of blood products)
- **Local skin reaction** (mild local irritation, pain, ecchymosis or erythema)
- **There were no reported deaths**
- **All complications reported in patients who underwent a posterior approach to the lumbar spine**

Results

- Patients receiving the first dose of enoxaparin ≥ 12 hours postoperatively had significantly fewer complications ($p < 0.05$).
- Rotation of injection sites was found to reduce the rate of local skin reaction complications.

Conclusion

Conclusion

- We report no incidence of clinically symptomatic thromboembolic complications following elective spinal surgery.
- Complications following the administration of low molecular weight heparin related to:
 - level of spinal surgery
 - surgical approach
 - delayed mobilisation

Conclusion

We identified a number of future areas of improvement:

- Treatment should commence after at least 12 hours following surgery
- Injection sites should be rotated to minimize local skin reactions
- Early mobilization should be encouraged
- Risk stratify patients prior to surgical intervention

Conclusion

- Enoxaparin should be given to patients undergoing elective spinal surgery to prevent mortality and morbidity associated with thromboembolic disease.
- A prospective database will be invaluable to continue monitoring thromboembolic disease within this Neurosurgical Department.