Guide to management of pre-operative abnormalities in patients with a fragility femur fracture

NHS
University Hospitals of Derby and Burton
NHS Foundation Trust

General Principles

- Medical optimisation should begin as soon as a patient with a fragility femur fracture is admitted, aiming for surgery within 36 hours. Delaying surgery leads to higher morbidity / mortality risks that will often outweigh any benefits of a longer pre-op optimisation period.
- **Minor abnormalities** need not necessarily delay surgery, as optimisation and surgery can proceed simultaneously.
- **Major abnormalities** may delay surgery and require a higher level of early intervention, including advice as appropriate from, for example, an anaesthetist (trauma anaesthetist or on-call night registrar), orthogeriatric consultant, medical registrar, cardiac outreach team, critical care outreach team, or diabetes specialist nurse. Such advice should be sought as soon as possible after admission.
- Unless specialist monitoring is required (CCU, stroke unit, renal unit), patients with a fragility femur fracture should be admitted to the hip fracture ward for medical optimisation.
- Patients who fall in hospital and sustain a fragility femur fracture should be transferred pre-operatively to the hip fracture ward.

	Minor abnormality	Major abnormality	Actions
Blood pressure	• Systolic BP > 180mmHg • Diastolic BP > 110mmHg	• Systolic BP < 90mmHg ►	• Look for cause • Start 500ml Hartmann's solution IV stat; reassess after 30 minutes • Advice: Anaesthetist, Orthogeriatrician, Medical Registrar
Heart rate and rhythm	• Sinus bradycardia ≥ 45/min or sinus tachycardia > 120/min with otherwise normal ECG • Pulse 101-120/min with atrial fibrillation or flutter	• Pulse < 45/min or complete heart block ► • Pulse > 120/min with atrial fibrillation / flutter or other ECG problem ►	• Review medication (beta blockers?) • May need pacemaker • Advice: Anaesthetist, Cardiac Outreach Team, Medical Registrar • Treat as per trust protocols; • Advice: Anaesthetist, Orthogeriatrician, Medical Registrar, Cardiac Outreach Team
Ischaemic heart disease	Stable angina ± chronic ischaemic ECG changes	• Evidence of new MI • Unstable angina ►	• Give O_2, consider transfer to CCU for monitoring if cardiovascular instability • May need CCU or SDU post-op • Advice: Cardiac Outreach Team, Orthogeriatrician, Medical registrar, Anaesthetist
Heart failure	History of previous heart failure, now treated	• Clinical signs of heart failure • Signs of failure on CXR – pulmonary oedema – pleural effusion without consolidation ►	• Give O_2, IV furosemide • Caution with IV fluids • May need CCU or SDU post-op • Advice: Cardiac Outreach Team, Orthogeriatrician, Medical registrar, Anaesthetist.
Respiratory failure	• SaO_2 ≥ 90% and/or • pO_2 ≥ 8kPa and/or • pCO_2 6.2 – 7.3 kPa	• SaO_2 < 90% and/or • pO_2 < 8kPa and/or • pCO_2 ≥ 7.4kPa ►	• Take arterial blood gases • Give O2 (24% or 28% if history of COPD) • Repeat arterial blood gases • Advice: Orthogeriatrician, Medical Registrar, Anaesthetist

Surgery should proceed without delay but in addition:

- Initiate appropriate treatment for above conditions
- Correct fluid resuscitation is particularly important
- Optimise analgesia and continue usual medication unless contra-indicated
- Discuss with surgeon and anaesthetist at 8am trauma meeting

If the patient is not fit:

- Inform the Trauma Nurse (tel. #6243)
- Document why surgery should be delayed
- Document a plan for optimisation
- Write your contact details in the notes

Cardiac murmurs and echocardiography

- Older people with a fragility femur fracture do not require routine echocardiography prior to surgery.
- History and physical examination is important and ideally the need for echocardiography should be confirmed by an experienced physician (consultant or registrar).
- Check for a previous echocardiogram – there is unlikely to be a significant change if one has been done in the last two years.
- Echocardiography should be performed immediately prior to surgery if aortic stenosis is suspected, ie a systolic murmur radiating to the neck.
- A diagnosis of aortic stenosis should not delay surgery; patients may require additional invasive monitoring and a period of management on HDU or SDU post-operatively.

	Minor abnormality	Major abnormality		Actions
Temperature	Temperature < 38.5°C regardless of site of infection	Temperature < 35°C	►	Rewarm as per Trust policy
		Temperature > 38.5°C	►	• Look for underlying cause • Septic screen then treat as per Trust guidelines • Advice: Consultant Microbiologist, Orthogeriatrician, Medical Registrar, Orthopaedic Surgeon
Warfarin	Any patient on warfarin should get Vitamin K 5mg IV stat as part of Fast-Track Protocol, **no need to check INR first.** Recheck INR 6 hours later or in time for 0800 trauma meeting. Repeat doses of Vitamin K until INR in range.			
	INR ≤ 1.5 is acceptable for spinal anaesthesia	INR > 1.5	►	• Give repeat dose of Vitamin K 5mg IV • Repeat INR after 6 hours • If INR still > 1.5 consider FFP / Octaplex • Advice: Haematologist, Consultant Anaesthetist
Clopidogrel	Stop clopidogrel on admission. **Relative** contra-indication to spinal anaesthesia (balance of risks). Proceed with surgery but be prepared to treat excessive intra-operative bleeding with platelets.			
DOACs (Apixaban, Rivaroxaban, Edoxaban, Dabigatran)	Stop DOAC on admission. **Relative** contra-indication to spinal anaesthesia (balance of risks), proceed under GA if possible **No** evidence of increased likelihood of excessive intra-operative bleeding if surgery proceeds **without** delay DOAC half-life is increased in patients with renal impairment. Dabigatran can be reversed using Idarucizumab (Praxbind)			
	≥ 24 hours since last dose	Recent DOAC dose with renal impairment	►	• Consider delaying surgery • Advice: Haematologist, Consultant Anaesthetist, Orthopaedic Surgeon
Electrolytes	Na^+ 121 – 128 or 151 – 155 mmol / l	Na^+ ≤ 120 mmol / l	►	• Stop thiazide / loop diuretics • Check urine osmolarity • Consider fluid restriction • Advice: Orthogeriatrician, Medical Registrar
		Na^+ > 155 mmol / l	►	• Usually due to dehydration • Slow correction with IV Normal Saline as per Trust guidelines
	K^+ 2.5 – 2.9 or 5.6 – 6.0 mmol / l	K^+ < 2.5 mmol / l	►	Refer to Trust hypokalaemia guidelines
		K^+ ≥ 6.1 mmol / l	►	Refer to Trust hyperkalaemia guidelines
Glucose	25 – 33 mmol / l	Glucose > 33 mmol / l	►	• Consider stat dose S/C insulin • Avoid aggressive sliding scale insulin • Advice: Medical Registrar, Diabetes Nurse Specialist
Renal	• CKD stage 1 – 3 • AKI stage 1 – 2	• CKD stage 4 and 5 • AKI stage 3	►	• Refer to Trust CKD and AKI guidelines • Avoid nephrotoxic drugs • Advice: Renal Registrar 0900-2200, Medical Registrar at other times
Anaemia	• Hb 76 – 80 g / l • Hb ≤ 75 g / l – check haematinics then transfuse – no delay to surgery – consider using cell-saver in theatre	Major active bleeding, eg peptic ulcer disease	►	• Identify bleeding source • Achieve haemodynamic stability prior to hip fracture surgery
	▼			▼
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