Presenting in the orthopaedic trauma meeting

Introduction

Many will describe their medical student days in an orthopaedic trauma meeting as a harrowing experience. Foundation doctors often rotate through orthopaedics with a degree of trepidation. However, the trauma meeting is a fantastic opportunity to participate in discussion, teaching and learning on a daily basis. This article describes the typical meeting set up and preparation, alongside important aspects to present in the history and examination, in order to present a fully worked-up patient, ready for theatre.

Preparation and set up for the trauma meeting

The smooth running of the trauma meeting relies on careful preparation by the on call and night doctors. *Table 1* shows the typical attendances at the authors' local trauma meeting. This allows discussion of patients who have been admitted over the past 24 hours and is an ideal opportunity to address any postoperative concerns from patients on the ward.

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Room set up

The room set up is essential to allow efficient running of the trauma meeting and to permit everyone to discuss the imaging and management of these patients. The use of a projector or large television monitor will allow the audience to see each X-ray as it is being discussed. It is important to document the input of all attendees, including the decisions on treatment and rehabilitation. The documentation can be carried out by a further member of the orthopaedic team writing on a continuation sheet and placing this in the notes later, or by using an electronic documentation system, as is done in the authors' trust.

Patient list

A patient list printed out and handed to all attendees is vital to avoid missing patients during change of shift and hand overs. A typical list is seen in *Table 2* and ensures thorough handover of all the patients and of any outstanding jobs that need to be completed by the day team.

Theatre list

A printed theatre list should also be available for the trauma meeting, so the operative order can be discussed. At the meeting

Table 1. Attendees at a trauma meeting and their roles

Attendee(s)	Roles
Trauma consultant for the week	Decides method of treatment
Fellow consultants	Interaction and specialist limb advice
Orthopaedic registrar or senior house officers	Participation and discussion of admissions
Trauma coordinators	Organization of beds, discharges and day case patients
Ward sisters	Discuss postoperative concerns
Radiologist and/or radiographers	Review of imaging and need for further imaging
Physiotherapist	Ascertain patients for discharge and physiotherapy input
Anaesthetist	Anaesthetic review of patients preoperatively
Theatre coordinator	Draw up the list of operative equipment required

Table 2. An example of a typical patient handover list

Patient details and contact number	Ward	Diagnosis	Past medical history	Social history	Plan
Patient 1	Orthopaedic ward	78-year-old female Mechanical fall Fracture left neck of femur	Warfarin for atrial fibrillation Hypertension	Lives in a bungalow Walks with 1 stick Once daily carers	Repeat international normalized ratio required Consented and marked for hemiarthroplasty
Patient 2	Clinical decision unit – awaiting orthopaedic bed	71-year-old male Acute swollen knee post total knee replacement	Diabetic tablet controlled	Independent	Knee aspiration aseptically in theatre– marked and consented First on list
Patient 3	Accident and emergency resuscitation room	24-year-old male pedestrian *vs* car 1. Right closed tibia and fibula fracture 2. Right dislocated shoulder reduced	Fit and well	Non smoker Right hand dominant Office worker	Awaiting computed tomography scan result to clear neck For intramedullary nail
Patient 4 Telephone number 07xxx xxx xxx	Home	37-year-old male knife injury to left index finger at level of proximal interphalangeal joint – cut neurovascular bundle, radial side tendons intact	Fit and well Tetanus and oral antibiotics given	Right hand dominant smoking chef	To come in for hand operating list on Wednesday

a decision on the fixation method and any last minute adjustments can be made depending on emergency admissions overnight and the available theatre equipment. The list will help the anaesthetist assess which preoperative patients require review and help the ward staff keep patients starved. Potential operative candidates should be selected the night before and the ward informed so that these patients are not given breakfast.

X-rays

Many trusts will use a digital X-ray system such as picture archiving and communication system (PACS). Typing the patients' details into the system beforehand gives a ready list of X-rays to review, saves time and helps the meeting run smoothly.

Presentation of the patient

The presentation of an orthopaedic patient does not differ from that of any acute patient seen. The collateral history from carers, family and general practice is often a useful adjunct in working out the history of presenting complaint, comorbidities and current medications. *Table 3* shows a typical history sequence. Within these headings important orthopaedic aspects will be highlighted.

Patient details

Age is important in orthopaedics as certain fractures which are treated aggressively in young patients may be treated conservatively in the older population.

Hand dominance and line of work are essential questions to ask with upper limb and hand injuries. A patient who plays a musical instrument or is a professional sportsman or woman may be treated very differently to an office worker or someone who is retired.

Table 3. History taking order and format

Patient details
Presenting complaint
History of presenting complaint
Past medical history
Family history
Drug history
Social history

Presenting complaint

Careful documentation of the side of the injury is of utmost importance and avoids operating on the wrong limb.

History of presenting complaint

Falls must be described as mechanical (trip or loss of balance) or non-mechanical (syncope). Non-mechanical falls or syncope need full medical work up and a diagnosis as to the cause. *Table 4* highlights some common causes of syncope.

Describing the injury as an isolated injury implies that there were no other injuries sustained at the time of the fall. It is essential that any head injury or loss of consciousness is also investigated appropriately.

Asking the patient about 'pins and needles' is also crucial in any traumatic event. Neurovascular damage or compression is most commonly seen with upper limb injuries around the clavicle, shoulder, elbow and wrist. If the nerve is compressed then decompression is an orthopaedic emergency.

Establishing the length of time a patient has been on the floor is essential for establishing the need to measure creatinine kinase and thus the potential for acute renal failure.

Past medical history

Medical conditions involving the respiratory and cardiovascular system are important for the anaesthetic assessment.

Fractures around implants, also known as peri-prosthetic fractures, are important as specialist techniques, skills and implants may not be readily available. These patients require early operative planning and will need cross matching of blood.

Previous history of malignancy is an important cause of pathological fractures. These patients require full length views of the affected bone for operative planning.

As with any surgical speciality, information of a past medical history of blood-borne viruses is essential, but more so in orthopaedics where blood splashing and sharp bony fragments increase the risk of exposure.

Rheumatoid patients also require special consideration as their bone is often soft, and fixation techniques vary.

Patients with dementia are at increased risk of postoperative medical complications and hip dislocations and thus choice of implant is important. The documentation of a mini-mental test score (*Table 5*) is essential, as postoperative confusion is common and a baseline needs to be established.

Family history

Thalassaemia and sickle cell are examples of conditions which need to be screened preoperatively in the appropriate patients.

Drug history

Anticoagulants are commonly used in clinical practice and reversal of the international normalized ratio or starting heparin infusion is essential before operative intervention. Careful discussion with the cardiologist for those patients on clopidogrel with cardiac stents is imperative.

Diabetic patients need to be placed at the beginning of the list with special attention paid to pre-, peri- and postoperative glycaemic control.

Steroids make the soft tissues and bone fragile and thus may increase the difficulty

Table 4. Some causes of syncope or non-mechanical falls

Systems	Causes
Cardiovascular	Vasovagal, myocardial infarction, arrhythmias, aortic stenosis, carotid sinus syncope, cardiomyopathy
Respiratory	Pneumonia, pulmonary embolism
Cerebral	Stroke, seizure
Drug induced	Diuretics, antihypertensives, beta blockers, glyceryl trinitrate
Vascular	Abdominal aneurysm
Metabolic	Hypo- or hyperglycaemia
Gastrointestinal	Gastrointestinal bleed, diarrhoea and vomiting
Gynaecological	Ectopic pregnancy
Urological	Micturation syncope

Table 5. 10 point mini-mental test score

Order	Question		Answer	Score
1	Patient details	Age	Exact age	1
2		Date of birth	Exact	1
3	Orientation	Time	To nearest hour not looking at watch	1
4		Month	Exact	1
5		Year	Exact unless mention last year and now in January	1
6		Current place	Name of hospital, or town or city	1
7	Immediate memory	Give a made-up address	i.e. '42 West Street'	1 (test at end)
8	Long-term memory	Start of World War 2	Exact – 1939	1
9		Name of monarch	Exact	1
10	Concentration	Count backwards from 21–0	Exact – can prompt to 18	1
			Score out of 10	

of operative fixation, and immunosuppressants can mask the typical features of a septic joint.

Social history

Documentation of independence, level of care and mobility are important for early discharge planning.

The place of residence is important information for physiotherapy, occupational therapy input and escalating level of care postoperatively.

Examination findings

The full medical work up and examination is beyond the scope of this article. However, simply medical examination involves screening for any potential causes of collapse while assessing the fitness of the patient for operative intervention. The British Orthopaedic Association (2007) guideline and the guidance from the National Clinical Guideline Centre (2011) on behalf of the National Institute for Health and Clinical Excellence state that patients should undergo their operation within 48 hours from the time of injury. Delaying surgery past the 48-hour window increases bed-ridden complications and mortality. The patient needs to be optimized efficiently and close liaising with the anaesthetic department is required to make sure there is a balance between patient optimization and prompt surgery (Royal College of Anaesthetists, 2009).

A good technique for presenting the orthopaedic examination findings is to use the look, feel and move system.

Look

Describing the overall position of the limb, such as shortening and external rotation seen in fractured neck of femurs, overlying skin changes seen in cellulitis or the presence of a puncture wound over the fracture suggesting it is open, are important observations.

Feel

The site of the tenderness correlating with the fracture seen on the X-ray, or the lack of tenderness in the joint above or below suggesting that the injury is an isolated one, are critical findings in order not to miss associated injuries.

Move

In an obvious fracture, movement should be avoided until suitable analgesia can be given and a backslab, a half plaster cast or full cast can be applied for stability and pain relief. In soft tissue injuries range of movement should be reviewed in both limbs for comparison.

Finishing off

Every examination should be completed with a thorough neurovascular assessment of the associated limb, or in the case of suspected cauda equina anal tone, anal wink and per rectal examination.

Describing X-rays

The presentation of an X-ray can be summarized using the ABCS mnemonic:

A Adequacy and alignment
B Bone involved
C Cartilage space symmetry
S Soft tissue coverage or damage.

It is important to have the correct patient and describe the imaging view. A systematic approach should be used in order to present the salient features without missing subtle injuries. *Table 6* outlines a more detailed description method. More detail can be used to describe the bone or bones involved and fracture position, which can either be described as proximal, middle and distal thirds of the bone, or in relation to the anatomical section of a long bone. Here the term epiphysis describes the end of a long bone and thus contains the articular surface, the diaphysis is the shaft and contains the tougher cortical bone, while the metaphysis bridges the two (*Figure 1*).

Describing the fracture type and whether the fracture includes the joint surface is important as complex or multifragmentary (old term comminuted) fractures are often a result of high energy impact and are thus associated with significant soft tissue damage, and the involvement of the articular surface predisposes the patient to early onset osteoarthritis. Many intra-articular fractures will require operative intervention in order to reconstruct the joint surface and reduce the risk of osteoarthritis developing prematurely.

Lastly the relative position of the two ends of the fractured bone is described by the umbrella term displacement. The distal fragment is described in relation to the proximal fragment, and includes four terms:

1. Angulation, which describes the tilting of one bone relative to another
2. Rotation may be difficult to see on an X-ray but is clinically easier and essential to examine in order not to affect the movement or biomechanics of the joint
3. Translation refers to the degree of 'overlap' between the two ends – should the two ends be lying side by side this is referred to as 100% translation
4. Shortening: this either happens because one bone is driven into the other, i.e. impacted, or if both bones are 100% translated thus the muscle forces acting on unopposed bone allows each bone to slide past each other. Shortening is commonly seen in distal radius fractures, where disruption of the distal radial ulna joint impairs supination and pronation.

Table 6. Order of X-ray presentation

Order of X-ray presentation	Specific details
Patient details	Name
	Age
X-ray view	Anterior-posterior
	Lateral
	Oblique
What bone	Left or right
Where on the bone	Spilt into thirds
	or Epiphyseal / Metaphyseal / Diaphyseal } (*Figure 1*)
Fracture type	Simple (described as transverse, oblique, spiral *Figure 2*)
	Multi-fragmentary or complex (previously known as comminuted seen in *Figure 2*)
Involving the joint surface	Intra-articular
	Extra-articular
Displacement	Angulation
	Rotation
	Translation
	Shortening

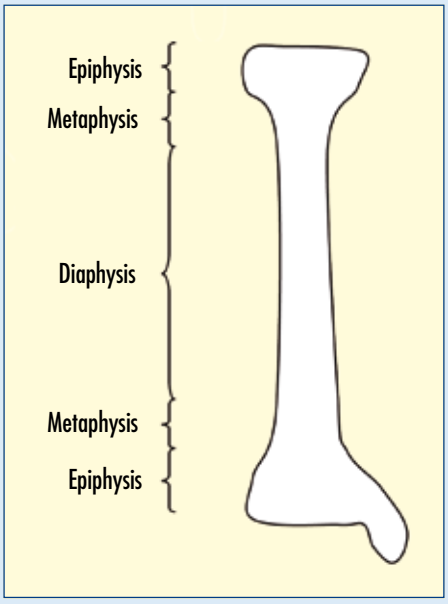

Figure 1. Anatomical description of the sections of a long bone (in this case the right tibia).

Some specific fractures are associated with a second fracture, e.g. calcaneal fractures are associated with a vertebral fracture. With vertebral fractures it is imperative to look further along the spine for a second fracture, which can be missed. Thus a systematic approach must be adopted in order not to miss further fractures.

Conclusions

The orthopaedic trauma meeting can be a daunting experience for those who are unfamiliar with it. Approaching the trauma meeting with a patient handover list, well-organized history and examination, while highlighting and optimizing anaesthetic issues, will allow a patient to be presented fully worked up and ready for operative intervention. BJHM

Conflict of interest: none.

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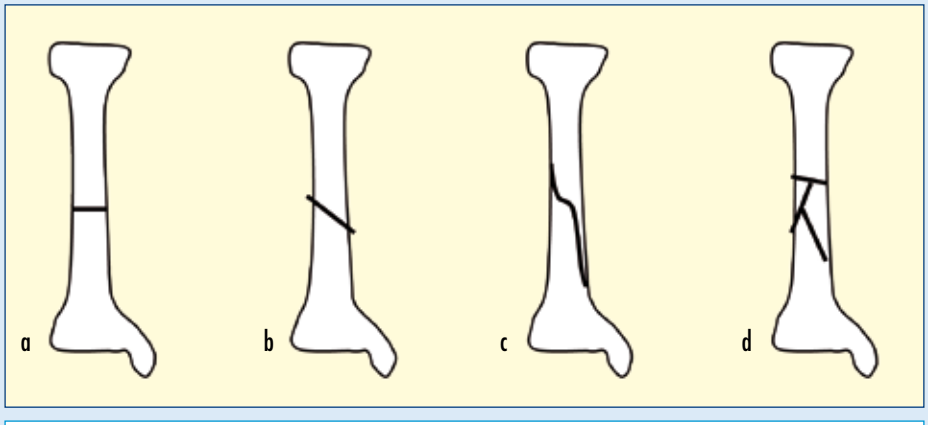
Further reading

British Orthopaedic Association (2007) *The Care of Patients with Fragility Fracture.* www.fractures.com/pdf/BOA-BGS-Blue-Book.pdf (accessed 17 May 2011)

Royal College of Anaesthetists (2011) *Management of Proximal Femoral Fractures.* www.aagbi.org/sites/default/files/proximal_femoral_fractures_draft_for_consultation_July%20_2011%5B2%5D.pdf (accessed 20 November 2011)

Figure 2. Fracture pattern configuration. a. Transverse. b. Oblique. c. Spiral. d. Complex.



KEY POINTS

- In the history it is important to thoroughly investigate non-mechanical falls.
- Any medical conditions should be optimized before the patient is ready for theatre.
- During the examination assess the patient for any coinciding soft tissue, head injury or bony injury.
- When organizing radiographs, one view is too few; make sure the bone is visible in two planes in order not to miss a fracture.