

HOW TO LOGICALLY DESCRIBE

- A fracture
- And how to fix it

1) OTA/AO Classification (<https://ota.org/research/fracture-and-dislocation-compendium>)

- Name bone or OTA/AO 1-4 (should suffice for exam) (does not matter as long as you get it right!)
- Name part of bone (proximal metaphyseal, / diaphyseal / distal metaphyseal) or OTA/AO 1-4 (does not matter as long as you get it right!)
- Type A, B or C
- Subtype 1, 2 or 3 (most useful for Type C intra-articular)

Once soft tissues have been considered this classification WILL TELL YOU the optimum way to reduce and fix the fracture.

“This is a (OTA/AO)....”

or

“This is a fracture of the part of the It is a Type (A,B or C) with (no) fragmentation of the(description of subtype 1,2 or 3)”

2) Energy + Effect

Low Energy Injury	High Energy Injury
<ul style="list-style-type: none">- Bone- Soft tissues- Local structures- Systemic considerations	<ul style="list-style-type: none">- Bone- Soft tissues- Local structures- Systemic considerations

3) Mechanism

Failure - Flexion	Failure - Extension
Failure – Abduction / Valgus	Failure – Adduction / Varus
Failure – Rotation	Failure - Compression

4) Energy + Soft tissues Summary

“This is a (low / high energy injury). The fracture pattern is suggestive of an injury mechanism associated with disruption of (.... periosteum / ligaments / capsule). The energy and mechanism of this injury would raise suspicion of and I would consider (investigations / associated treatment / temporary treatment).

5) Principles of Treatment

“I would recommend treating according to AO principles.

- *Restore anatomical relationships*
- *Preservation of blood supply*
- *Definitive treatment takes into account personality of the fracture, patient and injury.*
- *Early mobilisation”*

6) To work out optimum fixation strategy, address each component of the fracture separately.

Extra-articular component	Intra-articular component
Medial	Lateral
Anterior	Posterior

7) **Reduction + Fixation Strategy**

If you have just described

- An articular fracture you know that this component needs anatomical reduction and absolute stability.
- A simple, low energy fracture you know that to restore length and alignment of this component will probably require anatomical reduction.
- A multi-fragmentary fracture it would be best to consider indirect reduction.
- Disrupted soft tissues, try and avoid and replace stability.
- Intact soft tissues, avoid damaging and use to facilitate indirect reduction.

Remember non-operative can be considered biological fixation.

And then remember that everything in Trauma surgery (life) is a compromise. You have to choose a strategy (not necessarily the same one for each component) which deals with all components with consideration of potential problems. The final decision will be based on risk / benefit.

Rigid Fixation
<ul style="list-style-type: none"> - Anatomical reduction - Interfragmentary compression
Absolute Stability
Direct reduction
Direct bone healing (osteonal remodelling) <ul style="list-style-type: none"> - Absence of callus, resorption and intermediate repair tissue (Contact + Gap) - Remodelling

Biological Fixation
<ul style="list-style-type: none"> - Preserve blood supply - Restores length and alignment
Relative Stability
Indirect reduction
Indirect bone healing (callus) <ul style="list-style-type: none"> - Soft callus (haematoma / granulation tissue / fibrocartilaginous tissue) - Hard callus (calcified tissue) Remodelling

8) Treatment Method

Non-operative	Operative
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9) Operative Options

Have the mental discipline to consider all options to avoid forgetting a potential winning strategy.

Plate – compression	Plate – neutralisation
Plate – buttress - Resisting force away from the mechanical axis	Plate – antiglide - Resisting force in line with the mechanical axis
Plate – bridge	Plate - tension band
Internal fixation – intramedullary - Static vs Dynamic	External fixation - Monoaxial / Polyaxial / Dynamic
Internal fixation – extramedullary - Load sharing vs Load bearing	Arthroplasty - Hemi / Total / Excision

10) Additional Considerations

Acknowledge the loading of your construct in the context of the position, quality of bone and how much work the implant is having to perform. This may influence your post operative plan.

Load sharing	Load bearing
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