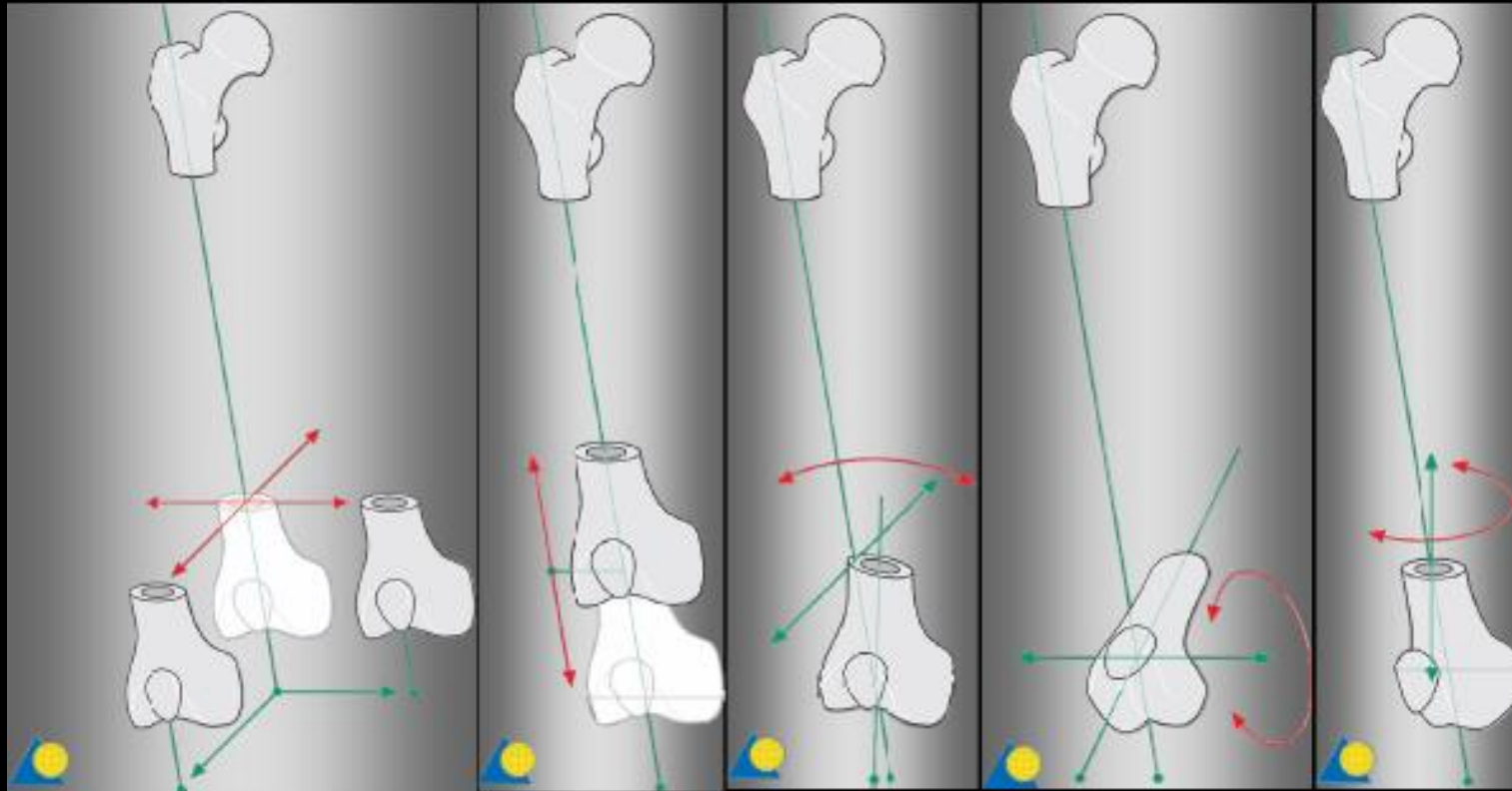


Reduction of extra articular fracture

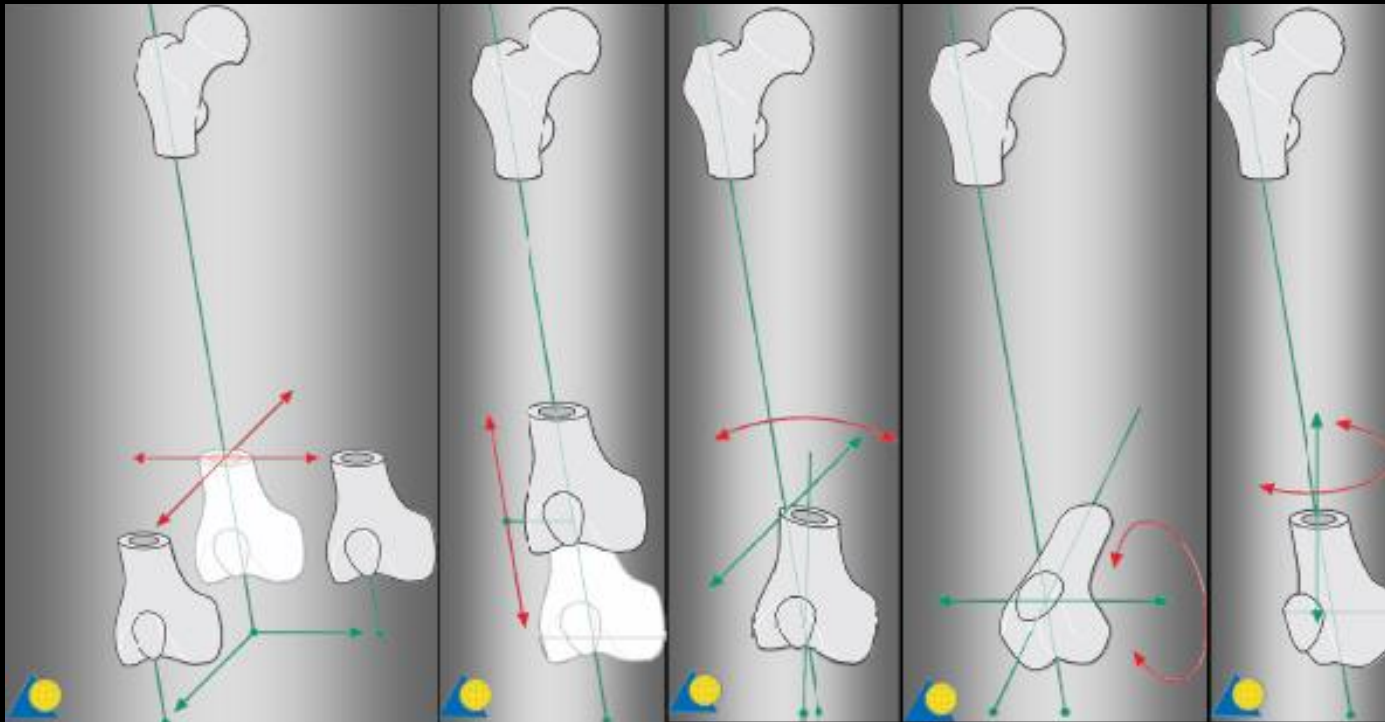


Jeppé Barckman
Aarhus University Hospital

Goal

- Describe fracture displacement!
- Understand displacing forces
- Reduction technic
 - Direct or indirect

Fractur displacement



Ant/post/medial/lat
displacement

Axial
shortening

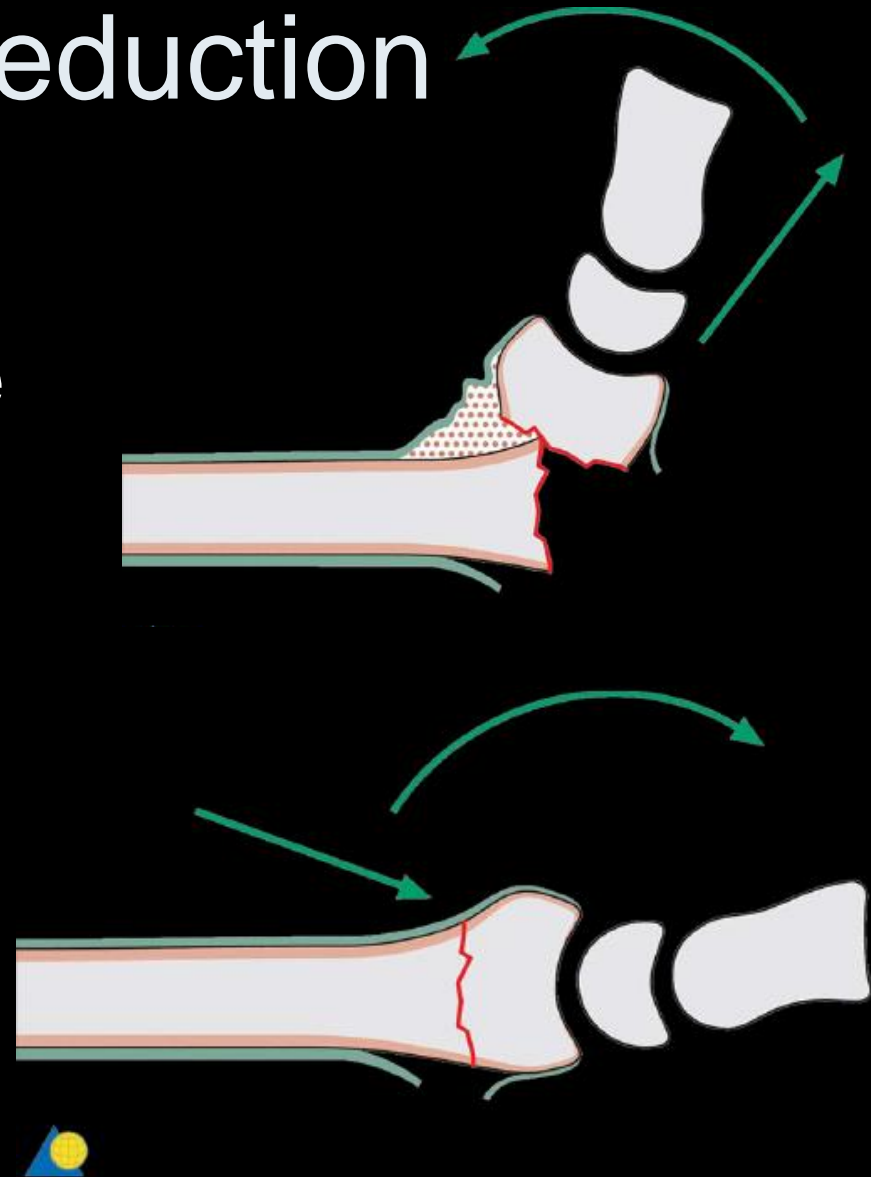
valgus/
varus

Anteversion
retroversion

rotation

Fracture Reduction

- Restoring the correct position of the fracture fragments



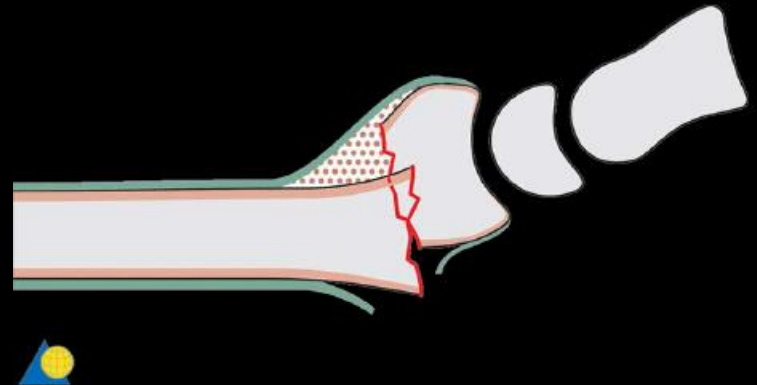
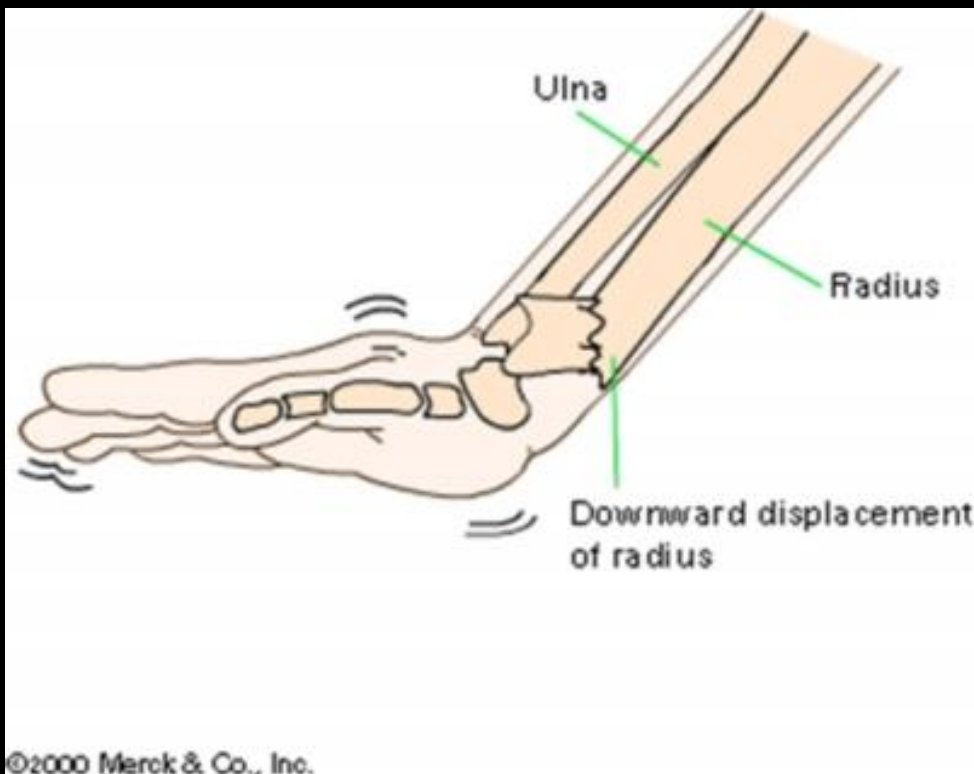
Fracture Reduction

- Analyses of displacement and displacing forces...

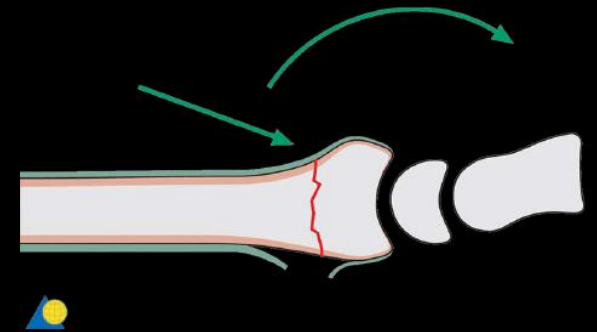
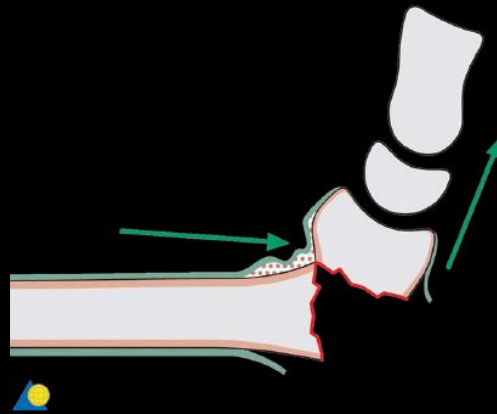
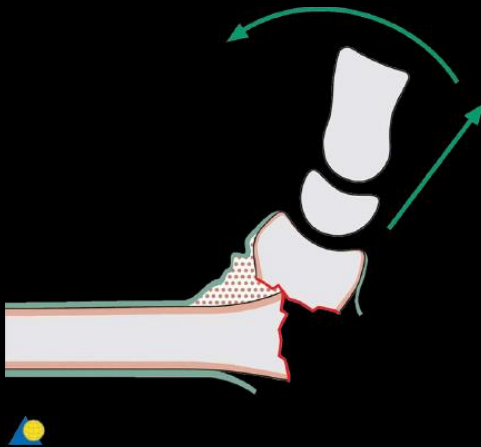
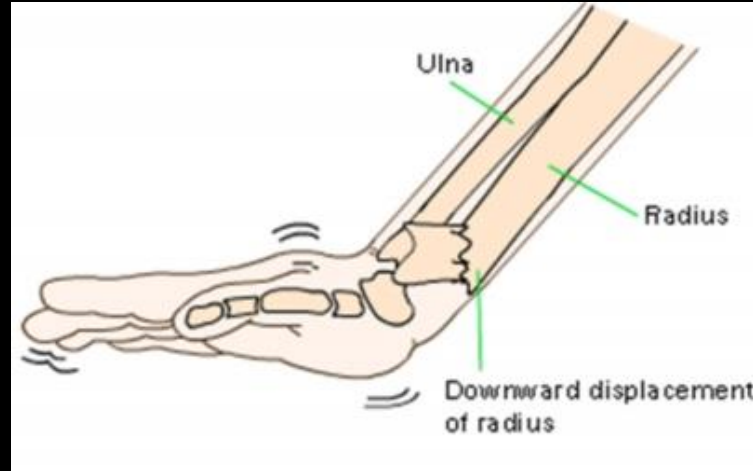


Fracture Reduction

- Analyses of displacement and displacing forces...

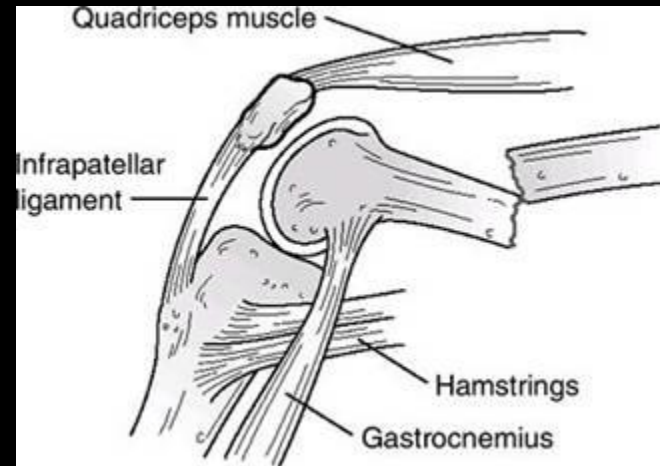


Fracture Reduction

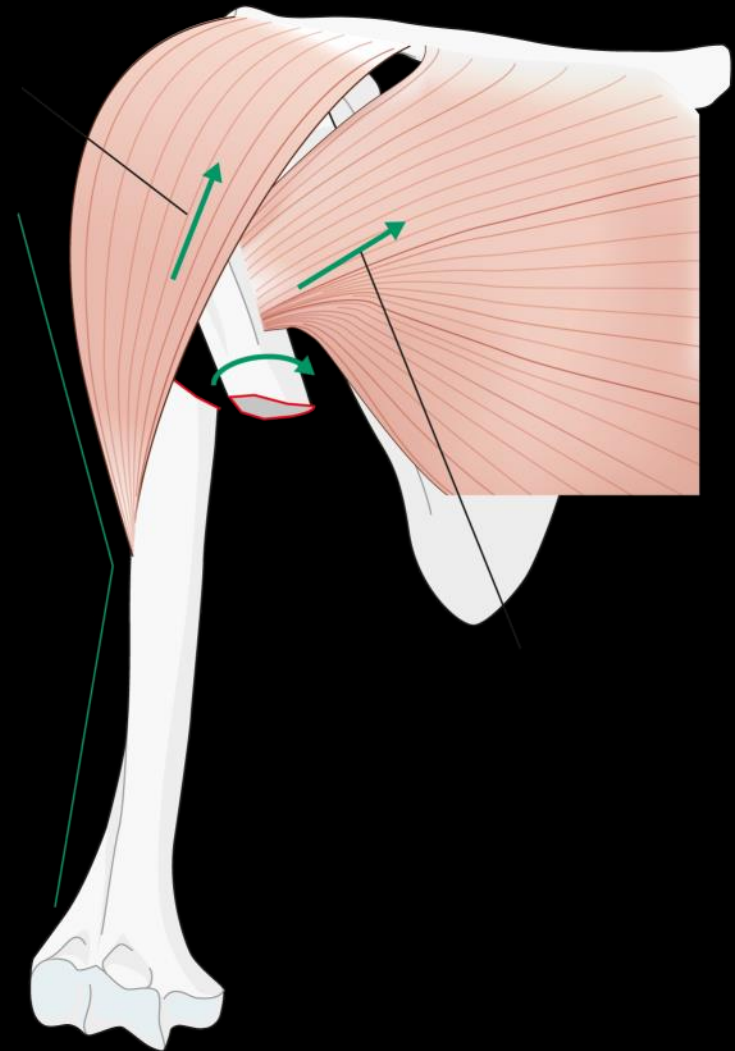
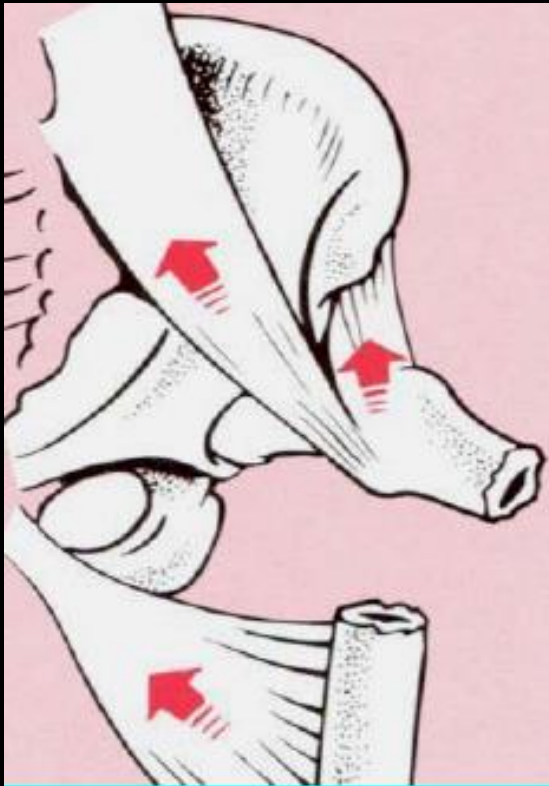


Displacing forces

- Analyses of displacement and displacing forces...
- ...help us to plan the reduction steps



Displacing forces



Goal of metaphyseal/diaphyseal fracture reduction



Restore

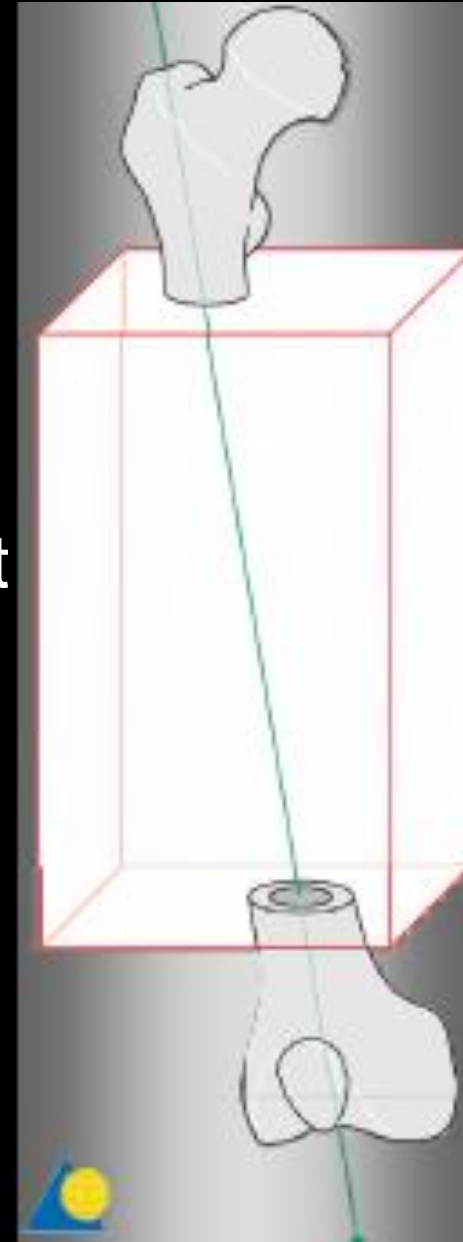
- Length
- Axial alignment
- Rotation

Goal of metaphyseal/diaphyseal fracture reduction



Restore

- Length
- Axial alignment
- Rotation

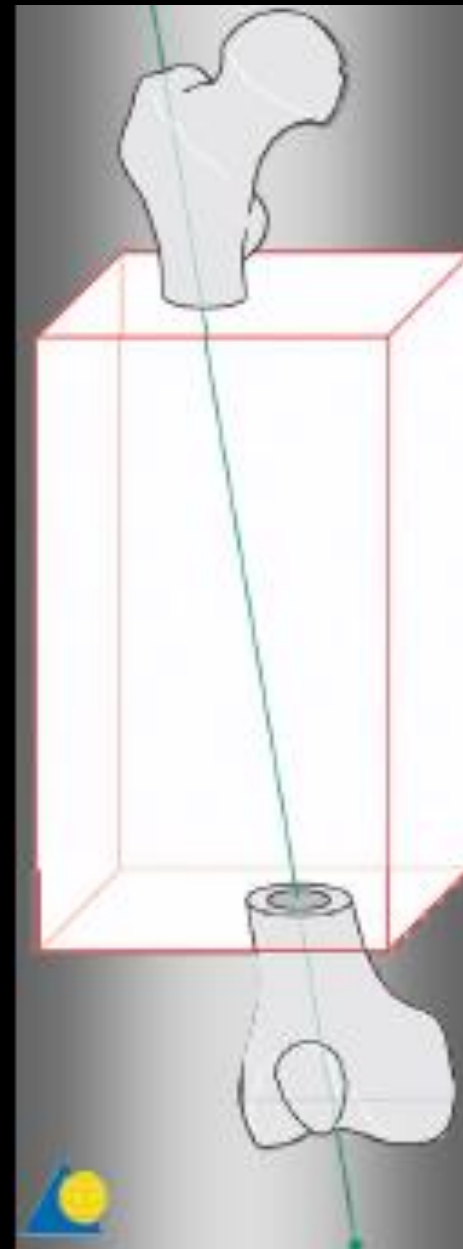


Goal of metaphyseal/diaphyseal fracture reduction

Restoring length, rotation and axial alignment



Obtaining correct mechanical axis



Who to reduce metaphyseal/diaphyseal fracture

Direct reduction



Indirect reduction



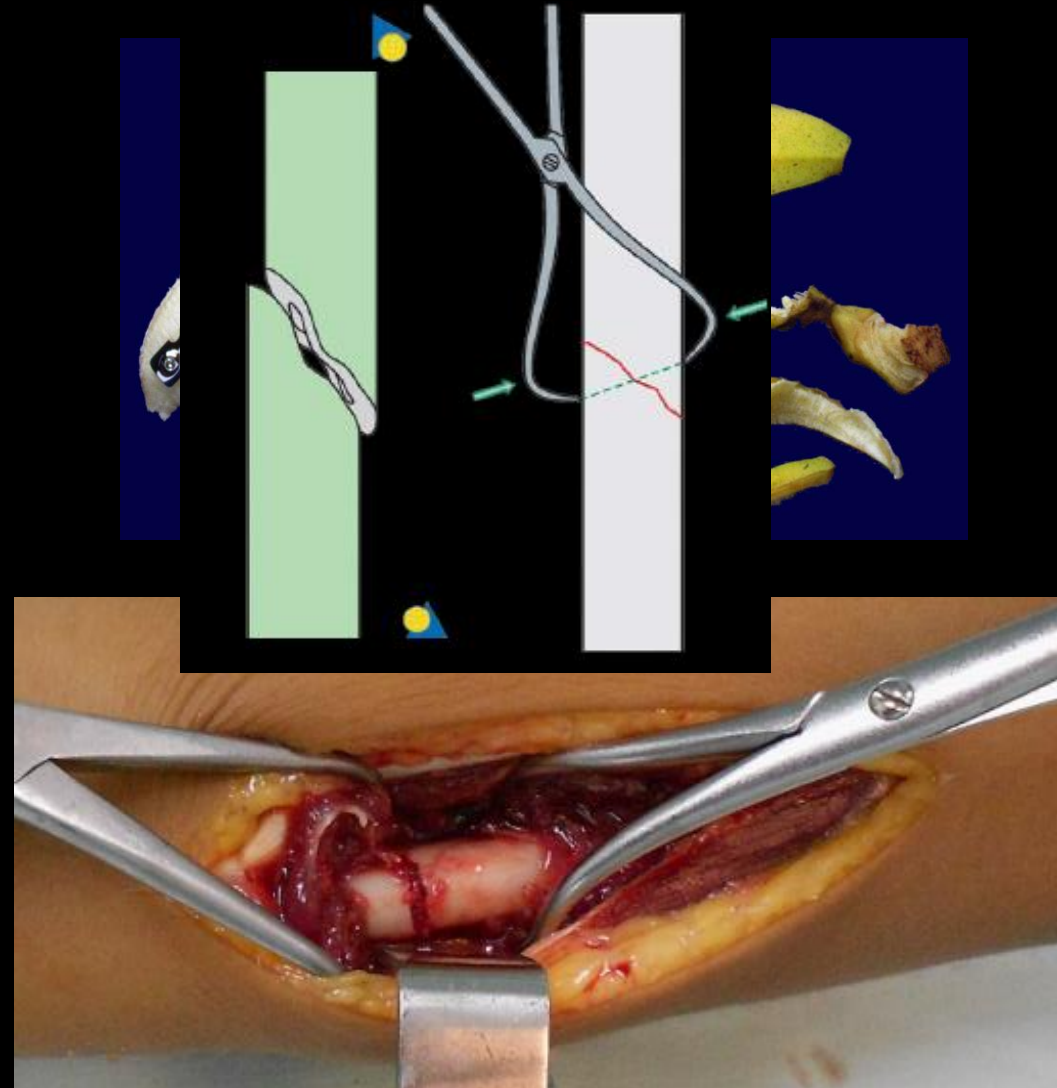
Who to reduce metaphyseal/diaphyseal fracture

Direct reduction

- The fracture site is exposed.

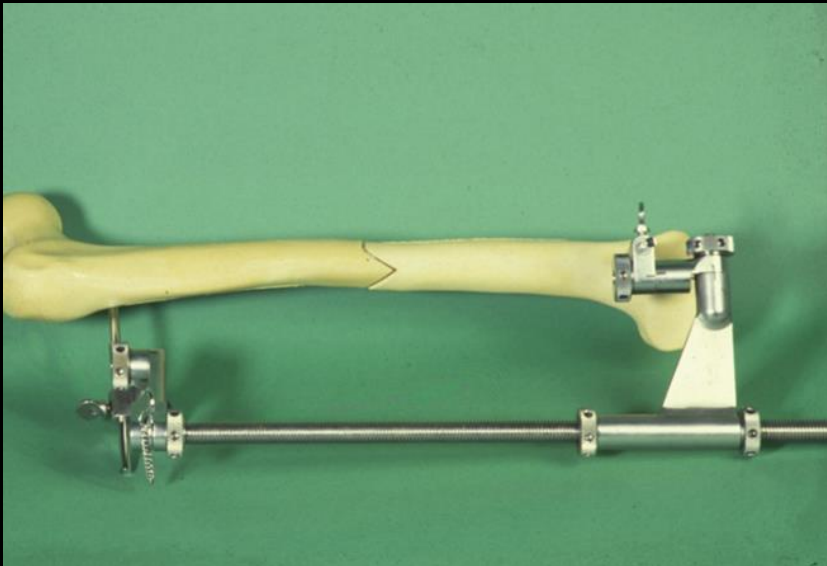


Risk of devascularisation of fragments



Indirect reduction

Indirect reduction



Indirect reduction

Indirect reduction

- The fracture site is NOT exposed.
- soft tissue protecting



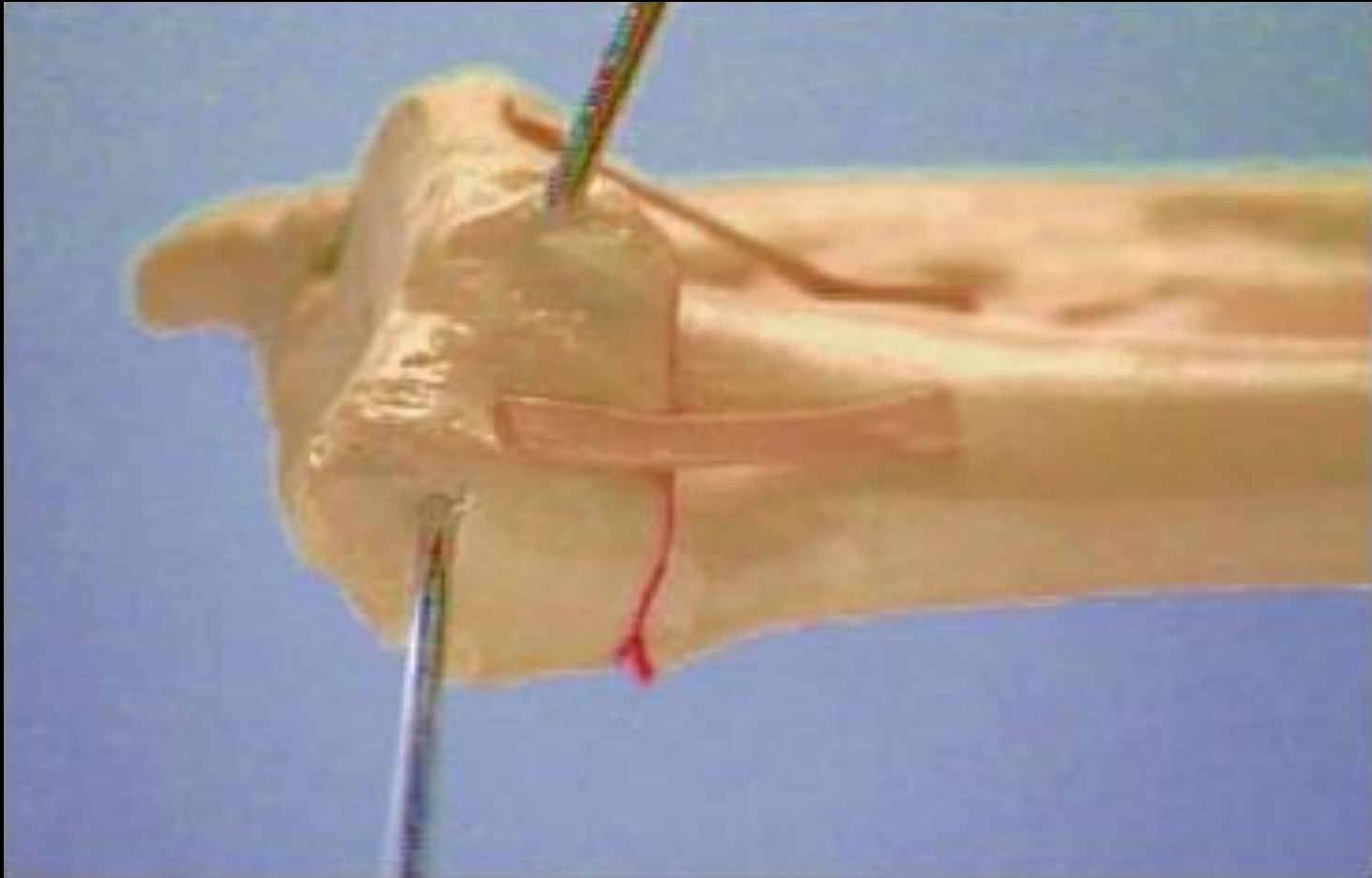
Tools for reduction

- Traction
- Reduction using instruments
- Reduction using the implant

Tools for reduction Traction



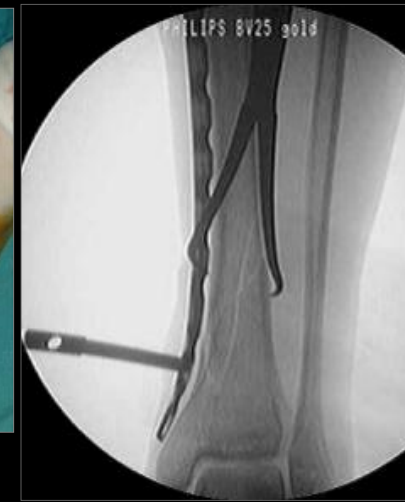
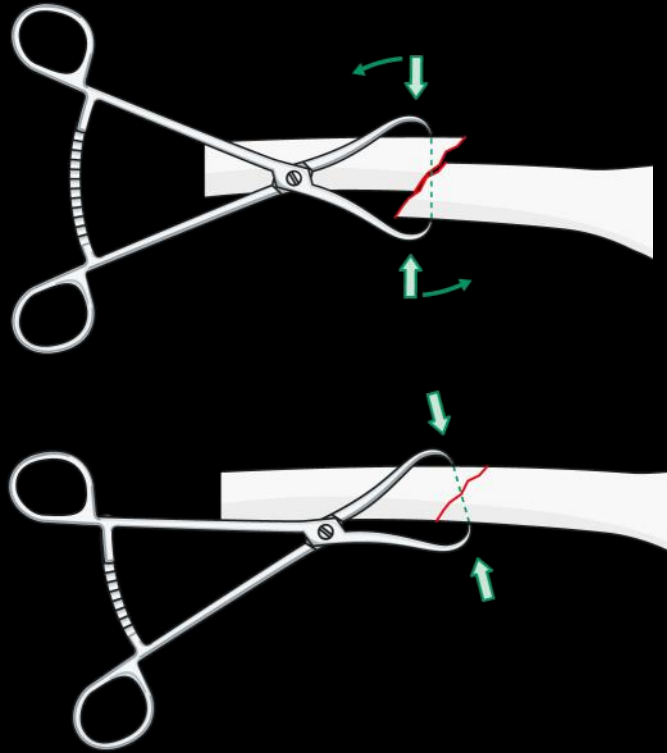
Tools for reduction Instruments



The “Joy-stick”

Tools for reduction Instruments

Pointed reduction forceps



Tools for reduction Instruments

Collinear reduction clamp



Tools for reduction Instruments

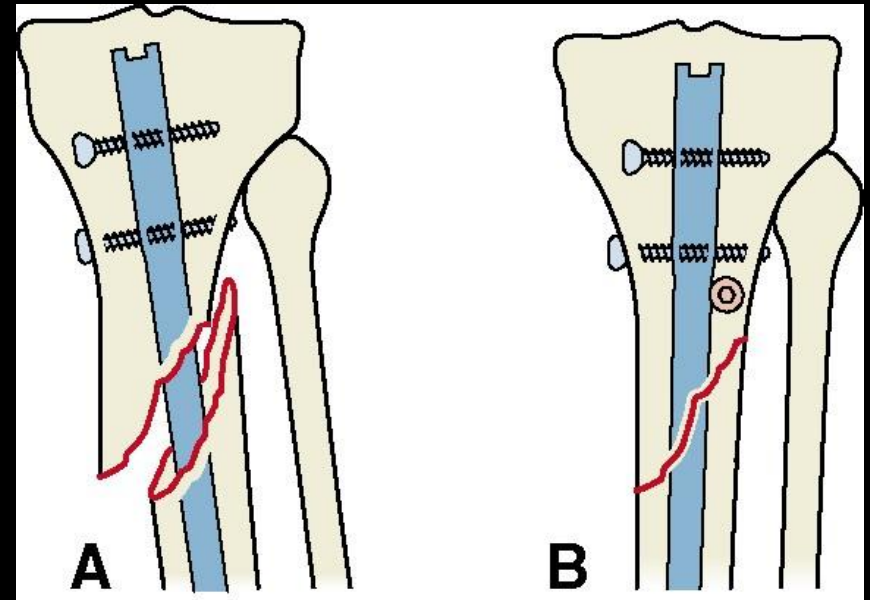
Collinear reduction clamp



Tools for reduction Implants

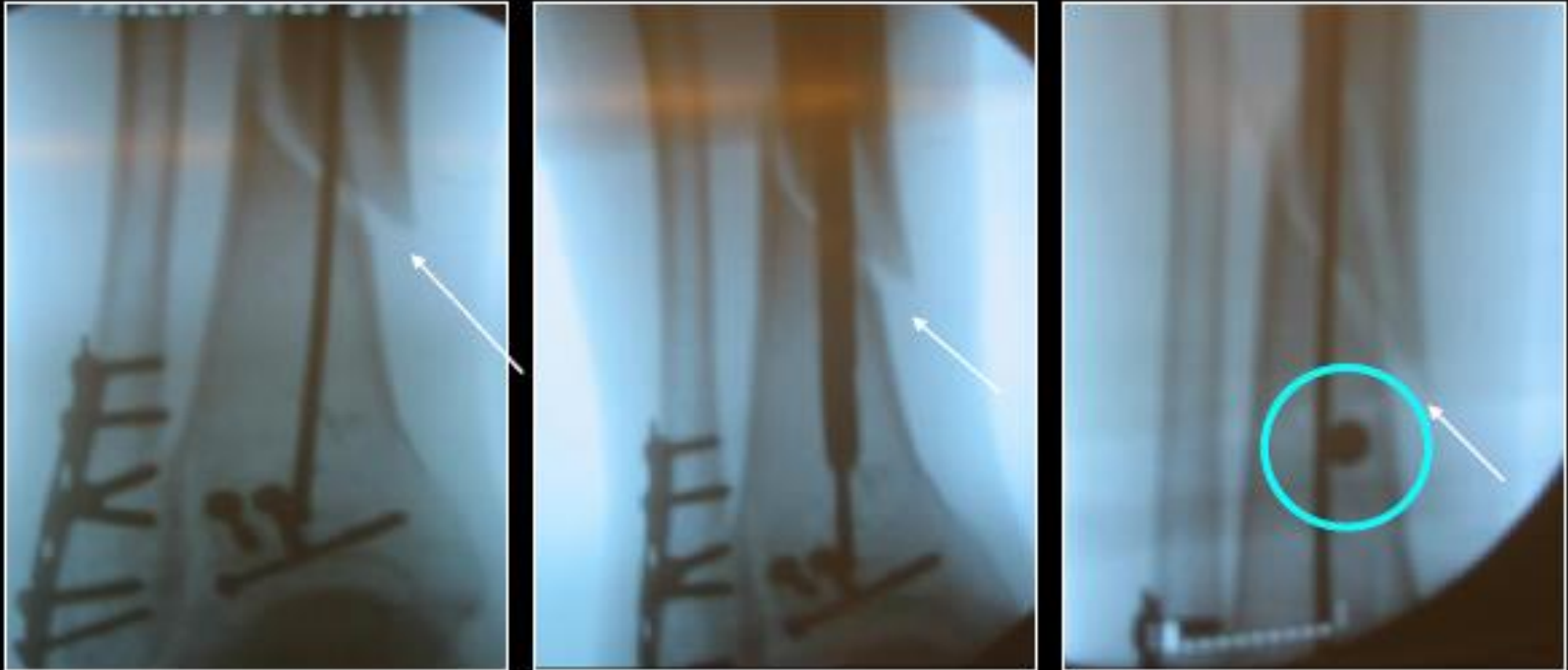


Tools for reduction Implants



”Poller-skru”

Tools for reduction Implants



”Poller-skrue”

Tools for reduction Implants



”Poller-skrue”

Evaluating reduction

- Clinically
- Always check distal pulse



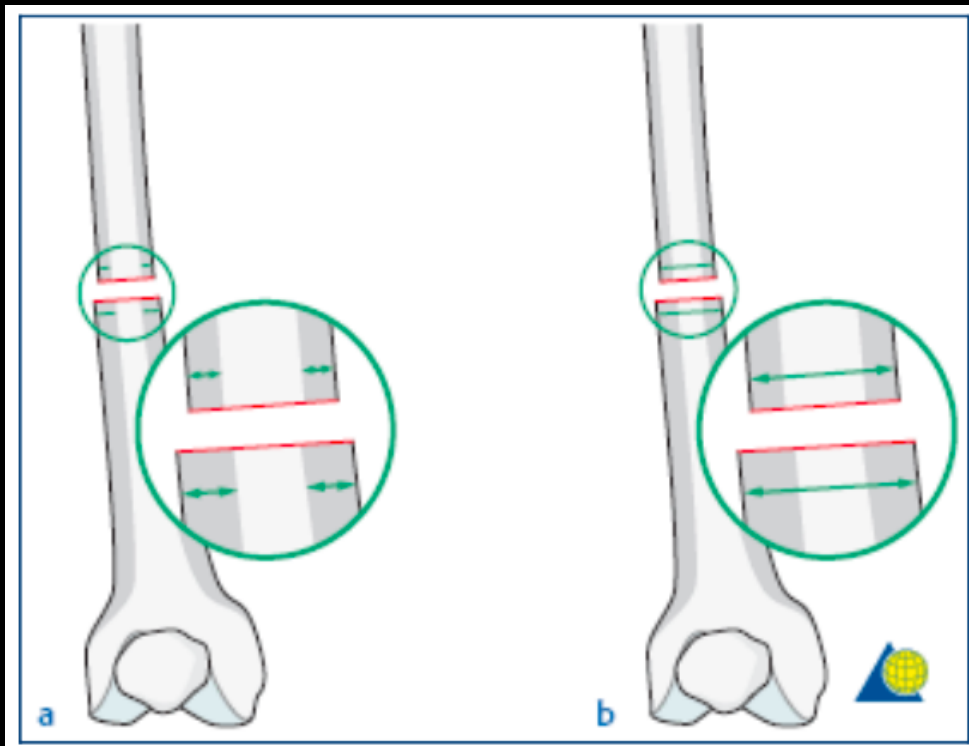
Evaluating reduction

- Clinically
- X-ray



Are you satisfied?

Evaluating reduction



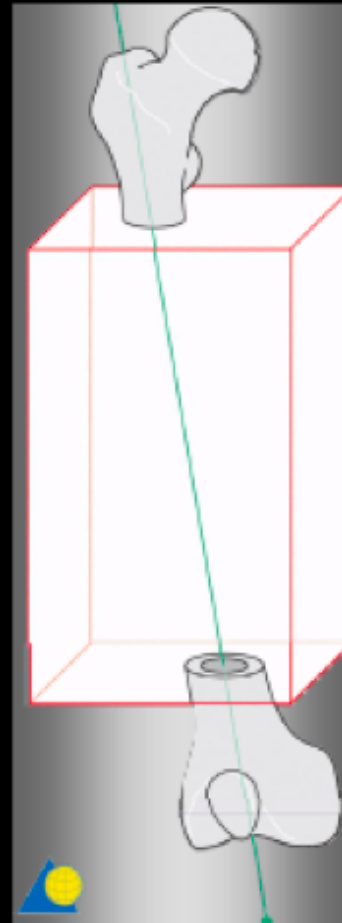
Take home messages

Goal of metaphyseal/diaphyseal fracture reduction

Restoring length, rotation and axial alignment



Obtaining correct mechanical axis



Take home messages

Direct reduction

- The fracture site is exposed.



Risk of
devascularisation of
fragments



Take home messages

Indirect reduction

- The fracture site is NOT exposed.
- soft tissue protecting



Take home messages

Indirect reduction

Thank you

- The fracture site is NOT exposed.
- soft tissue protecting

