Reduction of extra articular fracture



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Goal

• Describe fracture displacement!

Understand displacing forces

Reduction technic
Direct or indirect

Fraktur displasment



Ant/post/medial/lat Axial valgus/ Anteve displasment shortening varus retrove

Anteversion rotation retroversion

 Restoring the correct position of the fracture fragments



Analyses of displacement and displacing forces...





Analyses of displacement and displacing forces...













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



Direct reduction?

- The fracture site is exposed.
- Risk of devascularisation

Delayed union / Non union / Implant failure / Infection





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











The "Joy-stick"

Pointed reduction forceps









Collinear reduction clamp





Collinear reduction clamp







"Poller-skrue"



"Poller-skrue"



"Poller-skrue"

Evaluating reduction

Clinically

 Always check distal pulse





Evaluating reduction

- Clinically
- X-ray





Evaluating reduction





Goal of metaphyseal/diaphyseal fracture reduction

Restoring length, rotation and axial alignment

Obtaining correct mechanical axis



Direct reduction

The fracture site is exposed.



Risk of devascularisation of fragments



Indirect reduction

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

d





Indirect reduction

Thank you

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

d



