

1958 stable osteosynthesis1989 "biological osteosynthesis" (Mast, Ganz)1996 LISS (Krettek)

Fracture reduction and fixation to restore anatomical relationships.

Early and safe mobilization and rehabilitation of the injured part and the patient as a whole.



Fracture fixation providing absolute or relative stability, a required by the "personality" of the fracture, the patient, and the injury.

Preservation of the blood supply to soft tissues and bone by gentle reduction techniques and careful handling.







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## In the long bones the best MIO is the IM

Indirect reduction Remote acces to the fracture Relative stability Superior axial stability in the lower extremities

Can be supported by

- percutaneous reduction technique
- limited open fracture reduction



# MIPO is to gain the same benefits by using plates





## Indications





Babst, Khong 2007



# Planning

- Patient position
- Fracture table w/ or w/o support
- Assistant
- Tools for reduction
- Temporary fixation
- Definitive fixation abs/rel stability







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#### Percutaneous reduction

### Plan C



Be aware of and avoid the well known possible complications like: - malalignment/malunion



# - nonunion if fracture biomechanics is violated













#### Length & rotation













Shah AR; Sanders RW: Suprapatellar nailing of tibial shaft fractures: The next advancement Orthopedics Today, September 2015

В



12





## Kim Holck, Hvidovre







Sin





#### 3 months



#### 21 km



1/4

#### Lars sist i mål av alla: "Min sjukgymnast kommer hata mig"

som Många var det som kämpade sig runt Göteborgsvarvet 2017. Men frågan är



After the marathon (41km) .....







Review article Comparison of Minimally Invasive Percutaneous Plate Osteosynthesis and Open Reduction Internal Fixation on Proximal Humeral Fracture in Elder Patients: A Systematic Review and Meta-Analysis Wei Zhao W et al

MIPO in humeral fracture may be superior in elderly:

Blood loss Op. time Postoperative pain Fx healing time



#### Better cosmesis?





The message.....

MIO: whenever you can.....but the greatest advantage is in cases of pure soft tissue conditions

> Do not hazard the result by violating the principles

Thank you!



- Fractures older than ca 2-3 weeks?
- Frequent alignment check
- Take advantage of modern tools and aids
- Spare fluoroscopy time
  use identical plate to find plate holes
- Long plates, screw density below 0.5
- Use LH screws bicortically



