

AO Trauma Course—Principles of Operative Fracture Management

Internal fixation with screws and plates—absolute stability

Practical exercise

Course participants should use this checklist upon completion of each part of this practical to self-assess the basic steps and principles of osteosynthesis applied. The objective of this exercise is to be able to apply interfragmentary compression providing absolute stability by screw technique and conventional plating technique. Discuss results and questions with peers and faculty members, and ask faculty to provide feedback.

Screw technique—position screw:

Identify screws needed:

4.5 mm cortex screw, ☐ yes ☐ no
6.5 mm cancellous bone screw ☐ yes ☐ no

Review instruments needed ☐ yes ☐ no

Confirm diameter of drill bit and tap ☐ yes ☐ no

Drill perpendicularly to fracture plane through both cortices ☐ yes ☐ no

Determine required screw length, use depth gauge ☐ yes ☐ no

Prepare screw hole, insert 4.5 mm cortex screw ☐ yes ☐ no

Insert a position screw (fracture gap does not close) ☐ yes ☐ no

Screw technique—lag screw:

Drill a gliding hole in the near cortex (perpendicular to fracture plane) with 4.5 mm drill bit ☐ yes ☐ no

Insert drill guide ☐ yes ☐ no

Drill far cortex with 3.2 mm drill bit ☐ yes ☐ no

Countersink the hole in the near cortex ☐ yes ☐ no

Determine required screw length, use depth gauge ☐ yes ☐ no

Prepare screw hole in the far cortex (tap far cortex) ☐ yes ☐ no

Insert 4.5 mm cortex screw, tighten, achieve interfragmentary compression ☐ yes ☐ no

Option:

Discuss the use of a 6.5 mm cancellous bone screw with a modified thread and shaft that can act as lag screw without overdrilling the near cortex.

LCP as compression plate:

Describe the special design features of the LCP and the screw holes ☐ yes ☐ no

Overbend the plate to compress the far cortex ☐ yes ☐ no

Place and secure plate so that center of plate is over “osteotomy” site ☐ yes ☐ no

Choose respective part of combination hole in order to achieve dynamic compression ☐ yes ☐ no

Use universal spring loaded drill sleeve correctly ☐ yes ☐ no

Prepare screw hole and insert a 4.5 mm cortex screw ☐ yes ☐ no

Reduce fracture and use bone-holding forceps ☐ yes ☐ no

Drill an eccentric hole, use respective part of oval hole, measure screw length ☐ yes ☐ no

Insert screw, tighten screw and create compression ☐ yes ☐ no

LCP as neutralization plate

(compression plate with lag screw through the plate):

Choose appropriate plate and position plate properly on bone ☐ yes ☐ no

Decide how to achieve compression in the simple oblique A-type fracture ☐ yes ☐ no

Insert a first screw on one side of the fracture after reduction ☐ yes ☐ no

Verify fracture reduction ☐ yes ☐ no

Fix plate on other side of fracture with an eccentrically placed screw ☐ yes ☐ no

Insert screw to achieve axial compression ☐ yes ☐ no

Insert a 4.5 mm cortex screw, through the plate, perpendicular to fracture as lag screw to achieve interfragmentary compression ☐ yes ☐ no

Finish fixation by inserting an appropriate number of screws ☐ yes ☐ no