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Surgical Technique
ARZZT PLATES & SCREWS
LCP-DCP/DHS

- Introduction
- Indications
- Pre-Surgery planning
- Gauging the system
- Surgical approach
- Fixation

The aim of this guide is to present the technique and directions recommended for the use of Arzzt plates and screws for the management of fixation of fractures, of different types, metaphyseal and diaphyseal, proximal or distal, with delay or without consolidation. In various bones: clavicle, scapula, humerus, olecranon, radius, ulna, pelvis, femur, tibia and calcaneus and bones osteotomies and nonunions.

Recommendations for use are not intended to interfere neither with the surgeon's experience nor with the specific needs of each patient, following the basic principles in the management of fractures.



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INTRODUCTION

All surgical treatments for fractures have the purpose of reconstructing the anatomy and restore its mobility. Osteosynthesis with plate and screw has been established and clinically recognized for long time, this because in 1958, the AO formulated four basic principles, which became the guidelines for internal fixation.¹

1. Anatomic reduction
2. Stable fixation
3. Preservation of blood supply
4. Early, active mobilization

According to the AO, internal fixation is distinguished by precise reduction, stable fixation, preservation of blood supply and early functional mobilization. Clinical results have been improved by using internal fixation with angular stability (internal fixators) in metaphyseal fractures and in osteopenic bone.

Fractures types 31-B2 and B3 are unstable, displaced subcapital. Their prognosis is by and large the same and they are managed as one group for the purpose of manner of reduction and choice of fixation, should internal fixation be chosen as the method of treatment.

They can be stabilized with either cannulated screws or DHS. If the surgeon feels that optimal stability is required, he should choose a sliding hip screw (DHS) type of implant for fixation.

If added rotational stability is desired in addition to the DHS, a cannulated screw is inserted above and parallel in both planes to the DHS. It must be parallel in order not to block the sliding property of the DHS implant.

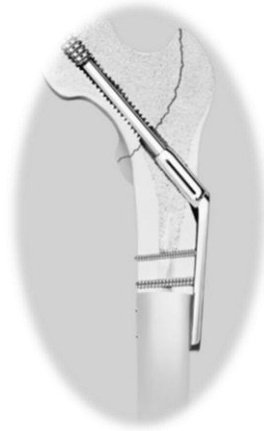


Image 1



Image 2
DHS plate



Image 3
Sliding screw

INDICATIONS

Arzst plates and screws are intended for the management of fixation of fractures, of different types, metaphyseal and diaphyseal, proximal or distal, with delay or without consolidation. In various bones:

clavicle, scapula, humerus, olecranon, radius, ulna, pelvis, femur, tibia and calcaneus and bones osteotomies and nonunions. More specific the DHS is indicated in fractures which a stable medial buttress can be reconstructed.

The Arzzt plates and screws, come in many different types and are therefore, suitable for a large number of fracture types. This document shows generic concepts for the fractures fixation, please refer also to the AO Principles of Fracture Management,² and AO Manual of Fracture Management–Internal Fixators.³

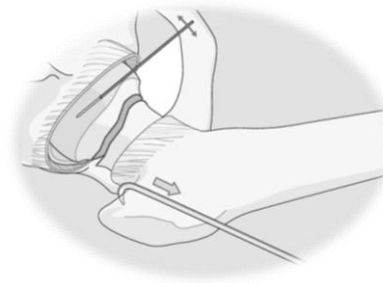
DHS PLATE IMPLANT

1. Selection of plate

- a. Select the appropriate plate for the fracture.
- b. The standard 38 mm barrel length is most commonly indicated.
- c. The 135° barrel angle is most commonly indicated. An evaluation of the angle subtended between the femoral neck and shaft axes (CCD, or collum-center-diaphysis, angle) of the uninjured femur will aid in the selection of the most appropriate barrel angle.

2. Reduction

- a. The reduction of the neck fracture should be under direct vision.
- b. Once the capsule is opened up while applying traction the head is manipulated with hooks or K-wires, inserted to act as joy sticks until an anatomical reduction is achieved.



*Image 4
Reduction*

3. Plate positioning

- a. Position a guide wire on the neck and hammer it into the head. With the C-arm

positioned to show the neck axis, slide the guide wire along the neck, parallel to its axis, and gently tap it into the head. With the C-arm in the AP, make sure that the wire subtends the CCD (collum-center-diaphysis) angle of the neck.



Image 5
Guide wire

- b. Align the appropriate DHS angle guide along the axis of the femoral shaft, and place it on the femur. Check its position in the AP view with the image intensifier.
- c. Insert the guide wire through guide and advance it into the head, stopping 10 mm short of the joint. In both the AP and lateral planes, the guide wire should be positioned along the axis of the neck and through the middle of the head, and advanced to within 5 mm of the subchondral bone.

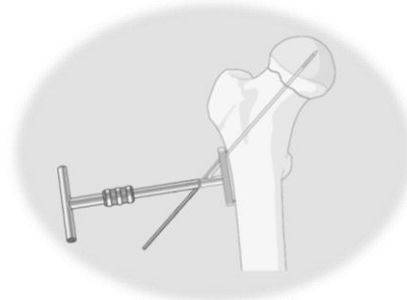


Image 6
Align angle guide

- d. Slide the direct measuring device over the guide wire to determine guide wire insertion depth. Calibration on the measuring device provides a direct reading. Select a screw which is 10 mm shorter than the measured length.



Image 7
Measure length of DHS screw

- e. Assemble the appropriate DHS triple reamer to the chosen length of the screw. Drill a hole for the screw and the plate sleeve.

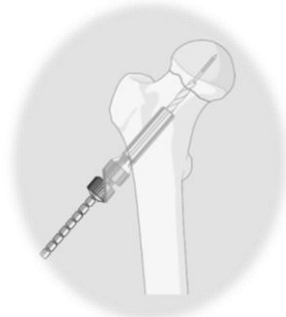


Image 8
Drilling

- f. Mount the screw on the handle and insert over the guide wire. By turning the handle it is advanced into the bone carefully so the fractures does not get distracted.
- g. When the screw has reached its final position (checked with the image intensifier: 10 mm short of the subchondral bone in the AP and lateral), the T-handle of the insertion piece should be parallel to the long axis of the bone to ensure the correct position of the plate.

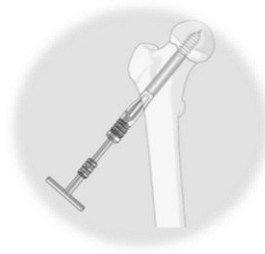


Image 9
Screw insertion

- h. Take the plate with the correct CCD angle, slide it over the guide wire, and mate it correctly with the screw. Then push it in over the screw and seat it home with the impactor.

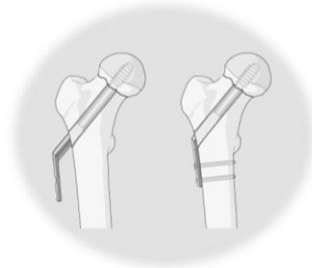


Image 10
Plate fixation

4. Postoperative treatment

- a. Postoperative treatment with DHS plates does not differ from conventional internal fixation procedures.