2.7 mm/3.5 mm Variable Angle LCP Elbow System
System overview

- Simply complete: A comprehensive system, consisting of five (5) distal humerus plates and three (3) types of olecranon plates
- Implant options for both parallel and perpendicular plating
- Rounded plate edges and anatomic contours designed to help reduce soft tissue irritation
- Proven, Synthes Variable Angle LCP locking technology
The Synthes Variable Angle LCP Elbow System is intended for fixation of fractures of the distal humerus, olecranon and ulna in adults and adolescents (12-21) in which the growth plates have fused.

Specifically:

– Distal humerus plates are indicated for intra-articular fractures, comminuted supracondylar fractures, osteotomies, malunions and non-unions of the distal humerus.

– Olecranon and Proximal ulna plates are indicated for fractures, osteotomies, malunions and non-unions of the olecranon and proximal ulna.
Implant features

Poor soft tissue coverage of the elbow makes the area prone to implant prominence. The VA-LCP Elbow Plating System is designed to help reduce the risk of soft tissue irritation through improvements to the implant design and profile:

Plate design

Rounded edges and an improved anatomical plate fit minimize the prominence of the construct, without compromising stability.

Cross section

1 - VA-LCP Distal Humerus Plate
2 - LCP Distal Humerus Plate

Shown at the level of the medial epicondyle

Plate-screw interface

Designed for minimal screw-head prominence; recesses in plate for screw heads.
Implant features

**Undercuts**
Allow additional contouring

**Suture Holes And Undercuts**
Allow passage of suture needles through the undercuts after plate application

**Narrow plate tip**
For reduced plate prominence

Lateral Plate: 8 mm
Medial & Extended Medial Plates: 8 mm
Implant features

Tapered plate tip
Tapered end for submuscular plate insertion

Limited-contact shaft profile
Limits plate-to-bone contact to reduce impairment of blood supply

Reconstruction segments
Allow additional contouring

Reduced plate width in the metaphysis
Proximal Olecranon: 10 mm
Olecranon: 10 mm
Extra Articular Proximal Ulna: 10.5 mm
Reduced plate thickness

<table>
<thead>
<tr>
<th></th>
<th>Proximal Olecranon Plate</th>
<th>Olecranon Plate</th>
<th>Extra-articular Proximal Ulna Plate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distal plate thickness</td>
<td>2.25 mm</td>
<td>2.25 mm</td>
<td>2.75 mm</td>
</tr>
<tr>
<td>Shaft Thickness</td>
<td>2.8 mm</td>
<td>3.2 mm</td>
<td>3.6 mm</td>
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</table>

Extra-articular Proximal Ulna Plate
Olecranon Plate
Proximal Olecranon Plate
Reduced plate thickness

Medial Distal Humerus: 2.25 mm

Extended Medial Distal Humerus: 2.25 mm

Lateral Distal Humerus: 2.25 mm

Posterolateral Distal Humerus and Posterolateral Distal Humerus With Support: 2.5 mm

Note: measurements are for distal plate thickness
Implant features

Predefined screw angles

- The predefined (nominal) screw angles are designed to address common fracture patterns for average anatomy
- Use of the predefined, nominal angles helps reduce the risk of screw collisions within the same plate
2.7 mm Variable Angle Locking Holes

Variable Angle Locking Holes in the metaphysis accept:

- 2.7 mm Variable Angle Locking Screw
- 2.7 mm Cortex Screw
- 2.7 mm Metaphyseal Screw
- 2.7 mm Locking Screw (nominal position only)
- 2.4 mm Cortex Screw
Variable angle locking screws allow unlimited screw angulation within a 30° cone to:

- Adapt screw angulations to patient anatomy
- Capture specific fracture fragments
- Adjust screw trajectory after plate bending
- Position screws precisely to avoid joint penetration

- Proven, Synthes Variable Angle LCP locking technology; four columns of threads in the locking hole provide four points of contact
- Spherical screw head profile
2.7 mm Metaphyseal Screws

- Low-profile alternative to a cortex screw

- Pulls the plate to the bone. Fully threaded, therefore not intended to generate interfragmentary compression

- Same thread as a Variable Angle Locking Screw or Locking Screw

- The 2.7 mm locking screw shaft profile had a higher average pull-out resistance than a 2.7 mm cortex screw shaft profile. ¹

- Can be replaced with a locking screw after plate-to-bone compression has been achieved

¹ Inhouse testing on file at Synthes, MT10-636. Test conducted using 20 PCF Foam. Bench tests do not necessarily reflect clinical performance.
3.5 mm LCP Combi Holes in the shaft

**Threaded section accepts:**
- 3.5 mm Locking Screws

**Nonthreaded section accepts:**
- 3.5 mm Cortex Screws
- 3.5 mm Low Profile Cortical Screws
- 4.0 mm Cancellous Screws
Olecranon Plates

**VA-LCP Proximal Olecranon Plate**
- Portfolio: 2 holes; left & right
- Number of variable angle holes: 8

**VA-LCP Olecranon Plate**
- Portfolio: 2, 4, 6 and 8* holes; left & right
- Number of variable angle holes: 11

**VA-LCP Extra-Articular Proximal Ulna Plate**
- Portfolio: 6, 8, 10 and 12 holes; left & right
- Number of variable angle holes: 7

* Only available sterile

Available in Stainless Steel and Titanium
Distal Humerus Plates - Lateral

VA-LCP Posterolateral Distal Humeral Plate
- Orientation of distal screws: posteroanterior
- Portfolio: 3, 4, 7, 9, 11* and 13* holes; left & right
- Number of variable angle holes: 5

VA-LCP Posterolateral Distal Humeral Plate with Lateral Support
- Orientation of distal screws: posteroanterior and lateromedial
- Portfolio: 3, 4, 7, 9, 11* and 13* holes, left & right
- Number of variable angle holes: 5

VA-LCP Lateral Distal Humerus Plate
- Orientation of distal screws: lateromedial
- Portfolio: 1, 2, 5, 7, 9* and 11* holes; left & right
- Number of variable angle holes: 7

* Only available sterile
Distal Humerus Plates - Medial

VA-LCP Medial Distal Humeral Plate
- Orientation of distal screws: mediolateral
- Portfolio: 1, 2, 4, 6, 8* and 10* holes; left & right
- Number of variable angle holes: 7

VA-LCP Extended Medial Distal Humeral Plate
- Orientation of distal screws: mediolateral & ascending
- Portfolio: 1, 2, 4, 6, 8* and 10* holes; left & right
- Number of variable angle holes: 8

* Only available sterile
Large Range of Plate Lengths

Olecranon Plates:
- Proximal Olecranon Plates: 73 mm
- Olecranon Plates: 90 - 169 mm
- Extra Articular Proximal Ulna Plates: 131 – 211 mm

Distal Humerus Plates:
- Medial Distal Humerus Plates: 69 - 186 mm
- Extended Medial Distal Humerus Plates: 72 - 189 mm
- Lateral Distal Humerus Plates: 69 - 199 mm
- Posterolateral Distal Humerus Plates: 75 - 205 mm
- Posterolateral Distal Humerus Plates With Lateral Support: 75 - 205 mm
**Instruments**

**Periarticular Reduction Forceps**: to reduce the articular block of the distal humerus.

**Straight/Curved Reduction Forceps with Points**: to reduce and compress the olecranon to the shaft. Used in pairs.

**Depth Gauge, Percutaneous**: includes a long calibration up to 100 mm.
Templates

Templates for the following plates:

- Posterolateral, with lateral support, right & left, 4 holes
- Lateral, right & left, 2 holes
- Medial, right & left, 2 holes
- Proximal Olecranon, right & left, 2 holes
- Olecranon, right & left, 4 holes
- Extra-articular Proximal Ulna, right & left, 8 holes
Three Types of Olecranon Plates

1. Proximal Olecranon Plate
   - Long proximal extension and more proximal screw options secure small olecranon fragments; designed to help neutralize the forces of the triceps muscle
   - Notches designed to help minimize interference with the triceps tendon.
   - Reduced shaft thickness minimizes plate prominence.
   - Available in 2 holes

2. Olecranon Plate
   - Proximal extension with multiple screw options secures the olecranon; designed to help neutralize the forces of the triceps muscle
   - Multiple screws target and stabilize the coronoid
   - Intermediate shaft thickness
   - Available in 2, 4, 6, and 8 holes

3. Extra-articular Proximal Ulna Plate
   - Short proximal extension designed to avoid interference with the triceps tendon.
   - Shaft strength at least equivalent to 3.5 mm LCP Plate
   - Available in longer shaft lengths, including 6, 8, 10, and 12 holes
**Recommended Uses for Olecranon plates**

1. **Proximal Olecranon Plate**
   For very proximal, short, comminuted avulsion type fractures – fractures that are proximal to the coronoid

2. **Olecranon Plate**
   For complex fractures involving the trochlear notch of the ulna and coronoid

3. **Extra-articular Proximal Ulna Plate**
   For proximal ulna metaphyseal-diaphyseal fractures – fractures that are distal to the coronoid
Indications: The 3.5 mm LCP Hook Plate is indicated for fractures, osteotomies and nonunions of small bones, including the ulna, radius, tibia and fibula, particularly in osteopenic bone.

3.5 mm LCP Hook: Recommended for use in simple fractures due to the fact this plate offers only one locking option in the proximal olecranon.

2.7 mm/3.5 mm VA-LCP Proximal Olecranon Plate: Recommended for use in comminuted fractures due to the fact it has multiple locking options in the proximal olecranon.
Proximal olecranon plate - orientation of screws

- **3 most proximal screws** oriented to secure small proximal fragments
- **4th screw** angled into base of coronoid
- **5th screw** angled into tip of olecranon
**Olecranon plate – orientation of screws**

1st and 2nd screws – can be long or short screws to capture small proximal fragments. Can be oriented into the coronoid.

3rd and 4th screws - angled into the base of coronoid

5th and 6th screws – oriented towards the proximal tip of the olecranon
Extra-articular Proximal Ulna Plate - Orientation of screws

1st screw – angled into base of coronoid

2nd screw – angled into tip of olecranon

3rd and 4th screws - angled into coronoid
Development of system

- Anatomic shape based on analysis of over 120 skeletal specimens
- Mechanical Testing
  - Tested over 250 constructs in both materials (SS and Ti)
  - Static and Fatigue testing using biomechanical elbow model.¹
- Extensive collaboration with a global surgeon team

¹ Note: Bench tests do not necessarily reflect clinical performance.
Clinical Concepts
**Anatomy**

**Important ligaments lateral:**
1. Annular ligament
2. Radial collateral ligament
3. Lateral ulnar collateral ligament

**Important ligaments medial:**
1. Anterior bundle of the medial collateral ligament (AMCL)
2. Posterior bundle of the medial collateral ligament (PMCL)
3. Transverse ligament
Anatomy: muscles

The Brachialis covers the front of the elbow-joint and the lower half of the humerus. It arises from the lower half of the front of the humerus and inserts into the tuberosity of the ulna and the rough depression on the anterior surface of the coronoid process.

The Triceps brachii is situated on the back of the arm, extending the entire length of the dorsal surface of the humerus. It is large, and arises by three heads. The tendon of the Triceps brachii inserts, for the most part, into the posterior portion of the upper surface of the olecranon.
Fractures of the elbow

Elbow fractures can be very challenging

- Can be very complex and often involve small fragments
- Fracture patterns and anatomy vary
- Stable fixation is crucial to allow early mobilization and to avoid limitations in elbow function

Main treatment goals:

- Anatomical reconstruction of all articular surfaces
- Absolute stable fixation of the articular fragments
- Stable reconstruction of the ligaments, their attachments and the muscle attachments (e.g. epicondyles, coronoid process)
Distal humerus fractures are typically classified according to the AO classification:
Distal Humerus – Parallel and Perpendicular Plating

Perpendicular (90°)  Perpendicular with lateral support (90°)  Parallel (180°)

VA-LCP Distal Humerus Plates

1 Medial Plate
2 Extended Medial Plate
3 Lateral Plate
4 Posterolateral Plate
5 Posterolateral Plate, with Lateral support

Parallel plating is recommended for fractures that do not include a substantial coronal shear fragment
Perpendicular (90°) vs. parallel (180°) distal humerus plating

- Both parallel and perpendicular plating currently performed
- Literature shows that both techniques are acceptable\(^1\)
- No evidence available showing one or the other configuration leads to superior clinical results
- Most surgeons have one favorite configuration; they do not perform both. Some surgeons do use both configurations, depending on the fracture pattern

Some considerations:

– Coronal shear fractures of the capitellum may be a clinical situation for using a posterolateral plate (perpendicular configuration), since this plate allows screw placement from the posterior side into the capitellum

– Very distal and complex fractures of the articular block may be treated with parallel plate configuration or for perpendicular configuration with lateral support, since these configurations allow to place long screws into the trochlea from medial and from lateral

No general consensus on when to use the medial plate with extension vs. the one without. However, there are two conceptual ideas:

- The Extended Medial Plate can be used to fix simple transverse medial column fractures where the ascending screw maintains the compression over the column.

- The extension of the plate can be used to buttress the medial epicondyle if required by the fracture pattern.
Trays & Sets
VA-LCP Elbow Compact Set

- Compact Set (01.107.006): Contains two (2) implant trays with the most common implants, Screw Rack with 2.7 mm Variable Angle Screws and 2.7 mm Metaphyseal Screws, and instrument tray.

- Includes Proximal Olecranon Plates, Olecranon Plates, Extended Medial Distal Humerus Plates, Lateral Distal Humerus Plates, and Posterolateral Distal Humerus Plates

- Does not include Extra-articular Proximal Ulna plates, Medial Distal Humerus Plates, Posterolateral Plates With Lateral Support or the longest lengths of the implants above (which are available sterile only)

- Required set: LCP Small Fragment Set
VA-LCP Elbow Set

- Full Set (01.107.002) – Contains all implants, Screw Rack with 2.7 mm Variable Angle Screws and 2.7 mm Metaphyseal Screws, and Instrument tray

- Also includes longer length plates, sterile-only

- Required set: LCP Small Fragment Set
Modular Graphic Cases

2/3 Length, 2 High (61.116.081)

Potential combinations include:

- One instrument tray (61.107.002) and up to two (2) implant trays OR
- One screw rack (61.107.008) and up to two (2) implant trays OR
- Up to four (4) implant trays

2/3 Length, 3 High (61.116.082)

- Designed to house one screw rack (61.107.008), one instrument tray (61.107.002), and up to two (2) implant trays
Technique Overview
Patient Positioning

Lateral decubitus

Fully prone
Approach

- Make a slightly curved posterior incision, just radial to the olecranon
- Identify and protect ulnar nerve
- Depending on the fracture, ulnar nerve may remain in the cubital tunnel region or be transposed to the anterior subcutaneous tissue
- For direct fracture exposure, split triceps longitudinally, reflect triceps to either side, or perform an olecranon osteotomy
- Respect innervation from the radial nerve to the triceps and anconeus muscle
Parallel Plating of the Distal Humerus
Parallel plating

- For distal humerus fractures that do not include a substantial coronal sheer fragment
- Use maximum number of screws from lateral to medial through trochlea
- With two-plate technique, use plates of unequal lengths to minimize stress on diaphysis
- Choose plate lengths that offer sufficient fixation proximal to the fracture line.
Reduce fracture and provide temporary fixation

- Temporarily fix the distal block to the shaft using K-wires and/or the Periarticular Reduction Forceps to restore the anatomy of the distal humerus.

- Ensure K-wires or forceps will not interfere with subsequent plate placement

- If necessary, reduce the articular surface using lag screws
Lateral plate insertion

- Contour plate, as needed, using the bending irons or bending pliers
Determine plate placement

- Position the plate on the lateral ridge of the distal humerus
- The most distal screw hole should lay on the anatomical joint axis
Preliminary plate fixation

- Drill and insert a 3.5 mm cortex screw into the DCU section of an elongated Combi hole in the shaft of the plate
- Do not completely tighten the screw to allow adjustment of plate placement
Distal locking options

- Distal screw options:
  - 2.7 mm Variable Angle Locking Screws
  - 2.7 mm Metaphyseal Screws
  - 2.7 mm Locking Screws (nominal position only)
  - 2.7 mm Cortex or 2.4 mm Cortex Screws

- 2.7 mm Variable Angle screws and 2.7 mm Metaphyseal screws may be inserted in the variable angle or the nominal position

- Insert the screw at the nominal angle for the lowest possible profile construct

- Variable angle drilling and the presence of another plate can increase the risk of drill and screw collisions.
2.0 mm drill guide

- The 2.0 mm Drill Guide **must** be used when drilling for the 2.7 mm Metaphyseal Screws and 2.7 mm Variable Angle Locking Screws.
- Metaphyseal screws and Variable angle locking screw can be inserted:
  - Variable Angle (off-axis) position
  - Nominal position

Use this end of drill guide for drilling in the **variable angle position**

Use this end of drill guide for drilling in the **nominal position**
Drill for 2.7 mm Metaphyseal Screws (optional)

- Drill using the 2.0 mm Drill Bit and the Universal Variable Angle Drill Guide

- NOTE: threaded drill guides cannot be used in the Variable Angle locking holes since they will damage the threads in the plate hole
Measure for 2.7 mm metaphyseal screws

- When drilling, the tip of the drill guide should remain fully seated in the hole.

- When drilling with the nominal end of the drill guide, etched lines on the drill bit can be used to measure for screw length.

- For variable angle, measure for screw length with the depth gauge.
Insert 2.7 mm metaphyseal screws

- Insert a 2.7 mm Metaphyseal Screw to pull the plate to the bone
- Use the 1.2 Nm Torque Limiting Attachment (TLA) to insert the screw
  - For Power insertion, attach the T8 StarDrive screwdriver shaft to the 1.2 Nm TLA
  - For Manual insertion, attach the T8 Screwdriver shaft to the TLA and blue TLA handle
Drill for 2.7 mm variable locking screws

- Drill using the 2.0 mm Drill Bit and the Universal Variable Angle Drill Guide in either the variable angle or nominal position

- When drilling, the tip of the drill guide should remain fully seated in the hole

- For variable angle, check the position of the drill guide under fluoroscopy

- Use the depth gauge or the calibrations on the nominal end of the drill guide to measure for screw length
Insert 2.7 mm variable angle screws

- Perform screw insertion with the 1.2 Nm Torque Limiting Attachment (TLA). Locking screw insertion can be manual or with power.
- Only initial insertion of the variable angle locking screws may be done with power equipment. Do not lock the screws with power tools.
- Final tightening must be done manually using the 1.2 Nm torque limiting attachment.
- Do not engage the screw head with the plate while inserting with power. Screw engagement and final locking must be done manually with the 1.2 Nm torque limiting attachment and handle.
- Do not use TLA for screw removal

For final tightening, use:

- T8 StarDrive Screwdriver Shaft
- 1.2 Nm Torque Limiting Attachment (TLA)
- Handle for Torque Limiting Attachment (TLA)
Insert additional screws

- Insert additional screws in the metaphysis and shaft of the lateral plate
- 2.7 mm locking screws may only be inserted in the nominal angle
Position medial or extended medial plate

- Medial plates sit slightly dorsal to the intermuscular septum.
- Medial plate “cups” medial epicondyle
- The extended medial plate will wrap around the medial epicondyle
- Distal release of the medial intermuscular septum may be necessary in order to achieve optimal position of the medial plate.

- Metaphyseal screws should reach as far as possible into the bone. Choose a plate position that allows the longest possible screws.

- If necessary, bend the plate to ensure optimal position of the long screws through the articular block.
Preliminary plate fixation

– Secure plate to bone by inserting a 3.5 mm cortex screw through the DCU portion of the elongated Combi hole.

– Do not fully tighten the screw to allow adjustment of plate position.
Insert distal screws

- For the Extended Medial plate, it is recommended to insert the most distal screw first to avoid collision with other screws.
- Careful drilling is necessary, as interference with the screws in the lateral plate is possible.
- In case of interference, stop drilling and use an appropriate length screw or choose a different screw trajectory.
Continue screw insertion

– Continue to insert additional screws in the metaphysis and shaft of the medial plate
Perpendicular plating

- Perpendicular plating is recommended for a fracture that involves a coronal shear fracture
  - To achieve sufficient stability for early mobilization, use the two-plate technique
  - Choose plate lengths that offer sufficient fixation proximal to the fracture line
  - To prevent extensive diaphyseal stress, it is recommended that the medial and posterolateral plates are not the same length.
Position posterolateral plate

The Posterolateral Plate allows screw insertion in a posterior-anterior direction.

The Posterolateral Plate with Lateral Support allows additional screw insertion through the lateral epicondyle in a lateral-medial direction.
Preliminary plate fixation

- Drill and insert a 3.5 mm cortex screw into the DCU section of an elongated Combi hole in the shaft of the plate
- Do not fully tighten the screw to allow adjustment of plate placement
Drill for 2.7 mm metaphyseal screws (optional)

– Drill using the 2.0 mm Drill Bit and the Universal Variable Angle Drill Guide in either the variable angle or nominal position

– When drilling, the tip of the drill guide should remain fully seated in the hole

– For variable angle, check the position of the drill guide under fluoroscopy

- Use the depth gauge or the calibrations on the nominal end of the drill guide to measure for screw length
Insert 2.7 mm metaphyseal screws

- The 2.7 Metaphyseal Screw can be used to pull the plate to the bone
- Use the 1.2 Nm Torque Limiting Attachment (TLA) to insert the screw
  - For **Power** insertion, attach the T8 StarDrive screwdriver shaft to the 1.2 Nm TLA
  - For **Manual** insertion, attach the T8 Screwdriver shaft to the TLA and blue TLA handle
Drill for 2.7 mm variable angle screws

- Drill using the 2.0 mm Drill Bit and the Universal Variable Angle Drill Guide in either the variable angle or nominal position
- When drilling, the tip of the drill guide should remain fully seated in the hole
- For variable angle, check the position of the drill guide under fluoroscopy

- Use the depth gauge or the calibrations on the nominal end of the drill guide to measure for screw length
Insert 2.7 mm variable angle screws

- Use the 1.2 Nm Torque Limiting Attachment (TLA) to insert the 2.7 mm variable angle screws

- Screws can be inserted with power or manually:
  
  - For **Power** insertion, attach the T8 StarDrive screwdriver shaft to the 1.2 Nm TLA
  
  - For **Manual** insertion, attach the T8 Screwdriver shaft to the TLA and blue TLA handle
**Insert 2.7 mm variable angle screws**

- Only initial insertion of the variable angle locking screws may be done with power equipment. Do not lock the screws with power tools.

- Final tightening must be done manually using the 1.2 Nm torque limiting attachment.

- Do not engage the screw head with the plate while inserting with power. Screw engagement and final locking must be done manually with the 1.2 Nm torque limiting attachment.

- Do not use TLA for screw removal

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For final tightening, use:

- T8 StarDrive Screwdriver Shaft
- 1.2 Nm Torque Limiting Attachment (TLA)
- Handle for Torque Limiting Attachment (TLA)
Position medial plate

- Position the medial plate on the medial ridge slightly dorsal to the intermuscular septum. The Extended Medial plate will wrap around the medial condyle.

- Distal release of the medial intermuscular septum may be necessary in order to achieve optimal position of the medial plate.

- Metaphyseal screws should reach as far as possible into the bone. Choose a plate position that allows the longest possible screws. If necessary, bend the metaphyseal part of the plate to ensure optimal position of the long screws through the articular block.
Preliminary plate fixation

- Drill and insert a 3.5 mm cortex screw into the DCU section of an elongated Combi hole in the shaft of the plate
- Do not fully tighten the screw to allow adjustment of plate placement
Insert additional screws

- Drill and insert screws in the metaphysis and shaft
Olecranon Plating
Patient positioning

- Place the patient in either the lateral or the prone position with the elbow flexed over a side rest. Depending on the fracture, use a posterior access up to approximately 5 cm distal from the supracondylar region.

- The supine position with the forearm placed across the chest is also an acceptable position.

Lateral decubitus

Fully prone
Approach

- Make an incision running posteriorily from the supracondylar area to a point 4-5 cm distal to the fracture. The incision may curve toward the ulnar or radial aspect, depending on the exposure necessary.

- For the proximal olecranon plate, the triceps must be split to apply the plate. The olecranon plate can be applied with or without splitting the triceps. For the extra-articular proximal ulna plate, triceps splitting is not necessary.
Reduce fracture

– Reduce the fracture directly or indirectly, depending on the type of fracture. Ensure that the coronoid is properly reduced before fixation.

– Use K-wires for temporary fixation.

– Use the 2.5 mm drill bit to drill a small hole to accommodate the straight tip of the forceps.
Contour plate

– Due to varying patient anatomy, slight bending might be necessary.
– Using bending irons, contour plates as necessary.
- Secure the plate to bone by inserting a 3.5 mm cortex screw in the DCU portion of the elongated LCP Combi hole.

- Do not fully tighten the screw to allow adjustment of plate placement.
Drill for 2.7 mm metaphyseal screw (optional)

- Drill using the 2.0 mm Drill Bit and the Universal Variable Angle Drill Guide in either the variable angle or nominal position

- When using the universal variable angle drill guide, inserting the screw at the nominal angle will ensure the lowest possible profile construct

- When drilling, the tip of the drill guide should remain fully seated in the hole

- For variable angle, check the position of the drill guide under fluoroscopy
Measure for 2.7 mm metaphyseal screws

Use the depth gauge or the calibrations on the nominal end of the drill guide to measure for screw length.
Insert 2.7 mm metaphyseal screws

- The 2.7 Metaphyseal Screw can be used to pull the plate to the bone

- Use the 1.2 Nm Torque Limiting Attachment (TLA) to insert the screw
  - For **Power** insertion, attach the T8 StarDrive screwdriver shaft to the 1.2 Nm TLA
  - For **Manual** insertion, attach the T8 Screwdriver shaft to the TLA and blue TLA handle

T8 StarDrive Screwdriver Shaft

1.2 Nm Torque Limiting Attachment (TLA)

Handle for Torque Limiting Attachment (TLA)
Drill for 2.7 mm variable angle screw

- Drill using the 2.0 mm Drill Bit and the Universal Variable Angle Drill Guide in either the **variable angle** or **nominal position**

- When drilling, the tip of the drill guide should remain fully seated in the hole

- For variable angle, check the position of the drill guide under fluoroscopy
Measure for screw length

- Use the depth gauge or the calibrations on the nominal end of the drill guide to measure for screw length
Insert 2.7 mm variable angle screws

- Use the 1.2 Nm Torque Limiting Attachment (TLA) to insert the variable angle screw
  - For **Power** insertion, attach the T8 StarDrive screwdriver shaft to the 1.2 Nm TLA
  - For **Manual** insertion, attach the T8 Screwdriver shaft to the TLA and blue TLA handle
Insert 2.7 mm variable angle screws

- Only initial insertion of the variable angle locking screws may be done with power equipment. Do not lock the screws with power tools.
- Final tightening must be done manually using the 1.2 Nm torque limiting attachment.
- Do not engage the screw head with the plate while inserting with power. Screw engagement and final locking must be done manually with the 1.2 Nm torque limiting attachment.
- Do not use TLA for screw removal

For final tightening, use:

- T8 StarDrive Screwdriver Shaft
- 1.2 Nm Torque Limiting Attachment (TLA)
- Handle for Torque Limiting Attachment (TLA)
Insert additional screws

- Continue to insert additional screws in the metaphysis and shaft.
Clinical case

- 66 year old male
- Fell rock climbing

Pre-op AP  
Pre-op Lateral
Clinical case

– Olecranon Plate – 4-hole

Post-op AP   Post-op AP distal   Post-op lateral
Thank you for your attention