Building on Success. Variable Angle LCP Locking Technology.
Building on Success

The launch of the Synthes Locking Compression Plate (LCP) System represented an important milestone in patient care. With the LCP system, locking screw technology was merged with conventional plating techniques. Since then, our locking compression plates have delivered successful clinical outcomes for patients all over the world.

As an innovator and market leader in locked plating technology for over ten years, Synthes offers the Variable Angle LCP (VA-LCP) locking technology as another clinical milestone.

**The Evolution of Plating Technology**

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<tr>
<th>Round Screw Hole</th>
<th>Dynamic Compression Plate (DCP) Hole</th>
<th>Limited-Contact Dynamic Compression Plate (LC-DCP) Hole</th>
<th>Less Invasive Stabilization System (LISS) Hole</th>
<th>Locking Compression Plate (LCP) Combi Hole</th>
<th>Variable Angle Locking Compression Plate (VA-LCP) Hole</th>
<th>Variable Angle LCP Combi Hole</th>
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<td>– Cortical or cancellous screws can be angled through the plate</td>
<td>– Screw can be inserted eccentrically for axial compression</td>
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<td>– Round locking hole for fixed angle locking</td>
<td>– Combines dynamic compression with fixed angle locking</td>
<td>– Four columns of threads provide four points of locking between the VA-LCP plate and the variable angle screw, forming a fixed-angle construct at the desired screw angle</td>
<td>– Combines a dynamic compression hole with a variable angle locking screw hole</td>
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<td>– Screw placed in the inclined area of the plate hole will move the underlying bone horizontally in relation to the plate</td>
<td>– Compression from either side of the hole</td>
<td>– Fractional as an internal fixator. Plate is not compressed against the bone, reducing impairment of blood supply</td>
<td>– Threaded hole section for locking screws</td>
<td>– Screws can be angled anywhere within a 30° cone around the central axis of the plate hole</td>
<td>– Provides flexibility of selecting either axial compression or variable angle locking in the same hole</td>
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<td>– Compression in only one direction</td>
<td>– Allows cortical or cancellous screws to be angled through the plate</td>
<td>– Dynamic compression hole for conventional screws</td>
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2.7 mm/3.5 mm Variable Angle LCP Lateral Distal Humerus Plate

2.7 mm/3.5 mm Variable Angle LCP Extended Medial Distal Humerus Plate
**Designed for Stability**

- Four columns of threads provide four points of threaded locking between the plate and screw, offering increased stability.

**Strength Comparison (cantilever bend testing)**

Mechanical tests show that the 2.4 mm Variable Angle LCP construct provides strength at least equivalent to the Synthes standard 2.4 mm LCP construct.1

![Strength Comparison Chart](image)

Synthes 2.4 mm Variable Angle LCP plating has been shown to be 32-60% stronger than similar competitive variable angle plating systems.1

**Benefits of Variable Angle Locking**

Variable angle locking screws provide the ability to create a fixed-angle construct while also allowing the surgeon the freedom to choose the screw trajectory. A fixed-angle construct provides advantages in osteopenic bone or multi-fragmentary fractures.

With Synthes Variable Angle LCP locking screw technology, screw angulation is unlimited within a cone of 30° around the central axis of the plate hole.

Variable angle locking enables optimal screw positioning and offers many benefits, allowing the surgeon to:

- Target fragments with high-quality bone, especially in patients with osteopenic bone
- Adjust screw direction after bending the plate
- Position screw precisely to avoid joint penetration
- Redirect screw position to avoid existing implants, prostheses or independent lag screws
- Adapt screw position to accommodate varied patient anatomy and capture fracture fragments

![Benefits of Variable Angle Locking](image)

1 Mechanical test data on file at Synthes. Cantilever tests performed at nominal angulation using 2.4 mm stainless steel screws.

Note: Bench test results do not necessarily reflect clinical performance.
Focus on Simplicity

Variable angle locking is achieved without the use of bushings, end caps, additional implants, or multiple technique steps. Other variable angle plating systems require thread-tapping of the plate or insertion of end caps, which increase the number of steps in the clinical procedure.

The Synthes platform of Variable Angle LCP plates is based on a common approach to implant design and instrumentation, reducing complexity and ensuring a familiar technique.

Locking is facilitated with a simple technique using the Synthes torque limiting attachment (TLA). The TLA serves an important role; it ensures maximal strength of the plate-screw interface and prevents overtightening of the screw.
Variable Angle Locking Screws

– Threaded, spherical screw head profile
– Rounded shape facilitates various angles in the plate
– Self-retaining StarDrive recess for improved torque transmission and increased resistance to stripping
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Locking Screws

– Threaded conical screw head profile
– For use in variable angle locking holes in the predefined nominal angle

Cortex Screws

– Can be used for traditional compression and fixation

Variable Angle LCP Locking Technology

Variable Angle LCP Hole

– Four columns of threads in locking hole provide four points of locking between the VA-LCP plate and the variable angle locking screw, forming a fixed-angle construct at the desired screw angle

Variable Angle LCP Combi Hole

– Many of the variable angle plates feature a variable angle Combi hole that combines a dynamic compression hole with a variable angle locking screw hole. This provides the flexibility of selecting either axial compression or variable angle locking in the same hole

Variable Angle LCP Elongated Combi Hole

– Elongated Combi hole aids in reduction and plate positioning, providing more versatility for the surgeon

Variable Angle LCP Locking Holes accept:

Variable Angle LCP Curved Condylar Plate
Quality Instruments for Performance

- Cone-shaped drill guides feature a compact design and allow quick alignment to the plate
- Locking is facilitated with a simple technique using the Synthes torque limiting attachment (TLA)
- Compression forceps in the 2.4 mm/2.7 mm Forefoot/Midfoot System provide a streamlined method of compression
- Plate reduction wires with stop temporarily hold plate to the bone
- Reduction forceps in the 2.7 mm/3.5 mm VA-LCP Elbow System aid in reduction
Low-profile fixation

- Recess for screwheads minimizes screw prominence and creates a low-profile construct
- Rounded plate profile helps reduce soft tissue irritation
- 2.7 mm Metaphyseal Screws are an alternative to cortex screws with a low-profile head

Expanded Options

Most Synthes Variable Angle LCP plates are available in both stainless steel and titanium alloy.
Wide Range of Applications

With a portfolio of more than 270 different variable angle plates, Synthes offers solutions for a range of applications:

- Clavicle
- Distal humerus
- Olecranon
- Volar and dorsal distal radius
- Hand
- Distal femur
- Proximal tibia
- Foot

Variable Angle LCP screws are available in 2.4 mm, 2.7 mm, and 5.0 mm sizes.

Quality Manufacturing

Synthes manufacturing facilities maintain high standards through modern production methods and high-tech machinery while following environmental, safety and compliance regulations.