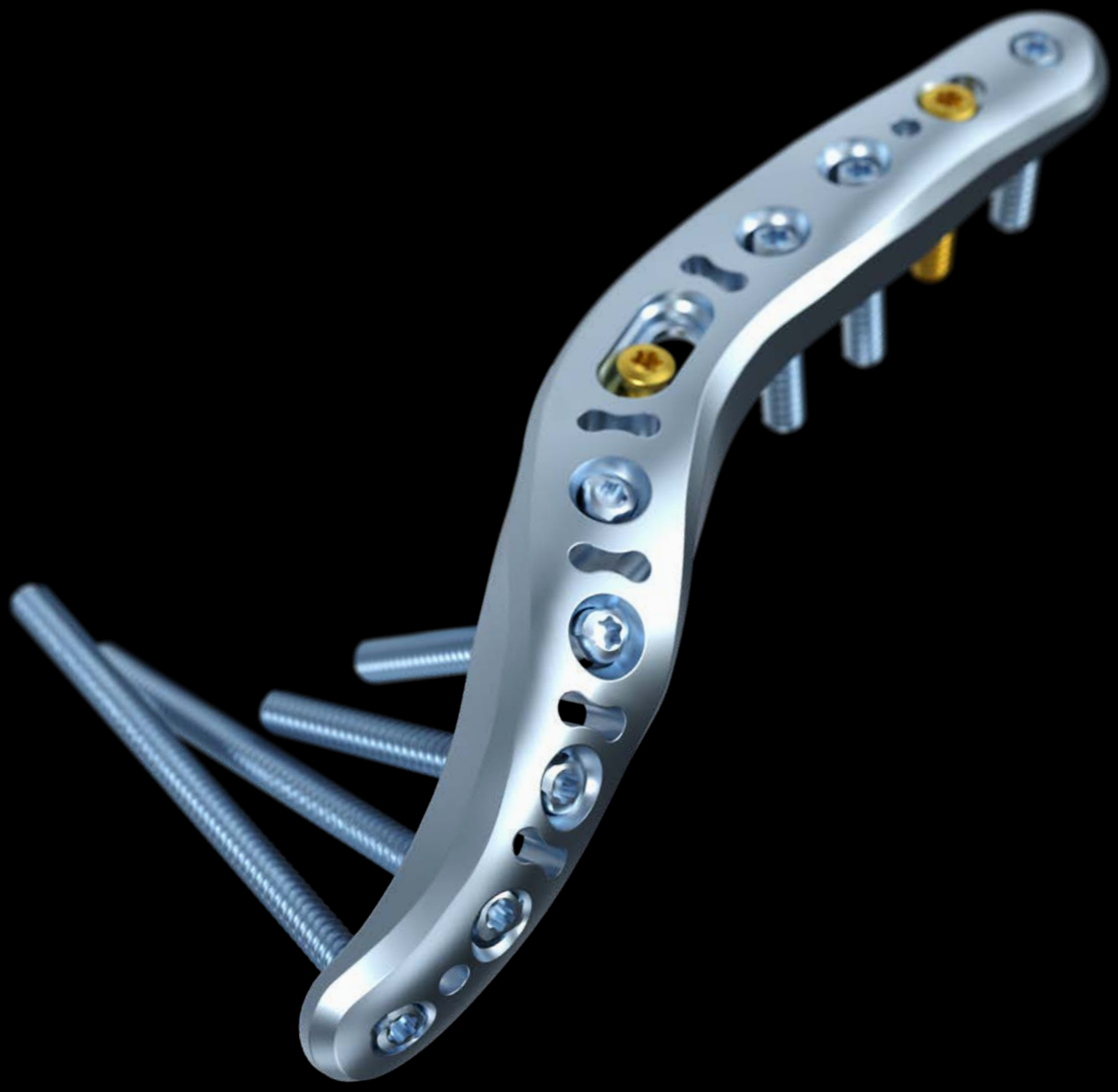
medartis

PRECISION IN FIXATION

PRODUCT INFORMATION

Elbow System 2.0, 2.8



APTUS Elbow

Contents

For further information regarding the APTUS product line visit www.medartisusa.com.

APTUS Elbow. Hidden Expertise.

The elbow is a complex joint, essential for upper limb function and daily activities. Its intricate anatomy and the need for precise movement make fractures in this area particularly challenging to treat.

The APTUS Elbow portfolio is designed to address the challenges of elbow fractures treatment. With its anatomical designs and innovative features, the system provides precise fixation and high stability for both simple and complex fractures.

The most common fractures requiring surgical intervention include proximal ulna fractures (olecranon and coronoid), radial head fractures, and distal humerus fractures, each presenting unique treatment considerations.

Proximal ulna fractures present unique challenges due to the triceps tendon insertion and the pulling forces of the triceps, which distract the fractures fragments. The APTUS Elbow system offers a range of solutions tailored to fracture patterns, bone quality and surgeon's preference. For simple fractures with interfragmentary support or osteotomies, Medartis has developed the tension plate. This low-profile solution offers biomechanical advantages over traditional tension band wiring (TBW).[1] The double plates allow for the effective treatment of more complex olecranon fractures by reaching proximal fragments as well as the coronoid, while the lateral plate positioning may allow for muscle coverage of the plates. Finally, the dorsal olecranon plates feature an excellent anatomical fit and a specific screw placement option — called coronoid cluster — for an enhanced coronoid support.

Coronoid fractures, though relatively uncommon, are crucial to recognize as they impact the stability of the ulnohumeral joint.[2] Given the importance of this structure, the Medartis coronoid plates feature a plate arm that buttresses the coronoid process and offers an option for indirect fixation of the medial collateral ligament, addressing both bony and ligamentous stability.

Radial head fractures are common in elbow trauma and can significantly affect joint function.[3] Displaced or multifragmentary fractures that can be anatomically reconstructed, may be treated with ORIF. One of the challenges in managing these fractures is selecting the right implant and identifying the 'safe zone' to avoid impingement. Thanks to their low-profile design and optimized size, our radial head plates can be positioned within this area, providing a buttressing effect and enhancing radial head stability by allowing subchondral screw placement.

The complex anatomy of the bone and the proximity to neurovascular structures can make the management of distal humerus fractures challenging. The Medartis solutions are designed with high precision to consider the anatomy of the patient. The medial plate has a recess on the distal end which lowers the risk of contact between the ulnar nerve and the plate. The posterolateral plate features preangled screw holes on the distal end to capture distal shear fragments of the capitulum. The lateral's twisted plate shape and rounded edges reduce the risk of soft tissue irritation. Both plates can be positioned in pairs with the medial plate in a 90° or 180° configuration.

All Medartis elbow plates are developed according to our design philosophy, which combines cutting-edge development, meticulous engineering, and advanced manufacturing techniques.

In addition, as a support or individual treatment option, CCS and headedCCS screws offer exceptional compression for fracture fixation delivering precise insertion, and enhanced stability.

The aim of ORIF treatment is secure fixation allowing early mobilization. Given the complexity of elbow fractures, anatomically designed implants — including low-profile, contoured plates and optimized screw configurations — are essential for stable fixation while minimizing soft tissue irritation in even the most challenging cases.

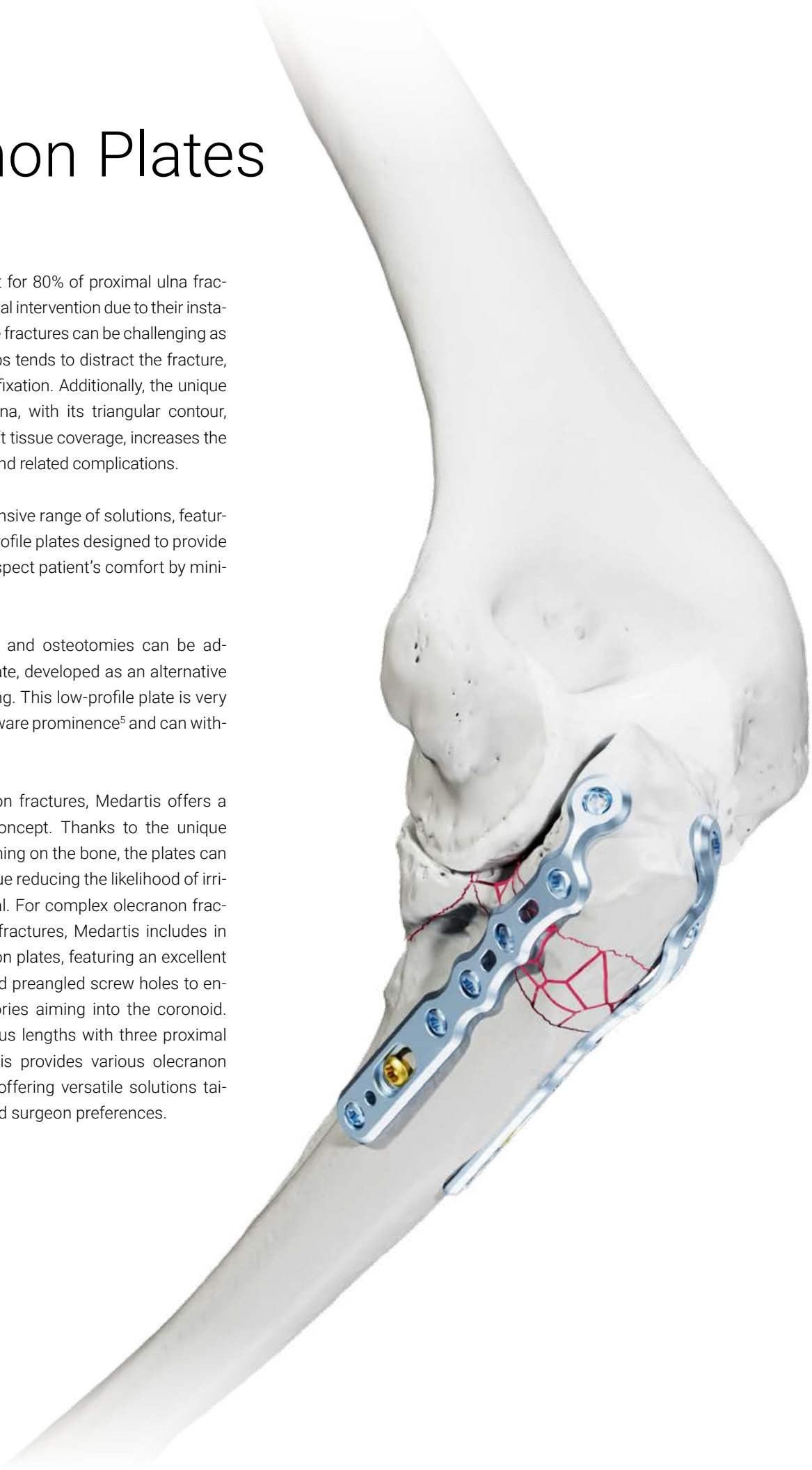
Olecranon Plates

Olecranon fractures account for 80% of proximal ulna fractures and often require surgical intervention due to their instability.[4] The treatment of these fractures can be challenging as the pulling force of the triceps tends to distract the fracture, complicating reduction and fixation. Additionally, the unique anatomy of the proximal ulna, with its triangular contour, curved shape and limited soft tissue coverage, increases the risk of implant prominence and related complications.

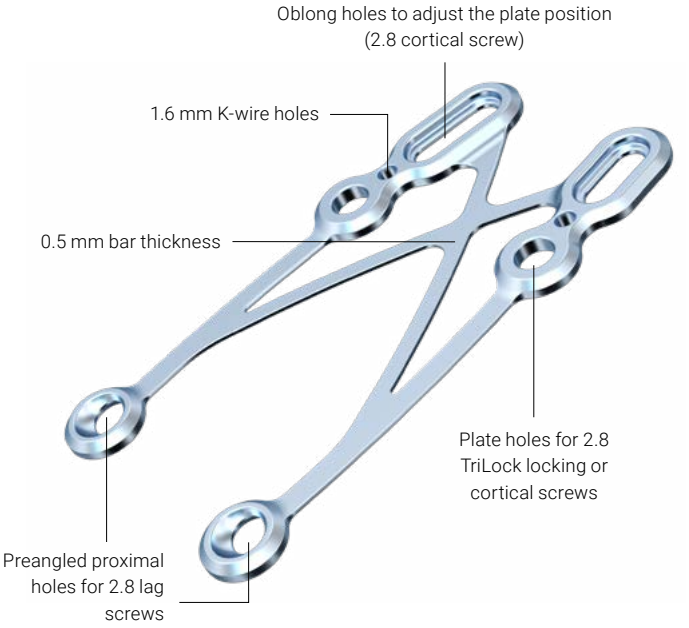
Medartis offers a comprehensive range of solutions, featuring anatomical fit and low-profile plates designed to provide a stable construct and to respect patient's comfort by minimizing soft tissue irritation.

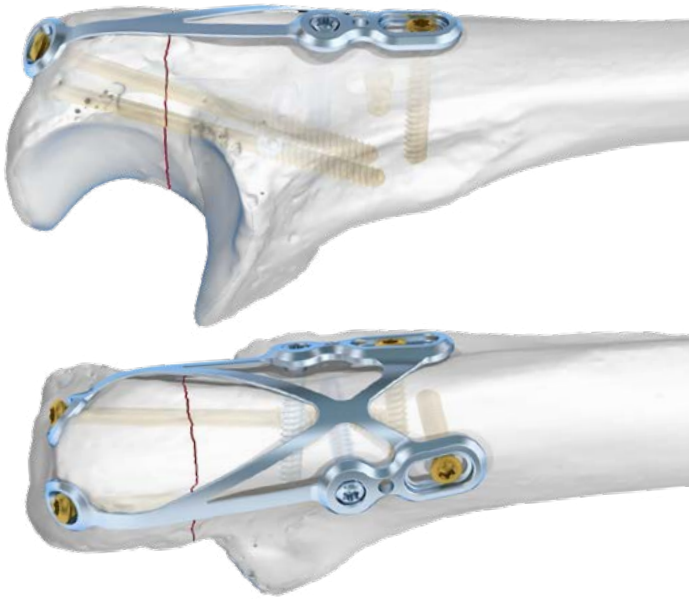
Simple olecranon fractures and osteotomies can be addressed with our tension plate, developed as an alternative to classic tension band wiring. This low-profile plate is very thin resulting in limited hardware prominence[5] and can withstand tensile forces.

For more complex olecranon fractures, Medartis offers a double plating treatment concept. Thanks to the unique plate design and the positioning on the bone, the plates can be covered with muscle tissue reducing the likelihood of irritation and hardware removal. For complex olecranon fractures, including Monteggia fractures, Medartis includes in the portfolio dorsal olecranon plates, featuring an excellent anatomical fit, and dedicated preangled screw holes to enable specific screw trajectories aiming into the coronoid. Plates are available in various lengths with three proximal end configurations. Medartis provides various olecranon fracture treatment options offering versatile solutions tailored to fracture patterns and surgeon preferences.



2.8 TriLock Tension Plate





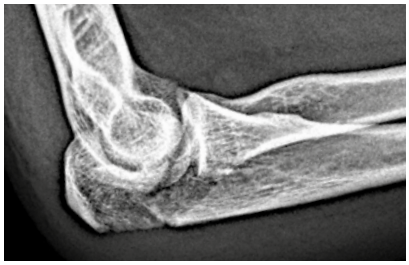
The preangled proximal lag screw holes enable to apply uniform compression across the fracture, allowing early mobilization.[5]

Low implant profile and a smooth surface, with no protruding metal knots.

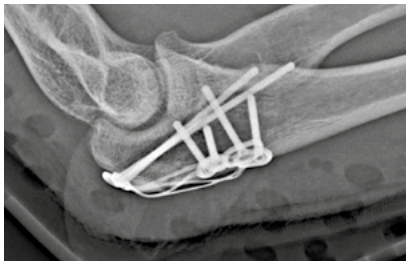
The four distal screw holes ensure increased bone purchase even in osteoporotic bone which reduces the risk of fracture dislocation.[5]

Low bar thickness and the ease of bending ensure exceptional fit to the bone.

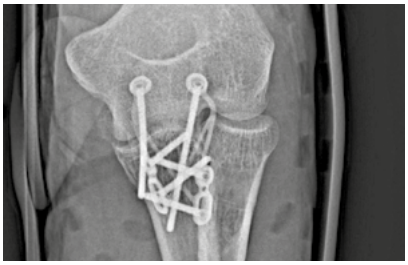
Simple olecranon fracture



Preoperative X-ray.



Intraoperative lateral X-ray.
Subchondral buttressing by cross-fracture lag screws.



Intraoperative AP X-ray.
Fixation with tension plate.

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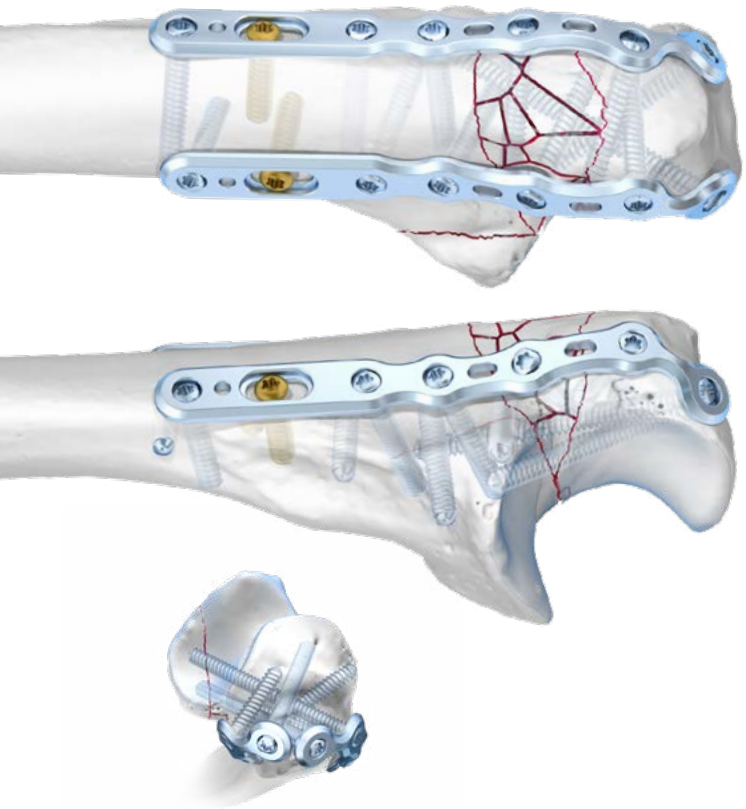
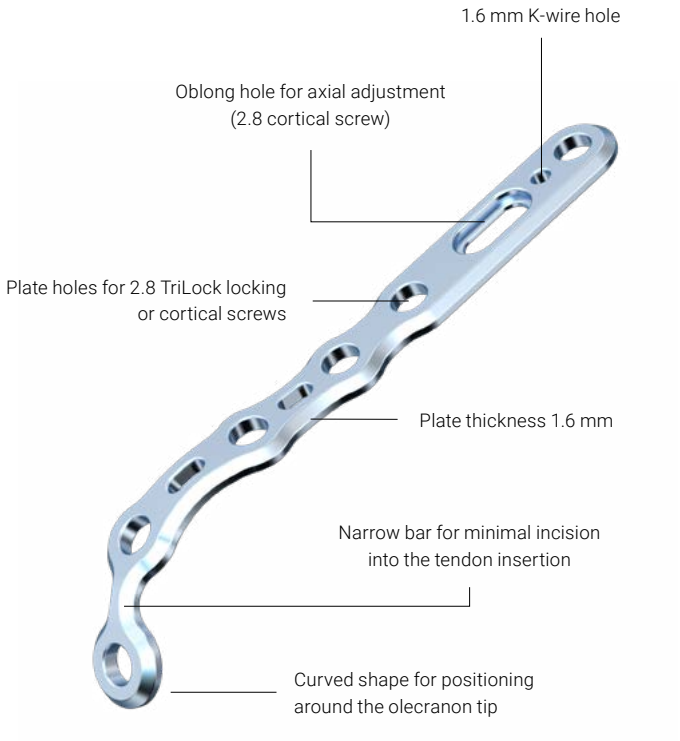
2.8 TriLock Olecranon Double Plates





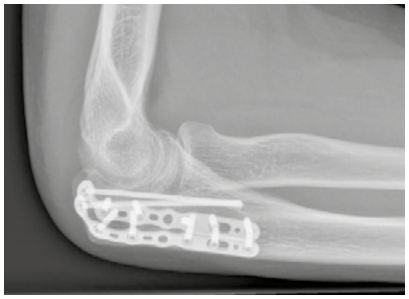
More fixation options and stability even in small proximal fragments thanks to 2.8 screws and multiple screw placement options.[6]

Minimal incision into the triceps tendon insertion thanks to the narrow proximal bar.

Lateral plate positioning and low profile allow for reduced occurrence of wound healing problems and the likelihood of hardware removal.[6,7,8]

Complex Proximal Ulna Fracture

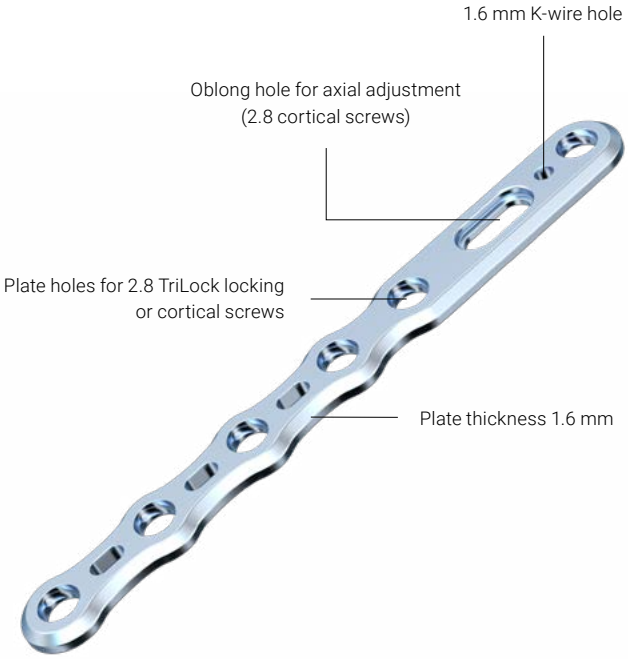
Preoperative X-ray.

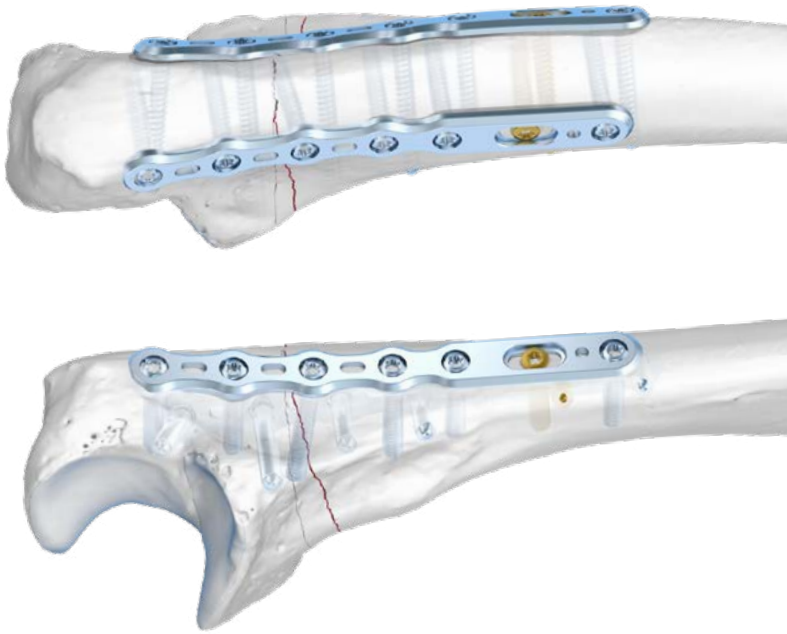


Postoperative lateral X-ray (6 months).
Fixation with double plates and homerun screws.

Postoperative AP X-ray (6 months).
Patient is pain free with full range of motion
(Mayo Elbow Performance Score (MEPS) 100).

Clinical case published with kind permission of: A. Rashid, London, UK





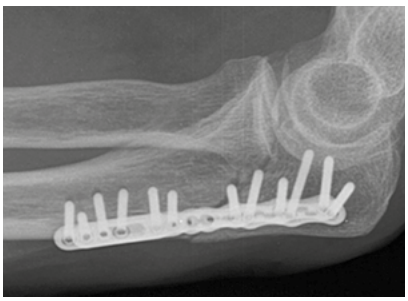
More fixation options and stability thanks to 2.8 screws and multiple screw placement options.[6]

No invasion of the triceps tendon insertion.

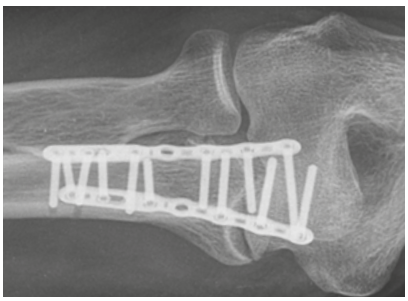
Lateral plate positioning and low profile allow for reduced occurrence of wound healing problems and the likelihood of hardware removal.[6,7,8]

Distal Oblique Olecranon Fracture

Preoperative X-ray.



Intraoperative lateral X-ray.
Fixation with straight olecranon double plates resulting in reduced injury of the triceps tendon.



Intraoperative AP X-ray.

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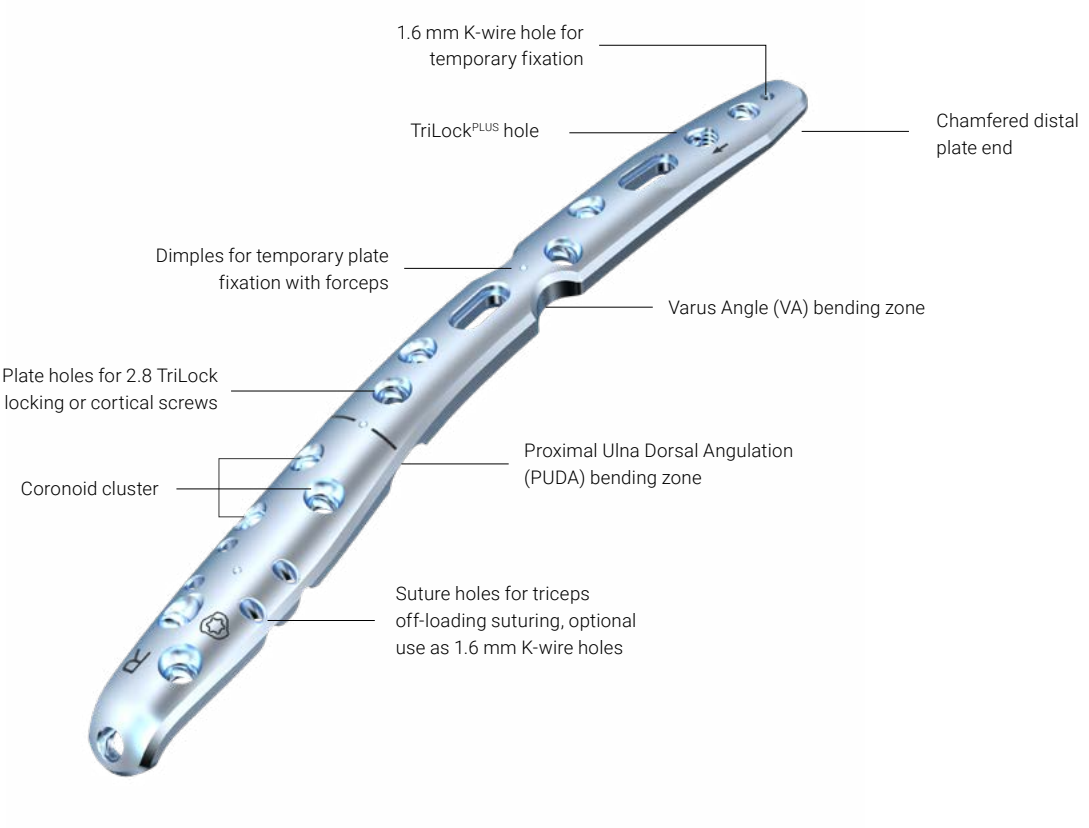
2.8 TriLock Dorsal Olecranon Plates



Three proximal plate ends, left and right versions, and various lengths: 22 plates to allow for individual plate selection according to fracture pattern and surgeon preference.

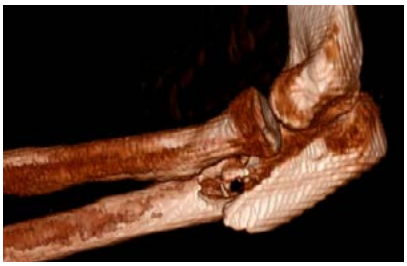
The standard plate type allows for placement of one fracture-crossing screw in the proximal end without compromising the triceps insertion area.

Fixation of coronoid fragments by placing screws with specific trajectories into the coronoid.

The anatomical plate design minimizes the need of plate bending.*

* Feedback from 65 surgeries: 98.5% found anatomical fit "good" or "very good". Bending was needed in 5/65 surgeries (7.7%)

Complex Proximal Ulna Fracture



Preoperative CT image.

Postoperative AP X-ray.
Fixation with dorsal olecranon standard plate.

Postoperative lateral X-ray.

Clinical case published with the kind permission of: K. Mader, Hamburg, Germany

Standard

The standard plate option is designed to be positioned without affecting the triceps tendon insertion. It allows placement of one fracture-crossing screw.

Medium

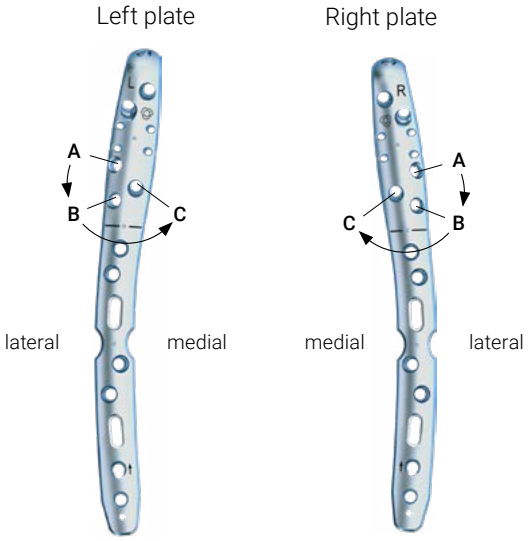
The medium plate option is designed to be positioned on top of the triceps tendon. It allows insertion of up to two fracture-crossing screws.

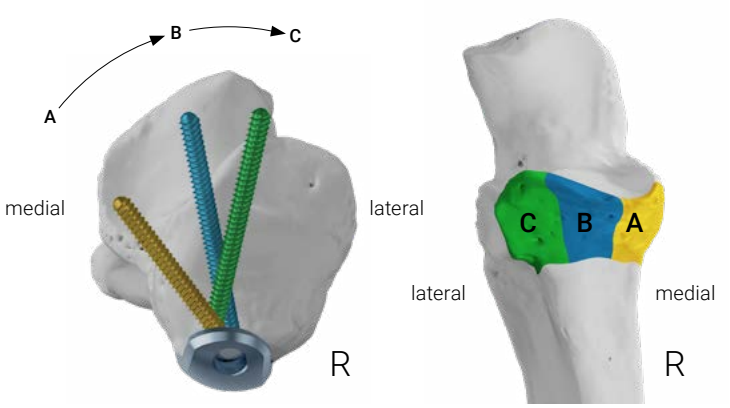
Extended

The extended plate option is designed to be positioned under the triceps. Plate placement requires splitting of the triceps tendon. This option allows insertion for a maximum of three screws (up to two fracture-crossing screws) in the proximal area.

Coronoid Cluster

The Medartis dorsal olecranon plates were designed with specific attention to stabilization of the coronoid. The coronoid cluster offers three preangled screw holes to enable specific screw trajectories aiming into the coronoid.





Screw A: Crosses from the lateral plate rim to the medial side of the coronoid (sublime tubercle)

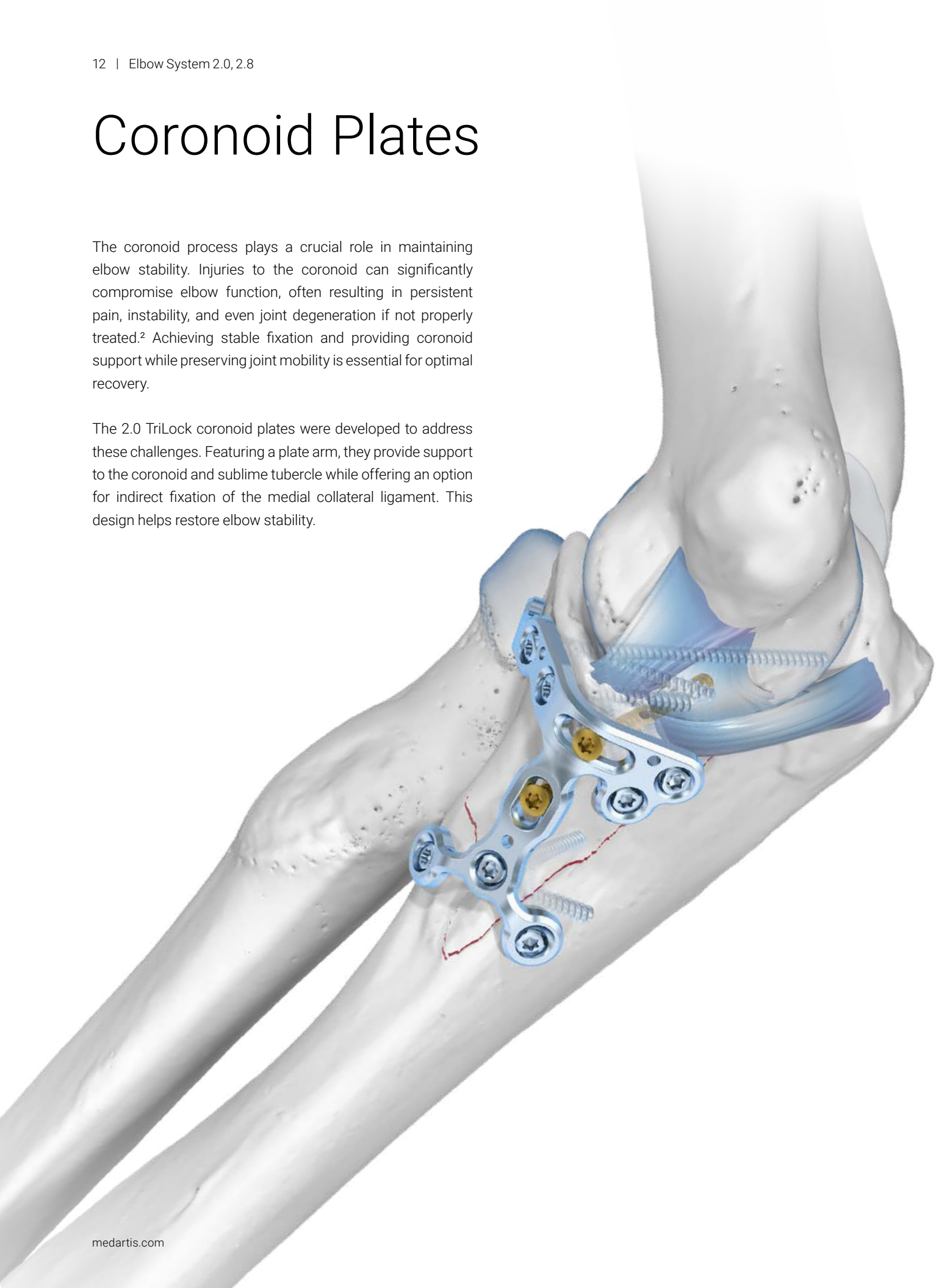
Screw B: Crosses from the lateral plate rim to the center of the coronoid

Screw C: Crosses from the medial plate rim to the lateral side of the coronoid

Coronoid Plates

The coronoid process plays a crucial role in maintaining elbow stability. Injuries to the coronoid can significantly compromise elbow function, often resulting in persistent pain, instability, and even joint degeneration if not properly treated.[2] Achieving stable fixation and providing coronoid support while preserving joint mobility is essential for optimal recovery.

The 2.0 TriLock coronoid plates were developed to address these challenges. Featuring a plate arm, they provide support to the coronoid and sublime tubercle while offering an option for indirect fixation of the medial collateral ligament. This design helps restore elbow stability.



2.0 TriLock Coronoid Plate

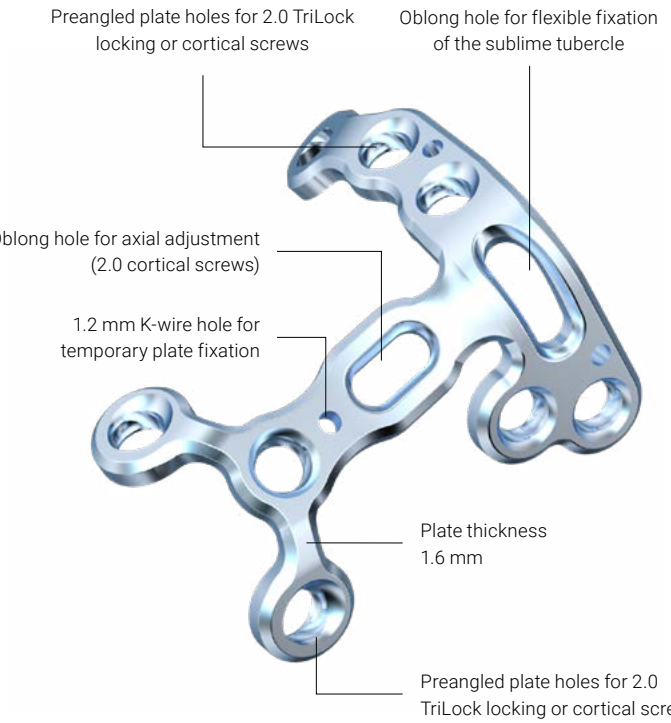


Plate arm with preangled screw holes, which allows for subchondral screw placement and buttressing of the coronoid, helping to restore elbow stability.

Oblong hole in the proximal plate area enables fixation of the sublime tubercle and provides indirect fixation of the anterior bundle of the medial collateral ligament through cortical screw placement.

Anatomical plate design ensures suitability for both the anterior and anteromedial variants of the Hotchkiss approach.

Comminuted Coronoid Fracture

Preoperative CT image.

Intraoperative X-ray.
Fixation with coronoid plate and a 2.2 SpeedTip CCS.

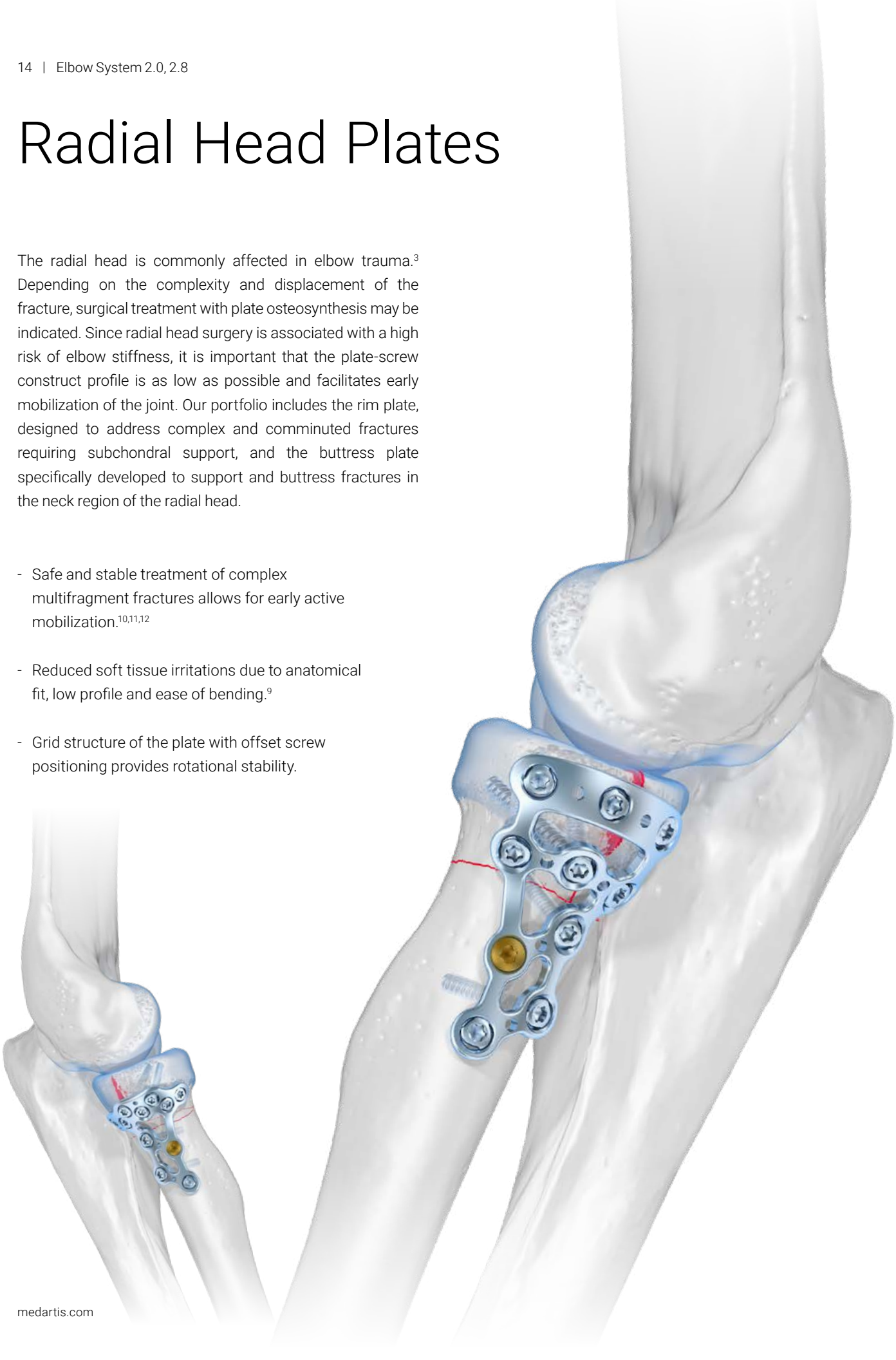
Postoperative X-ray (5 months).
Patient is pain free with full range of motion.

Clinical case published with kind permission of: A. Rashid, London, UK

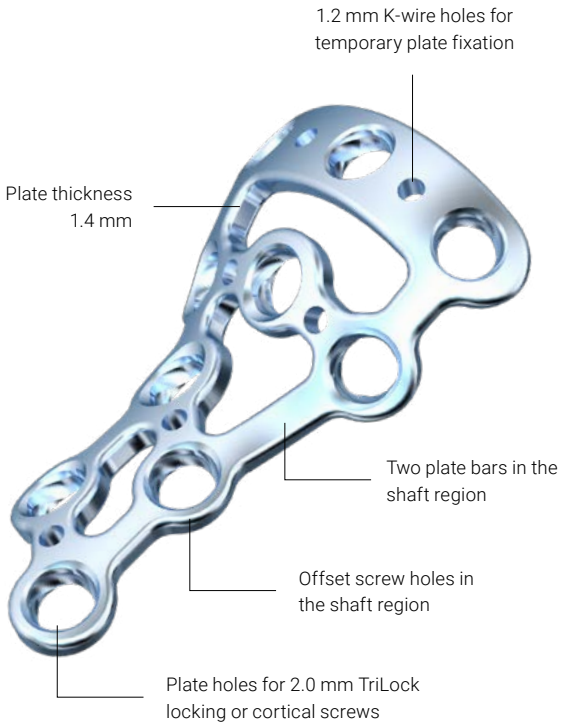
Radial Head Plates

The radial head is commonly affected in elbow trauma.[3] Depending on the complexity and displacement of the fracture, surgical treatment with plate osteosynthesis may be indicated. Since radial head surgery is associated with a high risk of elbow stiffness, it is important that the plate-screw construct profile is as low as possible and facilitates early mobilization of the joint. Our portfolio includes the rim plate, designed to address complex and comminuted fractures requiring subchondral support, and the buttress plate specifically developed to support and buttress fractures in the neck region of the radial head.

- Safe and stable treatment of complex multifragment fractures allows for early active mobilization.[10,11,12]
- Reduced soft tissue irritations due to anatomical fit, low profile and ease of bending.[9]
- Grid structure of the plate with offset screw positioning provides rotational stability.



2.0 TriLock Rim Plate



A secure fit to the bone while addressing the 'safe zone' and minimizing the risk of cartilage damage thanks to an optimized plate size and design.

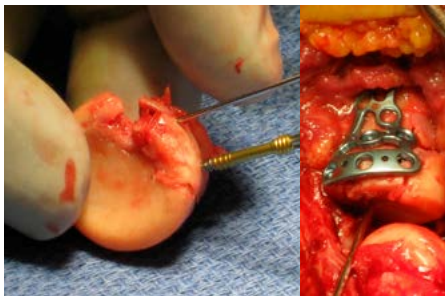
Plate geometry allows for subchondral screw placement.

Positioning close to the rim of the joint surface of the radial head and underneath the annular ligament.

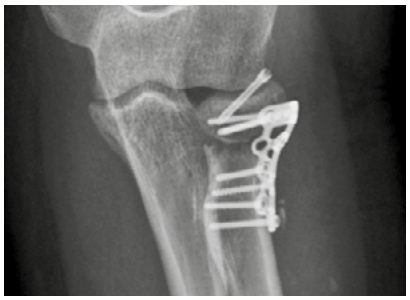
Enhanced support of the radial head by two proximal rows of screw holes.

Multifragment radial head and radial neck fracture

Preoperative X-ray.



Intraoperative pictures.
Left: Fixation of the fragments with a 2.2 SpeedTip CCS.
Right: Refixation of the radial head with a rim plate.



Postoperative X-ray.

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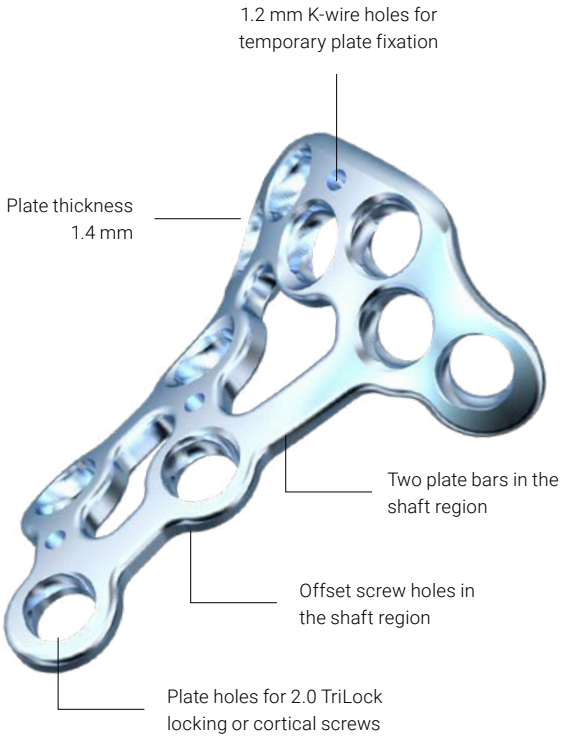
2.0 TriLock Buttress Plate



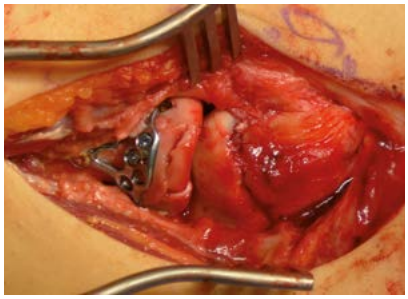
Positioning is distal to the radioulnar joint surface and the annular ligament.

Plate geometry makes it particularly suitable for fractures with defects in the neck region.[11]

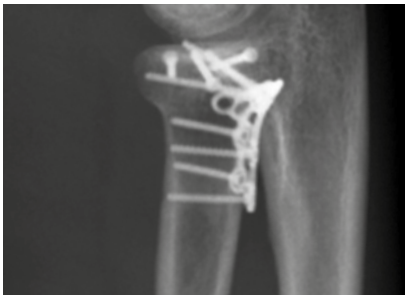
Minimized interference with soft tissues by allowing positioning of the plate distally to the radioulnar joint surface and the annular ligament.

Multifragment radial head and radial neck fracture

Preoperative CT image.
Mason type 3 fracture with avulsion of the radial ligamentous apparatus.



Fixation with 2.2 SpeedTip CCS and radial head buttress plate.



Intraoperative X-ray.

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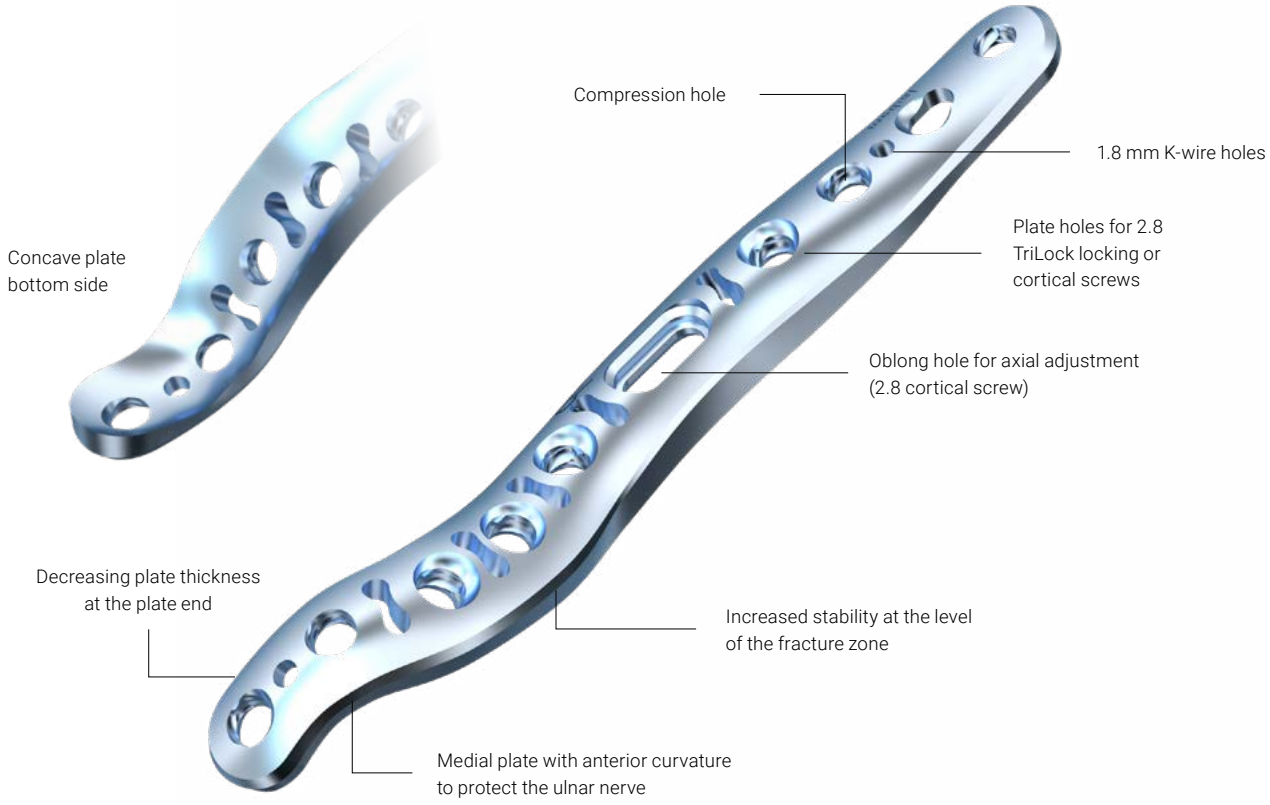
Distal Humerus Plates

Distal humerus fractures often result in significant elbow instability, and their treatment is particularly challenging due to the bone's intricate anatomy and the proximity of neurovascular structures. Achieving stable fixation is crucial for early mobilization which helps prevent stiffness.[13]

The APTUS Elbow portfolio includes solutions with pre-angled screw holes, rounded edges, and a great anatomical fit based on extensive studies for improved compatibility.[14] The medial plate is shaped to reduce the risk of ulnar nerve irritation, while the lateral plate, with its rounded edges, minimizes soft tissue irritation. The posterolateral plate, featuring preangled screw holes, provides stable fixation of the capitulum. These design elements enhance construct stability, considering the patient's anatomy.

2.8 TriLock Distal Humerus Medial Plate



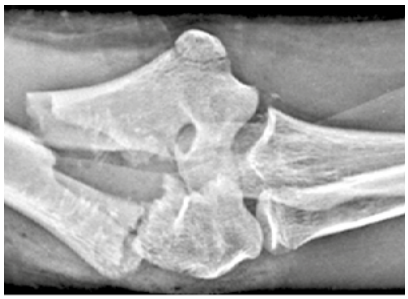
Reduced protrusion over the medial epicondyle due to concave milling/plate shape.[14]

Lowered risk of ulnar nerve contact with the plate, thanks to a slight curvature in the anterior-distal plate end.

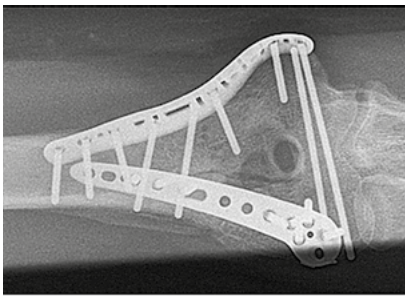
Reduced peak stresses in the humerus shaft thanks to a thinner proximal end and carefully rounded plate edges.

Anatomical fit allows the plate to serve as a reduction frame in complex cases, supporting better alignment.

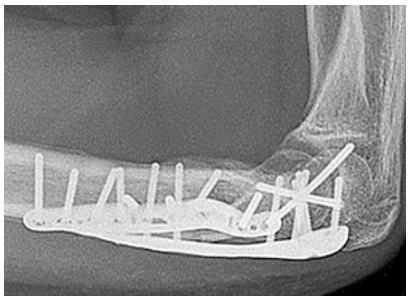
Distal Humerus Fracture (90° Configuration)



Preoperative X-ray.
Fracture type AO C2.



Intraoperative AP X-ray .
Treatment with posterolateral and medial plate.



Intraoperative lateral X-ray.

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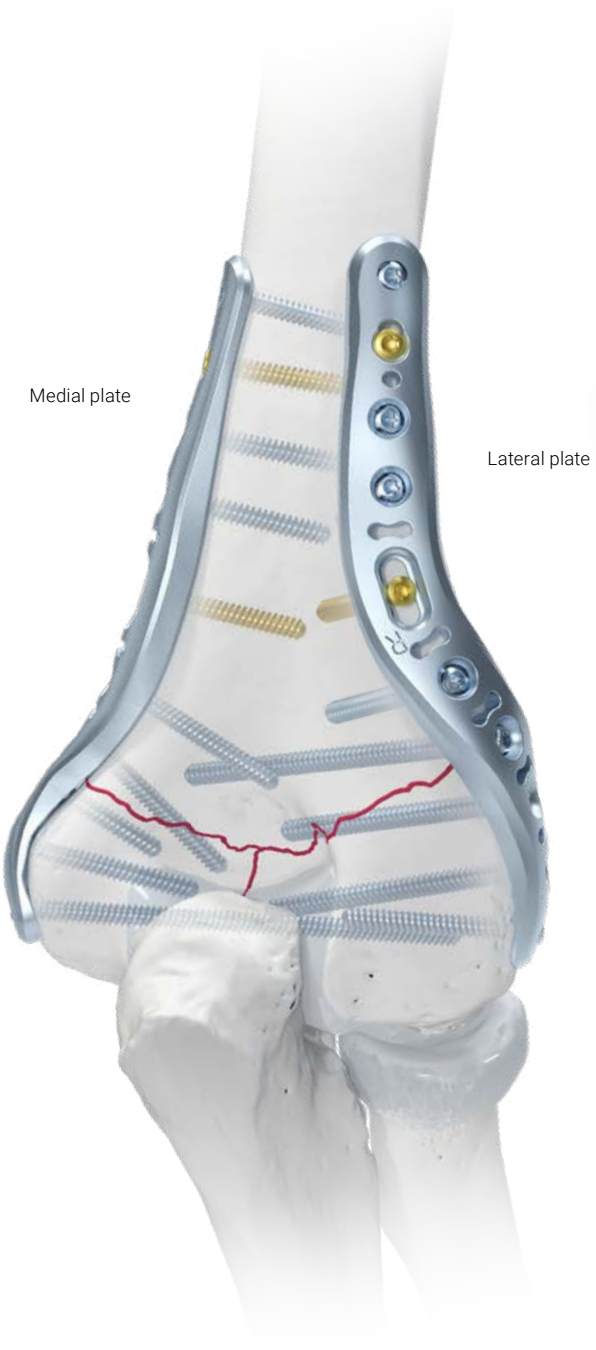
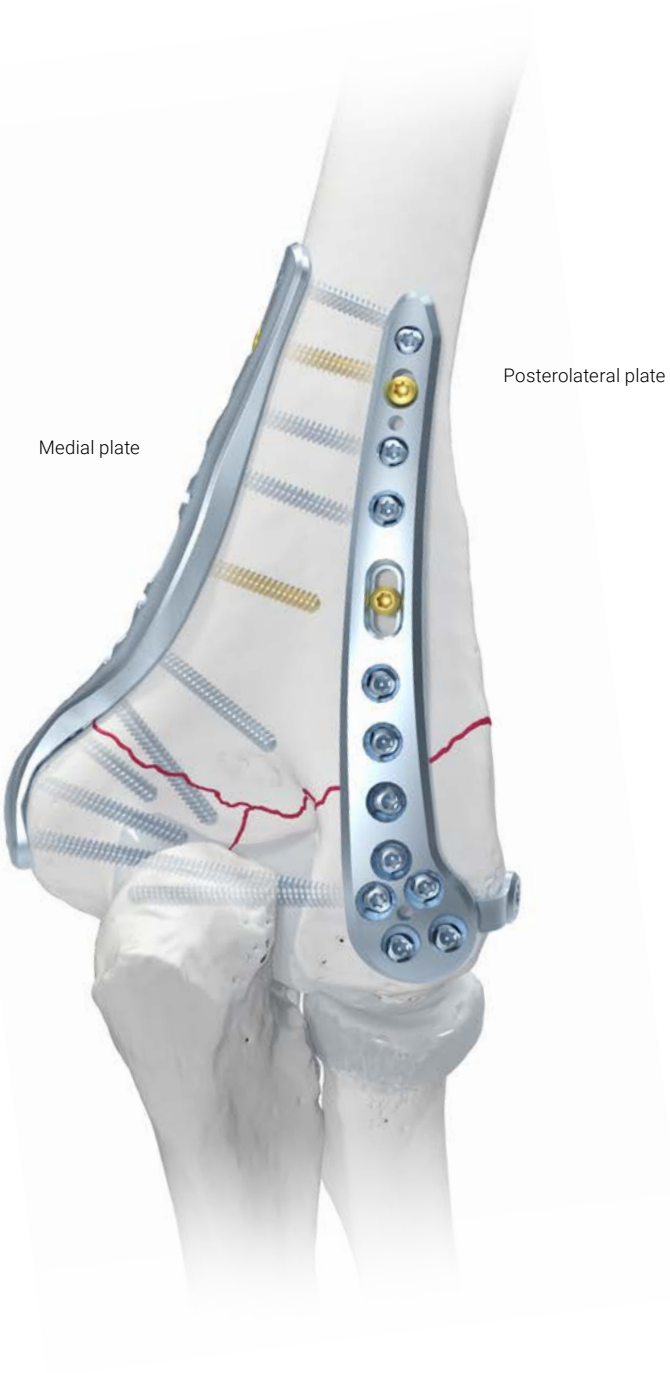
180° plate configuration



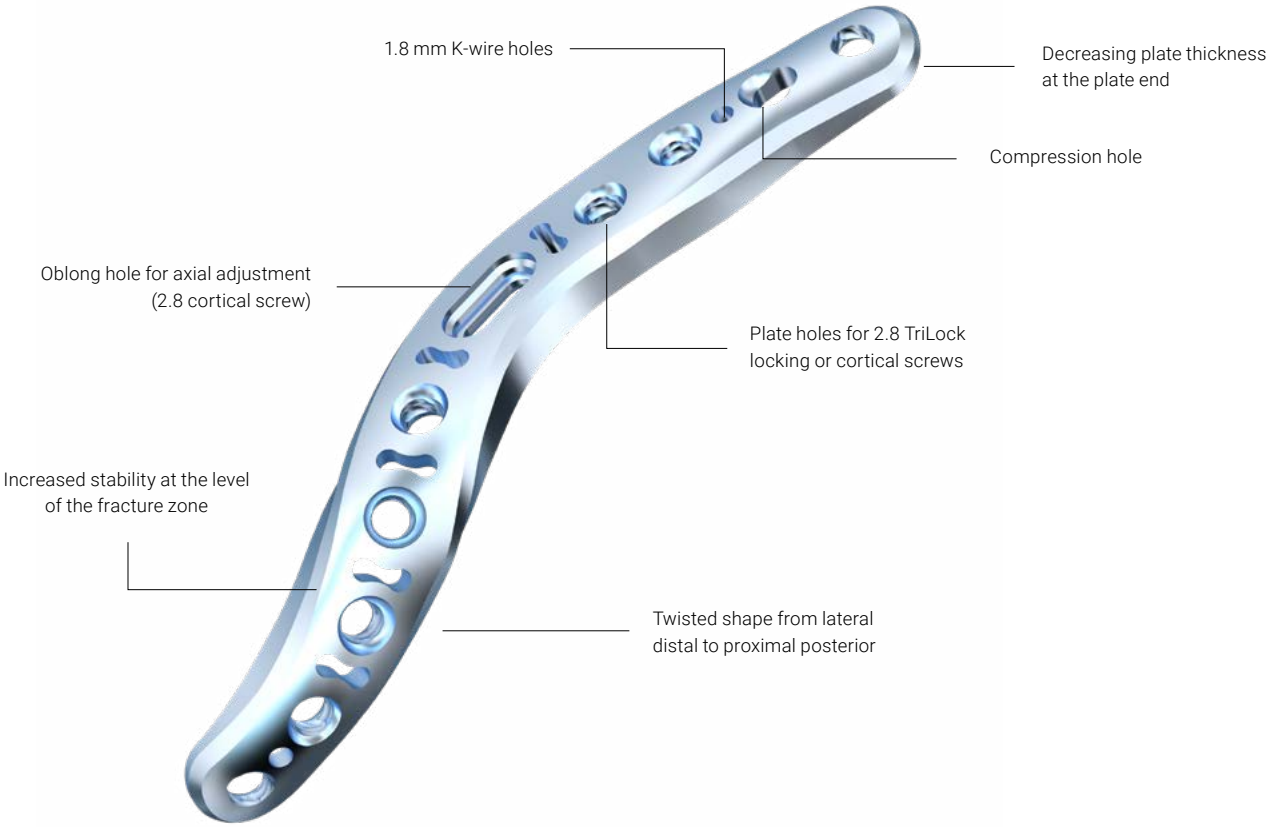
90° plate configuration



Medial plate supports both 90° and 180° treatment concepts, with compatibility for lateral and posterolateral plates.

In both, 90° and 180° configuration, proximal screws can be placed bicortically.

2.8 TriLock Distal Humerus Lateral Plate



Twisted plate shape (distal lateral to proximal posterior) helps reduce soft tissue detachment in the proximal area, potentially minimizing postoperative soft tissue irritation.[15]

Possibility of compression in the shaft area provided by a compression hole.

Distal Humerus Fracture (180° Configuration)

Preoperative X-ray.
Fracture type AO C3.

Postoperative lateral X-ray .
Fixation with medial and lateral plate, osteotomy sparing approach.

Postoperative AP X-ray .

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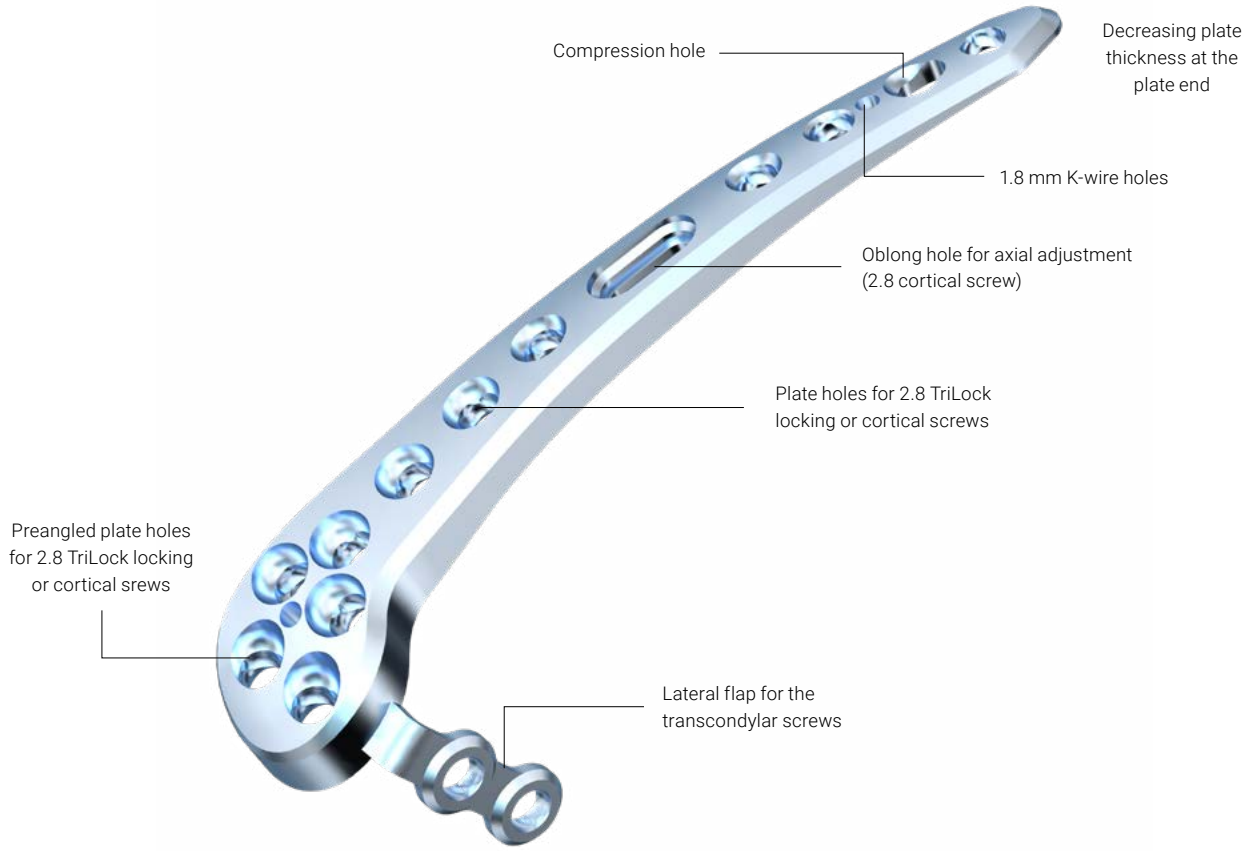
2.8 TriLock Distal Humerus Posterolateral Plate

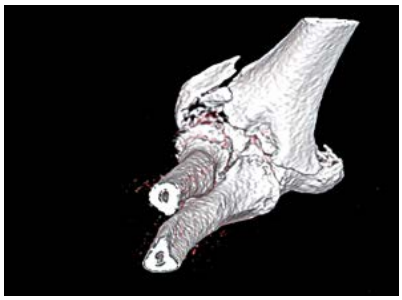


Improved fixation of very distal shear fragments of the capitulum, enabled by two preangled screw holes in the distal plate end.

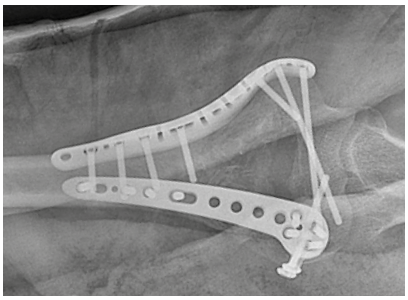
Possibility of compression in the shaft area provided by a compression hole.

Additional construct stability with up to two transcondylar screws, thanks to the plate design with a flap.

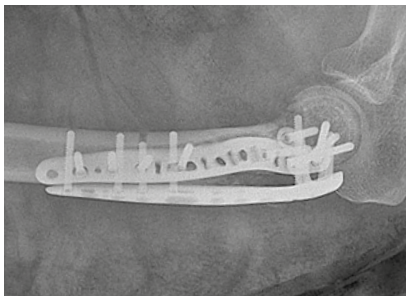
Distal Humerus Fracture (90° Configuration)



Preoperative CT image.



Postoperative AP X-ray.
Treatment with posterolateral and medial plate, lateral transcondylar screw connected via the flap with posterolateral plate.



Postoperative lateral X-ray.

Clinical case published with kind permission of: W. Pichler, Graz, Austria

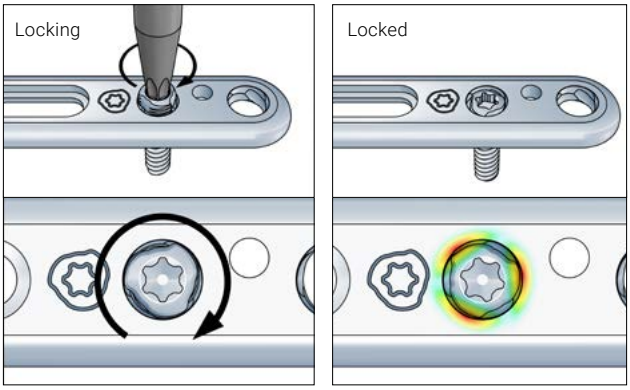
Technology

TriLock locking technology

TriLock is a multidirectional and angular stable locking technology.

Locking is achieved through:

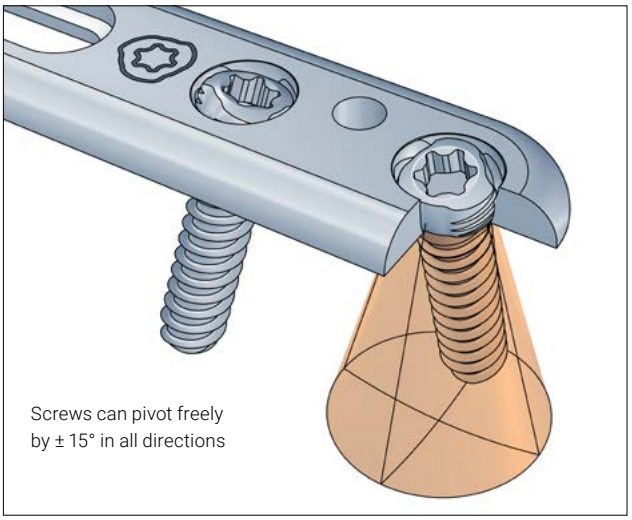
- Spherical three-point wedge locking, through radial bracing of the screw head in the plate without additional components



Spherical three-point wedge locking

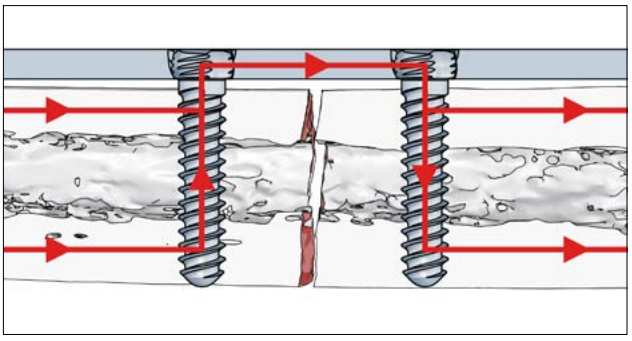
This locking technology enables:

- ± 15° multidirectional screw angulation to position screws based on the fracture pattern
- Re-locking a screw in the same plate hole at individual angles up to three times
- Fine tuning of fragments positioning due to the threadless locking technology
- No cold welding between plate and screws
- Flexibility in screw type selection based on indication and fracture — the same hole can be used for either locking or non-locking screws

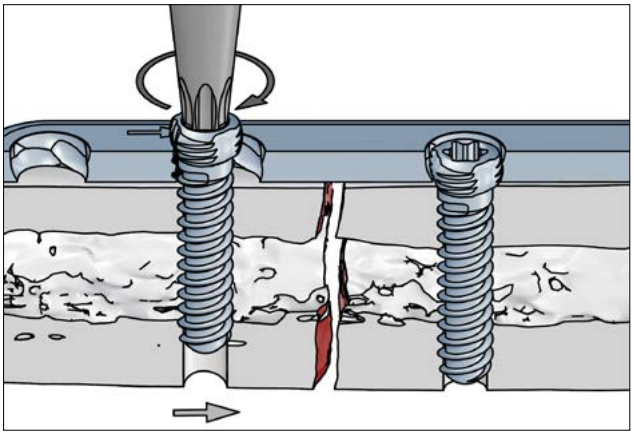


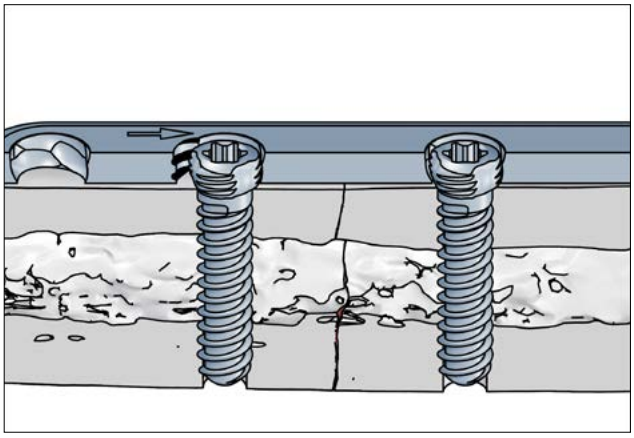
Internal fixator principle

Stable plate-screw construct allows for the bridging of unstable zones



TriLock^{PLUS}

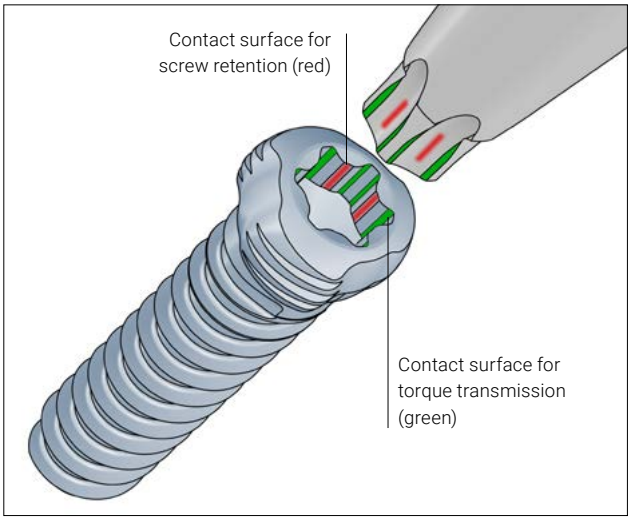


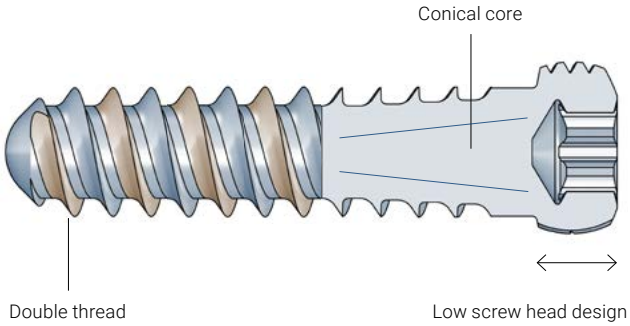


TriLock^{PLUS} screw holes offer the advantage of locking and compression in one step

Screw Features

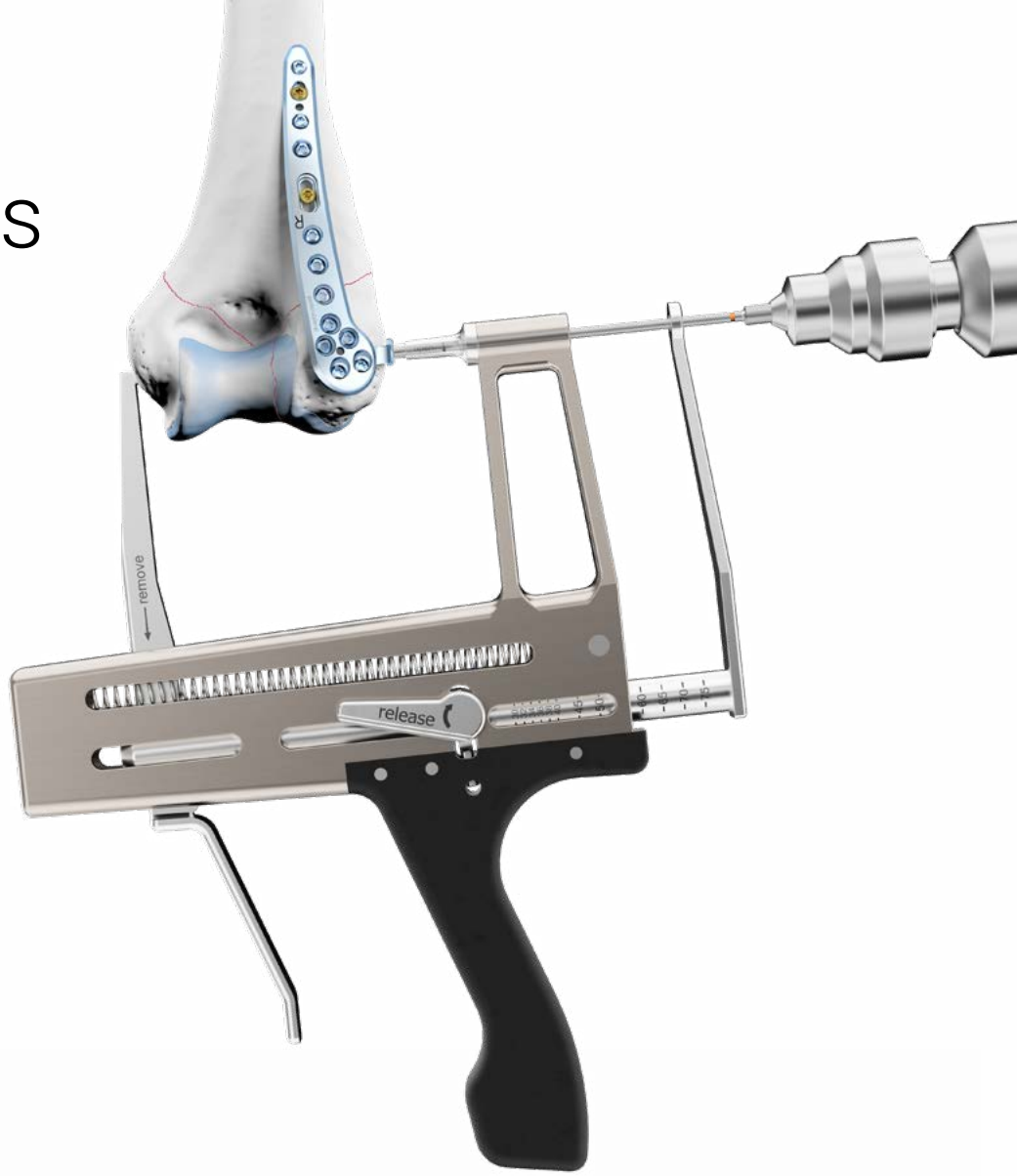
- HexaDrive screw head design:
  - HexaDrive interface with self-holding properties between screw and screwdriver
  - Increased torque transmission
  - Simplified screw pick-up due to the self-holding technology
- Atraumatic screw tip provides soft tissue protection when inserting screws bicortically
- Soft tissue protection due to smooth screw head design
- Double-threaded screws reduce screw insertion time
- Increased torsional, bending and shear stability due to conical core
- Precision cut thread profile for sharpness and self-tapping properties





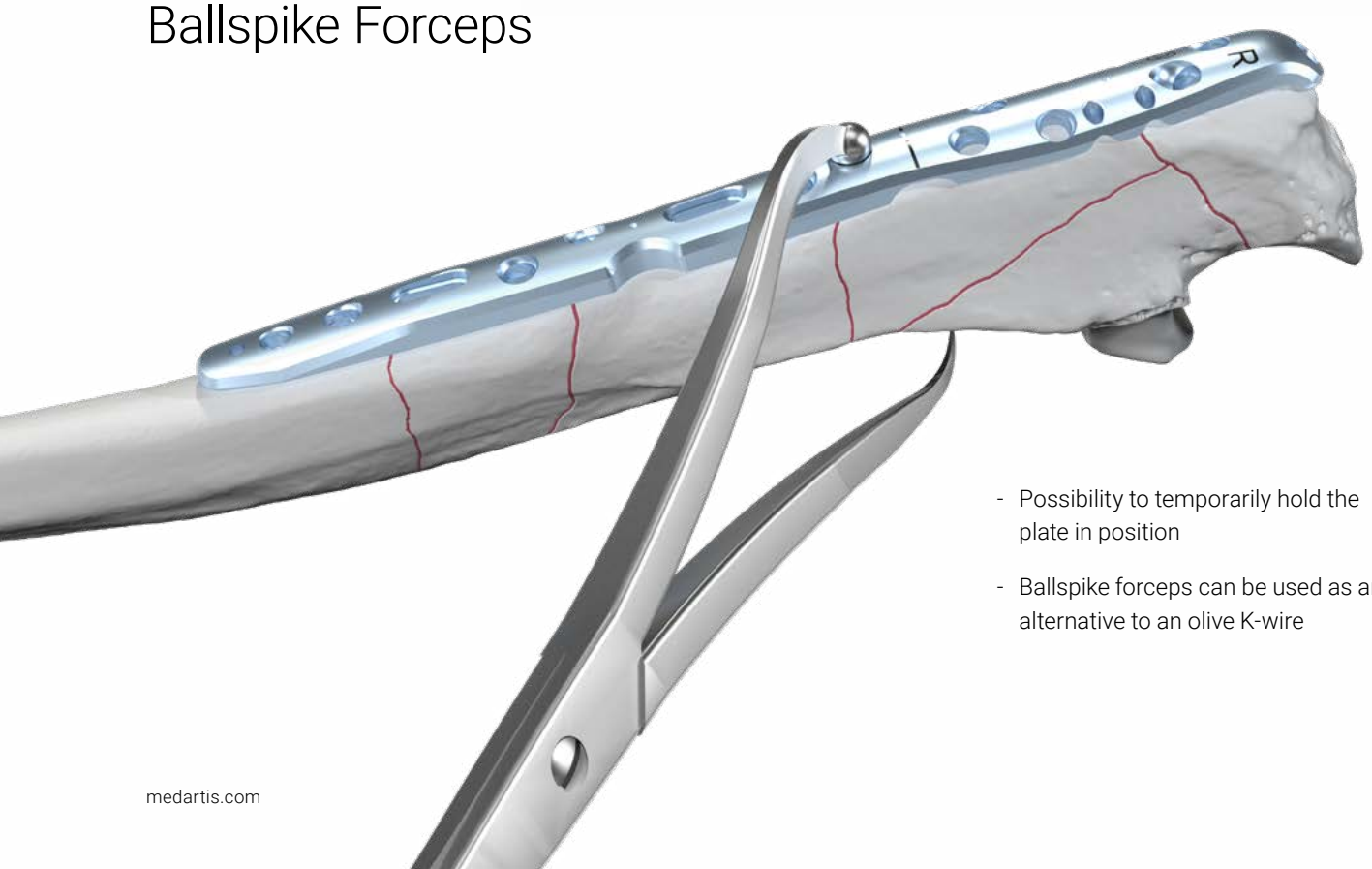
Instruments

Aiming Device for Distal Humerus



- Assists with the insertion of transcondylar screws through defined drill channel
- Drill stops shortly before the exit point (target tip)
- Screw length is read directly at the aiming device

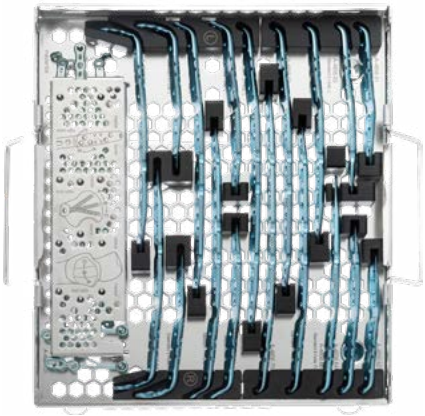
Ballspike Forceps



- Possibility to temporarily hold the plate in position
- Ballspike forceps can be used as an alternative to an olive K-wire

Storage

- Compact system
- Easy to use
- Lightweight components
- Validated cleaning and sterilization of the implants and instruments



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PRECISION IN FIXATION

ELBOW-02000006_v3 / 2025-06, Medartis AG, Switzerland. All technical data subject to alteration.

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