SURGICAL TECHNIQUE GUIDE

PROTEAN®

radial head plate

As described by:

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PROTEAN®
radial head plate

Indications for Use

The PROTEAN® Radial Head Plates are intended for fixation of fractures, fusions, osteotomies and non-unions of the proximal radius particularly in osteopenic bone.

Please refer to the PROTEAN® Radial Head Plate Module Instructions for Use to review the warnings, precautions and contraindications for this system.

ELBOW LANDMARKS 1

It is recommended to perform a lateral approach (Kaplan or Kocher) to the elbow using the respective tissue plane.

With the elbow flexed 90°, palpate and mark the lateral epicondyle.

Make an 8 – 10cm line through the marked point.

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SUPERFICIAL EXPOSURE 2

Open the joint and gain access to the radial head. Pronate the forearm and limit distal dissection to protect the posterior interosseous branch of the radial nerve.

NOTE:
The posterior interosseous branch of the radial nerve is located ~4cm distal to the lateral epicondyle.

CAUTION:
Limit periosteal stripping to reduce the incidence of avascular necrosis.

3 LOADING A.I.M.ing GUIDES

Using the Peg Driver, insert an A.I.M.ing Guide into the most proximal pre-loaded drill guide (PDG) on the plate. Insert a second A.I.M.ing Guide at the most appropriate location to maintain proper reduction.

A.I.M.ing Guides, 1.5mm *Peg Driver, Torque Limiting*

4 SAFE ZONE

The nonarticulating portion is the safe zone for the application of implants to the radial head. It consistently encompasses a 90 degree angle localized by palpation of the radial styloid and Lister's tubercle or approximately perpendicular to the plane of the metacarpals.

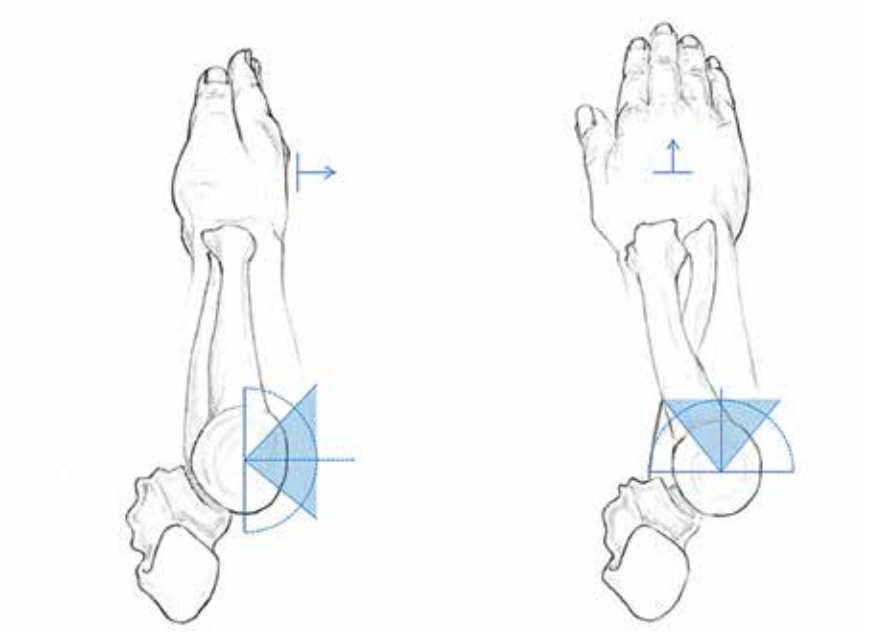
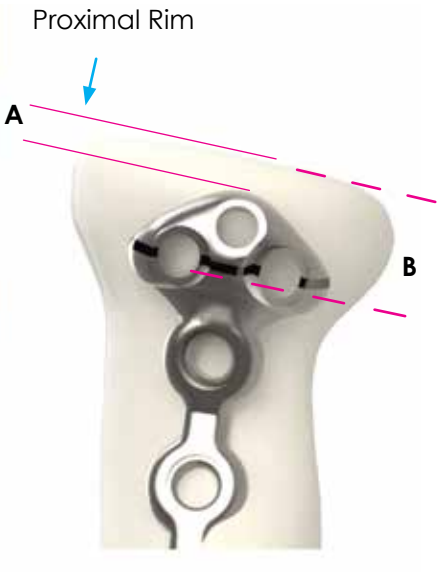


PLATE POSITIONING 5



Reduce the fracture.

With the forearm in neutral rotation, maintain radial head reduction and place the plate in the center of the "safe zone".

The proximal end of the plate should be 4-5mm distal to the proximal rim of the radial head (**A**).

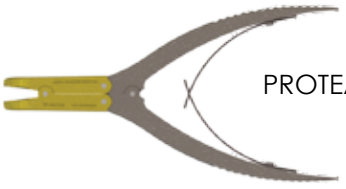
To ensure proper axial alignment of the plate, position the laser mark on the head of the plate parallel to the proximal rim of the radial head (**B**).

PLATE CONTOURING 6

Contour the plate as needed using the PROTEAN® Bending Pliers. Proper contouring should allow the plate to sit flush on the bone.

Refer to step 5 for proper plate positioning.

CAUTION:
Excessive contouring may weaken or cause the plate to break.



PROTEAN® Bending Pliers

7 DISTAL PLATE FIXATION

Using the Tissue Protector, drill through the center of the oblong hole using the 2.0mm drill bit.

NOTE:
Laser etching on the drill can be used to estimate screw length.

Drill, 2.0mm x 40mm

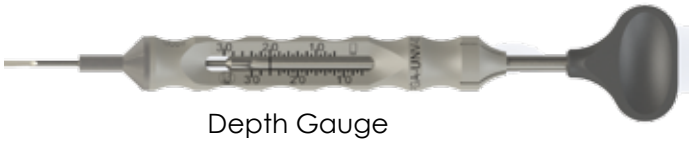
Tissue Protector/Drill Guide,

8 SECURE PLATE TO DISTAL FRAGMENT

Using the depth gauge, measure hole depth and then insert the appropriate length 2.7mm non-locking screw.

NOTE:
The orientation of the hook on the depth gauge probe corresponds to the flat portion on the depth gauge handle.

The Depth Gauge has a dual scale to reflect measurements either through the pre-loaded drill guides (top scale) or without pre-loaded drill guides (bottom scale).



Depth Gauge

Threaded Peg, Non-Locking

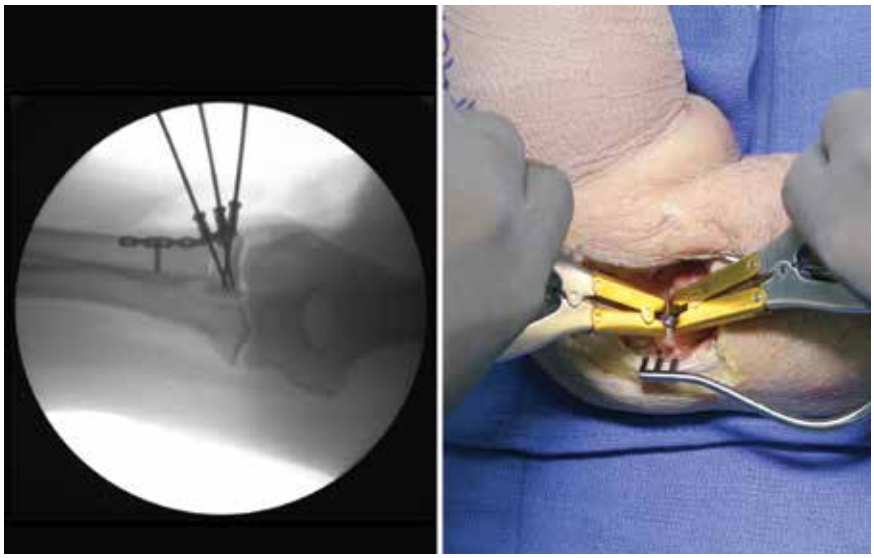
PROXIMAL FIXATION 9

Secure the proximal fragment(s) to the plate using two 1.5mm K-Wires through the A.I.M.ing Guide.

Additional K-wires may be used to secure remaining fragments.

K-Wire, 1.5mm

CONFIRM REDUCTION 10



Confirm reduction and proper K-wire placement 2mm distal to the subchondral plate using fluoroscopy.

If additional plate contouring is necessary, use the PROTEAN Bending Pliers for in-situ contouring.

11 PILOT HOLE PREPARATION

Using the 2.0mm bit, drill through the PDG and measure hole depth.

CAUTION:
Be careful not to drill through any articular surfaces.

12 PROXIMAL FIXATION

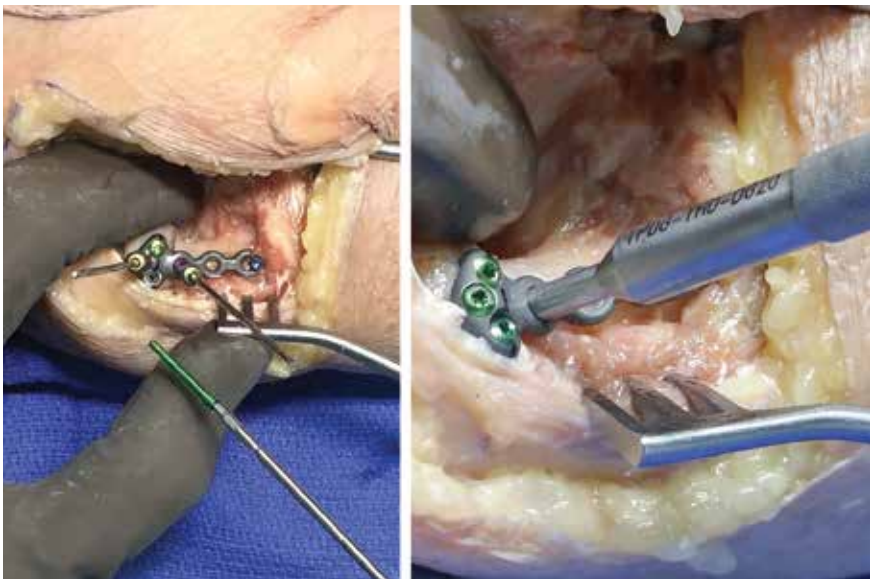
Remove the PDG using the peg driver, then insert the appropriate length screw.

Remove the K-wire and A.I.M.ing Guide from the most proximal hole, drill and measure hole depth.

Remove the PDG and insert an appropriate length 2.3 mm locking screw.

Repeat for the remaining proximal holes.

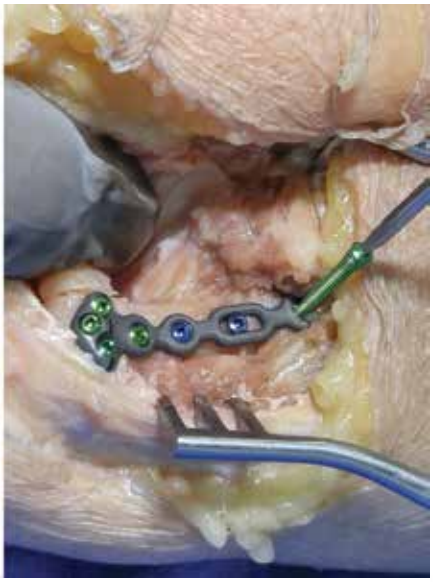
NOTE:
Locking and non-locking screws may be used.



Threaded Peg, Non-Locking,

Threaded Peg, Fluted, Locking,

DISTAL FIXATION 13



Using the Thread-in Drill Guide, drill through the shaft holes of the plate.

Screw length can be measured using the depth marks on the drill or by using the Depth Gauge.

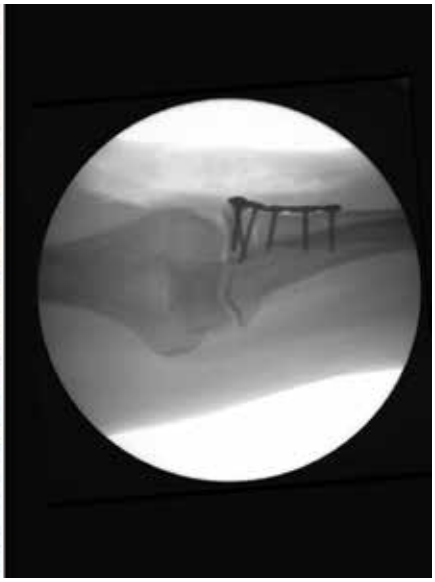
Insert the appropriate length screw (locking or non-locking)

Note:
If using Locking Screws, the Thread-in Drill Guide must be used to drill each hole.

Thread-in Drill Guide

Tissue Protector/Drill Guide

FINAL RADIOGRAPHS 14



Confirm proper reduction, screw length and placement using fluoroscopy.

Confirm that all screws have been fully tightened.

Close the wound in your normal fashion.

CAUTION:
Confirm that screws do not violate any of the articular surfaces by pronating and supinating the forearm and accessing for crepitus.

Note:
Additional screws can be used adjacent to the plate if necessary for additional fragment reduction.

Radial Head Plate System (Catalog # PRT-SYS)

INSTRUMENT TRAY

Loc #	Catalog #	Description
1	PRT-RHP- LT	PROTEAN® Radial Head Plate, Left
2	PRT-RHP- RT	PROTEAN® Radial Head Plate, Right
3	KWIR-STD-15127	K-Wire, 1.5mm x 127mm
4	DRLL-SSC-20040	Drill, Solid Side Cutting, 2.0mm x 40mm
5	DRVR-AOS-S20	Driver, Peg, Torque Limiting
6	TPNL-27110-TS	Threaded Peg, Non-Locking, 2.7mm x 10mm, Ti
	TPNL-27120-TS	Threaded Peg, Non-Locking, 2.7mm x 12mm, Ti
	TPNL-27140-TS	Threaded Peg, Non-Locking, 2.7mm x 14mm, Ti
	TPNL-27160-TS	Threaded Peg, Non-Locking, 2.7mm x 16mm, Ti
	TPNL-27180-TS	Threaded Peg, Non-Locking, 2.7mm x 18mm, Ti
	TPNL-27200-TS	Threaded Peg, Non-Locking, 2.7mm x 20mm, Ti
	TPNL-27220-TS	Threaded Peg, Non-Locking, 2.7mm x 22mm, Ti
	TPNL-27240-TS	Threaded Peg, Non-Locking, 2.7mm x 24mm, Ti
	TPNL-27260-TS	Threaded Peg, Non-Locking, 2.7mm x 26mm, Ti
	TPNL-27280-TS	Threaded Peg, Non-Locking, 2.7mm x 28mm, Ti
	TPNL-27300-TS	Threaded Peg, Non-Locking, 2.7mm x 30mm, Ti
	TPNL-27320-TS	Threaded Peg, Non-Locking, 2.7mm x 32mm, Ti
	TPNL-27360-TS	Threaded Peg, Non-Locking, 2.7mm x 36mm, Ti
	TPNL-27400-TS	Threaded Peg, Non-Locking, 2.7mm x 40mm, Ti
7	TPFL-23110-TS	Threaded Peg, Fluted, Locking, 2.3mm x 10mm, Ti
	TPFL-23120-TS	Threaded Peg, Fluted, Locking, 2.3mm x 12mm, Ti
	TPFL-23140-TS	Threaded Peg, Fluted, Locking, 2.3mm x 14mm, Ti
	TPFL-23160-TS	Threaded Peg, Fluted, Locking, 2.3mm x 16mm, Ti
	TPFL-23180-TS	Threaded Peg, Fluted, Locking, 2.3mm x 18mm, Ti
	TPFL-23200-TS	Threaded Peg, Fluted, Locking, 2.3mm x 20mm, Ti
	TPFL-23220-TS	Threaded Peg, Fluted, Locking, 2.3mm x 22mm, Ti

Loc #	Catalog #	Description
	TPFL-23200-TS	Threaded Peg, Fluted, Locking, 2.3mm x 20mm, Ti
	TPFL-23220-TS	Threaded Peg, Fluted, Locking, 2.3mm x 22mm, Ti
	TPFL-23240-TS	Threaded Peg, Fluted, Locking, 2.3mm x 24mm, Ti
	TPFL-23260-TS	Threaded Peg, Fluted, Locking, 2.3mm x 26mm, Ti
	TPFL-23280-TS	Threaded Peg, Fluted, Locking, 2.3mm x 28mm, Ti
	TPFL-23300-TS	Threaded Peg, Fluted, Locking, 2.3mm x 30mm, Ti
	TPFL-23320-TS	Threaded Peg, Fluted, Locking, 2.3mm x 32mm, Ti
	TPFL-23360-TS	Threaded Peg, Fluted, Locking, 2.3mm x 36mm, Ti
	TPFL-23400-TS	Threaded Peg, Fluted, Locking, 2.3mm x 40mm, Ti
8	WBTN-2750-T	Washer, Button, Inside Ø2.7mm, Outside Ø5.0mm, Ti
9	PDG-AIM-015	AIMing Guides, 1.5mm
10	TPDG-THD-DG20	Thread-in Drill Guide, 2.0mm
11	DPGA-UNV-030	Depth Gauge, Universal, 30mm
12	HNDL-SQC-FXD	Handle, Small QC, Fixed
13	PRT-BND-PLR	PROTEAN® Bending Pliers
14	TPDG-SSD-20	Tissue Protector / Drill Guide, Single Sided, 2.0mm
15	FRCP-BHM-RTC	Forceps, Bone Holding Medium, Ratcheting
16	PRT-MOD	PROTEAN® Module

The PROTEAN Radial Head Plate Module consists of titanium alloy plates (right and left), screws, and specialized instrumentation.

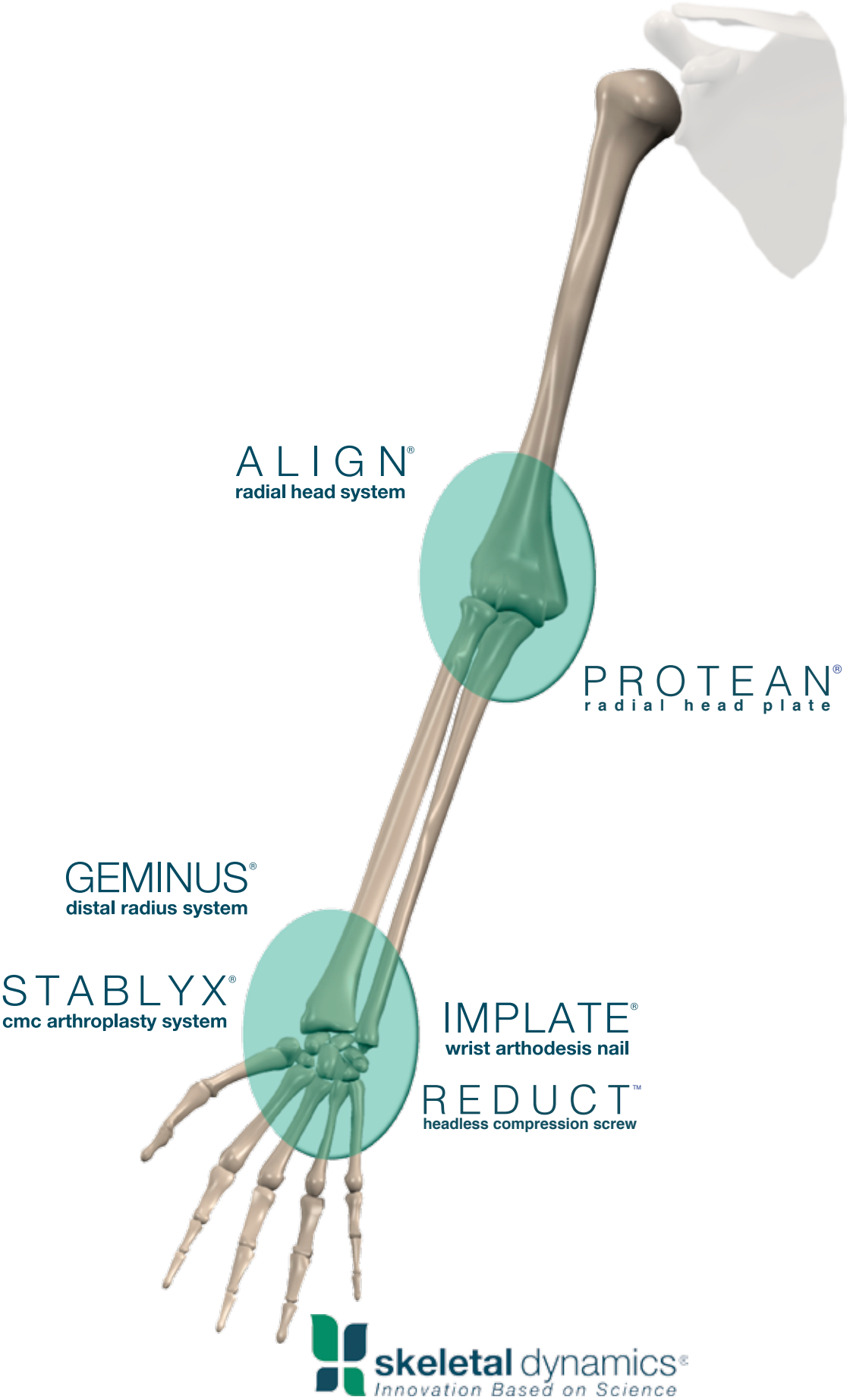
Radial Head Plate, Left

Radial Head Plate, Right

The screws are available in both locking and non-locking configurations and are provided in lengths from 12mm – 40mm, in 2mm increments.

Threaded Peg, Fluted Locking, 2.3mm, Ti

Threaded Peg, Non-Locking, 2.7mm, Ti



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