

SURGICAL TECHNIQUE

rHEADTM PLATING SYSTEM



SBi

SMALL BONE INNOVATIONS, INC.

SURGICAL TECHNIQUE

- 1 Incision**

Make 8 to 10 centimeter incision centered over the radial capitellar joint. Care should be taken to avoid all neurovascular structures around the radial neck and head (**FIGURE 1**).
- 2 Exposure**

Use either the extensor splitting approach of Hotchkiss¹ or lateral Kocher² approach through the interval between the anconeus and extensor carpi ulnaris muscles (**FIGURE 2**). Radiographs should be taken to assess the fracture and locate all fragments.
- 3 Plate Sizing**

Four plate sizes are available, (standard rim, small rim, standard long, and neck plate). Hold the chosen plate against the radial head to evaluate the proper size and contour (**FIGURE 3**). In most cases, the plate will not need to be bent. If bending is required for adequate contouring, the Plate Benders in the instrument set may be used for fine contouring.
- 4 Plate Preparation**

If fragments can be reduced directly (in situ), the rHEAD plate may be applied directly to the radius and temporarily secured with a K-wire.

The plate should always be positioned opposite to the proximal radial ulnar joint. The Hotchkiss safe zone is located on the opposite side of the radial tuberosity and is commonly described as an area of 105 degrees on the radial head, free of impingement between the ulnar and radius. This is centered laterally when the forearm is in neutral rotation³.
- 5 Collect and Secure Fragments**

If fragments cannot be reduced or stabilized in situ, they should be removed from the surgical site and assembled on the back table (**FIGURE 4**). Reassemble the radial head and secure with screws as needed (**FIGURE 5**). Once the head is assembled, the situation is now simplified such that the head is a unit thus converting a multiple-part fracture into 2 pieces requiring stabilization with the plate.



FIGURE 1

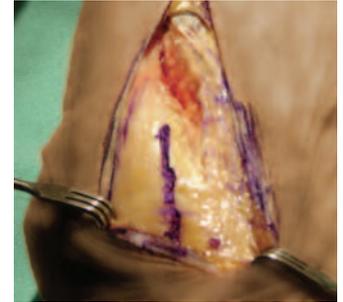


FIGURE 2



FIGURE 3



FIGURE 4

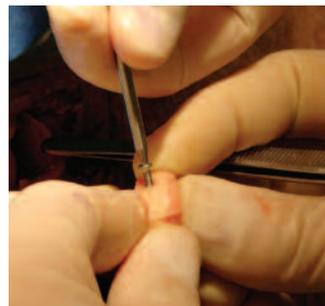


FIGURE 5

1 Hotchkiss RN: Displaced fractures of the radial head: Internal fixation or excision. J Amer Acad Orthop Surg 5:1-10, 1997.

2 Kocher T: Text book of Operative Surgery. London, Adam and Charles Black, 1911.

3 Robert N. Hotchkiss, MD, "Displaced Fractures of the Radial Head: Internal Fixation or Excision?" AAOS, Vol. 5, No. 1, Jan/Feb 1997

Attach the correctly sized plate to the assembled radial head. Secure plate and radial head to shaft of radius (**FIGURE 6**).

Fix plate to shaft temporarily with a K-wire (**FIGURE 7**). A non-locking screw (one of 2 outboard holes in standard plate) is inserted first into the head. The head/plate construct is applied to the (rotationally-appropriate) portion of the radial diaphysis and secured into the non-locking oblong hole. Radiographs confirming head/shaft reduction and plate placement/overall alignment are obtained prior to placing additional screws.

6 **Drilling of Holes (FIGURE 8)**

Use the appropriate drill guide (threaded or non-threaded) in the respective hole.

7 **Measuring Hole Depth (FIGURE 9)**

Use depth gauge to determine proper screw length.

8 **Screw placement:**

Secure the remaining non-locked screws into the head and shaft in the same manner. Now, the locked screw (center hole) is placed into the head (standard plate) using the threaded drill-guide and drill (1.8mm for 2.4mm locking screw and 2.0mm for 2.7mm screw).

Finally, the tripod screw (angled locked screw) is inserted into the plate using the appropriate drill-guide (**FIGURE 10**). **It is critical that this be drilled with the aid of both live fluoroscopic imaging and direct inspection (with the aid of forearm rotation) to be absolutely certain that the articular surface is not violated with this screw.**

The annular ligament and extensor interval is re-approximated when the Hotchkiss-type approach is utilized. In many injuries, the lateral collateral ligament may require repair if this has been traumatically disrupted or if the approach takes this down, it is repaired now. The remainder of the closure is performed in standard fashion.

Bone grafting is sometimes necessary to fill voids left from the original fracture. Depending on the intent of the bone graft, it can be applied early in the procedure or after placement of the plate. If additional structure support of the cortex is needed, bone grafting should be performed early in the procedure.

9 **Post-operative Protocol**

Early motion can begin in flexion and extension as well as supination and pronation for isolated fractures of the radial head and neck without ligament injury. This usually begins within one to two days after the surgery. Ligament disruption or further de-stabilization should be handled more conservatively under the guidance of a trained and experienced therapist with specific protocols to address any LCL instability.



FIGURE 6



FIGURE 7

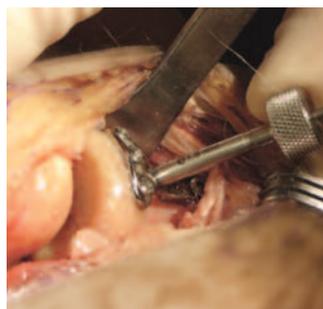


FIGURE 8



FIGURE 9



FIGURE 10

Small Bone Innovations does not recommend a particular surgical technique when using the implant. Proper surgical procedures and techniques are the responsibility of the medical professional. Each surgeon must evaluate the appropriateness of the surgical technique used based on personal medical training and experience.

Caution: United States federal law restricts this device to sale by or on the order of a physician.

Small Bone Innovations, Inc.

SBi Customer Service: (800) 778-8837

1380 South Pennsylvania Ave.

Morrisville, PA 19067

Fax (215) 428-1795

Technical Support: (866) SBi-TIPS

www.totalsmallbone.com

Technique authored by
Jeffrey N. Lawton, MD.
Cleveland, OH

rHEAD Plating System is a trademark of Small Bone Innovations, Inc.
8020 XM Copyright ©2008 Small Bone Innovations, Inc. All rights reserved.

Small Bone Innovations International

ZA Les Bruyères - BP 28

01960 Péronnas, France

Tel: +33 (0) 474 21 58 19

Fax: +33 (0) 474 21 43 12

info@sbi-intl.com

MKT 10413 Rev. A 7/08