

D-RAD SMART PACK Plating System

A series of case studies



AO fracture classification: C3

Surgeon

Eben A. Carroll, MD

Associate Professor

Director Orthopaedic Trauma Service

Director Orthopedic Trauma Fellowship

Wake Forest University

Winston Salem, NC

Diagnosis

A 45-year-old female with a benign medical history presented to our institution with a chief complaint of left wrist pain. The patient had fallen while competing in a judo tournament landing on her left wrist. Radiographic examination revealed an intra-articular left distal radius fracture.

Description of treatment

The patient underwent initial closed reduction in the emergency department and was brought to the operating room on hospital day number one. Given her young age and active lifestyle the decision was made to proceed with operative reduction and fixation of her left distal radius fracture.

Discussion

Reconstruction with the D-RAD SMART PACK[®] system allowed neutralization and control of each of the individual fracture fragments in this situation. The trajectory options for the subchondral screws were particularly useful in this case. The low profile design of the plate made us less concerned about late symptomatic hardware. Lastly, the fact that the entire D-RAD single-use kit is disposable meant faster turnover for my operating room.



Preop AP



Preop Lateral



Postop AP



Postop Lateral

AO fracture classification: B3

Surgeon

Eben A. Carroll, MD

Associate Professor

Director Orthopaedic Trauma Service

Director Orthopedic Trauma Fellowship

Wake Forest University

Winston Salem, NC

Diagnosis

A 28-year-old female was involved in a high-speed motor vehicle collision. She sustained a left scapula fracture in addition to a left intra-articular distal radius fracture.

Description of treatment

The patient underwent initial closed manipulation and reduction of her left distal radius fracture. Given her young age and active lifestyle, it was decided that she should undergo open reduction and internal fixation.

Discussion

The D-RAD SMART PACK[®] plate's variable-angle locking feature allowed for neutralization and control of each individual fragment for this intra-articular distal radius fracture. Additionally, distal screw placement provided adequate subchondral support. The D-RAD plate is a low-profile construct and eliminated concerns about late symptomatic hardware.



Preop AP



Preop Lateral



Postop AP



Postop Lateral

AO fracture classification: C2

Surgeon

Louis Catalano III, MD

Associate Professor NYU Dept. of Orthopedics
New York, NY

Diagnosis

A 58-year-old male construction worker fell from 10 feet while on the job. As a result, he sustained multiple fractures to his left hand and wrist including an intra-articular distal radius fracture, an ulnar styloid fracture and fractures to the base of the 2nd and 3rd metacarpals.

Description of treatment

Fractures to the ulna and metacarpals were conservatively managed while it was decided to treat the distal radius fracture surgically with a volar locking plate.

Discussion

The variable-angle locking feature of the D-RAD SMART PACK® plate demonstrated its usefulness in this case as three distal screws were angled toward the radial styloid fragment and four were directed at the lunate corner of the radius. The flexibility in distal locking screw trajectory safeguarded against the potential of collapse.



Preop AP



Preop Lateral



Postop AP



Postop Lateral

AO fracture classification: C3

Surgeon

Yngvar Krukhaug, MD, PhD
Orthopaedic surgeon
Senior Consultant
Bergen, Norway

Diagnosis

A 45-year-old male farmer sustained an intra-articular fracture of the right distal radius. This high energy fracture occurred as a result of a fall from height. Prior to our initial interaction, he was unsuccessfully treated at a different hospital via Plaster of Paris (POP).

Description of treatment

A volar approach was used to access the fracture site. Temporary reduction was achieved through the use of K-wires. A wide volar plate was applied to the reduced distal radius and a variety of non-locking and locking screws were used to adequately maintain anatomical alignment.

Discussion

The D-RAD SMART PACK® plate's combination of anatomic design and variable-angle locking holes enabled me to create a scaffold under the subchondral bone while safely positioning the construct beneath the watershed line.



Initial AP



Initial Lateral



Preop Ap
(following failed POP treatment)



Preop Lateral
(following failed POP treatment)



Postop AP



Postop Lateral

AO fracture classification: A3

Surgeon

Yngvar Krukhaug, MD, PhD
Orthopaedic Surgeon
Senior Consultant
Bergen, Norway

Diagnosis

A 60-year-old male presented with a severe fracture to the left distal radius a result of a fall from 12 feet.

Description of treatment

Due to the severity and high degree of instability, open reduction and internal fixation through a volar approach was chosen as the method of treatment. Following the exposure of the fracture site, the distal fragment was reduced and radial length was restored through the use of K-wires. A standard width variable-angle locking plate was applied to maintain length and anatomical alignment.

Discussion

The patient returned after six weeks for follow-up. Fracture healing was well-underway. The low-profile D-RAD SMART PACK[®] plate provided ample stability for this high demand indication while remaining unobtrusive to the surrounding soft tissue.



Preop AP



Preop Lateral



Postop AP



Postop Lateral

AO fracture classification: C3

Surgeon

Anjan R. Shah MD
Florida Orthopaedic Institute
Tampa, Florida
Brandon Regional Hospital/Director of
Orthopaedic Trauma
Brandon, Florida

Diagnosis

A 35-year-old male unsuccessfully attempted to stop a rolling trailer from striking his SUV. In the process the gentleman's left wrist sustained an axial loading force as his elbow and wrist were momentarily pinned between the SUV and trailer.

Description of treatment

The patient was taken to the operating room theater and positioned supine with the left arm on a radiolucent arm table. A volar approach to the wrist was used exposing the underlying distal radius. Due to the severity of injury and degree of shortening an intraoperative external fixator (Smith & Nephew JET-X° MINI Bar) was applied to assist with traction. The articular fragments were first reduced and provisionally stabilized with clamps and K-wires. Axial alignment was restored and K-wires were used to maintain temporary fixation. A volar plate was then applied and the fracture was stabilized with multiple non-locking and locking screws as necessary. The external fixation device was disengaged and the wrist and elbow were tested for joint and fracture stability.

Discussion

This case highlights what I believe are the major benefits of the D-RAD SMART PACK® system. This injury required subchondral support of the multiple articular fragments. However, there was very minimal subchondral bone available in several of the fragments. With the D-RAD system, I was able to place the plate far distal, allowing for the plate to serve as a buttress. I then used the variable-angle capability of the system to direct and place the screws in the limited subchondral bone. The design of the D-RAD system allowed for a stable anatomic reduction which facilitated early range of motion ultimately improving the prognosis for this high demand patient with an otherwise devastating injury. In addition, the intuitive instrumentation and sterile packaging makes the D-RAD system a good distal radius fracture fixation system that is conveniently available when needed.



Preop AP



Preop Lateral



Preop Oblique



Postop AP



Postop Lateral

AO fracture classification: C2

Surgeon

Dean G. Sotereanos

Clinical Professor of Orthopaedic Surgery
Orthopaedic Specialists – University of
Pittsburgh Medical Center
Pittsburgh, PA

Diagnosis

A 39-year-old female presented with left wrist pain after a fall onto her outstretched hand. X-Rays indicated a displaced intra-articular 4-part left distal radius fracture and a non-displaced left ulnar styloid fracture.

Description of treatment

The patient underwent open reduction and internal fixation with volar plate of the left 4-part distal radius fracture.

Discussion

The D-RAD plate provided stable fixation of all fragments promoting fracture healing. At six weeks postop the patient was in the process of healing with satisfactory alignment.



Preop AP



Preop Lateral



Postop AP



Posop Lateral

This series of studies is provided for information and educational purposes only. These cases may not represent typical surgical outcomes. Every surgery and each patient undergoing surgery represents unique sets of circumstances and, therefore, results may vary. It is not intended to serve as medical advice. It is the responsibility of the treating physician to determine and utilize the appropriate products and techniques according to their own clinical judgment for each of their patients. For detailed product information, including indications for use, contraindications, effects, precautions and warnings, please consult the product's Instructions for Use (IFU) prior to use.

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