Fracture of the Distal End of the Radius

(Part Two)

Abstract

This article is the second part of a comprehensive review focusing on the anatomy, physiology, and treatment of distal radius fractures. This injury is among the most common skeletal traumas. The first part provided a historical overview of the condition and outlined the advancements in its recognition and management. It was noted that the treatment of this fracture requires a precise understanding of the anatomy of the radius and the wrist joint. The importance of standard imaging modalities such as radiography and CT scan for fracture evaluation and surgical planning was emphasized, and various classification systems used in managing this fracture were also discussed. Since the primary goal of treatment is to restore wrist function to its pre-injury level, the first part highlighted the critical role of key parameters such as articular step-off, dorsal tilt, and radial length in clinical decision-making. Now, in the second part, surgical methods including pin and plaster, percutaneous pinning, the Kapandji technique, fragment-specific fixation, external fixators (both bridging and non-bridging types), locking plates (fixed-angle and variable-angle), and spanning plates are examined. The complications associated with each method, such as infection, radial nerve injury, and tendon-related problems, are also discussed. Postoperative pain management, follow-up care, and the importance of precise imaging—particularly the facet view—are among other key topics addressed in this section. Ultimately, it is emphasized that the choice of surgical method should be based on the characteristics of the fracture, the patient's condition, and the surgeon's experience.

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Surgical Treatment of Distal Radius Fractures

Surgery is indicated for displaced fractures, irreducible fractures, reducible but unstable fractures [22], fractures with radial shortening greater than 3 millimeters, dorsal tilt exceeding 10 degrees, and intra-articular step-off greater than 2 millimeters.

Another increasingly accepted indication involves patients who, due to the nature of their daily activities, occupation, or recreational habits, are unwilling to tolerate the limitations imposed by cast immobilization. There are several surgical techniques available, each with its own specific characteristics.

Pin and Plaster Technique

This technique was widely adopted starting in the 1970s. Although it is still occasionally observed in practice, it has lost its global acceptance, and no recent reports document its current use. Major reasons for the decline in its popularity include the risk of infection, joint stiffness, and patient discomfort.

Percutaneous Pinning

Subcutaneous pinning has been practiced for many years. While it remains a common and standard technique in many parts of the world due to its affordability, simplicity, accessibility, and effectiveness, the widespread use of volar locking plates has significantly limited its application. Percutaneous pinning can be performed using various methods, which are discussed in the following sections.

Clancey Technique

This method utilizes 1.5 mm pins. After preparing the skin and administering the necessary anesthesia, fracture reduction is performed using a C-arm. Positioning the fingers in a finger trap (as illustrated in the first part of this article) assists in the reduction. Another supportive approach involves the assistant applying traction to maintain reduction, while the surgeon inserts the first pin through the radial styloid. The pin is advanced across the fracture site and into the opposite cortex—but not through it—to prevent pin migration. The second pin is inserted from the dorsoulnar angle, passed across the fracture, and advanced to reach the opposite cortex. Additional pins may be used to enhance stability.

Kapandji Technique

Following anesthesia and patient preparation (similar to the percutaneous pinning technique), the pins are inserted dorsally. By using the pins as levers, the distal fragment is repositioned, and the pins are then advanced across the fracture site [23]. Typically, more than one pin is used (Figure 1). To facilitate this technique, Kapandji designed pins shaped like the flag of the Arum lily and named them *Arum*, after the scientific name of the flower (Figure 2).

Complications of Pinning

Injury to the radial sensory nerve: This complication can be minimized by making a small incision, using a guide, and avoiding repeated repositioning of the pins.

Figure 1: Clancey Pinning Technique

Figure 2: Arum Lily Flag Pin Inspired by the shape of the Arum lily's spathe, Kapandji designed a special type of pin or wire, which he named after the flower's scientific name, *Arum*

Pin tract infection: Proper care and maintenance of the pin sites reduce the risk of infection. The area should be kept clean; showers and washing are effective. Antibiotics help relieve symptoms and support recovery. If necessary, removal of the pins resolves the issue.

Fragment-Specific Fixation

This technique was pioneered by Fernandez, who originally described it as a “limited open approach.” Along with his colleague Medoff, he expanded and formally introduced it under the term fragment-specific fixation. This approach utilizes very small, low-profile plates, such as those developed by Medoff and shown in Figure 3.

Figure 3: Medoff Fragment-Specific Fixation

The radial-side device is a radial pin plate, which helps hold the fragment in place. The pins provide initial fixation, and the pin plate adds further stability. On the ulnar side, the ulnar pin plate is used to maintain the dorsal ulnar corner (DUC) in its correct position. Fragment-specific fixation instruments include plates, pin plates, hook plates, screws, and tension bands. These devices create a multidirectional load-sharing construct, which allows for anatomical restoration of the articular surface and provides enough stability to permit early mobilization of the joint.
Each individual device is used to stabilize the volar rim, dorsal wall, radial column, and dorsal ulnar corner. Fragment-specific fixation is particularly useful for small, unstable fragments that cannot be adequately stabilized with a volar plate. However, osteoporotic fractures and those with bone loss in the metaphysis are not well suited for this method.

External Fixators

There are two types of external fixators:

1. **Nonspanning External Fixator**
2. **Spanning External Fixator**

Nonspanning External Fixator

The nonspanning external fixator was developed by McQueen, and its design is based on the strength of the subchondral bone and the volar cortex. Although advocates of this method promoted early mobilization, others found that the range of motion achieved was not satisfactory. Despite being used for years by some surgeons, this method never gained widespread acceptance.

Spanning External Fixator

The spanning external fixator maintains length, alignment, and rotation of the bone via ligamentotaxis. After the invention of the radius-specific fixator by Roger Anderson in 1944, this method became a widely used treatment tool worldwide. Its technique was further standardized by W. Seitz in 1990. To prevent injury to the radial sensory nerve branch and ensure proper positioning over the second metacarpal and the shaft of the radius, a small open incision is used. This technique remains one of the most commonly used methods globally (Figure 4, 5).

Complications of Distal Radius Fractures

A study compared the complications of distal radius fractures in patients treated with external fixators versus volar plating. Although the volar plate group showed higher rates of tendon and nerve injuries, overall, the external fixator group had a higher complication rate.
As the complication rate of volar plates continues to decline, many surgeons now prefer volar plating over external fixation.

Figure 4: Spanning Ex Fix

Figure 5. Nonspanning Ex Fix

External Fixator Use

External fixators are used in comminuted distal radius fractures where locking plates and fragment-specific fixation are not sufficient [26]. They are also applied in contaminated open fractures and in patients unable to tolerate prolonged surgery [27].

Complications of External Fixators

- Injury to the radial sensory nerve and tendons
- Infection

Injury to the radial sensory nerve and tendons is among the possible complications of using external fixators. Infection is another potential issue. As with pinning, making small skin incisions, caring for pin entry sites, and administering antibiotics are effective countermeasures.

Spanning Internal Fixation Plates

The use of spanning internal fixation plates was first introduced by Becton and later developed by Ruch [28]. These plates act similarly to internal equivalents of spanning external fixators. When prolonged immobilization is required, this method is preferred over external fixation. The screws are anchored in the metacarpal and the radial shaft, and the plate is typically removed after 3 months (Figure 6).

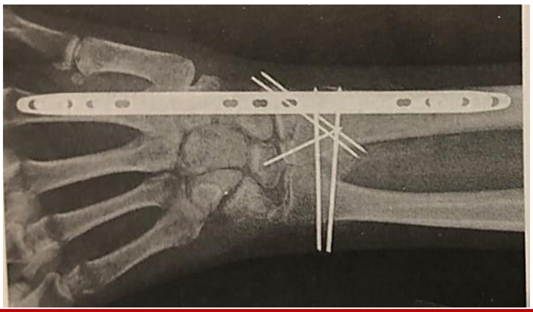

Figure 6: Spanning internal fixation plates

This method is used in the following cases:

- Multiple trauma, where general anesthesia does not allow for the placement of a locking plate.
- Severe comminution that cannot be managed with the subchondral volar fixation method.

Plates:

Dorsal Plate

In 1990, dedicated dorsal plates (Figure 7) were developed for the radius, gaining wide acceptance. However, due to the damage they caused to tendons, their significance diminished.

Figure 7: Dorsal plate

Complications of the Dorsal Plate

The complications of dorsal plates arise from the proximity of extensor tendons [3] to the bone. Even thin, 2 mm plates are still too large for a 1 mm space and can irritate the tendons.

Volar Plate

The volar plate, especially the type designed for unstable dorsal fractures, was independently developed by three surgeons: Orbay, Jennings, and Drobetz. Orbay successfully introduced the device to the world and was the first to publish data on it. He is rightfully considered the godfather of this technique [29].

Locking Plates

There are two main types of locking plates available for distal radius fractures: fixed-angle and variable-angle, depending on the freedom of screw direction (Figure 8).

Figure 8: Variable-angle locking plate (Zimmer Biomet) - Fixed-angle locking plate (Medtronic)

Locking plates bridge the fracture and act as load-bearing internal fixators, transferring forces from the distal fragment to the volar cortex without altering them [30].

The placement of distal screws in the subchondral bone provides a base to maintain the joint surface and prevent displacement of the fracture.

Traditionally, volar locking plates were designed with fixed-angle locking screws. The fixed screw angle made these plates prone to errors such as screw penetration, and the screws were sometimes unable to capture or hold certain fragments [31].

The advantage of variable-angle locking plates is their flexibility in plate and screw placement, as they adapt to various fracture patterns and reduce the risk of screw penetration. The freedom of screw movement allows them to align with fracture fragments (Figure 9). In addition to all these benefits, they also preserve angular stability [32].

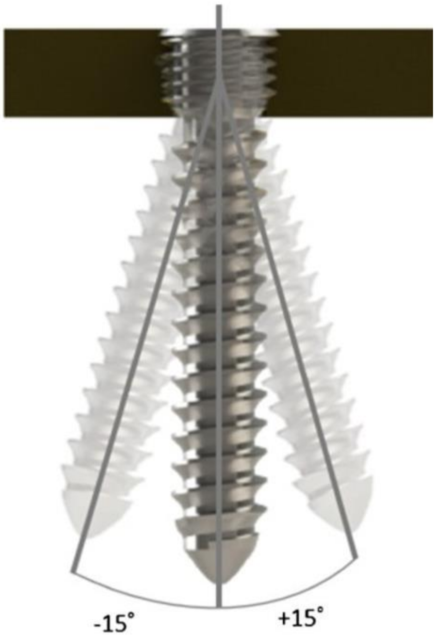

Figure 9: Range of motion of screws in variable-angle locking plates

Volar plates are widely accepted in most advanced countries, although they are significantly more expensive compared to closed reduction or pin fixation. Many local designers have created plates of similar quality to the Orbay plates and their successors, but at a much lower cost. The complications associated with volar plates, especially tendon rupture, are increasingly recognized. Initially, this complication seemed rare, but widespread use, without paying attention to design details and angles, has led to an increase in complications.

The complications of fixed-angle locking plates are not yet well understood. Most tendon ruptures and injuries have been caused by failure to follow proper technique. One important aspect of this technique is to avoid gaps and screw penetration, and preferably position the screws 2 to 4 millimeters from the dorsal cortex. Another important consideration is to use a plate that does not extend below the wrist capsule. Additionally, attention should be paid to the critical Orbay line, which the plate should not cross (Figure 10).

Anatomical Landmarks for Volar Approach

Anatomical landmarks for the volar approach are crucial. The area marked "Pronator fossa" in Figure 10 is covered by the pronator quadratus (PQ) muscle, which extends toward the "Critical PQ Line" (the second line from the top in Figure 10). The highest line in Figure 10, the "Water Line" (ws), shows the highest crest of the radius. The "X" symbol marks the radial volar tuberosity. VR indicates the radial volar edge.

The issue of plate prominence has been discussed in the literature. Soong et al. studied the relationship between the plate and the volar rim of the radius. Plates that do not cross the volar critical line (the line tangent to the volar rim of the fossa lunate) are classified as grade 0. Plates that are located proximally to the critical line, volar rim, and volar radius are classified as grade 1, while those located distal to the volar rim are classified as grade 2. In grade 2 patients, plate prominence has been observed, and tendon ruptures have been significant. In summary, plates should be placed proximally to the water line and dorsally to the critical Orbay line.

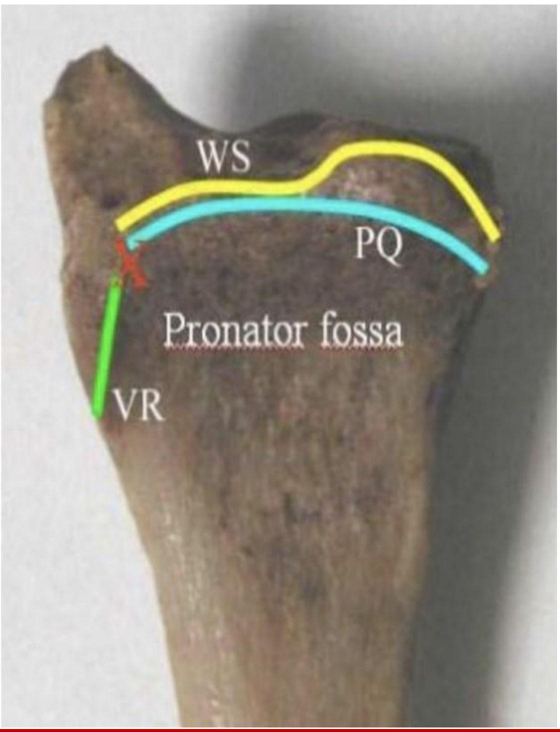

Figure 10: Important anatomical landmarks for the volar approach

Pronator Quadratus Technique

Many surgeons believe that tendons are better protected when covered by the pronator quadratus.

Orbay and Nelson described an approach known as the pronator quadratus technique for this purpose. In this technique, the muscle, along with strips of fibrous tissue, is cut from the origin along the lateral septum to the proximal wrist capsule. This technique ensures that at the end of the procedure, the muscle is well sutured in place and provides protection to the tendons.

Locking Plates and Their Role

Locking plates have become so popular in many countries—due to the specific preferences of surgeons—that they have significantly changed surgical perspectives in various directions [36]. These plates have shown superiority over percutaneous pinning and external fixators in elderly patients [37].
The development of variable-angle locking screws and the ability to position screws and plates to capture fragments—alongside growing familiarity with surgical approaches—have established locking plates as a cornerstone in the fixation of distal radius fractures. Locking plates stabilize the complex fragments of distal radius fractures both directly and indirectly. Additional fixation may be required for small volar rim fragments, radial column comminution, and dorsal ulnar angulated fragments.

Complications of Volar Plates

The complications of these plates are classified into two categories: dorsal and volar complications. Dorsal complications are related to the screws penetrating the dorsal cortex of the bone. Orthopedic screws are designed with a cutting flute at the tip to ensure secure anchorage in both cortices. Ideally, screws should extend just slightly beyond the far cortex—approximately the diameter of the screw.
The design of locking plates ensures that the screws lock into the plate, as the dorsal cortex does not provide much stabilization. In fact, the dorsal cortex is typically thin and often comminuted. Thus, firm fixation is achieved through the plate and the subchondral bone. Any screw protrusion through the dorsal cortex can endanger the extensor tendons.
Volar complications of the plates occur due to contact between the tendons and the plate. These complications can result from poor plate design or improper placement—both of which have been discussed in detail in the preceding sections.

Surgical Technique

The skin incision is made directly over the Flexor Carpi Radialis (FCR) tendon. The incision is approximately 10 cm in length and should not extend beyond the wrist crease.
The FCR tendon is retracted radially, and the floor of the tendon sheath is incised. It is important to note that a branch of the radial artery, heading toward the superficial palmar arch, passes beneath this incision. The septum between the FCR tendon and the Flexor Pollicis Longus (FPL) tendon is then released down to the wrist crease. If the distal surgical field is not adequately exposed, this septum should be extended further.
Muscle fibers of the FPL, which originate from the ulnar shaft or the interosseous wall between the radius and the first compartment, are released. The Pronator Quadratus (PQ) muscle is now visible; this muscle is often torn due to fracture fragments.
The PQ muscle is incised 1 to 2 mm distal to its muscle fibers and proximal to the fibrous tissue that forms the wrist joint capsule. On the radial side, the muscle is similarly incised 1 to 2 mm medial to the fibrous edge, close to the muscle fibers. These distal and radial fibrous flaps allow the muscle to be reapproximated over the plate at the end of the procedure, thereby protecting the tendons. At this point, the PQ muscle is retracted and the Brachioradialis is released. The joint capsule is cleared of surrounding fatty tissue.
To proceed with the operation, one of the following two methods may be used:

1. The fracture is reduced first, followed by placement of the plate.
2. A preliminary reduction is achieved, the distal screws are inserted, and the plate is then used to gain a few degrees of volar tilt.

In the case of a comminuted fracture, the fragment reconstruction algorithm should be applied in the following order.

Wrist Reconstruction Sequence Based on the Column Model

The reconstruction of comminuted distal radius fractures begins with the anatomical fixation of the intermediate column (Figure 11). This column is addressed step by step, in the following order: volar rim, dorsal ulnar corner (DUC), free intra-articular fragment, and dorsal wall fragment.

The volar rim fragment is evaluated to determine whether a locking plate can be placed proximal to the watershed line, in the area typically covered by the pronator quadratus muscle (Figure 12). If stable fixation can be achieved in this position, the fragment is reduced and the plate is fixed accordingly. The distal screws should be placed approximately 3 mm proximal to the subchondral cortex [38]. Using excessively long screws may interfere with the reduction of other fragments and pose a risk of tendon injury.

Ideally, screw length should be 75% of the distance between the volar and dorsal cortices of the distal radius, or end approximately 3 mm short of the subchondral surface. Overly long screws can prevent proper fragment reduction and may lead to tendon rupture. It is important to note that after the reduction of fracture fragments, screw repositioning may be necessary.

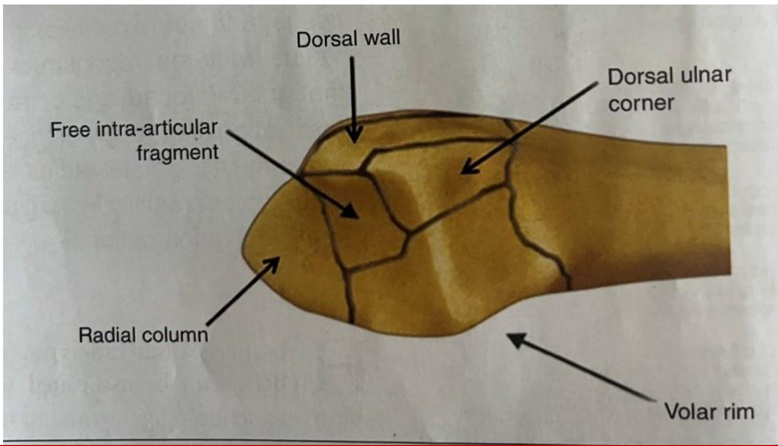

Figure 11: Intermediate Column

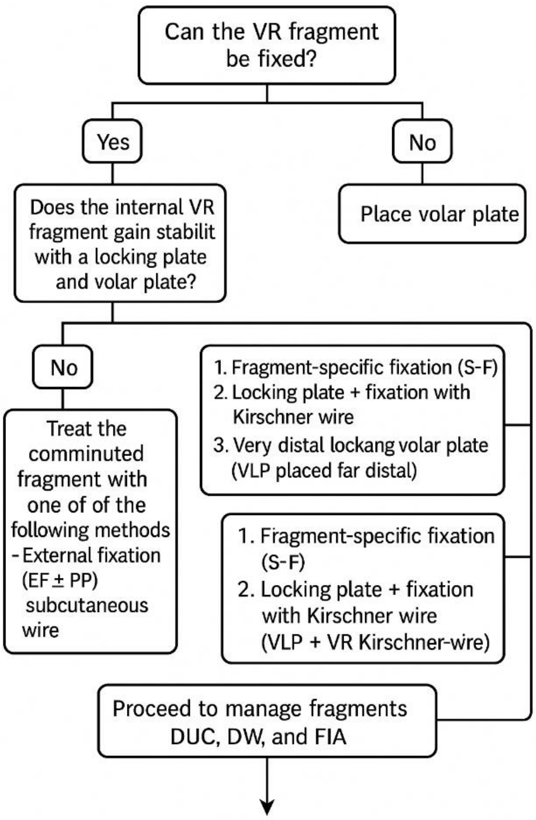

Figure 12: Algorithm for fixation of the VR fragment

If the locking plate fails to adequately capture the volar rim fragment, there are three surgical options available, prioritized as follows:

Priority One (1): Use of fragment-specific fixation that can secure the small volar rim fragments. If the flexor carpi radialis (FCR) approach does not provide sufficient exposure, the volar ulnar approach—through the interval between the flexor tendon and the ulnar neurovascular bundle—can be utilized [39].

Priority Two (2): Use of Kirschner wires (K-wires). These are inserted from the volar rim of the ulnar fossa toward the opposite cortex. The ends of the wires should be kept long enough to allow them to be bent and buried under the plate (Figure 13).

Option Three (3): Use of a locking plate, but positioned more distally so that it acts as a buttress for the volar rim fragment and allows placement of at least one distal screw. Positioning the plate in this location may irritate the flexor tendons [40]. After the operation, the patient should be informed that the plate must be removed after the bone has healed. The need for a dorsal approach depends on the presence of a comminuted fragment, an intra-articular loose fragment, and an unstable DUC fragment (Figure 14). In the dorsal approach, the third extensor compartment is divided. A flap with an ulnar base is elevated from the fourth extensor compartment. A dorsal radiocarpal arthrotomy, while preserving the ligament, allows direct visualization of the articular surface [41]. Typically, the fracture line between the distal ulna corner (DUC) and the dorsal wall provides access to explore the intra-articular loose fragment. The fragment can be isolated, reduced, and fixed using bone grafting or bone substitutes. If the dorsal wall fragment is large enough to allow carpal translation, it can be fixed with Kirschner wires (K-wires) or fragment-specific fixation. The unstable DUC fragment is also fixed in a similar manner.

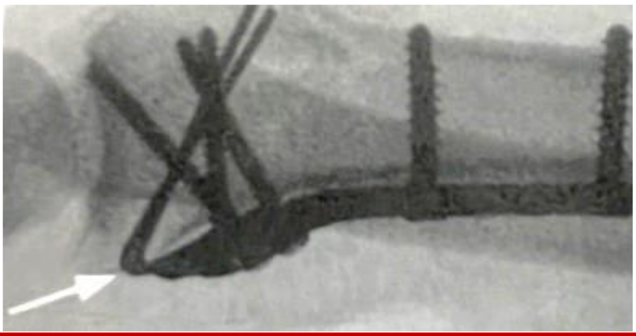

Figure 13: Use of Kirschner wires (K-wires) to stabilize the volar rim fragment

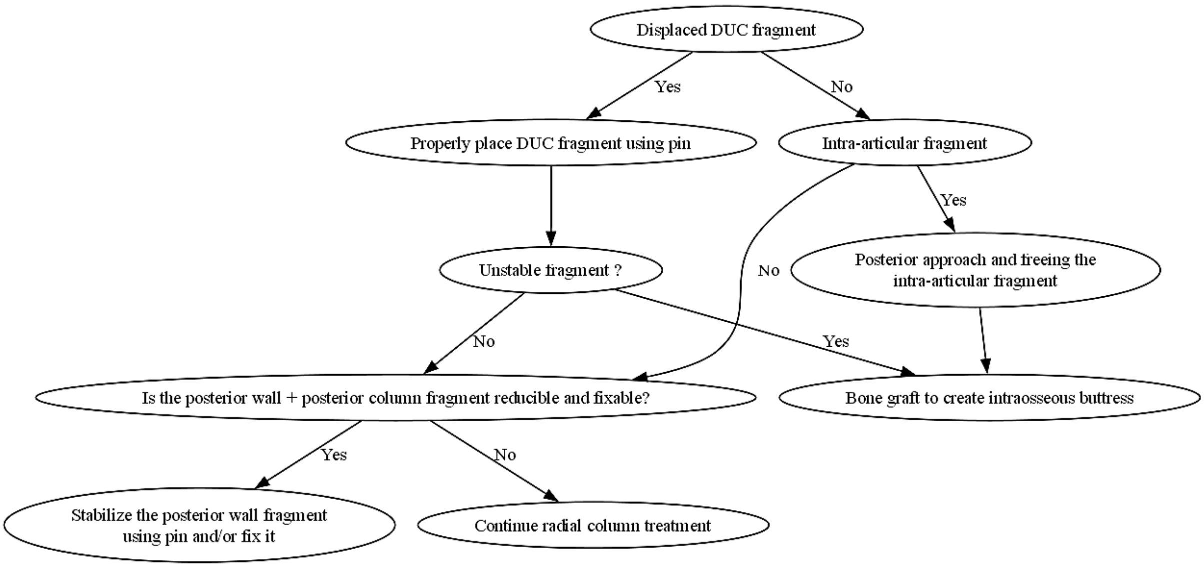

Figure 14: Use of Kirschner wires (K-wires) to stabilize the volar rim fragment

Radial Column

The radial column is reconstructed on the pedestal and forms a support structure for the intermediate column. The styloid fragment is reduced using traction and ulnar deviation. The brachioradialis is released without concern for its clinical effects. Management of the radial column depends on how the intermediate fragment has been fixed. If the volar rim is fixed with a plate [42], the last screw of the radial locking plate secures the styloid. The radial column's stability is tested under fluoroscopy with traction and pressure applied to the styloid (Figure 15). If instability is noted, fragment-specific fixation or a pin can be used for additional stability.

Ulna Column

After reconstructing the intermediate and radial columns, we assess the stability of the DRUJ (Distal Radioulnar Joint) to determine if the ulna column has any defects (Figure 16). Many patients with fractures involving the ulnar styloid do not have unstable DRUJ after anatomical reduction and fracture fixation [43]. Therefore, fractures and non-unions that are not displaced do not impact treatment outcomes [44].
Persistent instabilities of the DRUJ may result from instability of the intermediate column, insufficient repair of the sigmoidal cavity, or damage to the TFCC (Triangular Fibrocartilage Complex) [5]. If, despite prior fixation, instability (DUC) and the volar rim fragment persist, these issues should be addressed first. Otherwise, the ulnar styloid base fracture is fixed and the TFCC is repaired.
However, several authors have reported satisfactory outcomes using a splint, casting, and external fixator in supination or temporary stabilization of the DRUJ with Kirschner wires for 6 weeks. If Kirschner wires are used, it is essential to ensure that the wires are positioned outside the far and near cortices to facilitate their easy removal in case of wire failure.

Special Notes

Shear Fractures (Joint Shear) with Extensive Intra-articular Comminution:
High-energy distal radius fractures in young individuals with strong bones result in subchondral fractures accompanied by varying degrees of intra-articular comminution. These fractures cannot be fixed with locking plates or fragment-specific fixation alone. If the joint irregularity is less than 2 millimeters, an external fixator, with or without pins, or covering plates, can provide adequate traction and reduction for the volar rim, dorsal wall, and radial column fragments, allowing the fracture to heal with minimal displacement. Since the DUC fragment does not have ligamentous attachment to the carpal bones, ligamentotaxis is not effective for its reduction.

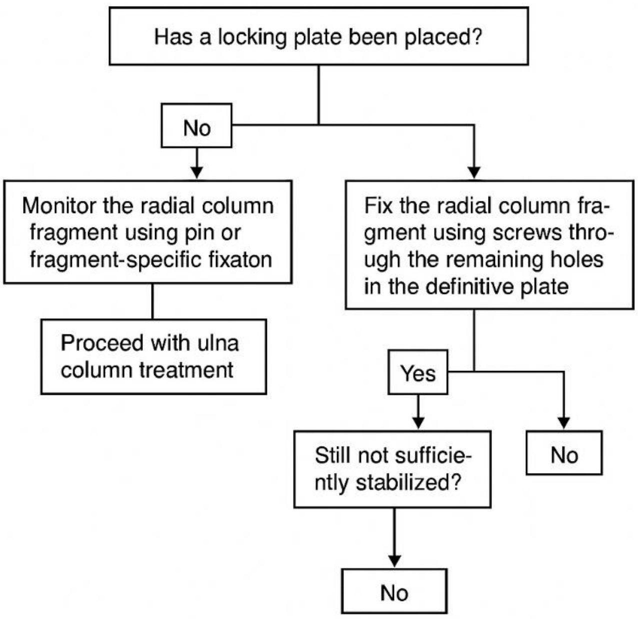

Figure 15: Fixation of the radial column

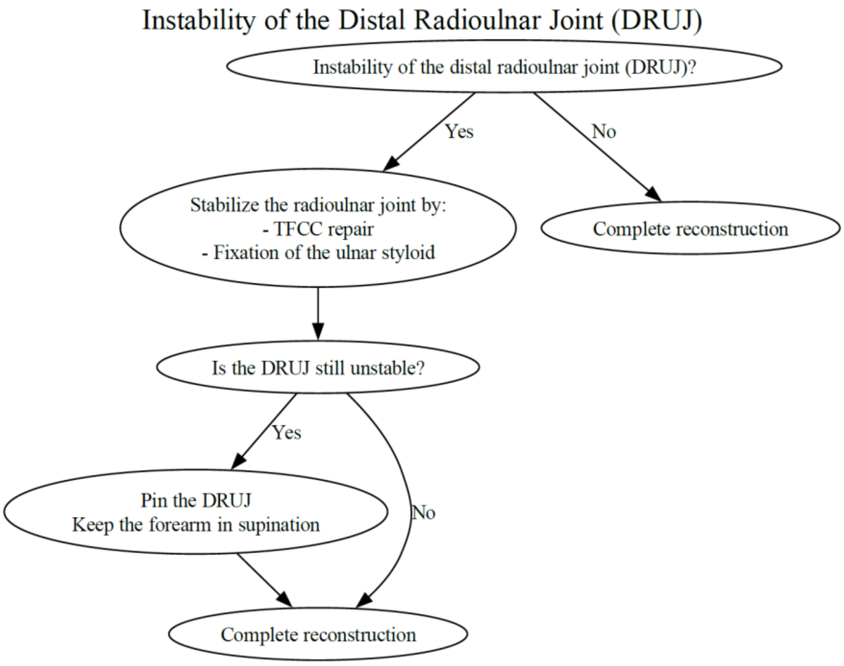

Figure 16: Algorithm for ulnar column treatment

If the joint irregularity exceeds 2 millimeters or if there is severe metaphyseal comminution or an unstable DUC fragment, an external fixator, with or without pins, or covering plates can be combined with a dorsal approach to facilitate the reduction of intra-articular fragments, bone grafting, and fixation using fragment-specific fixation and pinning.

In patients with distal radius comminuted fractures, covering plates and external fixators (with or without pins) have shown good clinical outcomes when compared to other types of fixation (45). However, attention to detail is essential to ensure that distraction is limited to less than 5 millimeters to avoid extensor tendon stiffness (64).

After fixation with covering plates or an external fixator, with or without pins, daily activities can begin with a weight-bearing load of up to 1.8 kilograms. If an external fixator is used, it is removed after 6 to 8 weeks. Covering plates are removed after 3 to 4 months.

Bone Deficiency of the Pedestal (Metaphyseal)

The most suitable type of fixation for metaphyseal fractures with bone deficiency depends on the ability to fix the intermediate and radial columns with locking plates. In this case, a long plate is used that spans the bone deficiency site and can fix the columns and pedestal. If the locking plate is not able to fix the distal fragments, an external fixator, with or without pins, or covering plates are used. The advantage of covering plates is the absence of subcutaneous pins that can remain beneath the skin for an extended period.

Bone deficiency of the pedestal is treated either acutely or in stages. In the acute phase, autogenous cancellous bone or corticocancellous bone is used for open or closed fractures. In cases of infected wounds, bone grafting is done in stages. In the first stage, a cement spacer saturated with antibiotics is used to create a membrane. This membrane is particularly effective in cases where the bone has been exposed to soft tissue. In the second stage, the cement spacer is removed, and the site is filled with autogenous bone. Autogenous bone is preferred over other grafts.

Role of Arthroscopy

The role of arthroscopy in managing intra-articular fractures is a subject of discussion and debate. Although cases of scaphoid lunate instability, lunotriquetral tears, and TFCC ruptures have been reported in over 60%, there is a lack of reports showing superior outcomes, leading to disagreement regarding the role of arthroscopy.

Yamazaki and colleagues compared the radiological and clinical outcomes of intra-articular fragment reduction using fluoroscopy and arthroscopy (47). In this study, no significant changes in grip strength, wrist motion, or DASH score 3 were observed after 48 weeks post-surgery. The use of arthroscopy depends on the equipment available at the center, such as having a dry arthroscope, etc. Many surgeons believe that with traction and using the proximal row surface, good reduction of fragments can be achieved.

Surgical Pain Management

The most significant change in the treatment of distal radius fractures since 2010 has been the transformation in postoperative pain management. The primary catalyst for this transformation was the opioid epidemic in the United States [48] and its subsequent spread globally [49]. The reluctance to use opioids in other countries has also been noteworthy. The trend is now moving toward reducing opioid use and adopting multimodal pain management approaches. Successful postoperative pain management begins at the time of surgery. If pain management begins after surgery, it will be too late [50]. There are numerous modalities available for managing surgical pain. Although some of these may not be suitable for pain management in distal radius fractures, a fully successful treatment has been achieved using simple over-the-counter medications [51].

Vitamin C supplements, with claims of beneficial effects in preventing CRPS (complex regional pain syndrome), which occurs in about 10% of patients after distal radius fractures, have gained attention. Vitamin C inhibits the local inflammatory cascade via antioxidant mechanisms, including free oxygen radicals [52]. Medications alone are not the solution [53]. The International Association for the Study of Pain has promoted the multimodal pain management strategy over the years, which has been effective in many cases [54].

Multimodal Approaches:

- Preoperative counseling (including verbal guidance, educational materials, and online publications)
- Acetaminophen (650 mg) every eight hours, in addition to Naproxen
- Pre-incision anesthesia with Lidocaine and Epinephrine
- Postoperative anesthesia before suturing the wound with Bupivacaine and Epinephrine
- Postoperative use of Acetaminophen and Naproxen, twice daily for several days
- Elevation
- Ice pack
- Psychological Support (Hand therapist, telephone communication with the doctor, written materials, and online publications)

Opioids are part of the multimodal approach but lose their significance. Minimal or opioid-free methods have not only been effective in pain reduction but have also avoided issues such as constipation or excessive drug use.

Postoperative Care

Postoperative care varies, and there is limited evidence supporting each method. Surgeons who treat distal radius fractures with volar plates, dorsal plates, or external fixators do not use casts or splints. This approach requires good pain management techniques. In this method, movements begin on the third day after surgery. Some surgeons use splints, and rarely casts, believing they help prevent pain.

There is no consensus on the duration of postoperative care, but many surgeons schedule follow-up visits within 2 to 4 weeks. External fixators are typically maintained for 6 weeks, and sometimes even up to 8 weeks. Some fractures that do not achieve bone union may remain in a cast for up to three months. Cover plates are removed after three months.

The functional hand movements in patients treated with cover plates who were immobilized for three months were no different from those in patients treated with volar plates who began hand movements after three days. These observations challenge the traditional AO recommendations of early postoperative mobilization.

Postoperative Physiotherapy

Postoperative physiotherapy after surgery or casting is a topic of debate. A systematic study has examined the differences between formal and home physiotherapy; both methods were equally beneficial. It would be wise to allow patients to manage their rehabilitation with therapist guidance and medical handouts, and keep supervised therapy for patients who need encouragement or are suffering from joint stiffness.

A Very Important Point in Post-Surgical Radiography

A very important issue is follow-up and radiography of the volar plate. Volar plates should be checked through the facet view (Figure 17), not with the routine lateral or posterior-anterior views (Figure 18). Routine views show a high error rate in the positioning of locking plate screws. Figure 18 shows a lateral radiograph of a locking plate where screws are inside the joint, while in Figure 17, taken with the facet view, no such error is observed. It is important to remind radiology technicians to use the facet view. Adequate tilt can be achieved by placing a 2-inch roll bandage (Vibril) under the cast, directly beneath the wrist.

Figure 17: Patient with facet view

Figure 18: Patient with lateral view

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