Indications: Fracture-dislocations of the elbow are rarely amenable to nonoperative management. One common pattern occurs with posteromedial dislocations of the elbow. While these may occur after falls on an outstretched hand (flexed, adducted, and axially loaded), they are more commonly high energy injuries such as are seen in jumping and contact sports, industrial accidents, and motor-vehicle crashes. This pattern is consistent in having a medial shearing fracture of the coronoid process of the ulna and disruption of the LCL/ LUCL. Other associated injuries may include additional injuries to the proximal ulna (olecranon fractures), articular cartilage injury, and base of the coronoid fractures. These injuries are unstable, likely to be debilitating in the absence of surgical treatment, and are generally treated surgically.

Technique: The patient is positioned supine with a sterile tourniquet above the level of the drapes. The coronoid fracture is addressed first. A longitudinal incision is made over the posteromedial elbow, exposing the flexor-pronator mass and protecting the posterior branch of the medial antebrachial cutaneous nerve. The ulnar nerve is identified on the medial border of the triceps and then decompressed from the Arcade of Struthers to the FCU aponeurosis. Nerves that subluxate anteriorly with range of motion will be transposed anteriorly at the end of the case. The FCU split is carried on distally and the flexor-pronator mass is elevated bluntly off of the underlying olecranon and coronoid. The fracture planes are inspected and the joint may generally be entered through the coronoid fracture. Hematoma is washed out and the joint inspected. Any loose pieces of bone or cartilage are now removed and catalogued. Salvageable pieces will be reincorporated into the reconstruction. The joint surface is now reduced back to an anatomic position if injured. The coronoid tip, when a separate fragment, is controlled with a capsular stitch which is then cerclaged around the olecranon body and tied over the subcutaneous ulna. The shear fracture is then reduced and secured definitively with a contoured buttress plate oriented over the apex of the fracture. Additional fixation will be used as needed. Wounds are irrigated copiously and tourniquet is dropped to regain hemostasis. Wounds are then closed in layers, performing an anterior transposition of the ulnar nerve when necessary.

Tourniquet is now reinflated and the proximal limb of a Kocher incision to the lateral elbow is created. The ECU/ Anconeus interval is identified and opened. The LCL origin is then inspected and both anterior and posterior compartments are inspected by releasing capsule. Any additional loose bodies are removed. The LCL is then prepared with #2 fiberwire in a Krakow pattern. Parallel drill holes are placed from the lateral epicondyle after preparing this surface to a healthy, bleeding bone bed with a rongeur. The stitches are then passed transosseously, tensioned, and tied down. Additional periosteal stitches and, occasionally, suture anchors may be used as needed. The wound is then closed in layers and the skin is
cleaned and dried, then a sterile dressing is applied. The patient is placed in a posterior mold splint, extubated, and transported to postoperative recovery. The decision to admit to hospital vs. discharge is based on the presence or absence of other injuries. Isolated dislocations are generally discharged on the day of surgery.

*Therapy begins on the 5-7th day after surgery--*

**Phase 1 Therapy (Protect Repair, Regain ROM)**

Therapy 2-3x/ week x 6 weeks

- Dressing is removed and the patient is placed in a hinged elbow brace with the forearm in neutral rotation. Teach the patient to don and doff/lock and unlock the brace. The brace should be locked at all times when not working on range of motion. This includes sleeping.
- AROM/ AAROM with gravity assisted extension in hinged brace.
  - 1st 2 weeks- limit to 30-110 in brace.
  - weeks 2-4- limit to 15-130
  - weeks 4-6: no limits in brace.
- Gentle PROM of shoulder, wrist, and hand.
  - Avoid abduction of shoulder. No rotational stress (ER or IR).
- Non-weightbearing at all times. May type, write, and use hand for assistance in feeding.
- Dry dressing to patient’s wounds, change daily. Patient may shower at 7 days after surgery.
- modalities prn
- HEP

*1st postoperative visit 10-14 days after surgery--*

- 3 views of the elbow to monitor for maintenance of reduction.
- Wound assessment. Stitches out when wound is well-coapted.
- Pain assessment. Refill pain meds as appropriate.
- Review postoperative limitations.
- Work Note: may type and write. no driving. No lifting, pushing, or pulling. Non-weight bearing to the operative extremity.
- Therapy Note: Continue Phase 1 Therapy
- Return to Office at 6 weeks after therapy.
- Expected Return to Work:
  - Cognitive/ Sedentary: 2 weeks
  - Light Labor: 8 weeks
  - Medium/ Heavy Labor: 3-4 months
2nd Postoperative Visit at 6 weeks after surgery--

- Three views of elbow. Assess for bridging bone at repair sites.
- Pain assessment. Refill pain meds as appropriate.
- If bridging bone visible on x-ray and elbow non-tender to palpation, then advance to phase 2 of therapy. If still tender or if there is concern for delayed union, continue with phase 1 therapy and see the patient back in 2 weeks to reassess.
- Phase 2 work restrictions: At 8 weeks, may return to lifting up to 20#. No pushing/pulling. May drive.
- Return to Office at 12 weeks after surgery.
- Expected Return to Work:
  - Cognitive/ Sedentary: 2 weeks
  - Light Labor: 8 weeks
  - Medium/ Heavy Labor: 3-4 months

Phase 2 Therapy (Regain ROM and wean from protection)

- Splinting-- may wean from hinged brace as tolerated. Start ROM out of brace.
- Range of Motion--
  - AROM/ PROM of shoulder, elbow, wrist, and hand.
  - may allow abduction of elbow.
  - AROM/ AAROM as tolerated in flexion, extension, pronation, and supination.
  - PROM
    - may add static progressive splint for extension or flexion as needed if extension is < -30 degrees or if flexion is <130 degrees at 8 weeks postoperatively.
    - may use light dumbbell hangs to facilitate elbow extension.
- Strengthening-
  - Isometric rotator cuff and scapular strengthening
  - Light grip strengthening.
- Modalities prn
- HEP
- Advance to Phase 3 when:
  - Patient has painless range of motion between 30-130 degrees of flexion.
  - Able to perform exercises with good mechanics.

Phase 3 Therapy (Normalize Function and Regain Strength)
Therapy 1-2x/ week

- AROM/ PROM
  - Shoulder, elbow, wrist, and hand. Goal is for at least 10-140 degree arc of motion.
- **Strengthening**
  - Isotonic Rotator Cuff, Scapular Shrugs and Prone Rowing.
  - Biceps and triceps strengthening
  - Grip strengthening
  - When strength is 80% of contralateral side, patient’s with unusually high demands either for occupation or recreation may benefit from a work conditioning or sport-specific conditioning program. Please contact Leslie Hedge, RN at 573-388-3026 to arrange for a referral if needed.
  - Throwing athletes may add interval throwing program after week 10.
- modalities prn
- HEP

*3rd office visit 12 weeks after surgery--*
- x-rays: 3-views of elbow.
- pain assessment
- DASH score
- Work note: Depends on patient’s clinical performance. Patients with very high demand, manual laboring jobs may require further work hardening. Majority of patients may return to normal life demands without restrictions at this point.
- MMI at one year from surgery