Hand Therapy Guidelines

2012

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And
Orthopaedic Department

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Plastic Surgery Guidelines
Dupuytrens (fasciectomy / dermo-fasciectomy)

Post – op
- Hand supported in bulky dressing or POP
- Instructed to keep elevated

Day 5
- Seen in Hand Therapy Clinic
  ▪ Dressing taken down, wound checked by nurse
  ▪ Graft checked by surgeon / team (in Dressing Clinic)
  ▪ Dressing reduced to allow active movement
  ▪ Start gentle active exercises
  ▪ Start gentle passive extension within limits of wound stability.
  ▪ Encourage elevation
  ▪ Night extension splint fabricated (palm based)

Day 10 – 14 Hand Therapy Clinic
- ROS
- Wound management as required
- Commence scar management (oily cream, + silicon product)
- Exercises – continue active and passive within limitations of wound healing
- Reassess splint/remould – advise patient to wear at night only for 3 to 6 months
- Refer to patient local physio/OT if indicated
- Check op notes for any OPD follow up

Follow up
- Check op notes for OPD
**Extensor Tendon Repair - Zone I / II (mallet)**

Rupture or lengthening of terminal extensor tendon at the DIP joint

**Closed Injury**

- Referred for a splint as soon as possible. (DIPJ neutral to hyperextension) (if hospital attendance over weekend/bank holiday, finger in a zimmer or stack splint and refer to Occupational Therapy for splint on Monday/Tuesday) Start PIP joint flexion and extension exercises. Refer to local splinting team for splint review as required.

- Review in Hand Therapy clinic at 6 weeks. If no extensor lag, then start exercises and refer to local physiotherapy if needed. If extensor lag >30 deg, then immobilise for further 2 weeks and review at 8 weeks.

- At 6 weeks – start active DIPJ exercises (composite and isolated) Splint night/protection for 2 weeks (longer if lag present) Start light activities

- At 8 weeks – discard splint if no extensor lag present Continue with exercises Start passive stretches if reduced flexion and no extensor lag Start moderate activities

- At 10-12 weeks – return to full function and work Contact sports

N.B. Acceptable extensor lag no more than 30deg or as patients lifestyle allows

**Surgical Repair +/- K-wire**

As closed injury +/- scar management
Extensor Tendon Repair - (Zone III – Central slip)

Disruption of the extensor tendon central slip over the PIP joint: usually by rupture or lengthening +/- lateral band involvement

Central Slip Involvement Only

1. Closed
   - Referred to Occupational Therapy Department for splint.
     Splint position – PIPJ 0deg volar gutter
     Instruction given for DIPJ flexion/extension
     Splint review as needed with local splinting service.
   - Review Hand Therapy Clinic at 6 weeks
     Start exercises and refer to local hospital for Physio/OT
   - At 6 weeks – start active isolated PIPJ flex/ext
     Work towards combined active flexion over next 2 weeks
     Splint night/protect for 2 weeks if no extensor lag
     Start light activities – ward patient of no sudden grip work
     Return to driving
   - At 8 weeks – discard splint if no extensor lag
     Start moderate activities
     If poor flexion; start passive flexion; if no lag

2. Repair (+/- K-wire)
   - Day 1 post-op - POP removed. Replace with PIPJ gutter splint
     DIPJ mobilised with O.T./Physio
     All free joints mobilised
   - At 2 weeks – Seen in Hand Therapy Clinic
     Removal of sutures
     Check DIPJ exercises
     Scar management
     Splint review
   - At 4 weeks – removal of k-wire
     Start PIPJ exercises
     Refer to local Physio as needed

**NB:** If lateral band involvement: +/- central slip
0-2 weeks immobilise in DIP/PIPJ extension, then PIPJ only for further 2/52
At 4 weeks start DIP and PIPJ exercises
Progress exercises as closed injury
Use of capener splint as clinically indicated
Extensor Tendon Repair (Zone IV-VIII)

Day 1 post-op
- POP position checked; wrist 30° extension, MCPJ 0°-30° flexion, IPJ full ext.
- If good POP position; to remain in POP
- If poor POP position; refer to Occupational therapy for splint.

At week 3
- Seen in Hand Therapy Clinic
- Removal of sutures and POP
- Start exercises –
  - isolated wrist flexion/extension
  - isolated MCPJ flexion/extension
  - IPJ flexion/extension with MCPJ in extension
  - Work towards full combined active flexion over next 2 weeks
- Start light activities

At week 4
- Start passive isolated IPJ exercises if needed
  (monitor for extensor lag, if lag present, then night extension splint needed)

At week 6
- Start passive combined exercises.
- Start moderate activities
- Start driving

At weeks 8
- Return to full activities
- Return to contact sport

NB:
- If joint involvement/foreign body/ fracture then consider early active mobilisation. Discuss with the surgeon prior to discharge from ward.
- Occasionally POP replaced with splint on day 1 post-op or week 2 (if concerns regarding POP position and wound). Splint can be worn for protection for 2 weeks after immobilisation period.
Extensor Tendon - Thumb (E.P.L. All zones)

Day 1 post-op
- POP position checked; wrist 30° ext, CMCJ mid position, MCPJ/IPJ full ext.
- If good POP position; to remain in POP
- If poor POP position; refer to Occupational therapy for splint.

At week 3
- Seen in Hand Therapy Clinic
- Removal of sutures and POP
- Refer to local physiotherapy if needed
- Start exercises
  - isolated wrist flexion/extension
  - isolated IPJ flexion/extension
  - thumb extension/opposition/adduction/abduction
- Splint night/protect if extensor lag
- Start light activities

At week 6
- Start passive combined exercises.
- Start moderate activities
- Start driving

At weeks 8-10
- Return to full activities and contact sports

NB:
- Occasionally POP replaced with splint on day 1 post-op or week 2 (if concerns regarding POP position and wound). Splint can be worn for protection for 2 weeks after immobilisation period.
Extensor Tendons - Wrist

Adults and children with repairs of >40% division to ECU or ECRL/B

- **Day 1 Post-op**
  - POP position checked; wrist at 0-30 degrees extension
  - Fingers free to move
  - If good POP backslab position; to remain in POP
  - If poor POP backslab position; refer to OT for splint
  - Encourage full movement of all free joints
  - Elevate

- **Week 2**
  - Seen in HTC
  - Remove of sutures
  - Replace POP with splint

- **Week 3 - 4**
  - Seen in HTC
  - Commence active wrist exercises
  - Continue with splint at night/protect for further 2 weeks
  - Commence light activities
  - Refer to physiotherapy if required.
  - (NB Care with rotational activities with ECU repairs)

- **Week 6**
  - Discard splint
  - Start driving

- **Week 8**
  - Commence passive wrist flexions if required
  - Start to increase strength exercises
  - Commence moderate activities

- **Week 10**
  - Return to contact sports and heavy manual work
**Flexor Tendon Repairs – Fingers**

**(Controlled Active Mobilisation, CAM)**

- Adults and children over 10 years who are deemed able to comply with the post-op plan with repairs of 40% or more to FDP and /or FDS tendons with or without nerve or vascular injury.
- Contribute to MDT assessment of post-op plan e.g. with/without patient compliance

**12 - 24 hours post-op**
Dressings reduced on the ward (retain POP until seen by OT)
Splint position; wrist 0-30deg flex, MCPJs 70-90deg flex, IPJs 0deg
Commence CAM (controlled active mobilization)
  - 5 passive flexion to individual digits, then active extension to splint hood
  - 10 active flexions and extensions
  - hourly exercises
  - before discharge aim for;
    - full active extension to hood of splint
    - reasonable active/passive flexion in limits of oedema, pain and wounds i.e. ½-3/4 range
Advice – education, elevation, no smoking/caffeine, protection. Advice sheet given. Outpatient physiotherapy arranged locally and within one week.

**At 2 weeks.**
Seen in Hand Therapy Clinic – check tendon intact/ exercises/therapy in place, ROS.
Start scar management once wound healed (caution with massage in zone 1/11 in early stages due to forced passive extension)

**2-4/6 weeks**
Continue with splint constantly, exercises, scar management, check tendon integrity
Use of COBAN, joint mobilisations and gentle passive extensions if appropriate.

**At 6 weeks**
Seen in Hand Therapy Clinic.
Start exercises out of the splint (see patient advice sheet)
Retain splint for night/protection in the day for the next 2 weeks
Light function only (weight of a cup of tea)
Avoid forced passive composite extension.

**At 8 weeks**
Discard splint.
(may need night extension splint if tendon tightness or flexion contractures developed- refer to nearest splinting team)
Begin resisted flexion.
Return to moderate activity (weight of ½ full kettle)
Return to driving if safe.

**At 12 weeks**
Seen in Hand Therapy Clinic.
Return to full function and heavy lifting. Return to contact sports.
Flexor Tendon Repairs – Fingers

(Modified Duran Regime)

Similar client group to CAM group. Used when repair is tight or vulnerable

Day 1 Post-op
Dressing reduced on the ward. (retain splint until seen by OT).
Splint fabricated by OT - Position – wrist 20deg flexion
    MCPJs 50 deg flexion
    IPJs in neutral.
Commence Duran exercise regime;
    i)  10 passive flexion and active extensions (ensure nail to hood of splint is achieved)
Perform exercises 2-4 hourly.
Local outpatient Physiotherapy arranged within 1 week

At Week 2
  ▪ seen in hand therapy clinic
  ▪ removal of sutures
  ▪ commence scar management
  ▪ check exercises and therapy in place
  ▪ check tendon integrity

At week 4
  ▪ commence active exercise programme as CAM regime
  ▪ continue with scar management
  ▪ use of COBAN / ultrasound if applicable

At week 6
  ▪ progress as CAM regime
Flexor Tendon Repairs – Thumb.

(Controlled Active Mobilisation, CAM)

- Adults and children over 10 years who are deemed able to comply with the post-op plan with repairs of 40% or more to FPL tendon with or without nerve or vascular injury.
- Contribute to MDT assessment of post-op plan e.g. with/without patient compliance

12 - 24 hours post-op
Dressings reduced on the ward (retain POP until seen by OT)
Splint position; wrist 0-30deg flex, MCPJ 10deg flex, IPJs 0deg, in palmar abduction, fingers free.
Commence CAM (controlled active mobilization)
- 5 passive composite flexion IPJ/MCPJ and active extensions
- 5 active IPJ flexions and extensions
- 5 active composite flexions and extensions
- Hourly exercises
- Before discharge aim for:
  a) Full active extension to hood of splint
  b) Reasonable active/passive flexion in limits of oedema, pain and wounds i.e. ½-3/4 range
Advice – education, elevation, no smoking/caffeine, protection. Advice sheet given.
Outpatient physiotherapy arranged locally and within one week.

At 2 weeks
Seen in Hand Therapy Clinic – check tendon intact/exercises/therapy in place, ROS.
Start scar management once wound healed (caution with massage in zone 1/11 in early stages due to forced passive extension)

2-6 weeks
Continue with splint constantly, exercises, scar management, check tendon integrity
Use of COBAN, joint mobilisations and gentle passive extensions if appropriate.

At 6 weeks
Seen in Hand Therapy Clinic.
Retain splint for night/protection in the day for the next 2 weeks
Light function only (weight of a cup of tea).
Short periods of writing only
Avoid forced passive composite extension.

At 8 weeks
Discard splint.
(may need night extension splint if tendon tightness or flexion contractures developed - refer to nearest splinting team)
Begin resisted flexion.
Return to moderate activity (weight of ½ full kettle)
Return to driving if safe.

At 12 weeks
Seen in Hand Therapy Clinic. Return to full function and heavy lifting. Return to contact sports.
Flexor Tendons - Wrist

Adults and children with repairs of >40% division to FCU or FCR

➢ **Day 1 Post-op**
  - POP position checked; wrist at 0-30 degrees flexion
  - Fingers free to move
  - If good POP backslab position; to remain in POP
  - If poor POP backslab position; refer to OT for splint
  - Encourage full movement of all free joints
  - Elevate

➢ **Week 2**
  Seen in HTC – remove of sutures
  - replace POP with splint (wrist in 30° flexion, fingers free)

➢ **Weeks 3 - 4**
  Seen in HTC –
  - commence active wrist exercises
  - continue with splint at night/protect for further 2 weeks
  - commence light activities
  - refer to physiotherapy is required

➢ **Week 6**
  - Discard splint
  - Start driving

➢ **Week 8**
  - Commence passive wrist extensions if required
  - Start to increase strength exercises
  - Commence moderate activities

➢ **Week 10**
  - Return to contact sports and heavy manual work
Finger Tip Injuries/Amputations

General Principles

1. early movement; active and passive (if no fracture involvement)
2. oedema control
3. early intervention to address sensory changes i.e. re-education/desensitisation
4. advice on returning to ADL, work, sports, hobbies.
Repair of Major Arteries and Veins

Return from theatre in bulky dressing +/- backslab

At 2 weeks
- Seen in hand therapy clinic
- Removal of sutures
- Commence scar massage
- Gentle active exercises
- Light function

4-6 weeks
- Cautious passive exercises

At 6 weeks
- Return to full function
MCP Joint Swanson’s Interposition Arthroplasty

Week 1
- Splint worn constantly, removed for physiotherapy only
- Free active exercises for MCP flexion/extension under supervision
- These should be carried out with ulnar border of hand and forearm resting on table to maintain correct alignment of MCPs
- Individual splints which maintain IP joint extension can be useful when exercising MCPs for those patients who have a tendency to flex predominantly at PIP joints
- In certain cases the surgeon will opt to manage these patients in an outrigger splint to maintain MCP extension.

Week 2-3
- Splint removed only for exercising
- Continue MCP exercises
- Exercises to strengthen lumbricals and intrinsic muscles may be incorporated. Pre-operative assessment is important to establish the predicted post-operative function of these muscles. Surgical transfer/release may have been performed.
- No intrinsic exercises which ulnar deviate
- Light equipment exercises may begin, e.g. using tweezers, picking up objects between finger and thumb
- No exercises which encourage ulnar deviation.

Week 3-6
- Splint – continue to remove only for exercising
- Exercises can be progressed by introducing gentle strengthening and functional activities regime

Week 6-12
- Splint at night only. Discard splint at 12 weeks
- May resume light ADL’s at home and progress to full functional use of the hand
Repair of Small Muscles of the Hand

Thenar/hypothenar

Post-operative
- Return from theatre in bulky dressing
- Rest in dressing for 2-3 weeks

At 2-3 weeks
- Seen in Hand therapy clinic
- Removal of sutures
- Commence scar management
- Start gentle active exercises
- Splint to protect only if needed
- Light function

At 6 weeks
- Start passive exercises if needed
- Continue with active exercises
- Return to driving

At 8 weeks
- Return to full function as able.

Intrinsic Muscles
- As thenar muscles
- Start intrinsic stretches at week 6
- Return to work at 6-8 weeks, depending on type of work
Median Nerve Repair

(distal to anterior interosseous nerve)

Day 1 - Week 2

- Immobilise wrist for 2 weeks in neutral (or as indicated by surgeon depending on tension on repair/graft)
- Maintain active/passive ROM of all free joints (especially thumb web space)
- Advice to patient i.e. elevate, warnings re hot/cold/sharp objects

Week 2 – seen in Hand therapy clinic

- Removal of sutures
- Commence scar management
- Immobilise wrist. Splint position wrist 0-30º flexion

Week 4 - Attend Hand Therapy Clinic

- Start gentle active wrist exercises (ensure full passive range of web space)
- Continue with other exercises
- Refer to local physio
- Continue with splint at night/protection for further 2 weeks
- Light function

Week 6 - 8

- Discard protective splint
- Introduce functional splint to assist with opposition e.g. Neoprene abductor splint
- Introduce ‘C’ splint to address tight web space if needed.
- Start resisted exercises
- Introduce sensory re-educational
- Increase function as able/driving

Consider

- Function, desensitisation
- Nerve retraining → focus on thumb opposition; NB. Trick movements
- Nerve recovery monitored at 6 – 8 week intervals using Semmes-Weinstein monofilaments.
Ulnar Nerve Repair

Day 1 - Week 2

- Immobilise wrist for 2 weeks in neutral (or as indicated by surgeon depending on tension on repair/graft)
- Maintain active/passive ROM of all free joints (especially thumb web space)
- Advice to patient i.e. elevate, warnings re hot/cold/sharp objects

Week 2 – seen in Hand therapy clinic

- Removal of sutures
- Commence scar management
- Immobilise wrist. Splint position wrist 0-30° flexion

Week 4 - Attend Hand Therapy Clinic

- Start gentle active wrist exercises (ensure full passive range of digits)
- Continue with other exercises
- Refer to local physio
- Continue with splint at night/protection for further 2 weeks
- Light function

Week 6-8

- Discard protective splint
- Introduce functional splint if clawing develops e.g. figure 8 / knuckle-duster / anti-claw splint
- Introduce night extension splint to address any tightness in soft tissue length of long flexors
- Start combined finger/wrist extension stretches (if needed)
- Start resisted exercises
- Introduce sensory re-education
- Start driving and increase function as able

Consider

- Function, desensitisation
- Nerve retraining → focus on cylindrical grip, lateral pinch grip, IPJ extension

Nerve recovery monitored at 6 – 8 week intervals using Semmes-Weinstein Monofilaments
Radial Nerve Repair
(posterior Interosseous nerve)

Day 1 Week 3

- Immobilise in static splint (position of safe immobilisation)
- Advice to patient re elevate
- Arrange splinting in O.T. for week 3

Week 3 - Attend Hand Therapy Clinic / Dressing Clinic

- Removal of Sutures
- Start gentle exercises
  - maintain passive extension of long flexors (isolated/composite extension of fingers/wrist)
  - Active flexions (refrain from composite wrist and finger flexion)
  - Maintain active/passive thumb web space
  - IPJ/MCP flexion and intrinsics
- Refer for splinting (this needs to be prearranged with O.T. due to time to make splints
  - at night → volar resting splint
  - in day → low profile dynamic splint

Consider

1. Splint all day; remove for exercises only
2. Light function within dynamic splint
3. Discard sections of dynamic splint as recovery occurs e.g. as improved active wrist extension; discard wrist section
4. Increase strength of muscles as recovery progresses
5. Need activities requiring a stable wrist and wrist/digit extension e.g. elevated activities.
Guidelines for Nerve Injuries

Nerve Injuries above Elbow

- High Ulnar - 3 weeks immobilise elbow in extension
- High Radial - 3 weeks immobilise elbow in mid position
- High Median - 3 weeks immobilise elbow flexion
Common or Digital Nerve Repair

Day 1 Post-op
- Immobilise individual digits (POP, zimmer, dressing)
- According to tension/gap in repair, splint according to operation notes.

Day 10-Week 2
- Seen in Hand Therapy clinic
- Removal of sutures
- Commence scar management
- Introduce desensitisation/ sensory re-education (if appropriate)
- Commence exercises – gentle active isolated and composite flex/ext
  - Expect full range by 3 weeks
- Light function for 2 weeks
- Warnings given regarding insensate area

At week 4
- Commence passive extension, hyperextension, or resisted flexion if needed
- Return to full function

At weeks 8-10
- Check sensory recovery
- Continue with scar management and sensory re-education
- Monitor for neuroma

At 3-4 months
- Reassess sensation
- Review in Hand therapy clinic/ outpatients

NB: For combined nerve and tendon injuries it is usual for the tendon rehabilitation to take priority
Trapeziectomy

Performed in those patients with carpometacarpal joint (CMCJ) degeneration due to arthritis or trauma.

Day 1 Post op
- Return from surgery in POP
- Patient education re elevation
- Encourage movement to all free joints

At 2 weeks seen in Hand Therapy Clinic
- Removal of Sutures
- Supplied with thermoplastic splint to be worn constantly
- IPJ thumb free to move

At 4 weeks seen in Hand Therapy Clinic
- Start active exercises
- Start light function
- Splint for night/protection for further 2 weeks

At 6 weeks
- Continue
- Discard splint – may need soft support to protect during functional activities

At 8 – 10 weeks
- Start gentle strength work for pinch and grip

At 10 – 12 weeks
- Return to all function
Ulnar Collateral Ligament Injury to the Thumb

2 Categories
Incomplete tears - no bony avulsion, minor instability requires Conservative management
Complete tears - bony avulsion (? stener lesion), major instability requires surgery

Conservative Treatments

0-3/6 weeks - Immobilised in thumb spica (refer to O.T. for splint)
- Discuss with doctor re IPJ / wrist movements & splinting time
4-6 weeks - Refer to Hand Therapy Clinic
- Start wrist / CMCJ / IPJ/MCPJ exercises
- Splint between exercises and at night
6-8 weeks - Start passive exercises
- Continue with splint for support at night
8-10 weeks - Start strength work e.g. pinch (lateral, tip, tripod) grip (thumb locking around 6-8cm cylinder)
10-12 weeks - Increase function
- Strapping for sports as required

Surgical Treatment (after repair / k-wire)

0-4/6 weeks - As conservative treatment
(at 4 weeks k-wires removed in dressing clinic)
At 6 weeks - Refer to hand Therapy Clinic
- Start active MCPJ exercises
- Splint for night and support only
8-10 weeks - Continue with active exercises
- Start passive MCPJ exercises
- Splint for night and support only
10-12 weeks - Start strength work
12-16 weeks - Return to full function / sports as able / use strapping/support
Repair of Volar Plate (PIP Joint)

Return from Theatre in dressing and POP

Day 1 post op
- Refer to OT for dorsal splint to block PIPJ at 30° flexion
- Splint constant for next 4 weeks
- Start exercises - composite and isolated active and passive flexion
  - active extension to hood of splint
  (to wear strap when not exercising and at night)

At 2 weeks
- Seen in Hand Therapy Clinic
- Removal of sutures
- Scar management
- Check exercises and splint
- Refer to Physiotherapy if not already

At 4 weeks
- Discard dorsal splint
- Volar splint at limits of active range
- Continue with flexion exercises
- Nail → table top extensions
- Light activities
- Return to driving as able
  (if joint unstable; k-wire usually used, remove at 4 to 6 weeks in clinic)

At 6 weeks
- Start passive stretches
- Splinting to ↑ stretch
- Start resisted exercises as able
- Moderate activity

At 8 weeks
- Continue with therapy as needed
- Return to function
- Contact sports/work +/- buddy taping

Outcome: Extension achieved slowly over 3 – 4 months
Orthopaedic Hand Therapy Guidelines
**MCP Joint Arthroplasty**

The main aim of the procedure is pain relief. The procedure also aims to restore function by increasing arc of flexion and extension range of movement, reducing pain and correcting deformity (commonly ulnar deviation). The implant is a dynamic spacer which allows the development of a stable fibrous capsule and is often accompanied by extensor tendon realignment.

**Outcomes:**
- Extension approx 20° lag
- Flexion approx 65°

**Main Complications:**
- Long term implant failure,
- Reoccurrence of ulnar deviation.

---

**Immediate Post Op Phase**

**Day 4 – 5 Post op**

**Elevation, Analgesia, Check theatre dressing**

Arrange out-patient appointment 4-5 days

**Check what implant used +/- involvement to extensor mechanism**

Fabricate Resting Splint: Wrist 20-30° ext; MCPS’s 20-40° flex; IPS’s 20-30° flex

Splint removed hourly for exercises

Commence;
- **a)** isolated active MCP flexion/extension (ulnar border of hand and forearm supported on table to maintain MCP alignment)
- **b)** isolated active IPJS flexion/extension (no combined flexion - in cases of extensor tendon reconstruction)

Ice if required

Arrange physiotherapy/Occupational Therapy appointment at local hospital

**Week 2 - Seen in therapy clinic**

Wound check/ROS. Commence scar management. Continue with above programme

**Week 3**

Commence radial finger walking.

Continue removing splint for exercises/hygiene

Commence gentle passive movement of MCPS’s if 70° not achieved

**Week 6 - Seen in consultant clinic.**

Commence gentle strengthening exercises & Gentle composite flexion

Commence Light function.

Continue with splint at night only.

**Fabricate anti ulnar drift splint for use in function if ulnar drift persistent.**

**Week 12**

Discard splint. Progress to full function with joint protection principles.
# PIP Joint Arthroplasty

This procedure is usually for OA or RA, affecting the proximal interphalangeal joint of the finger and is also done occasionally following trauma. The main aim of the procedure is pain relief and restoring functional motion. The implant is a dynamic spacer which allows the development of a stable fibrous capsule.

**Outcomes:**
- Extension approx 20° lag
- Flexion approx 45 - 60°

**Main complications:** Stiffness, lateral deviation, recurrent deformity

## Immediate Post op Phase

**Elevation, Analgesia, Check theatre dressing**

Arrange outpatient appt **3-5 days** (If no clinic available, book therapy appt direct with therapists)

## Day 3 – 5 Post op - Seen in Therapy clinic (or Hand Physio or O.T in dept) –

**Wound check.**

Check what implant used and what involvement to extensor mechanism

Fabricate Hand Based Resting Splint; Applied to operated finger and adjacent finger

**Position:** MCPJ 20-30° flexion; PIPJ Full extension; DIPJ Full Extension

Bedford Buddy strapping to be provided for use within splint when wound completely dry. Buddy taping to be used during exercises until wound dry. Advise patient splint to be removed hourly for exercises (with buddy strap in situ)

**Exercises:**
- Active isolated flex/ext MCPJ’s.
- Active isolated flex/ext PIPJ
- Active combined flex/ext PIPJ’s and DIPJ’S (MCPJ’s in extension)
- Active ROM all unaffected joints.

Arrange PT/OT appt at local hospital. Morriston therapists to review until appt provided.

## Week 2 - Seen in Therapy clinic

**wound check/ROS. Check splint & exercises**

Splint removed for exercises/hygiene only continue until week 6.

Avoid light function of operated finger.

Commence scar management

## Week 6 - Review in consultant clinic

Resting Splint at night only. Buddy strapping removed if joint stable.

Commence composite flexions

Commence passive movement of PIPJ and flexion taping/splinting.

Commence gentle strengthening.

Commence Light function.

## Week 12

Discard night splint at 12 weeks. Return to full function as able.
**Radial Head Replacement**

If Lateral collateral Ligament Stable:
- At 48-72 hours, commence active exercises (or as guided by Surgeon)
- Gentle weight-bearing and rotation for 4/52 & as tolerated.  
  *NB: the annular ligament is partly incised and repaired during the operation therefore caution on weight-bearing in first 4/52*

If related to fracture-dislocation:
- Elbow extension restricted and progressed as guided by surgeon.
Total Wrist Arthroplasty

Largely restricted to the RA patient and low demand wrists. Influencing factor: Implant stability, Extent of soft tissue rebalancing Inter operative fracture, Pre-operative deformity /ROM, Individual. Any or a combination of these factors will dictate the length of the initial period of immobilisation in a below elbow POP / splint. Potential Problems Oedema, CTS, Limited digital ROM Early dislocation of the implant Longer term loosening of the implant.

<table>
<thead>
<tr>
<th>Total wrist replacement are non weight bearing joints, heavy activity (household or occupational), use of a walking aid or repetitive staccato movements (hammering), will increase the speed and incidence of loosening of the implants stems and the ultimate failure of the implant</th>
<th>Outcome Stable, pain free joint with a functional arc of movement (30fl/30ext, 5 RD/10UD,60/80 pro/sup). Adoption by patient of short as well as long term joint protection principles to minimise external forces being transmitted through the implant.</th>
</tr>
</thead>
</table>

Day 1-14
Wrist immobilised in neutral alignment or in position of greatest stability in below elbow POP. Elevation of limb Mobilisation of all free joints – refer to physio if joint stiffness evident

A stable implant can commence mobilisation at two weeks. Those with more laxity mobilise as per consultants guidance

At 2 weeks - seen in therapy or consultant clinic.
ROS. Commence scar massage. Thermoplastic wrist resting splint made. Worn between exercises and night. Commence active and active assisted wrist flex, ext, RD, UD, pronation and supination. Continue with mobilisation of the fingers Light functional use of hand within splint Xray under image intensifier arranged for 6 weeks

At 6 weeks. - Seen in consultant clinic.
Introduce strengthening of wrist extensors and digits Increase functional activity out of splint applying joint protection principles and activity modification (if the wrist extensors cannot maintain the wrist at neutral alignment whilst holding an object then the object is too heavy and should be avoided or the activity performed with splint in situ).

At 8-12 weeks
Retain splint for heavier activities. May need to continue with splinting indefinitely during periods of active arthritis flare-ups.

NB. Irrespective of when mobilisation is commenced all patients proceed back to functional use of the wrist and mobilisation through a graduated mobilisation programme, which protects any soft tissue rebalancing and joint capsule.

At 3 months - Seen in consultant clinic
Carpal Tunnel Release.

Post-op
- Advice re elevation and mobilisation of uninvolved digits

At 48 – 72 Hours
- Patient reduces dressing and retains light weight dressing.
- Active mobilisation wrist, fingers, shoulder, median nerve and differential tendon glides commenced as advice sheet.

At 10 – 14 Days
- Removal of sutures at GP surgery / therapy clinic.
- Scar treatment commenced as indicated on advice sheet.
- Continue active mobilisation.
- Encouraged to avoid maximal grip for 6-10 weeks to avoid bowstringing of tendons

At Week 6- Appointment in Consultant follow-up clinic
- Refer to therapy if there is problems with stiffness / scar sensitivity
- If no problems with the above and need further surgery on other hand, list for other hand

Possible Complications: Stiff and swollen hand, Hypertrophic/ sensitive scar, Pillar pain, Reduced grip, CRPS

Cubital Tunnel Release.

Post-op
- return from theatre in bulky dressing
- Advice re elevation and mobilisation of digits

At 48 – 72 Hours
- Reduce dressing and retain light weight dressing.
- Active and passive exercises for wrist and digits
- Commence active elbow and forearm exercises

At 10 – 14 Days
- Removal of sutures at GP surgery / therapy clinic.
- Scar treatment commenced.
- Continue exercises.
- Monitor for clawing of ulnar digits.

At Week 6 - Appointment in Consultant follow-up clinic

NB. May take months for symptoms to change.
Possible Complications: Stiff/swollen hand, sensitive scar, Reduced grip.
Darrachs, Sauve-Kapandji, Bowers.

**Post – Op**
Above elbow POP applied in theatre with DRUJ at 10 - 20° supination.

**Where stiffness is likely or R.A:**

**2 Weeks post-op**
- Seen in therapy clinic
- ROS in clinic
- Supplied with futura splint
- Active wrist and DRUJ ROM exercises started.
- Passive ROM will be dictated by the patient pain level.
- Arrange xray for 6 weeks post-op

**6 weeks post-op**
- Seen in consultant clinic
- Commence graded strength exercises
- Commence moderate function
- Return to driving

**12 Weeks post-op**
- Return to work.

**Where instability is likely** (as indicated by surgical notes or surgeon):
6 Weeks immobilisation in POP, then assess clinically and radiologically.

**If x-ray satisfactory;**
Then active and passive (as pain allows) mobilisation is commenced. If necessary, for comfort a removable below elbow thermoplastic splint should be provided. Gradually wean the patient off the splint over 2/52.

**If instability is still a problem** on pronation and supination controlled mobilisation, within the limits of stability, is commenced.

*You will tend to see subluxation of the ulna stump at extremes of range.*
A forearm based splint is retained for between exercise and at night. This is discarded when stability is achieved. When movement potential has been maximised strengthening exercises are encouraged.

Heavy manual occupations should be discouraged to protect the implant from loosening and/or dislocation.
Darrachs, Sauve-Kapandji, Bowers Procedures

Educational Information

**Darrachs Procedure**
This involves excision of the distal inch of the ulna, between tendons of ECU & FCU. Used following distal radial fractures, inflammatory or degenerative arthritis of the DRUJ. Complications include; ulnar stump instability or impingement, carpal ulnar translation, cosmetic deformity, subluxing/snapping/ruptured tendons. Usually used in the older, or sedate population.

**Sauve-Kapandji**
This involves fusion of the DRUJ and creation of a pseudoarthrosis in the distal ulna, just proximal to the fusion. Pronator quadratus is advanced into the gap to stabilise it and deter ossification of the pseudojoint. Rotation occurs at the pseudojoint. Designed to prevent the potential complications of the Darrachs. The TFCC and ECU remain stabilised in their normal positions, contributing to the support of the ulna carpus, and preventing painful ECU subluxation. Main complication is instability of the ulnar stump. If symptoms persist, prolonged splinting or surgical stabilisation will be needed.

**Bowers Procedure**
Used in isolated cases of DRUJ arthritis. It involves resection of the articulating portion of the distal ulnar and interposition of soft tissue, usually Palmaris Longus, ECU or FCU to prevent radioulnar impingement. Capsule is sewn over the ulna to provide stability. The ulnar styloid, TFCC, ECU and ulnar collateral ligaments are left intact.

Operative details will dictate the exact nature of post-operative management.

**Influencing Factors:** Implant stability, Extent of soft tissue reconstruction, Inter operative fracture, Pre-operative range of movement, Previous surgery, Individual patient characteristics.

Any or a combination of these factors will dictate the length of the initial period of immobilisation in a sugar tong splint to control forearm rotation.

**Potential problems:** Oedema causing stiffness of the digits, Limited ROM at the DRUJ from capsular tightness, Instability, Dislocation, Ulnar nerve irritation, Implant loosening, Infection ECU tendonitis
Dolphin Procedure/ Extensor Tenotomy

This may be indicated for both rheumatoid and traumatic hyperextension DIP deformities. It is especially indicated when the skin over the PIP is abnormal or scarred and is carried out to allow flexion of the DIP joint. It can take the tension off the proximal joint to some extent and can be effective in correcting the deformity of the PIP Joint as well as the deformity at the DIP joint.

The tenotomy of the extensor tendon is performed distal to the triangular ligament but proximal to the DIP joint (and proximal to the oblique retinacular ligament insertion, in order to allow the ligament to maintain some DIP extension).

Alternatively is to step cut the lateral bands over the middle phalanx and to then suture the proximal and distal portions of the lengthened tendons. This method re-establishes the balance with the lengthened central slip, while avoiding the complication of a mallet deformity. The DIP is then manipulated into hyperflexion to break up adhesions. Mallet deformity should not develop as long as the ligament is intact. If postoperative mallet deformity is noted, then postoperative splinting should correct the problem;

References:
1) Dolphin JA. (1965) Extensor Tenotomy for Chronic Boutonniere Deformity of the Finger. JBJS 47-A p 161-164,

Post-Op
Return from theatre in bulky dressing. Elevation.

48 – 72 Hours
Reduce dressing and retain light weight dressing.
Active & passive DIPj flexions commenced

10 – 14 Days
Removal of sutures at GP surgery or therapy clinic.
Commence scar management.
Encourage function as able.
If extensor lag present, fit with a thermoplastic extension splint.

At 6 Weeks
Appointment in Consultant clinic.
**Dupuytren's Release (Fasciectomy/ Dermo fasciectomy)**

**Post-op**

- Hand supported in bulky dressing or POP
- Instructed to keep elevated
- Book into therapy clinic

**Day 5-7 Seen in Hand Therapy Clinic**

- Dressing taken down, wound checked.
- If Graft, checked by surgeon/ team.
- Dressing reduced to allow active movement.
- Start gentle active exercises if graft taken.
- Encourage elevation.
- Night extension splint.
- Commence light function
- Book into therapy clinic for ROS at 10-14 days.

**Day 10-14 Hand Therapy Clinic**

- ROS
- Wound management as required.
- Commence scar massage (use a non-scented moisturiser eg E45 or Nivea).
- Exercises – continue active and passive within limitations of wound healing.
- Reassess splint/remould – advice patient to wear at night only for 3 months.
- Refer to local Physio/OT if indicated.
- Continue with light function
- Return to driving if wound allows
- Appointment for 6/52 hand clinic.

**6 weeks in Consultant Clinic**

- Review in consultant hand clinic
- Return to full function
- Strengthening exercises
Modified Brunelli Procedure

This is performed for patients suffering from damage to the Lunotriquetral interosseous ligament.
The purpose is to provide a “check rein” to forward tilting of the scaphoid as well as stabilising the lunate and triquetrum, resulting in a painfree stable joint.
This is a ligamentous repair not a bony procedure, since it involves taking a strip of Flexor Carpi Radials through a drill hole in the scaphoid. This then comes back between the lunate and the dorsal radio-lunotriquetral before it is reattached to itself.

Post-Operative Management

Post – Op

- Application of above elbow backslab, forearm and wrist in neutral (sugartong)
- Maintain full range of movement in fingers, shoulder.

10-14 days

- removal of sutures
- Application of samiento cast (forearm based cast, restricting rotation).
- Continue finger mobilisation and commence active and passive elbow mobilisation

Week 6

- Seen in consultant Clinic, ?removal of k wires.
- Removal of cast. Supplied with removable wrist support.
- Commence gentle active wrist exercises. Splint worn between exercises.

Week 10

- Continue with active, concentrating on wrist extension and light resisted pinch and power grip and wrist strengthening exercises. (avoid passive forced wrist flexion until 12 weeks)
- Build in exercises at a low level gradually progressing exercises and function.
- Consider driving when out of splint.

12 Weeks

- Full strengthening and mobilising with no restrictions
- Commence forced passive flexion if needed
- No contact sport or heavy manual work for 6 months
Ulnar Shortening Osteotomy

Indicated if there is an ulnar positive variance (& radial articulation is satisfactory), which may cause painful synovitis of the ulnar wrist, eventually leading to degeneration of the TFCC/ulnocarpal articulation. Usually stabilised with plating to allow for early movement.

Post – Op

• Application of below elbow backslab.
• Maintain full range of movement in fingers, elbow, shoulder.

At 10-14 days

• removal of sutures
• Commence active wrist exercises
• Supply with futura or thermoplastic splint and wear between exercises until 6 weeks post-op until united.
• Refer to physiotherapy.

At 6- 8 weeks

• Reviewed in Consultant clinic. Re-Xray.
• Discard splint if united
• Commence graded strengthening programme
• Return to driving and function as able.

Corrective Distal Radius Osteotomy

As Ulnar shortening osteotomy, commencing mobilisation at 2 weeks post-op unless instructed otherwise by the Surgeon.
Pisiformectomy

**Post op**
Application of backslab in Theatre

**At 2 weeks**
Seen in therapy clinic.
Wound check and removal of stitches.

If no FCU involvement;
- mobilise as able.
- Supply with future splint for pain relief if necessary.

If FCU involvement;
then management dependant on FCU status ie ,if repaired treat as flexor repair and immobilise for 4 weeks, in dorsal blocking splint. Mobilise fingers

**At 4 Weeks**

If no FCU involvement : Start graded strengthen programme.
  Return to function as able.

If FCU involvement: Splint at night and protect for 2 weeks.
  Light function for further 4 weeks.
  Start graded strengthening at 8 weeks post-op.
Proximal Row Carpectomy

Aims to convert a complex link articulation in the wrist to a simple hinge joint. Used for scaphoid non-union/AVN, advanced scapholunate dissociation, scapholunate instability, lunate AVN, failed silicone lunate implant, radioscaphoid arthritis.

Advantages: allows for better ROM & strength compared to limited carpal arthrodesis, less immobilisation time, elimination of metalwork.

Outcome: 80% arc of flex/ext, 30% arc deviation, 20-50% reduced grip strength.

Main Complications: secondary arthritis.

Day 1 post-op
- return from theatre in backslab/POP

At 2 weeks
- seen in therapy clinic
- Removal of sutures.
- POP replaced with forearm splint (neutral rotation) for further 2 weeks.
- Encourage finger movement.

At 4 weeks
- Instruction on scar massage
- Commence gentle active wrist exercises, splint between exercises.
- Instruction on active and passive finger exercises, if not already commenced.

6 Weeks
- Seen in Consultant clinic.
- Continue with active exercises
- If stable, commence light function.
- Commence gentle isometric strengthening. Only introduce concentric exercises if expected ROM achieved and symptom free.
- Introduce passive exercises.
- Continue with splint for night and protection
- Return to driving if able

12 Weeks
- Can commence grip strength (power/pinch)
- Can return to graded heavy work over next 3 months.

NB: strength may be reduced due to the length-tension alterations in the muscles crossing the wrist.
Scapholunate ligament repair

Direct repair is used in patients with acute scapholunate ligament tears diagnosed within 6 weeks

Post – Op

- Application of below elbow backslab, forearm and wrist in neutral
- Maintain full range of movement in fingers, elbow & shoulder.

10-14 days

- Removal of sutures
- Application of below elbow cast.
- Continue above mobilisation.

Week 6

- Seen in consultant Clinic, Removal of k wires.
- Re-Application of below elbow cast for further 4 weeks.

Week 10

- Cast removed
- Patient instructed in mobilisation techniques for flex/ ext/RD/UD of the wrist and gentle pronation/supination. Concentrate on dart throwing movement (ext/RD and flex/UD) and light resisted pinch and power grip and wrist strengthening exercises. (avoid passive forced wrist flexion until 12 weeks)
- Build in exercises at a low level gradually progressing exercises and function.
- Consider driving when out of splint

12 Weeks

- Full strengthening and mobilising with no restrictions
- Commence force passive flexion if needed
- **No contact sport or heavy manual work for 6 months**


Scapholunate Ligament Shrinkage.

As above, but commence mobilisation at 6 weeks post-op.
**Scaphoid Fixation** *(with or without non-vascularised bone graft)*

**Day 1 post-op**
- return from theatre in backslab/POP

**At 2 weeks**
- seen in therapy clinic
- Removal of sutures.
- Commence scar massage
- POP replaced with thermoplastic splint.
- If good fixation or as instructed by surgeon, Commence gentle active wrist exercises, splint between exercises.
- Instruction on active and passive finger exercises, if not already commenced.
- Xray arranged for 6 weeks post-op

**6 Weeks**
- Seen in Consultant clinic.
- If stable, commence light function
- Continue with splint for night and protection
- Can commence light work duties
- Return to driving if able

**12 Weeks**
- Can commence strengthening exercises (power/pinch).
- Can commence heavy manual work

**Scaphoid Fixation with vascularised bone graft.**

Immobilise for 6 weeks in POP and following surgeons review.
If good fixation, commence gentle active wrist exercises, splint between exercises for further 6 weeks.

**Scaphoid Wafer Excision**

Treat as trapeziectomy
Scaphoidectomy & Four Corner Fusion
(with locking plate)

Used for SLAC wrists (scapholunate advanced collapse), where the scaphoid rotates, the capitate pushes inbetween the scaphoid & lunate, and degeneration occurs at the scaphoradial joint, then at the capitolunate joint. The radiolunate joint is spared. Also used for radial carpal arthritis from scaphoid non-union & avascular necrosis.

This limited carpal fusion is usually combined with scaphoid excision in order to address radioscapoid arthrosis. It involves fusion of the capitate, lunate, hamate and triquetrum, preventing further capitate migration and preservation of the radiolunate joint and stabilisation of the midcarpal row.

Outcome: 50% loss of total ROM, greatest loss in radial deviation. 80% grip strength.

Main Complications: high non-union rate, arthritis.

Day 1 post-op
- return from theatre in backslab/POP

At 2 weeks
- seen in therapy clinic
- Removal of sutures.
- Commence scar massage
- POP replaced with wrist extension thermoplastic splint.
- Commence gentle active wrist exercises, splint between exercises.
- Instruction on active and passive finger exercises, if not already commenced.
- Xray arranged for 6 weeks post-op

6 Weeks
- Seen in Consultant clinic.
- If stable, commence light function
- Continue with splint for night and protection
- Can commence work light duties
- Return to driving if able

12 Weeks
- Can commence grip strength (power/pinch).
- Can commence heavy manual work
**Triangular Fibrocartilage Repair/Debridement**

**TFC Repair**

**Post – Op**
- Application of below elbow backslab, forearm and wrist in neutral.
- Maintain full range of movement in fingers, shoulder.

**At 10-14 days**
- Seen in therapy led clinic
- Removal of sutures, if applicable
- POP reapplied until 6 weeks post-op

**At 6 weeks**
- seen in consultant clinic
- commence active wrist flexion/extension & forearm rotation
- Wrist splint supplied if painful
- commence light function only.

**At 8 weeks**
- wean off splint and commence graded strengthening/proprioceptive exercises
- return to driving and function of able

**TFC Debridement**

**Post – Op**
- Application of bulky bandage.
- Maintain full range of movement in fingers, shoulder.

**At 10-14 days**
- Seen in therapy led clinic
- Removal of sutures, if applicable
- Instruction on active wrist exercises
- Light function as able

**At 4 weeks**
- Commence graded strengthening/proprioceptive exercises
- Return to driving and increase function as able.

**At 6-8 weeks**
- Seen in consultant clinic
Trapeziectomy

Immediate Post op Phase
- Elevation
- Analgesia
- Return from theatre in POP, check comfortable.
- Arrange outpatient appointment for 10 days/ 2 weeks in therapy clinic.

2 weeks post op
- Seen in therapy clinic
- Removal of sutures.
- Full thumb spica splint made. To wear constantly for a further 1 week.
- Refer to physiotherapy to commence thumb and wrist mobilisation at 3 weeks post-op.
- Outpatient appointment made for 6 weeks post op.

3 weeks post-op
- Commence gentle active wrist & finger exercises as pain allows.
- Continue with splint between exercises for next 1-3 weeks (ie 4-6 wks post-op).
- Advice given on light function within splint as pain allows.

6 weeks post op
- Continue to regain maximum range
- Assess use of splint. Supply with soft support if necessary for function.
- Maintain splint at risk situations only
- Start stabilising exercises.

8-10 weeks post-op
- Review in consultant clinic at 8 weeks.
- strengthening work for pinch and grip

10-12 weeks post-op
- Return to all function

NB: if k-wires used, wires removed at 3-4 weeks and commence mobilisation as above.
Thumb CMCJ Arthroplasty (Elektra)

As for Trapeziectomy.

However, avoid resistive opposition and adduction until 12 weeks post op.

Thumb CMCJ Arthroplasty (Pyrocarbon Interposition)

As for Elektra Arthroplasty,

However, immobilise for 4 weeks.
Trigger Digit Release

Post-Op

- Return from theatre in bulky dressing. Elevation.

48 – 72 Hours

- Reduce dressing and retain light weight dressing.
- Active mobilisation wrist, fingers, shoulder and differential tendon glides as advice sheet.

10 – 14 Days

Removal of sutures at GP surgery or therapy clinic.

- Continue active mobilisation.
- Commence scar management.
- Encouraged to avoid maximal grip for 6 weeks.

At 6 Weeks

Appointment in Consultant clinic.
Refer to therapy if problems with stiffness or scar sensitivity.

- Discharge from clinic if no problems with the above and no other reason for clinic attendance.

Complications are uncommon but include
- Stiff and swollen PIPJ / MCPJ
- Hypersensitive scar
- Tender/Hypertrophic scar
- CRPS
### Wrist Arthrodesis

Final salvage procedure, for trauma or failed other procedures. Also used in the spastic hand.

Outcome: mild persistent pain, no ROM, some functional difficulties, reduced grip strength.

Complications: non-union, metalwork problems, extensor tendon adhesions, Carpal tunnel syndrome.

<table>
<thead>
<tr>
<th>Pre-op</th>
<th>Obtain a baseline on ADL status, strength, ROM, pain levels.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1 post-op</td>
<td>• return from theatre in backslab/POP</td>
</tr>
</tbody>
</table>
| At 2 weeks | • seen in therapy clinic  
• Removal of sutures.  
• POP replaced for a further 4 weeks.  
• Instruction on active and passive finger exercises, if not already commenced.  
• Xray arranged for 6 weeks post-op |
| 6-12 Weeks | • Seen in Consultant clinic.  
• If united, commence isometric exercises if tolerated.  
• POP replaced with splint and worn for night and protection  
• Continue with tendon gliding exercises.  
• Can commence work light duties  
• Return to driving if able |

Once full consolidation, return to graded heavy work, with work hardening programme.