

## HAND AND MICROVASCULAR ROTATION – SPECIFIC OBJECTIVES

### Patient Care

The PGY 3 resident will:

1. Demonstrate appropriate evaluation and treatment of patients with hand surgery problems in the emergency room and as part of the inpatient consultation service, including application of physical examination tests specific to the diagnosis.
2. Be able to examine the injured hand with basic knowledge of any vascular, neurologic, bony or ligamentous injury, and assess infections of the upper extremity.
3. Be able to perform a basic clinical examination of the forearm and wrist.
4. Be able to order appropriate diagnostic tests and imaging studies to assist with diagnosis and accurate assessment of the level/severity of the injury.
5. Be able to initiate and interpret a logical course of investigations for patients complaining of chronic wrist pain, including bone scan, arthrogram, CT scan and MRI scan of the wrist.
6. Be able to interpret x-rays of fractures of the wrist and hand to determine the need for closed reduction or admission for open reduction and internal fixation.
7. In consultation with the appropriate hand surgery fellow or attending, provide treatment for the patient as appropriate for level of training as a junior orthopedic hand resident.
8. Be able to treat both simple infections of the hand, wrist and forearm (e.g. flexor tenosynovitis, abscesses, deep space infections of the hand, cellulitis) and diagnoses necrotizing fasciitis.
9. Be able to reduce and apply appropriate cast immobilization for displaced or angulated fractures of the metacarpals, phalanges and distal radius.
10. Be able to repair nail bed injuries or apply split thickness or full thickness skin grafts for fingertip injuries.
11. Be able to perform steroid injections of the A1 pulley of the flexor tendon sheath for trigger fingers, first dorsal extensor compartment for deQuervain's tenosynovitis, lateral/medial epicondyle for epicondylitis, and carpal tunnel for carpal tunnel syndrome.

The PGY 4 resident will:

1. Demonstrate and teach appropriate evaluation and treatment of patients with hand surgery problems in the emergency room and as part of the inpatient consultation service, including application of physical examination tests specific to the diagnosis.
2. Be able to examine the injured hand with a high level of sophistication and detail to determine any bony or ligamentous injury, flexor or extensor tendon injury, nerve injury, arterial injury, and infections of the upper extremity.
3. Be able to perform a detailed clinical examination of the forearm and wrist and hand.
4. Be able to order appropriate diagnostic tests and imaging studies to assist with diagnosis and accurate assessment of the level/severity of the injury.
5. Be able to initiate and interpret a logical course of investigations for patients complaining of chronic wrist pain, including bone scan, arthrogram, CT scan and MRI scan of the wrist.
6. Be able to interpret x-rays of fractures of the wrist and hand to determine the need for closed reduction or admission for open reduction and internal fixation.

7. In consultation with the appropriate hand surgery fellow or attending, provide treatment for the patient as appropriate for level of training as senior orthopedic hand resident.
8. Be able to diagnose and treat both simple and complex infections of the hand, wrist and forearm (e.g. flexor tenosynovitis, large or complex abscess, deep space infections of the hand, complicated cellulitis requiring inpatient therapy, necrotizing fasciitis, etc.).
9. Be able to reduce and apply appropriate cast immobilization for displaced or angulated fractures of the metacarpals, phalanges and distal radius.
10. Be able to repair nail bed injuries or apply split thickness or full thickness skin grafts for fingertip injuries.
11. Demonstrate a thorough understanding of the operative anatomy and understand the following procedures:
  - a. Open reduction and internal fixation of metacarpal and phalangeal fractures using K-wires, interfragmentary and/or lag screws, and screws and plates.
  - b. Repair/reconstruction of ligament injuries in the hand (e.g. repair of thumb MP joint ulnar collateral ligament rupture).
  - c. Carpal tunnel release and cubital tunnel release
  - d. Open reduction and internal fixation of scaphoid fractures.
  - e. Russe bone graft, distal radius bone graft, iliac crest bone graft, and vascularized bone graft for scaphoid nonunions.
  - f. Release of Dupuytren's contracture, including needle aponeurotomy.
  - g. Arthrodesis of interphalangeal joints.
  - h. Lateral/medial epicondylectomy for epicondylitis.
  - i. Tendon transfers.
  - j. Radius and ulna shortening osteotomies.
  - k. Distal ulna resection procedures (e.g. Darrach procedure, Feldon wafer procedure, Bower's hemiresection).
  - l. Extensor tendon repairs.
  - m. Flexor tendon repairs, including "no man's land" repairs for zone II flexor tendon injuries.
  - n. Tenolysis, secondary tendon reconstruction, flexor tendon sheath pulley reconstruction.
  - o. Extensor and flexor tendon grafting.
  - p. Joint arthroplasties of the MP and PIP joints
  - q. Neurolysis.
  - r. Excision of upper extremity tumors.
  - s. Excision of common hand masses (giant cell tumor, ganglion cysts, mucous cysts, volar retinacular cysts, neuromas, schwannomas, etc.)
12. Be able to apply an external fixator for reduction of distal radius fractures.
13. Demonstrate some basic microsurgical skills under the operating microscope.

### **Medical Knowledge**

The PGY 3 resident will

1. Develop a basic understanding of the anatomy of the forearm, wrist and hand, including the bones, ligaments, tendons, nerves and arteries.

2. Demonstrate a thorough understanding of the treatment of fractures of the hand and wrist, fingertip injuries, tendon injuries, nerve injuries.
3. Demonstrate ability to diagnose and treat nerve compression syndromes, including carpal tunnel syndrome, cubital tunnel syndrome and radial tunnel syndrome.
4. Understand the indications and contraindications for replantation in the upper extremity.
5. Be able to perform reconstructive hand surgery, including treatment for congenital hand anomalies, tendon transfers and Dupuytren's contracture.
6. Read and demonstrate a detailed understanding of the material contained within:
  - a. Applicable chapters of Green's Operative Hand Surgery textbook before each elective operative case for which the resident expects to participate.
  - b. Focused reading of other appropriate textbooks and journals of hand surgery, as indicated.
  - c. Incorporate online sources of information available on the internet to augment the knowledge base and to facilitate acquiring specific information for specific questions or problems that arise.
7. Demonstrate a detailed understanding of the use of splints for fracture immobilization and tendon rehabilitation.
8. Prepare and present a monthly report for the hand surgery Morbidity and Mortality conference, including a detailed presentation of "Cases of the Month".
9. Presect for the weekly hand anatomy during the rotation. Lead the discussion of the week's module having read and fully prepared.
10. Attend and participate in bimonthly hand journal club.
11. Prepare and research cases for monthly hand service indications conference.

The PGY 4 resident will:

1. Develop an advanced understanding of the anatomy of the forearm, wrist and hand, including the bones, ligaments, tendons, nerves and arteries.
2. Demonstrate a thorough understanding of the treatment of fractures of the hand and wrist, fingertip injuries, tendon injuries, nerve injuries, and traumatic amputations.
3. Demonstrate ability to diagnose and treat nerve compression syndromes, including carpal tunnel syndrome, cubital tunnel syndrome and radial tunnel syndrome.
4. Understand the indications and contraindications for replantation in the upper extremity.
5. Be able to perform reconstructive hand surgery, including treatment for congenital hand anomalies, tendon transfers and Dupuytren's contracture.
6. Read and demonstrate a detailed understanding of the material contained within:
  - a. Applicable chapters of Green's Operative Hand Surgery textbook before each elective operative case for which the resident expects to participate.
  - b. Focused reading of other appropriate textbooks and journals of hand surgery, as indicated.
  - c. Incorporate online sources of information available on the internet to augment the knowledge base and to facilitate acquiring specific information for specific questions or problems that arise.

7. Demonstrate and teach a detailed understanding of the use of splints for fracture immobilization and tendon rehabilitation.
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9. Prosect for the weekly hand anatomy during the rotation. Lead the discussion of the week's module having read and fully prepared.
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### **Practice-Based Learning and Improvement**

The PGY 3 resident will learn to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. PGY 3 residents are expected to:

- Analyze practice experience and perform practice-based improvement activities using a systematic methodology.
- Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems.
- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.
- Use information technology to manage information, access on-line medical information, and support their own education.
- Facilitate the learning of students and other health care professionals
- Instill the importance of lifelong commitment to learning
- Preparation and presentation of hand and upper extremity cases at M&M, including presentation of relevant literature search, lessons learned from the complication, and how to avoid similar complications in the future.

The PGY 4 resident will further develop their ability to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices. PGY 4 residents are expected to:

- Analyze practice experience and perform practice-based improvement activities using a systematic methodology.
- Locate, appraise, and assimilate evidence from scientific studies related to their patients' health problems.
- Apply knowledge of study designs and statistical methods to the appraisal of clinical studies and other information on diagnostic and therapeutic effectiveness.
- Use information technology to manage information, access on-line medical information, and support their own education.
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- Instill the importance of lifelong commitment to learning
- Preparation and presentation of hand and upper extremity cases at M&M, including presentation of relevant literature search, lessons learned from the complication, and how to avoid similar complications in the future.

## **Interpersonal and Communication Skills**

The PGY 3 resident will:

1. Learn the ability to communicate effectively with all members of the hand service, including medical students, junior residents, senior residents, hand fellows, and hand surgery and trauma attending staff.
2. Learn the ability to communicate effectively and work well with all members of the hospital staff, including nurses, nursing assistants, radiology staff, orthopedic technologists, social workers, discharge planners, physical therapists, hand therapists, operating room/surgery center staff, inpatient/outpatient support staff, etc.
3. Learn the ability to interact effectively, professionally, and empathetically with patients and family members.
4. Learn the ability to provide appropriate and detailed information to patients and family members, when appropriate.
5. Learn the ability to develop an appropriate relationship with a patient that fosters communication, respect, and ethics of the highest degree.
6. Learn the ability to recognize important cultural and generational differences that may affect patient care, and to apply appropriate changes in approach to these patients that respect these important differences (e.g. amputation of a digit in Asian and Hispanic cultures has important cultural implications that need to be addressed).
7. Learn effective listening and communication skills with patients, which may include both verbal and non-verbal skills.
8. Learn the ability to understand and respond appropriately to patient inquiries.

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8. Demonstrate ability to understand and respond appropriately to patient inquiries.

## **Professionalism**

The PGY 3 resident will:

1. Learn strict adherence to medical/ethical principles.
2. Learn a keen sensitivity to the differences and challenges that a diverse patient population may present, especially in the context of the known multi-racial and multi-cultural patient population in the San Diego area.
3. Treat all patients with respect, empathy, and with compassionate care. All patient inquiries and requests will be considered seriously, professionally, and in a timely manner.
4. Recognize the important social, economic, emotional, and work-related implications that a hand problem or injury may represent for the patient.
5. Provide patients with excellent care in all aspects.
6. Maintain patient confidentiality, including strict adherence to HIPPA guidelines.
7. Obtain informed consent from patients in accordance with established guidelines that ensure full patient comprehension after a detailed discussion of all pertinent issues relating to patient care/surgery. This includes the opportunity for the patient to ask and have answered questions relating to any proposed procedures.
8. Learn the ability to accommodate and adapt to differences in patients' culture, age, gender and disabilities.

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## **Systems-Based Practice**

The PGY 3 resident will:

1. Learn an awareness of how the care that they provide to patients can affect other caregivers and the UCSD Medical Center and healthcare system in general.
2. Learn the ability to effectively utilize hospital resources in a way that directly benefits patient care.

3. Learn more in-depth about the different types of medical practice available in the context of hand surgery. This will include exposure to care in different settings, such as UCSD Hillcrest hospital (level one trauma center), UCSD Thornton hospital, VA Medical Center, outpatient surgery centers, and hand surgery clinic run by the hand fellow.
4. Learn about the differences in different payer types, such as worker's compensation, managed care, HMO, PPO, Medicare, MediCal, and student health insurance plans.
5. Learn about the necessity to provide efficient and cost-effective health care in the context of appropriate use of limited medical resources, yet without sacrificing quality of care.
6. Act as a patient advocate and assist patients in obtaining the necessary care, including coordination of post-discharge care if necessary (e.g. home health care, postoperative hand therapy, placement into appropriate rehabilitation facility, etc.).

The PGY 4 resident will:

1. Further the awareness of how the care that they provide to patients can affect other caregivers and the UCSD Medical Center and healthcare system in general.
2. Demonstrate and teach the ability to effectively utilize hospital resources in a way that directly benefits patient care.
3. Develop a more in-depth understanding of the different types of medical practice available in the context of hand surgery. This will include exposure to care in different settings, such as UCSD Hillcrest hospital (level one trauma center), UCSD Thornton hospital, VA Medical Center, outpatient surgery centers, and hand surgery clinic run by the hand fellow.
4. Develop a more detailed understanding of the differences in different payer types, such as worker's compensation, managed care, HMO, PPO, Medicare, MediCal, and student health insurance plans.
5. Develop a mature understanding of the necessity to provide efficient and cost-effective health care in the context of appropriate use of limited medical resources, yet without sacrificing quality of care.
6. Act as a patient advocate and assist patients in obtaining the necessary care, including coordination of post-discharge care if necessary (e.g. home health care, postoperative hand therapy, placement into appropriate rehabilitation facility, etc.).