

**Goals and Objectives for the Orthopaedic Surgery Resident
McGill Hand Rotation (MGH, Shriners & SMH)**

PGY 3 to PGY 4

Objectives

To obtain a solid foundation of knowledge pertaining to the anatomy and pathophysiology of the hand and wrist.

A. Medical Expert

Knowledge: Basic Science and Anatomy

1. Understand the basic principles and phases of wound healing of various tissues including skin, tendon, bone, and nerve.
2. Understand the functional anatomy of the forearm including origins, insertion, and innervation.
3. Understand the anatomy of the wrist including the bones, ligaments, and capsule and their relationship to each other
4. Understand the anatomy of the hand including:
 - Bones
 - Tendons including both flexor tendon sublimis, profundus, Camper's chiasm and vincula as well as the specific anatomy of the extensor system (extrinsic and intrinsic) and dorsal wrist compartments.
 - Intrinsic muscles (function, origin, insertion, and innervation).
 - Nerves
 - Vessels including superficial, deep arches as well as the specific blood supply to the end carpal bones and distal radius.
 - Carpometacarpal joint (basilar) of the thumb.
 - Metacarpophalangeal (MCP) and interphalangeal joints (PIP and DIP), their similarities and differences.
 - Volar plate anatomy of the MCP and PIP joints
 - Carpal tunnel and Guyon's canal borders and contents and the relationship to each other.
 - Borders and contents of the anatomic snuffbox.
 - Compartments of the hand.
 - Triangular fibrocartilage complex (TFCC) anatomy.
5. Understand the pathophysiology of osteoarthritis, rheumatoid arthritis, vasculitis, Reynauld's, the tetraplegic hand and the spastic hand.
6. Understanding basic models of wrist biomechanics.
7. To understand the anatomy of brachial plexus.

Knowledge: General Clinical

1. Evaluation and examination of the hand and wrist in both trauma (emergency department) and elective (clinic) situations. This includes thorough knowledge and application to tendon, vessel, and nerve injuries.
2. Understanding the principles of rehabilitation including Occupational and Physiotherapy,
3. Understanding the use and indications for diagnostic imaging including plain XR, dynamic XR tomograms, Ultrasound, CT scans, MRI scans and arthrograms.
4. Demonstrate the ability to manage wounds both acute and chronic/
5. Understanding the radiologic evaluation of the wrist.

Knowledge: Specific Clinical Problems

1. Demonstrate the ability to diagnose disorders of the hand and wrist in both the traumatic and elective settings using a combination of patient history, clinical examination, basic and advanced diagnostic imaging. Once a diagnosis is established, the resident should be able to make a treatment plan including both non-surgical and surgical modalities where appropriate. As well, the resident should be familiar with the post-operative phase and the specific rehabilitation (including OT and PT) protocols.
2. Fractures of the hand and wrist.
 - a) Phalangeal fractures.
 - b) Fractures involving the first CMC.
 - c) Fracture of the carpal bones.
 - d) Fractures/dislocations of the hand (MCP and PIPs) and wrist (perilunate).
3. Tendon injuries.
 - a) Flexor tendons.
 - b) Extensor tendons
4. Ligament injuries
 - a) MCP of the thumb
 - b) CMC of the thumb
 - c) Intrinsic ligaments of the carpus (SL,LT)
 - d) Extrinsic wrist ligaments.
5. Neurovascular injuries(acute and chronic)
6. Diagnosis and management of osteoarthritis (OA) involving any of the joints in the fingers.
7. Diagnosis and management of the patient with basilar joint OA.
8. Diagnosis and management of the SLAC (scapholunate advanced collapse) and SNAC (scaphoid non-union advanced collapse) wrist.
9. Demonstrate the ability to recognize, properly diagnose, and treat peripheral nerve entrapment syndromes including:
 - a) Carpal tunnel Syndrome
 - b) Cubital tunnel syndrome
 - c) Posterior interosseous nerve compression
 - d) Radial tunnel
 - e) Pronator syndrome
 - f) Waartenberg's Syndromes
10. Recognize, diagnose, and treat compartment syndrome of the forearm and hand.
11. Recognize and treat common acute (necrotizing fasciitis) and chronic infections of the upper extremity.
12. Be able to manage simple amputations-revisions (indications and functional outcome).
13. Competently manage mutilating injuries of the hand.
14. Diagnose, classify, and manage the rheumatoid hand and wrist.
15. Diagnose and treat stenosing tenosynovial disorders of the hand.
16. Diagnose and manage Dupuytren's disease.
17. Be familiar with all joint arthroplasties (soft tissue and implants) and arthrodesis of the wrist.
18. Management of the patient with traumatic or obstetrical brachial plexus injury
19. Principles in managing the spastic hand.
20. Principles in the management of the common tendon transfers used in isolated low and high median, ulnar, radial nerve and combined injuries.
21. Be familiar with the international society for classification of congenital hand anomalies as well as some of the principles of treatment for more common congenital problems.

22. Be able to formulate a differential diagnosis for wrist pain and to discuss rational approaches to the use of diagnostic imaging or other diagnostic modalities.
23. Diagnose and treat avascular necrosis of the lunate (Kienbock's) and scaphoid (Preiser's).
24. Be familiar with the anatomy and use of vascularized bone grafts.

Knowledge: Technical

1. The resident should demonstrate competency in traumatic suturing of skin.
2. The resident should be able to design and raise common local flaps used in the upper extremity.
3. Be able to repair both flexor and extensor tendons.
4. Be able to perform closed and open reduction and internal fixation of most fractures of the hand and wrist.
5. Be able to perform carpal tunnel release, ulnar nerve decompression/ulnar nerve transposition.
6. Perform wrist arthroscopy at a basic level.

B. Communicator

1. Record and report complete patient evaluation and assessment in a timely fashion.
2. Communicate with other health care workers in a professional manner.

C. Collaborator

1. Serve as an effective surgical team leader.

D. Manager

1. Effectively manage health care resources in the care of patients with hand and wrist problems
2. Utilize resources effectively to balance patient care, learning needs, and outside activities.
3. Work effectively and efficiently in a health care organization.

E. Health Advocate

1. Advise patients and their families regarding prevention of disease and health maintenance.
2. Recognize and respond to those issues where advocacy is appropriate.

F. Scholar

1. Demonstrate and develop skills for evidence based surgical practice as it relates to hand and wrist pathology.
2. Critically appraise sources of medical information.
3. Contribute to the development of new knowledge.

G. Professional

1. Interact with patients, families, nurses, and other health care personnel in a professional manner with appropriate attitudes in dealing with patients with hand and wrist problems.
2. Respect all opinions of health care workers as well as the patients and families.

3. Constantly evaluate working knowledge, skills and abilities, and to recognize the limits of professional competence.
4. Deliver the highest quality of care with integrity, honesty, and compassion.
5. Practice ethically consistent with the obligations of the physician.

Evaluation

1. Direct observation with attending staff and preceptors.
2. Structured examinations
3. Multisource feedback (Radiology; photographs, follow-up including long term results)
4. ITERs

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