



Department of Orthopaedics and Rehabilitation

| Rotation-Specific Objectives for Resident Education | |
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| Rotation: | Pediatric Orthopaedics |
| Resident Year-In-Training: | PGY4 |

Attending Physicians

OHSU/Kaiser Permanente

1. Matthew Halsey, MD

Orthopaedic Surgery, American Board of Orthopaedic Surgery
Fellowship: Pediatric Orthopaedics

2. Ronald Turker, MD

Orthopaedic Surgery, American Board of Orthopaedic Surgery
Fellowship: Pediatric Orthopaedics

3. Stephen Renwick, MD

Orthopaedic Surgery, American Board of Orthopaedic Surgery
Fellowship: Pediatric Orthopaedics

Shriners Hospital

1. Michael Aiona, MD

2. Ivan Krajbich, MD

3. Michael Sussman, MD

4. Dennis Roy, MD

5. Charles D'Amato, MD

6. Ellen Raney, MD

Primary Objective

Surgical and medical training related to orthopedic injury and conditions in children and adolescents including congenital, acquired, neuromuscular, developmental and traumatic conditions affecting the musculoskeletal and integumentary systems in the appendicular skeleton and spine.

Educational Philosophy

The principal goal of the Pediatric Orthopaedic service is to familiarize all orthopedic residents with the nature of the developing child and adolescent highlighting the differences between the developing and mature skeleton as it relates to the manifestation of chronic conditions and traumatic injuries. Essential medical and surgical therapeutic interventions are considered in both clinical practice and during formal academic teaching sessions. The goal is to achieve a coordinated care approach across disciplines (Pediatrics, Radiology, PT/OT, Rheumatology, Genetics, Metabolic Disease, Infectious Disease and Pediatric Surgery) with the Pediatric Orthopedic surgeon as a member of the team dedicated to safe, effective and efficient patient care and advocacy.

Rotation Expectations and Opportunities

At OHSU the Orthopedic Resident will work primarily with one full time University based Pediatric Orthopaedic surgeon; additional direct experience will occur with Kaiser-based Pediatric Orthopaedic surgeons (Drs Renwick and Turker).

Current Rotation: The PGY4 spends 10 weeks dedicated to Pediatric Orthopaedic Surgery. This rotation encompasses a 5 day week. Each resident spends time (10-20% or 0.5-1 days/week) dedicated to service-related educational activity and self study (e.g. preparing conferences, review cases records, independent study and research investigations).

OHSU Rotation Schedule (current)

Monday: 1 day clinic - Halsey
Tuesday: 1/2 day clinic - Halsey
Wednesday: 1 day OR - Halsey/Kaiser
Thursday: 1/2 day clinic - Halsey
Friday: 1 day clinic or OR - Halsey

32+ hours are provided by 1 Full-time University-based surgeon at OHSU. Residents participate as 1st assist in all circumstances as no Fellows participate (except for occasional Spine fellow participation in deformity surgery). There are 300+ cases annually.

28+ clinic hours are offered each week in attending clinical practices. The opportunity includes one-to-one supervised instruction and direction in management of new patients, provision of continuity of care for both post-operative and non-operatively managed patients, and coordination of care across the spectrum of medical services.

There is a conference once a month on Wednesdays that is a topic based conference. It is a combined conference with OHSU and the Shriner's hospital.

Generalized Rotation Goals & Mechanisms

Didactic

- A formal Pediatric Orthopaedic Attending/Resident monthly conference to specifically address topics in Pediatric Orthopaedic Surgery
 - Curriculum appendix A.
- Pre, mid and post-rotation meetings to assess expectations and progress of residents.
- Journal Club once a year to discuss important literature on trauma. This journal club is combined with the Shriner's Hospital.

Patient Care

- Manage all aspects of musculoskeletal injury and infection in children and adolescents in acute and sub-acute settings (ER, fracture clinic)
- Attain competence in performing a comprehensive evaluation of new and return patients with chronic conditions in clinic. Comprehensive and concise history, physical examination, and diagnostic test ordering and interpretation are emphasized. This includes:
 - Performing a thorough history & physical examination
 - Ordering appropriate studies/consults
 - Developing a differential and making a final diagnosis when appropriate
 - Initiating therapeutic non-operative (including PT/OT, medication and/or bracing) or surgical interventions

Medical Knowledge

At the conclusion of a rotation, each resident is expected to have a basic understanding of:

- common newborn and congenital orthopaedic conditions
- common developmental variants and physiologic development of the maturing musculoskeletal system
- pediatric spine conditions including deformity and degenerative conditions
- common overuse injuries
- common pediatric benign musculoskeletal neoplasms
- pediatric musculoskeletal trauma/injury evaluation and treatment
- the differences between the developing and mature skeleton
- common surgical approaches in pediatric orthopaedics
- how to prepare patients for operative and nonoperative management and how to guide them through the recovery process of either
- current standards of care by reading Orthopedic Knowledge Update, including the edition on Pediatric Orthopaedics.
- basic textbook information and current journal articles in pediatric orthopaedics
- the key orthopaedic literature in pediatric orthopaedics
- the techniques and modalities used by physical therapists and how to provide appropriate guidance and coordination of care for common and complex rehabilitation guidelines

- the role of the Pediatric Orthopaedic Surgeon as part of the health care team and the relationship of the working environment with Nurses, PAs, NPs, PTs, OTs, Orthotists, Trainers, Coaches & Families

Practice-Based Learning and Improvement

- Participate as an assistant in surgical procedures and as primary surgeon where level of skill makes this appropriate. Develop the planning and technical skills to the level that participation as primary surgeon is appropriate on most surgical cases.
- Demonstrate ability to effectively perform preoperative planning for surgical procedures, even complex cases.
- Set up an operating room for surgery involving the spine, hip, knee, upper and lower extremities (know risks, pros and cons for each position)
- Understand and direct the role/limitations of Operating personnel: Scrubs, Nurses, Charge nurse, Company representatives, Schedulers and Surgeons.
- Identify and clearly communicate the indication for every operation; Prior to scrubbing to the attending and students
- Know the algorithm for several techniques for each indication
Be prepared in advance to complete the operation
Understand the choices for anesthesia and indications
Be ready to describe how to change course mid-operation
- Direct and perform the following procedures:
 1. Infection
 - a. Aspiration and Injection of any joint
 - b. Open Arthrotomy of any joints, with a focus on the hip joint
 2. Trauma:
 - a. CRPP supracondylar humerus fracture
 - b. ORIF lateral humeral condyle fracture
 - c. CR-spica cast for femur fracture
 - d. ORIF femur fracture
 - e. CRPP distal radius fracture
 - f. ORIF forearm fracture
 3. Spine
 - a. Posterior spine fusion and instrumentation for scoliosis
 4. Hand
 - a. Trigger thumb release
 - b. Ganglion cyst resection
 5. Neoplasm
 - a. Resection/biopsy benign bone lesion
 - b. Aspiration/injection UBC
 6. Osteotomies
 - a. Pelvic (Salter, Pemberton)
 - b. Proximal femoral (VDRO)
 - c. Deformity correction (axial, coronal, sagittal plane)
 - d. Limb lengthening
 - e. Epiphyseodesis/Hemi-epiphyseodesis
 7. Feet
 - a. Achilles tenotomy

- b. Tendon transfer/lengthening
 - c. Coalition resection
- Plan a complete rehabilitation program for all post-operative patients
Plan follow-up visits, PT, pain management and return to limits

Professionalism

- Learn to organize patient clinic practice while participating in more advance patient evaluation and management activities.
- Actively and competently participate in supervising the educational and clinical activities of the junior level residents.
- Model appropriate professional values and behaviors for peers, faculty, and staff.
- Mature in the development of patient care, considering the cost, quality, outcomes, and impact on patient and healthcare system as essential variables in the equation.
- Demonstrate ability to engage in supportive, clear, and compassionate communication with patients and family members.
- Answer requests in a timely, cordial manner

Interpersonal and Communication Skills

- The resident is expected on this rotation and all others to interact as a professional and team member with all the other staff and services within the hospital.
- The demeanor and tone of the resident in both verbal and nonverbal communication is expected to be exemplary.
- The same communication skills above are expected to be used with the patients and families.

Systems Based Practice

- Develop methods of analyzing complex data and prioritizing principles and issues to solve complex and ill-defined problems related to orthopaedic patient care.
- Demonstrate appropriate judgment, particularly as related to indications for surgical treatment of patients, nonoperative treatment options and algorithm.
- Understand the daily business of Medicine/Orthopedic Surgery
- Become facile with billing and coding issues
- Manage the patient and health system to manage a disease/injury in the context of the biopsychosocial model.

Supervisory Tasks

- Supervise Surgical Tech in proper use of equipment and instruments.
- Supervise and direct nursing staff in patient positioning and draping technique, use and set up of arthroscopy towers and equipment
- Supervise medical students during history and physical, in utilization of the electronic medical record, acquisition of radiography data.
- Supervise medical assistants in suture removal and bandaging, application of braces, application and removal of splints and casts.

Literature Resources

Herring: Tachdjian's Pediatric Orthopaedics, 4th edition

Morrissy & Weinstein: Lovell & Winter's Pediatric Orthopaedics, 6th edition

Morrissy & Weinstein: Atlas of Pediatric Orthopaedic Surgery, 3rd edition

Wenger & Rang: The Art and Practice of Children's Orthopaedics. (Loaned to the R4 during their rotation)

Canale & Beatty: Operative Pediatric Orthopaedics, 2nd edition

Green's Operative Hand Surgery, 5th edition

Campbell's Operative Orthopaedics, 9th edition

Weinstein: Pediatric Spine: Principles and Practice, 2nd edition

Smith, Micheal & Bowker: Atlas of Amputations and Limb Deficiencies: Surgical, Prosthetic and Rehabilitation Principles, 3rd edition

Simon & Springfield: Surgery for Bone and Soft-Tissue Tumors,

Unni: Dahlin's Bone Tumors, 5th edition

Library/Electronic Resources

Journal of Pediatric Orthopaedics

Children's Orthopaedics

Journal of Bone and Joint Surgery

Journal of the American Academy of Orthopaedic Surgeons

Clubfoot: Ponseti Management, 3rd edition. Website http://www.global-help.org/publications/books/help_cfponseti.pdf

Recommended Reading

OKU 3: Pediatrics

Ponseti: Congenital Clubfoot: Fundamentals of Treatment, 3rd edition

Journal Articles of Interest

- De Bastiani G, Aldegheri R, Renzi-Brivio L, et al. Limb lengthening by callus distraction (callotaxis). *J Pediatr Orthop*. 1987;7:129Y134.
- Paley D. Current techniques of limb lengthening. *J Pediatr Orthop*. 1988;8:73Y92.
- Koman LA, Mooney JF III, Smith BP, et al. Management of spasticity in cerebral palsy with botulinum-A toxin: report of a preliminary, randomized, double-blind trial. *J Pediatr Orthop*. 1994;14:299Y303.
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- Corry IS, Cosgrove AP, Duffy CM, et al. Botulinum toxin A compared with stretching casts in the treatment of spastic equinus: a randomized prospective trial. *J Pediatr Orthop*. 1998;18:304Y311.
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- Gage JR, Fabian D, Hicks R, et al. Pre- and postoperative gait analysis in patients with spastic diplegia: a preliminary report. *J Pediatr Orthop*. 1984;4:715Y725.
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- Lonstein JE, Beck K. Hip dislocation and subluxation in cerebral palsy. *J Pediatr Orthop*. 1986;6:521Y526.
- Aronson J, Tursky EA. External fixation of femur fractures in children. *J Pediatr Orthop*. 1992;12:157Y163.
- Beaty JH, Austin SM, Warner WC, et al. Interlocking intramedullary nailing of femoral-shaft fractures in adolescents: preliminary results and complications. *J Pediatr Orthop*. 1994;14:178Y183.
- O'Malley DE, Mazur JM, Cummings RJ. Femoral head avascular necrosis associated with intramedullary nailing in an adolescent. *J Pediatr Orthop*. 1995;15:21Y23.
- Reeves RB, Ballard RI, Hughes JL. Internal fixation versus traction and casting of adolescent femoral shaft fractures. *J Pediatr Orthop*. 1990;10:592Y595.

Langenskiold A. Surgical treatment of partial closure of the growth plate. *J Pediatr Orthop.* 1981;1:3Y11.

Ward WT, Levy J, Kaye A. Compression plating for child and adolescent femur fractures. *J Pediatr Orthop.* 1992;12:626Y632.

Heinrich SD, Drvaric DM, Darr K, et al. The operative stabilization of pediatric diaphyseal femur fractures with flexible intramedullary nails: a prospective analysis. *J Pediatr Orthop.* 1994;14:501Y507.

Kirby RM, Winquist RA, Hansen ST Jr. Femoral shaft fractures in adolescents: a comparison between traction plus cast treatment and closed intramedullary nailing. *J Pediatr Orthop.* 1981;1:193Y197.

Mizuta T, Benson WM, Foster BK, et al. Statistical analysis of the incidence of physeal injuries. *J Pediatr Orthop.* 1987;7:518Y523.

Jackson MA, Nelson JD. Etiology and medical management of acute suppurative bone and joint infections in pediatric patients. *J Pediatr Orthop.* 1982;2:313Y323.

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Stambough JL, Davidson RS, Ellis RD, et al. Slipped capital femoral epiphysis: an analysis of 80 patients as to pin placement and number. *J Pediatr Orthop.* 1986;6:265Y273.