



VASCULAR AND INTERVENTIONAL RADIOLOGY

Tampa General Hospital

Rotation Director: Shawn Meader, M.D.

General Goals: To learn and perform image guided procedures including vascular intervention, venous access, thrombolysis and interventional oncology techniques. The resident will be involved in the diagnosis and treatment of non-vascular diseases involving the genitourinary, biliary, and enteric systems. All imaging modalities will be integrated with special attention to fluoroscopy, ultrasound, and CT.

Daily Work:

First Day: Residents are required to report to Dr. Davis, Dr. Massis or Dr. Meader on the first morning for their rotation to introduce themselves to the staff, nurse practitioners and fellows. Residents will be given a list of requirements including general VIR procedures that should be performed by the resident during their rotation. These have been picked from procedures that all diagnostic and/or interventionalists will be expected to perform during practice.

Start time: Residents are to report to the Vascular and Interventional Radiology section promptly after the completion of morning case conference by 8:15am. They are to report at 7 a.m. on Tuesday, Wednesday and Friday morning for GI (every other Tuesday) and vascular conference (every Wednesday) in the Bayshore Pavilion 3rd floor conference room. Friday is a case conference to discuss difficult cases, teaching points and complications.

Optional attendance is given to conferences on Monday morning at 7 am which is an IR fellow conference. Monday is a chapter review in Abrams VIR textbook, weekly chapter requirements are listed in the IR calendar, the fellows can also educate the resident to the topic of the upcoming week.

Pre-morning report: Residents will be asked to evaluate patients scheduled for interventional procedures. The patient list is shared amongst the fellows, nurse practitioners and residents. Communication with the nurse practitioners is vital to assisting and expediting their work. The procedure must be explained to the patient and consent obtained. Problems such as missing necessary History and Physical, labs or absence of premedication are to be addressed at this time. Questions should be resolved with the assistance of fellows and staff. A thorough understanding of the patient's condition, the indication for the procedure, and the technique involved in performance of the procedure is mandatory. In many cases, this will require specific reading and preparation the evening prior to performance of the procedure. This preparation is prerequisite for any direct resident involvement as the primary operator in the procedure. It is also strongly urged that reading each evening should include material on cases scheduled for the next day, regardless of the anticipated level of involvement in the performance of the procedure.

Although there is no formal "Morning Report" to discuss scheduled procedures, each morning around 8:00 am the team discusses the schedule. Any patient information should be conveyed at this time. The staff will often select specific patients for the resident to evaluate and recommend the resident read about the procedure. If performed, the resident will be rewarded being able to assist in the case.

Preprocedure assessment: Preprocedure assessment optimally will occur either in the VIR outpatient area (3K) or on the wards. Alternatively, this will occur in the department prior to the procedure if it has not previously been done. Preprocedure evaluation includes a history, physical examination, review of pertinent labs and radiographic examinations, formulation of a likely plan, and obtaining informed consent. Informed consent

includes 4 parts: 1.) explanation of the procedure in terms that the patient will understand, 2.) expected benefit(s) of the procedure, 3.) expected potential risks of the procedure, 4.) explanation of alternative diagnostic procedures or treatments.

Inpatient service: Inpatients admitted by the VIR service are seen daily by the fellow performing the case or by the staff. We strongly recommend the resident round with one of the fellows or staff each day to learn to management of patients post procedure and possible complications. This may be accomplished prior to start of the work day or after completion of all procedures and readout in the department. As above, experience with performance, assisting in, or observing procedures should not be sacrificed for routine ward rounds. However, active inpatients may require attention during the day concurrent with other procedures. This will be specified during morning report or during the day by an attending physician or fellow.

Any questions about either an emergency call, the course of an inpatient, or about the procedure work-up of any patient, should be addressed with the on-call fellow or attending.

Procedures: Procedures begin after completion of morning report, which is approximately at 8:30 a.m. Residents ideally should be involved with procedures for patients that they evaluated prior to the procedure. Patients who present to the department without prior assessment should undergo the same evaluation as those seen in the VIR Clinic or on the wards.

Residents should not view room turnover time as a chance to take a break. Rather, when a case that a resident is involved in is completed (including a procedure note and post procedure orders or POM), the resident is expected to seek out tasks necessary for optimal care of our patients, such as performing clinical assessments, counseling of patients, obtaining informed consent, performing ward rounds, or observing/assisting other procedures. If a physician second assistant (in addition to the primary operator and physician first assistant) is already present in an ongoing procedure, then the resident should observe the case from within the room if there are no other clinical demands. If no physician second assistant is present, the resident should gown and glove, and assist in completion of the procedure.

At all times while residents are in procedure rooms, whether performing, assisting, or observing, they are required to wear proper eye, nose and mouth protection. Face shields or goggles with side shields are mandatory. Eyeglasses alone are not sufficient.

For cases that continue after 5:00 p.m., significant teaching value remains for a physician first and second assistant. It is expected that residents who are not on call will remain in the section after this hour if there is no physician second assistant involved in the case. A break for lunch may be taken at the option of the resident. All procedures are reviewed with an attending prior to the patient being discharged from the department.

If more than one resident is on rotation, both residents are equally responsible for all types of procedures and all clinical responsibilities. Seniority will determine case selection and level of involvement in procedures.

Degree of involvement in procedures will be determined based on demonstrated ability. Familiarity with the clinical presentation, including history, physical examination, laboratory and other tests, pathophysiology of the disease process, and an appropriate assessment should precede resident involvement in any case. This means that upon entering a procedure room, the chart must be reviewed. The ability to maintain a neat and organized procedure tray, including flush and contrast syringes, is required prior to assisting in the performance of procedures. Residents who perform this duty adequately may then progress to assisting with performance of procedures, which requires familiarity with procedure techniques and understanding of the procedure in progress. Residents who acquire competent clinical skills and adequacy in the roles of first and second assistant will graduate to primary operator on appropriate cases.

Rotation Requirements:

Procedure List: As discussed in the report on the first day of the rotation, residents will be required to fill out a form documenting assistance in several procedures throughout the rotation. The particular procedures have are considered necessary knowledge for the general radiologist and will likely be expected knowledge for oral

boards and/or private practice. The procedure list should be signed at the end of the rotation during the departure interview.

Departure Interview: Each resident receives an evaluation of their performance which becomes part of their permanent performance record. At the end of the rotation, one staff member will meet with each resident to discuss his/her evaluation and performance. Any questions will be answered and suggestions reviewed.

Case review: Each resident will be required to perform a short power point case review during the last week of his/her rotation. The topic should include a disease/procedure witnessed and/or performed during the resident's rotation in IR. This should include the disease description, diagnosis, treatment, complications, possible alternative treatments and outcomes. Depending on the depth of the lecture, it may be performed on Friday morning case review conference, we may have the resident give the lecture during resident conference if applicable and informative to diagnostic residents.

Educational Goals and Objectives:

Level of performance for each of the criteria is expected to vary based on experience. Fulfillment of expected level performance will be categorized as introductory, familiarity, competency, or mastery. At all levels, achievement of performance criteria for previous levels is subsumed. Definitions of these categories are given below:

Introductory: the resident has observed at least one of the procedures, and has seen or assisted another person performing the task

Familiarity: the resident has seen the task performed enough times to accurately describe technical factors necessary for performance of the task, and may have performed the task with supervision

Competency: the resident has observed and performed the task with supervision enough times to be capable of performing the task with direct or indirect supervision, but without explicit direction

Mastery: the resident has observed and performed the task with supervision enough times to be capable of performing the task without direct or indirect supervision

Rotation 1 (Third Year Radiology Residents):

Patient Care:

- Capable of performing a directed physical examination in patients with peripheral vascular disease as well as in those requiring other vascular or non-vascular interventions.
- Understand endpoints for treatment of inpatients
- Formulate and execute patient care plans.
- Diligently review relevant clinical data, e.g., chart, outpatient record, labs, prior imaging exams.
- Gain an introduction to vascular access techniques. Demonstrate accurate clinical assessment of the patient, particularly those with vascular disease.
- Improve the ability to tailor diagnostic and therapeutic procedures to suit individual needs.
- Formulate a treatment plan based on a synthesis of clinical presentation, natural history of disease, and invasive findings.
- Improve performance of minor procedures.
- Knowledgeable in performing as first assistant in major interventions.
- Acquire familiarity with first order selective catheterizations below the diaphragm. Competent in assessing patients prior to radiological intervention and provide optimal pre-procedure management.
- Able to provide pre-procedural management of those conditions that increase procedural risk:
 - Diabetes mellitus
 - Renal insufficiency
 - Coagulopathy
 - Infection
 - Allergies

Patient Care (continued):

- Competent in the performance of interventional and diagnostic procedures listed below and in the interpretation of normal and variant anatomy and their radiological appearances in pathology:
 - Thoracic and abdominal aortography
 - Visceral angiography (celiac, superior mesenteric and inferior mesenteric arteriography)
 - Renal arteriography
 - Pelvic arteriography
 - Upper extremity and hand arteriography
 - Lower extremity arteriography
 - Pulmonary angiography
 - Central venography and superior venacavography
 - Inferior venacavography and filter placement
 - Portal hypertension evaluation
 - Therapeutic embolization
 - Percutaneous transluminal angioplasty
 - Fibrinolytic therapy
 - Percutaneous biliary intervention
 - Percutaneous urinary intervention
 - Dialysis fistulography

Medical Knowledge:

- List appropriate indications and contraindications for those studies performed in the VIR section.
- Know and understand the uses for the array of devices, wires, catheters, needles, etc. used in interventional procedures.
- Given appropriate images, demonstrate a thorough knowledge of the arterial and venous anatomy of the vascular system.
- Demonstrate an ability to accurately interpret angiograms and pressure measurements to recognize vascular pathology and discuss treatment options.
- Understand the physiology and clinical impact of noninvasive procedures such as ankle brachial indices, pulsed volume recording, opening pressure, recirculation times, etc.
- Develop a working knowledge of the natural history, prognosis and need for therapy in patients with vascular disease.

Interpersonal Communication Skills:

- Become competent in interdepartmental presentation of diagnostic findings and therapeutic interventions.
- Provide concise and accurate patient presentations.
- Appropriately obtain informed consent.
- Appropriately communicate and document in the patient record urgent or unexpected radiologic findings.
- Produce radiologic reports that are accurate, concise, and grammatically correct.
- Effectively teach medical students.
- Communicate effectively with technical and nursing staff in the VIR section.

Practice-Based Learning and Improvement:

- Learn to address each problem individually, tailoring the performance of the diagnostic test to fit the clinical needs.
- Pursue opportunities for procedural observation and performance, aggressively organize readout and other educational opportunities.
- Efficiently use the medical record and the radiology information system to access information.
- Attend the VIR conferences. and combined Vascular conference.
- Incorporate feedback obtained during rotation into improved performance.

Professionalism:

- Demonstrate respect for patients and all members of the healthcare team.
- Serve as a role model for junior residents and medical students.
- Respect patient confidentiality.
- Present one's self as a professional in appearance and communication.
- Demonstrate initiative by being available and volunteering services during procedures and between cases.
- Demonstrate willingness to perform additional duties that contribute to the overall patient care and academic interests of the section.

Systems-Based Practice:

- Attend VIR conferences.
- Demonstrate knowledge of cost effectiveness of procedures such as prophylactic filter placement, endovascular treatment of aneurysms, and peripheral vascular disease vs. surgical intervention.

Rotation 2 (Fourth Year Radiology Residents):

Patient Care:

- Master understanding the significance of the clinical presentation and its relevance to the planned procedure.
- Master procedural skills.
- Properly synthesize data including clinical and verbal history, laboratory values, and imaging results prior to initiating any procedure.
- Achieve competency with all invasive diagnostic procedures including first-order selective arteriography, transhepatic cholangiography, antegrade nephrostogram, venography and biliary drainage.
- Acquire familiarity with advanced interventions such as vena cava filter replacement, angioplasty, intravascular stent placement, central venous access.
- Obtain an introduction to complex state-of-the-art intervention such as TIPS procedures, chemoembolization, and neurointervention.

Medical Knowledge:

- Master the first assistant role during major interventions.
- Master the understanding of the significance of the clinical presentation and its relevance to the planned procedure.
- Gain competency with basic diagnostic and interventional procedures.
- Gain competency with selective catheterization below the diaphragm.
- Get an introduction to selective catheterization above the diaphragm.
- Gain a thorough understanding of pathophysiology of vascular disease, noninvasive tests, hemodynamics, and angiograms.
- Read and retain pertinent literature, including research for cases of particular interest.

Interpersonal Communication Skills:

- Appropriately obtain informed consent.
- Produce radiologic reports that are accurate, concise, and grammatically correct.
- Effectively teach medical students.
- Communicate effectively with technical and nursing staff in the VIR section.
- Achieve mastery in departmental presentation of diagnostic findings and therapeutic options.

Practice-Based Learning and Improvement:

- Effectively use electronic medical record and radiology information system to access prior labs and reports.
- Incorporate feedback obtained during rotation into improved performance.
- Attend VIR conference s.

Professionalism:

- Demonstrate initiative by being available and volunteering services during procedures and between cases.
- Demonstrate willingness to perform additional duties that contribute to the overall patient care and academic interests of the section.
- Demonstrate respect for patients and all members of the healthcare team.
- Serve as a role model for junior residents and medical students.
- Respect patient confidentiality.
- Present one's self as a professional in appearance and communication.

Systems-Based Practice:

- Attend the VIR conferences.
- Demonstrate knowledge of cost effectiveness of procedures such as prophylactic filter placement, endovascular treatment of aneurysms, and peripheral vascular disease vs. surgical intervention.
- Be able to discuss the relative merits of endovascular versus surgical approach to oncologic, peripheral vascular and neurovascular diseases; i.e. chemoembolization, cholangiography, port placement, metastatic liver disease, uterine artery fibroids, etc.

Mechanism of Evaluation: In addition to the staged expectations for daily performance of the residents depending on level of training, residents' work done outside of the section will be assessed during morning report, during procedures, and at evening readout. Diligent reading of core text and literature to result in familiarity with concepts of Vascular and Interventional Radiology commensurate with level of training is expected. At times, patient care may mandate literature review of a particular disease or procedure. Resident evaluations will depend in part on their achievement of these performance criteria. This will be reflected in the global evaluation form included at the end of this document. Medical knowledge in vascular and interventional radiology will be assessed by the ACR in-service examination. All residents are required to maintain a log of their procedures to document the type and number of procedures performed during their residency, as well as the outcome and incidence of their complications. **Since after graduation, many private practice groups and/or hospitals will ask for this log, it is much easier to keep it up to date than scramble after graduation to complete it.**