

Post-Doctoral Fellowship Course in
Abdominal Radiology
Department of Diagnostic and Interventional
Radiology



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Jodhpur, Rajasthan, India

PREAMBLE

Abdominal disorders and are a major cause of morbidity and mortality worldwide. Frequently these patients have complex clinical problems, which require multidisciplinary approach for appropriate patient management and they need accurate diagnosis. Abdominal pathologies and disorders still present a diagnostic dilemma for clinicians as well as general radiologists. The accuracy of clinical assessment is variable and depends upon clinical experience and support from various interdisciplinary departments. For this reason, there has justifiably been an increasing reliance on accurate diagnosis with the help of experts in abdominal Radiology to guide management.

The role of specialized abdominal radiologist also cannot be ignored in the setting of emergency. Acute abdomen is a medical emergency. It can represent a wide spectrum of conditions, ranging from a benign and self-limiting disease to a surgical emergency. Nevertheless, only one quarter of patients who have previously been classified with an acute abdomen actually receive surgical treatment, so the clinical dilemma is if the patients need surgical treatment or not and, furthermore, in which cases the surgical option needs to be urgently adopted. Due to this reason an accurate diagnosis thorough and logical approach is necessary.

Radiology is an expanding field in medicine. Applying for fellowship training positions in radiology is competitive. The field is rapidly expanding due to advances in computer technology, which is closely linked to modern imaging. Abdominal Imaging Radiologists must complete prerequisite postgraduate education in Radiology – MD or DNB in Radiology. Following completion of postgraduate training in Radiology, Radiologists may either begin practicing as a general Diagnostic Radiologist or enter into subspecialty training programs known as fellowships. Examples of subspecialty training in radiology include abdominal imaging, thoracic imaging, musculoskeletal imaging, interventional radiology, neuroradiology, interventional neuroradiology, pediatric radiology, nuclear medicine, emergency radiology, breast imaging and women's imaging. Fellowship training programs in radiology are usually one or two years in length.

Historically, abdominal scans has been infrequently performed and reported by general radiologists. New knowledge in imaging is being developed at an increasingly rapid rate. The field of radiology has expanded dramatically. The range of radiology covers diseases from the fetus through to the multi-morbid aging population, from prostate to the pituitary gland and from pancreatic neoplasia to bone dysplasia. No single person can master all the available knowledge. However, the referring physicians need a clinical interface with the imaging specialist. In order to create added value for the referring clinician, the radiologist must fully understand the clinical problem. The radiologist is expected to be able to do this at a different level and for all medical specialties. Therefore adequate imaging experience and appropriate training in specific clinical specialties may also be needed.

The reasons for subspecialization in Radiology is (1) Information overload - Our field has become so complex that no individual can maintain the level of expertise needed to practice the entire field of radiology (2) Too rapid developments - complex advanced scanners with new softwares, functional imaging, spectroscopy, diffusion imaging, fusion imaging (3) specialized clinicians (4) Patients and clinicians require comprehensive information and the most accurate diagnosis (5) research.

Overseas, specialized abdominal Radiology fellowship programmes have become a routine radiology practice and has evolved into an advanced subspecialty. Unfortunately, abdominal imaging radiology has not taken off well in our country and many patients are not able to benefit due to lack of existence of such programme. The rapid advances in clinical subspecialties and research mandates that an advanced course in abdominal Radiology is started in the country in order to create a core of dedicated young professionals to sustain a good quality abdominal reporting programme for our population. Thus, there is a growing need to start a post doctoral fellowship course in Abdominal Radiology in order to create a core of dedicated young professionals equipped to provide expert care and conduct quality research relevant to our population.

AIIMS Jodhpur has dedicated general surgery, GI surgery, gastroenterology, oncology, nephrology and urology, endocrinology, pulmonology and radiation

oncology specialties. All these specialties require the support of diagnostic and interventional radiology to accurately diagnose and manage a plethora of diseases. This post doctoral fellowship course in Abdominal Radiology would be in accordance with the mandate of the Institute “in developing patterns of teaching in postgraduate medical education in as many branches as possible and attempt to provide specialists in several disciplines of radiology.”

Definition:

Fellows in Abdominal Radiology will be fully qualified radiologists who have had further training in dedicated abdominal Radiology which will be a one-year comprehensive, structured, fellowship comprising clinical, teaching, and research activity in all aspects of abdominal Radiology using all available modalities.

Aim of the Training programme

The aim of this fellowship programme is to development outstanding subspecialist radiologists with expertise in abdominal Radiology and the skills to hit the ground running in their future practice.

Objectives of the Training programme

Clinical Objectives:

The goal of our Fellowship program is to expose and educate Fellows in abdominal and pelvic imaging including emergency so that they may become leaders in their academic and clinical worlds. Without doubt, this is a superb fellowship for many important reasons. The Radiology Department really does function as a closely-knit team. The work atmosphere is incredibly warm and collegial. The range of case material is enormous. Besides the usual mix of emergent, inpatient and outpatient studies, we do the imaging for various oncology cases. Our working relationships with the referral services are excellent. As a result, we get to see an extensive array of pathology, with all the complexities they involve. This makes the fellowship an unusually rich and enjoyable experience. The program has important additional highlights. There is a large volume of image guided intervention, including

percutaneous biopsies, drainages and tumour ablations, in which the fellow if interested may observe this procedures.

Education/Teaching Objectives:

Didactic Teaching and Clinical Meetings:

Educational program exclusively for a fellow including didactic sessions: Case presentations, approach to the diagnosis, detailed differentials, Clinical and Radiological approach to a finding or disease and on-call training. Fellows would be required to present cases, seminars, journal club and a topic for our grand rounds.

Fellow will also be involved in teaching and other academic activities of the Department including teaching the undergraduate and postgraduate students.

TRAINING PROGRAMME SYLLABUS

A: General Principles:

Each Fellowship student is required to possess a comprehensive knowledge of the imaging modalities used in abdominal radiology and develop the skills to diagnose and further guide the patient for possible management options available. He/she should have personally performed a sufficient number of reporting both under supervision and independently and be able to diagnose common adult and paediatric pathologies. He/she should also possess sufficient knowledge and experience in research methodology and development and is expected to complete a short research project during the tenure of his fellowship.

CLINICAL SKILLS FOR ABDOMINAL RADIOLOGY FELLOWS:

A. Learning Objectives

- The abdominal Radiology fellow will develop clinical expertise in the diagnosis and treatment of all diseases of the abdomen and pelvis with special emphasis on the following areas: hepatobiliary diseases, oncology, trauma, pre- and post-operative evaluations, diverse vascular Doppler studies as well as other areas of abdominal and pelvic disease that may be subject to imaging evaluation.
- Learn the latest advances and protocols in abdominal Radiology with emphasis on a practical approach and problem solving to avoid common pitfalls.

- Become expert at nonvascular image-guided interventions of the neck, chest, abdomen and pelvis.
- Show progressive knowledge and responsibility in interpretation and performance of studies, though these are done under the supervision of faculty radiologists.
- Develop the ability to teach radiology residents and medical students both informally and through participation in resident case conferences and medical student lectures.

B. Instructional/Teaching Activities

- Advanced didactic and interactive case-based curriculum contributed to by all the faculty members designed and tailored specifically for the abdominal Radiology fellow.
- Weekly Journal Club.
- Regular divisional interesting case conferences where the best cases of the week are presented.
- Fellow oriented bimonthly interesting case conferences on pelvic MRI and abdominal MRI following a topic based curriculum
- Interdepartmental Conferences:
 - Tumor Board meetings
 - GU Conference
 - GI Conference
 - Grand Rounds
 - CPCs

Fellows are encouraged to participate in ongoing research projects or develop their own.

Duration and Rotation:

MRI - 4 months

CT - 5 months

USG including Doppler - 2 months

X-Rays and Special procedures - on regular case basis

OPD posting in Gastroenterology and GI surgery, Oncology - 2 weeks

Urology - 1 week

Research - 1 week

Total: one year

Supervision:

Initially, the fellow will be fully supervised by the Faculty posted in the area. In the course of training, the level of supervision will be tapered according to the experience and confidence gained.

Overview of training

Over the course of the one-year fellowship, the fellow will receive training in thoraco-abdominopelvic imaging with specific emphasis on the acquisition and interpretation of cross-sectional MRI/MRA of the body. The fellow will be exposed to a large volume of body CT and MRI cases including:

- MRI of the abdomen, and pelvis for cancer diagnosis and staging
- MRI of hepatobiliary pathologies
- MRCP interpretation
- Dynamic MR imaging for liver, biliary and pancreatic diseases
- CT of the chest, abdomen, pelvis, lower extremities, and upper extremities
- Noncontrast MRI for the evaluation of acute abdomino-pelvic pain
- CTA for pulmonary embolus detection
- CTA for mesenteric/bowel ischemia
- CT/MR Enterography
- USG and Doppler studies of abdomen
- Advanced, quantitative imaging of liver disease, including spectroscopy and elastography (in future)
- Whole body MRI to evaluate patients with prostate cancer and multiple myeloma
- Transplant imaging workup (in future)

Additionally, the fellows will receive training in the interpretation of other imaging modalities of the body including:

- CT of the chest, abdomen, and pelvis

- CT Virtual colonoscopy
- PET-CT
- Ultrasound and ultrasound-guided procedures
- Fluoroscopy
- Plain film interpretation

Fellows will also receive several didactic lectures in abdominal Radiology, vascular and interventional radiology, and PET/CT. Medical Imaging Grand Rounds and interdepartmental meetings add to the educational experience.

At the end of the one-year fellowship, the fellow should be able to demonstrate the following skills and competencies:

- Interpreting cross-sectional US, CT, and MR imaging of the body
- Performing and interpreting fluoroscopic procedures
- Comprehensive knowledge of the physics of ultrasound, CT, and MR imaging and an ability to apply this
Knowledge for image optimization and for quality assurance issues
- Patient care in the areas of consultation particularly in multidisciplinary conferences, patient safety, and diagnostic and therapeutic procedures
- Supervise CT and MRI examination and assess for absolute and relative contraindications, protocol each case appropriately, perform conjoint procedures such as rectal jelly administration and buscopan administration, supervise technical adequacy and completeness of cases at the technologist's request

Throughout the year, fellows frequently interact with other medical services and are actively involved in several multidisciplinary conferences which include hepatobiliary, colorectal, urology, gynecology, and nephrology. Frequently, these discussions focus on the accurate diagnosis and guide for further management.

Abdominal Radiology fellows at AIIMS, Jodhpur will also be given the opportunity to participate in research activities. All trainees are required to participate in at least one scholarly project. Within the department, the fellows will be offered

opportunities to participate in on-going basic and translational research. Clinical academic meetings for fellows will be held frequently.

The Library of AIIMS, Jodhpur supports the students, faculty, researchers, and clinicians in the Medical College. The library enables access to vast stores of biomedical literature (International and national journals). Good amount of reading books are also available in the library with computers for internet access.

Research:

1. The fellow will have to:
2. See 20 cases of quality analysing and discussing which will be certified by the faculty of the department.
3. Present at one regional and one national conference.
4. Participate in the daily teaching sessions within the department and make regular presentations.
5. Take part in Inter-departmental meetings relevant to the area posted.

ASSESSMENT SYSTEM – As per Institute Policy

Internal Assessment

The overall internal assessment process is based on performance in patient care, performance in academic programme, logbook maintenance and achievement of research requirements.

Theory paper

Abdominal Radiology Speciality

Basic physics/contrast/techniques

Abdominal and vascular interventional radiology

Practical Examination

Components of Practical Examination

Component
Clinical Viva (2 cases)
Spotters
General Abdominal Radiology Viva

Recommended Reading

Author Name	Name of the Book	Publishing Company
Gore and Levine	Textbook of Gastrointestinal Radiology	Saunders
Lee and Sagel	Computed Body Tomography with MR Correlation	Wolters Kluwer
Haaga	CT and MRI of the Whole Body	Elsevier
Carol M Rumack	Diagnostic Ultrasound	Elsevier
Margulis & Burhenne's	Alimentary Tract Radiology	Mosby
David Sutton	Textbook of Radiology and Imaging	Churchill Livingstone

Stephen Chapman	Aids to Radiological Diagnosis	Differential	Saunders
Riccardo Manfredi	Magnetic Cholangiopancreatography (MRCP)	Resonance	Springer
Riccardo Manfredi	MRI of the female and male pelvis		Springer
Grainger	Diagnostic Radiology 3 rd edition Vol - I		Churchill Livingstone
Grainger	Diagnostic Radiology 3 rd edition Vol - II		Churchill Livingstone
Grainger	Diagnostic Radiology 3 rd edition Vol - III		Churchill Livingstone
Zwiebel	Introduction to Ultrasonography. 3 rd edition.	Vascular	Elsevier

Latest Articles from National and International Journals particularly Abdominal Imaging, European Radiology, AJR, BJR, CPDR, Clinical Imaging, Seminars in Ultrasound, CT and MR, Radiologic Clinics of North America, MR Clinics of North America