Medical Imaging

Interventional Radiology

The field of Interventional Radiology has been in existence for a long time. You may have heard of angioplasty. It certainly has its roots intertwined with this procedure. However, today it is so much more and encompasses access to almost every organ system in the body.

Its basic premise is that doctors trained in Interventional Radiology can treat a multitude medical conditions that had previously required surgery. The procedures are performed through small holes in the skin, hence they are minimally invasive.

As imaging technology has advanced so has the breadth of interventional radiology procedures. The Interventional Radiologist utilizes fluoroscopy (real time x-ray), digital subtraction radiography, ultrasound and CAT scans to "see" inside your body. They are able to treat conditions with more precision, less invasively and reduced complications and hospital stays.

Today's Interventional Radiologists are at the forefront of modern medicine and clinical advances in the use of image guided technologies. Their training consists of residency and fellowship leading to dual board certification in Radiology and Interventional Radiology. The purpose of this letter is to familiarize you with these types of procedures.

1. Venous Access for chemotherapy, antibiotics, TPN and dialysis access.
    a) PICC
    b) Central Venous Lines
    c) Tunneled catheters, i.e. Groshong or Hickman
    d) Subcutaneous ports, i.e. Portacaths
    e) Hemodialysis catheters - VasCath (temporary) and PermCath (longer term).
    Also used for plasmapheresis and stem cell treatment.
2. Pulmonary Embolism refractory to Medical Management or prophylaxis for surgical procedure.
    a) IVC filter placement.
    b) IVC filter removal after no longer needed
3. Dialysis shunt or fistula maintenance and revascularization.
    a) Angioplasty
    b) Thrombolysis and Thrombectomy
    c) Stent placement

4. Aspiration and Drainage Procedures of abnormal fluid collections
    a) Abscess collections
    b) Pleural effusions
    c) Peritoneal ascites
    d) Lymphoceles
    e) Leaking organs (biloma, urinoma, etc.)
    f) Small bore chest tubes for uncomplicated pneumothorax
5. Image Guided Biopsies
    a) Percutaneous for solid organs, soft tissue masses and bone
    b) Transjugular liver biopsy for liver disease
6. Percutaneous Placement of GI feeding and/or gastric decompression tubes
    a) Gastrostomy tubes
    b) Gastrojejunostomy tubes
    c) Transgastric jejunal tubes
    d) Jejunal tubes
7. Urinary tract procedures
    a) Nephrostomy tubes
    b) Nephroureteral catheters
    c) Ureteral stents
    d) Suprapubic Catheters
8. Biliary tract procedures
    a) Cholecystostomy tube
    b) External biliary drainage
    c) Internal/External biliary drainage
    d) Biliary stents
9. Pulmonary and Right heart procedures
    a) Trans venous temporary pacemaker placement
    b) Pulmonary angiography and pressure measurements (on horizon)
    c) Embolization of pulmonary AV shunts (on horizon)
10. Pain Management
    a) Epidural Steroid injection, transforaminal and intralaminar
    b) Joint, muscle and tendon sheath steroid injections
    c) Celiac plexus block

New areas on the horizon for Mammoth Hospital Interventional Radiology:

1. Lumbar and Thoracic Vertebroplasty/Kyphoplasty
2. Diagnostic Angiography to evaluate for bleeding or vascular disease, etc.
3. Endovascular treatment (embolization) of bleeding in trauma
    a. Pelvis
    b. Liver
    c. Spleen
4. Revascularization techniques
    a. Thrombolysis
    b. Angioplasty and stent placement for Aorta-iliac disease
5. Lower extremity venous hypertension procedures
    a. Varicose veins treatment
    b. Spider veins
6. Gynecological procedures
    a. Uterine Artery Embolization for bleeding or painful fibroids
    b. Treatment of Pelvic Congestion Syndrome
7. Male Reproductive Procedures
    a. Varicocele embolization
8. Placement of PluerX tunneled drainage catheters for chronic pleural effusions and peritoneal ascites.

Dr. Donald S. Harrell was an Associate Professor at USC School of Medicine in the Interventional Radiology Division of the Radiology Department for 26 years. He has also been on the Mammoth Hospital medical staff since 1986. Dr. Harrell recently retired from his position at USC to commit to caring for patients in Mammoth and Eastern Sierra full-time.