



# Interventional Radiology

University of North Carolina School of Medicine  
Department of Radiology 2020

UNC Radiology Residency Educational Scholarship  
Many slides adapted from Dr. Ari Isaacson, MD  
CVAD lecture

# Learning objectives

By the end of this activity, participants will be able to:

1. Understand spectrum of IR (interventional radiology) procedures
2. Describe central venous access device (CVAD) options
3. Understand pre-procedural planning
4. Review biopsy procedures

# Module Outline

- I. Procedures
- II. Central venous access devices
- III. Pre-procedure planning
- IV. Cases
- V. Questions

# Procedures We Do !

Lines  
Biopsies  
Abscess drains  
Thrombolysis  
IVC filters  
Cholecystostomy/PTBD  
G - tube  
Angiography

Thora/paracentesis  
Embolization/sclerosis  
Nephrostomy tubes  
Vertebroplasty  
RFA/cryo  
TIPS/BRTO  
LP  
Arthrography  
And more !!

You are the intern taking care of a 24yoF with cystic fibrosis admitted with a cystic fibrosis exacerbation.

To prepare for discharge and 3 weeks of outpatient IV antibiotics . . .

Q: What type of IV access/line does she need?

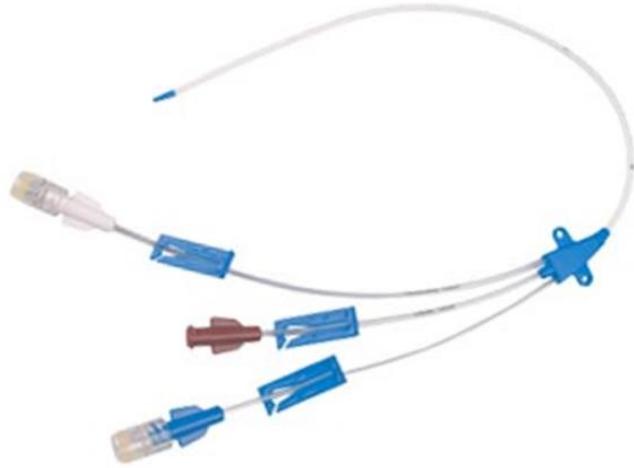
# CVAD

Non tunneled

Tunneled

Portacath

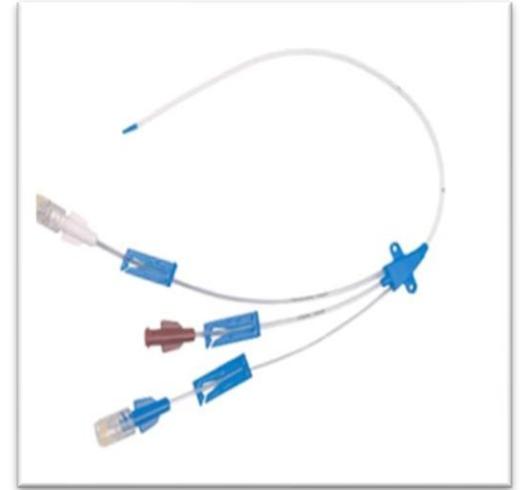
PICC



# Non-tunneled CVAD

In hospital use only  
Can fall out/be pulled out  
More prone to bacteremia  
Easily pulled by housestaff/anyone

Triple lumen



Hemodialysis/pheresis cath  
temp catheter



# Tunneled CVAD

Can be discharged with these

Better protection from bacteria and accidental withdrawal due to skin tunnel and cuff

Minor procedure to remove (by Rads)

## Powerline

Home IV abx

Use in dialysis pts



# Portacath and PICC

## Portacath

Implanted completely under skin

Usu for chemotherapy use



## PICC

Peripherally inserted central venous catheter

Ideal in home IV abx, CF patients

No in dialysis pts

Easily removed



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You are the intern taking care of a 24yoF with cystic fibrosis admitted with a cystic fibrosis exacerbation.

To prepare for discharge and 3 weeks of outpatient IV antibiotics . . .

Qs: Is the patient consentable?

Is the patient coagulopathic? (recent platelets/PT-INR)

Is the patient bacteremic?

Is the patient NPO? (in case of sedation)?

What kind of IV access/line does she need?

# Tunneled, Portacath and PICC

## Tunneled & Portacath

INR <2-1.5 depending on cath type

Plts >50k

SC Heparin/lovenox off 6 hrs, Coumadin off 3 days, Plavix off 5 days, Hep gtt off 1-2 hrs

Blood cultures NEG x 2 days

NPO x 8 hrs **if** sedation

## PICC

Coagulopathy does NOT need correction

Yes if bacteremic (but somewhat controversial)

No sedation required hence  
No NPO required

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# And now on to Biopsies performed by Rads . . .

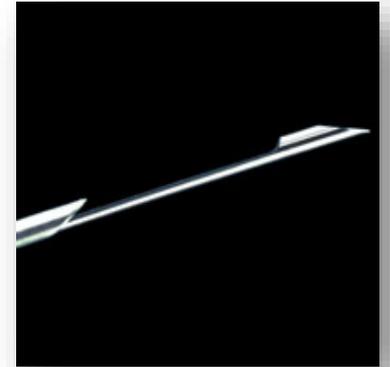
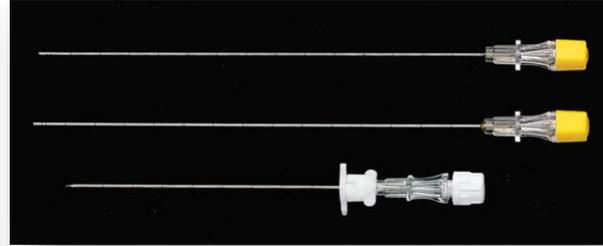
CT vs US depends on scenario

Fine Needle Aspiration (FNA)

obtains clumps of cells, smaller gauge

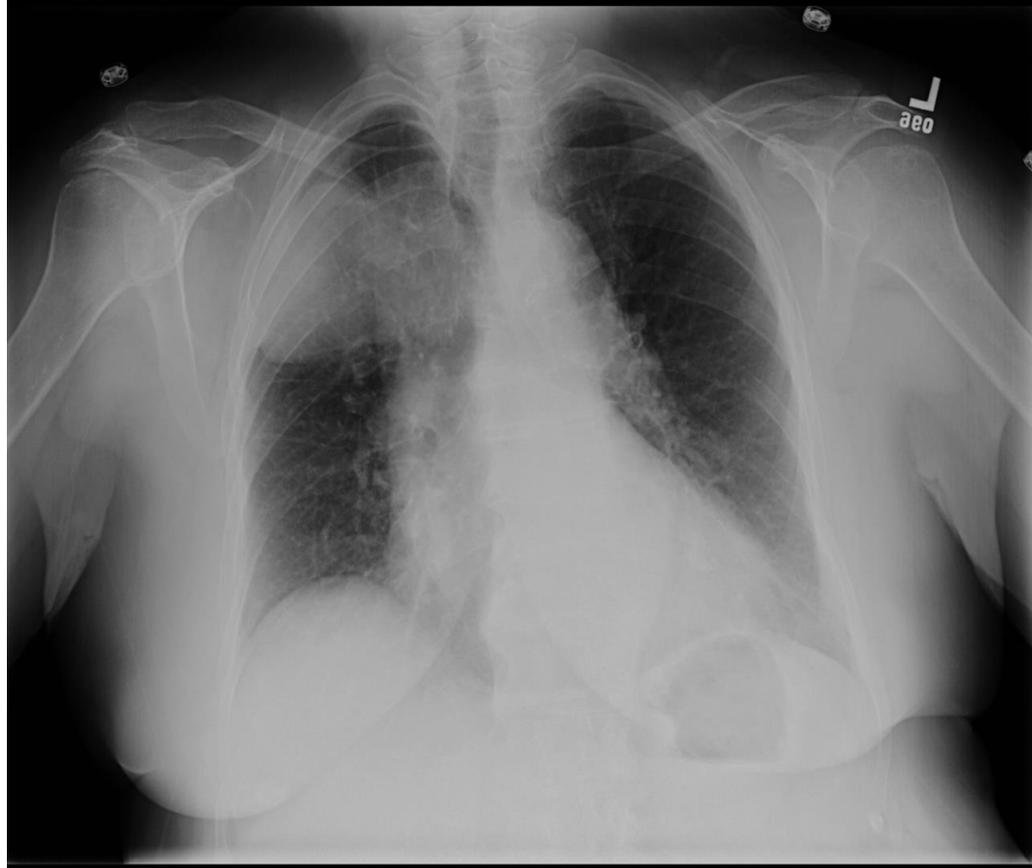
Core Needle Biopsy (CNB)

retrieves solid sample of tissue, retains architecture



78yo hemoptysis

RUL mass and right mediastinal LN  
Next step?

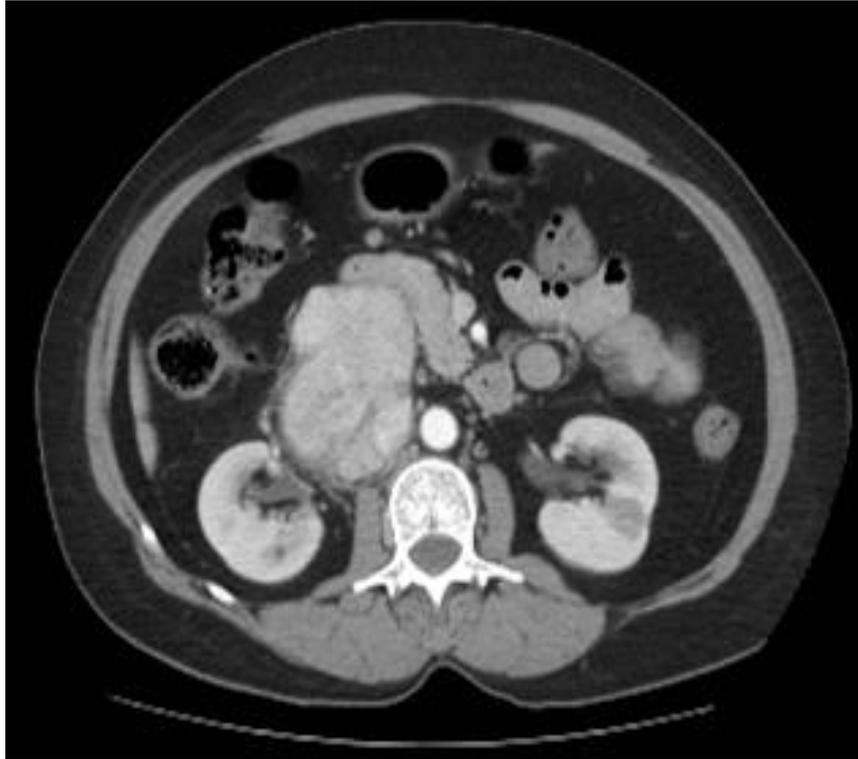


# 78yo hemoptysis

CT confirms RUL mass and right mediastinal LN. Pt poor bronchoscopy candidate -> Bx via CT



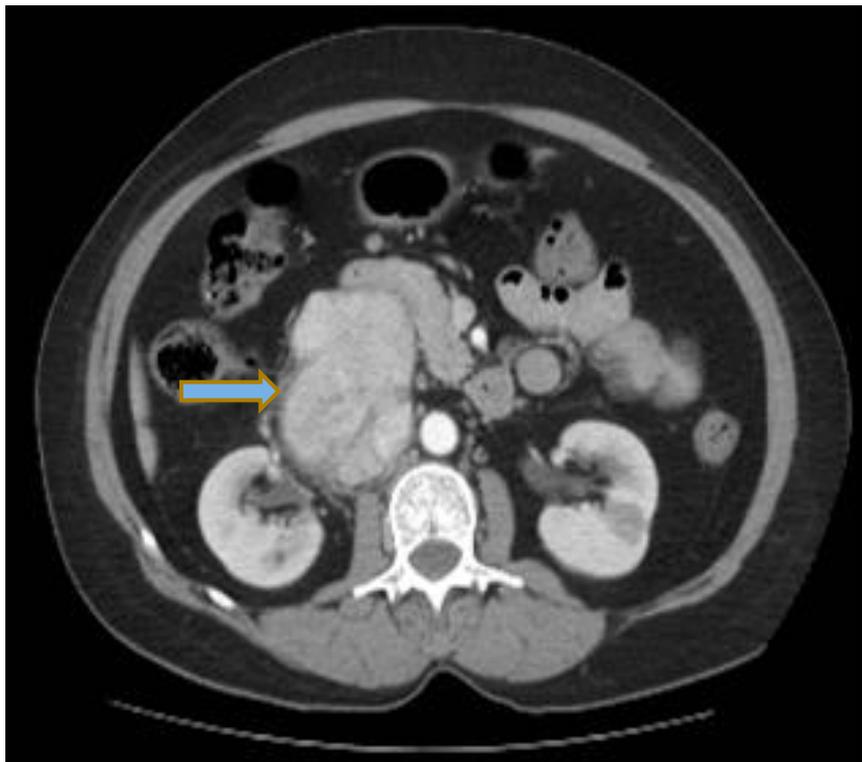
57yo right flank pain



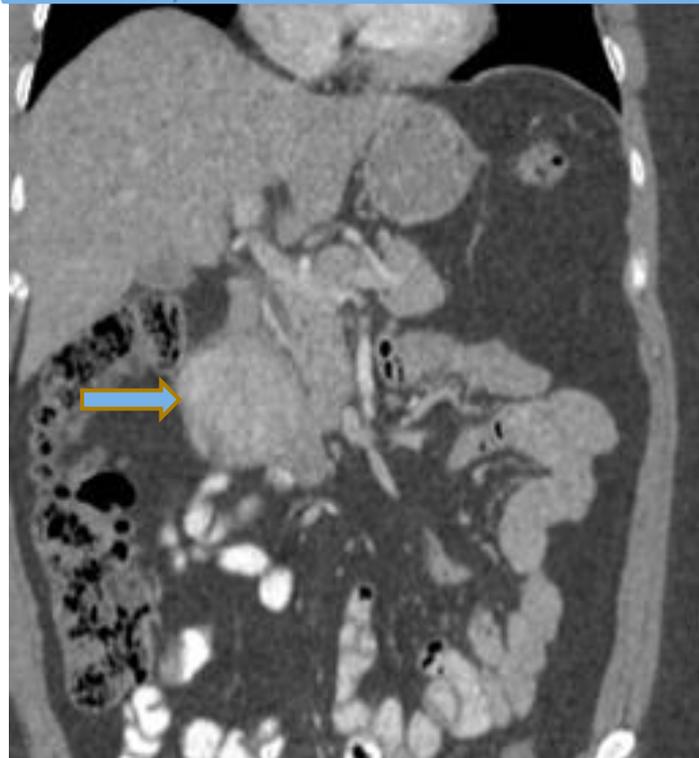
Axial and coronal CT scan images . . . findings?



# 57yo right flank pain



CT : Enhancing mass adjacent to the aorta and right kidney, encasing or involving the IVC. Displaces bowel anteriorly -> Proceed to CNB



Diagnosis on CNB: Retroperitoneal sarcoma

57yo right flank pain

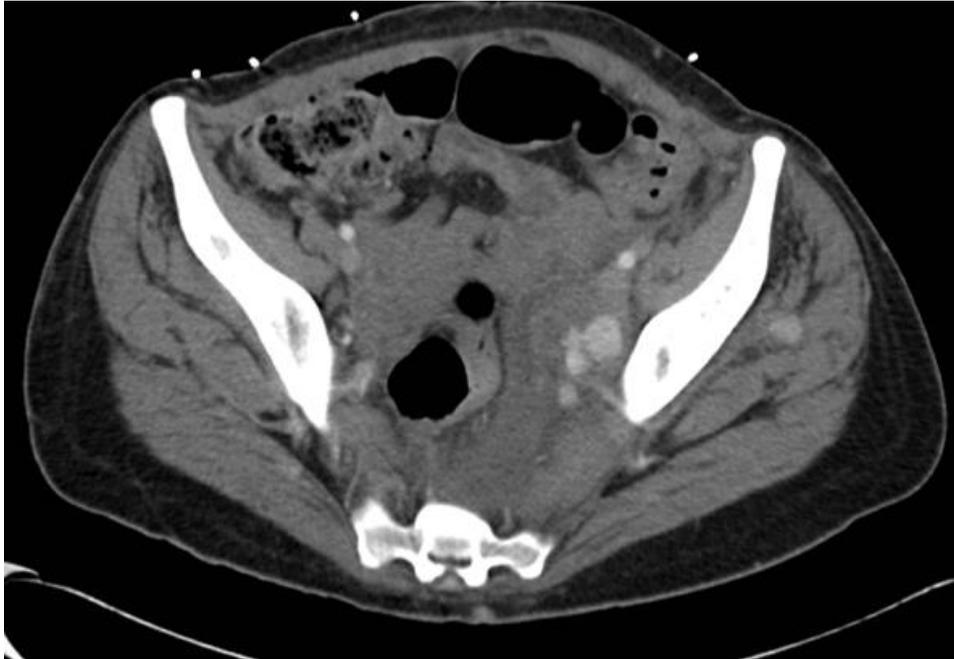


CT guidance setup

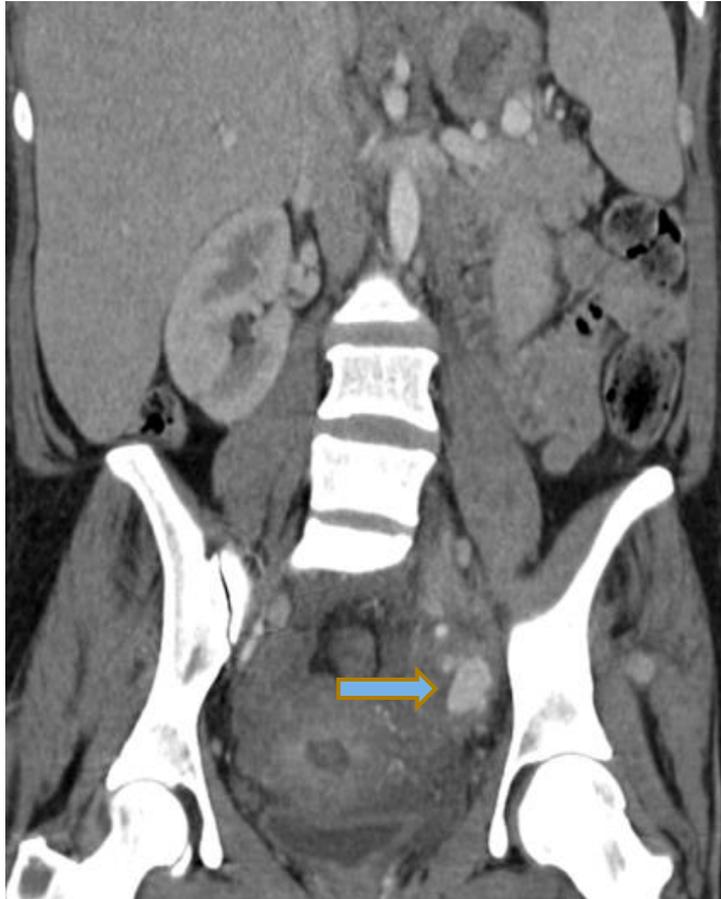


Biopsy needle advanced to mass

# 32yo endocarditis and LE claudication

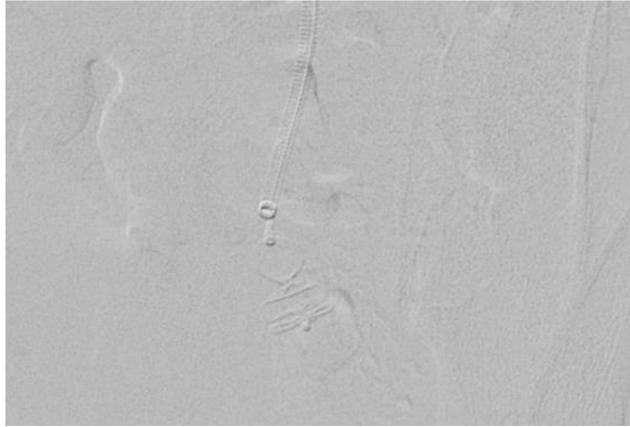


## 32yo endocarditis and LE claudication

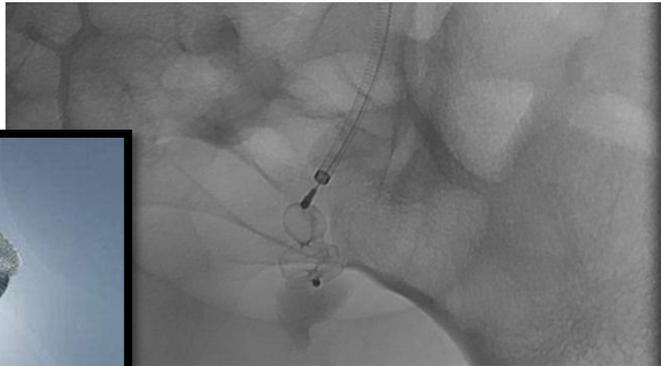
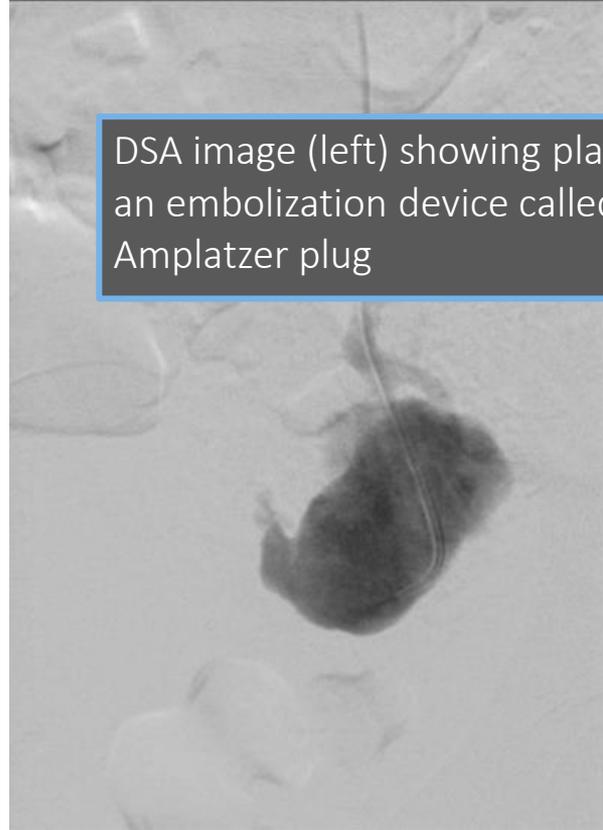


DSA image showing superior approach catheter with contrast injection. Contrast fills the aneurysm sac

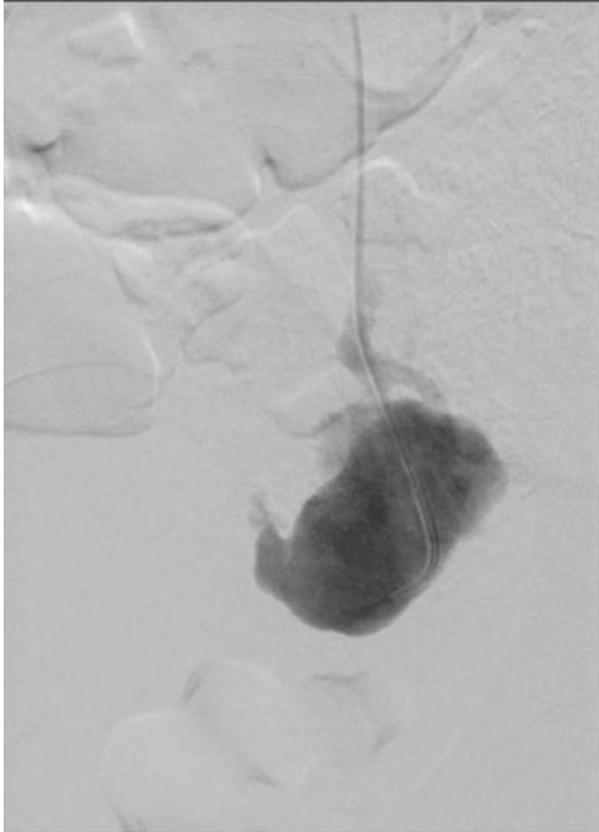
# 32yo endocarditis and LE claudication



DSA image (left) showing placement of an embolization device called an Amplatzer plug



# 32yo endocarditis and LE claudication



Pre & postembolization angiograms:  
Contrast injection post plug placement  
successful occlusion of the aneurysm!



# Synopsis

Radiologists actually do more than interpret radiographs!

Image guided procedures often less invasive than open/surgical procedures

Different types of CVADs

Pre-procedural planning: consentable? Coags ok? Blood cultures (tunneled lines)?

Many ways to perform biopsies - if unsure, ask a radiologist.

# Welcome to the UNC Radiology Residency Education Website!

UNCRADRES

Tweets by @UNCRadRes

**UNC Rad Residency**  
@UNCRadRes

Neuroradiology resident field trip to the art museum to check out the beautiful brain art. #RadioActivity @THHMD @DavidMauroMD @SJordanMD



Mar 28, 2019

**UNC Rad Residency**  
@UNCRadRes

We had a blast presenting all of our work at #IRATX19! Thanks to @UNCRadiology for the opportunity. #RadioActivity @BDixonMD @JessieStewartMD @mcreamy @CharlesBurkeMD @SJordanMD @THHMD



Embed View on Twitter

We are pleased to provide this educational resource for our residency program!

UNC Rad Q&A, subspecialty block ed resources, Phone Numbers, HSL custom build e-books, helpful hints can be found on this site.

ABR Core exam intel

Block 10 Schedule

Chief's Survey

RadExam

RSNA Physics Modules

## UNC Radiology Conference schedule 18-19

Today	←	→	March 2019	Print	Week	Month	Agenda						
Sun	24	Mon	25	Tue	26	Wed	27	Thu	28	Fri	Mar 1	Sat	2
			7am Cardiac Cases - 12pm Body: US Reni	7am Hot Seat - Phys 12pm Health Care Ec	7am Hot Seat - Phys 12pm Neuro - Pediat								
			8am CVI Family Med 12pm Breast - Kuzm										
	3	4	5	6	7	8	9						
			12pm Body: Modern 12pm VIR: Yu - Dial)	7am Hot Seat - Whit 12pm Peds Interacti	7am Hot Seat - Whit 12pm MSK: Maetani								
	10	11	12	13	14	15	16						
			7am Chest Cases - E 7am Hot Seat - Phys 12pm Body: Solid an	7am Grand Rounds - 12pm NH: Oldan - N									
			12pm Body: HSG - C 8am CVI Family Med 12pm Resident Conf										
	17	18	19	20	21	22	23						
			12pm Body: MRI/MR 7am Hot Seat - Core 12pm Peds: Fordhan	7am Hot Seat - Core 7am Grand Rounds: 12pm MSK: Nissman 12pm MSK: Robert J									
	24	25	26	27	28	29	30						
			7am Chest Cases - E 7am Hot Seat - Core 12pm Fellow Panel: 12pm Body: US Live: 8am CVI Family Med 12pm Breast - Fellow	7am Hot Seat - Core 12pm Fellow Panel: 12pm Neuro - Neuro									

# Home



Welcome to our UNC Medical Student Radiology website!

Custom built HSL website for Radiology - e-Anatomy, UpToDate, PubMed and reference books

UNC Radiology Teaching Files

URMC Radiology Teaching Files

ACR Appropriateness Criteria: What Test Applies?

Department career goal advisers are available to counsel radiology-bound students!

## RADY Formal Didactic Curriculum

Today	←	→	February 2020	Print	Week	Month	Agenda						
Sun	26	Mon	27	Tue	28	Wed	29	Thu	30	Fri	31	Sat	Feb 1
			10am RADY 401 Cas 2pm Best of Breast 11pm Meet Aunt Minn							TEC Block 11 Ends			
			1pm Intro to VIR Dr 4pm Ms Cluck Sim L							10am RADY 401 Fine			
	2	3	4	5	6	7	8						
			TEC Block 12 begin	RADY Symposium	1pm Intro to Cardiol	1pm CXR Unknowns							
			11am RADY 401 Intr	8am Intro and Apprc	9am CXR #1 in the \	10am Emergency Ra	11am Head CT Dr Rc						
	9	10	11	12	13	14	15						
			1pm Intro to Abdom	RADY Symposium		1pm Intro to Muscul	10am RADY 401 Mid						
			2pm Approach to the	8am Cervical spine E	9am Body CT Dr Dec								

More at [www.rads.web.unc.edu](http://www.rads.web.unc.edu) [www.msrad.web.unc.edu](http://www.msrad.web.unc.edu)

and @UNCRadRes

Thank you!



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Radiology