RADT-2650: INTERVENTIONAL AND SPECIAL IMAGING PROCEDURES

Cuyahoga Community College

Viewing: RADT-2650 : Interventional and Special Imaging Procedures

Board of Trustees:
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Academic Term:
Fall 2023

Subject Code
RADT - Radiography

Course Number:
2650

Title:
Interventional and Special Imaging Procedures

Catalog Description:
Study of sterile technique, infection control, interventional procedures and OSHA regulations as applicable to a breast imaging department.

Credit Hour(s):
1

Lecture Hour(s):
1

Requisites

Prerequisite and Corequisite
RADT-2610 Fundamentals of Mammography; and RADT-2620 Anatomy and Pathology of the Breast; and RADT-2630 Positioning Techniques for Breast Imaging, and RADT-2640 Physics of Mammography; and concurrent enrollment in RADT-2930 Mammography Applications.

Outcomes

Course Outcome(s):
Comply with OSHA regulations by demonstrating sterile technique and appropriately completing patient records.

Essential Learning Outcome Mapping:
Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):
a. Illustrate sterile technique.
b. Describe specimen handling and record keeping for pathologic analysis.

Course Outcome(s):
Discuss interventional/special procedures used to diagnose and treat breast cancer.

Essential Learning Outcome Mapping:
Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Identify procedures used to diagnose breast cancer.
b. Describe the treatment options for breast cancer.
c. Identify the value of biomarkers and those specific to breast imaging modalities.
d. Describe the uses of computer-aided detection for mammography images.

Course Outcome(s):

Define and describe from start to finish, a needle localization, core biopsy and stereotactic biopsy.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Define patient transport requirements pre-biopsy and post-biopsy.
b. Describe continuous patient care from pre-biopsy and post-biopsy.
c. Describe localization techniques
d. Describe biopsy techniques.
e. Describe specimen imaging guidelines.

Course Outcome(s):

Describe ductography, scintimammography, sentinel node mapping, digital breast tomosynthesis and MRI breast imaging.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Describe ductography (galactography).
b. Discuss the potential benefits and use of nuclear medicine studies.
c. Describe the basic theory of digital breast tomosynthesis including appropriate use.
d. Discuss the potential benefits and use of abbreviated breast MRI.

Course Outcome(s):

Develop a basic understanding of ultrasound and 3D ultrasound.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Describe correct patient positioning.
b. Describe the basic components of sonographic equipment and display of image.
c. Describe the sonographic appearance of breast anatomy
d. Describe the use of ultrasound and 3D ultrasound.
e. Correlate mammographic finding(s) with ultrasound.
f. Identify basic bioeffects and patient safety concerns associated with sonography.
g. Describe the importance of image labeling and components of precise location.
h. Describe the potential benefits and use of breast elastography.

Course Outcome(s):

Discuss patient services and procedures offered in a breast imaging center.

Essential Learning Outcome Mapping:

Not Applicable: No Essential Learning Outcomes mapped. This course does not require application-level assignments that demonstrate mastery in any of the Essential Learning Outcomes.

Objective(s):

a. Discuss interventional/special procedures offered to patients.
b. Discuss dual energy contrast digital mammography and its appropriate use.

Methods of Evaluation:

a. Participation and discussion
b. Written assignments
c. Case studies
d. Exams
e. Quizzes
f. Other methods deemed appropriate by department

Course Content Outline:

a. General Information
    i. Sterile technique
        1. Spread of infection
            a. Exogenous
            b. Endogenous
            c. Iatrogenic
            d. Nosocomial
        2. Preparation of local anesthetics, contrast media, etc.
        3. Patient allergies and alternative options
        4. Proper glove use
        5. Proper hand washing technique
        6. Sterile tray preparation
        7. Disposal of items
            a. Items contaminated with blood
            b. Regular waste basket items
    ii. Localization terms
        1. Clock
        2. Quadrant
        3. Distance from nipple
        4. External landmarks
            a. Axilla
            b. Nipple
            c. Inframammary fold
b. Localization Modalities (definition, application and technique)
    i. Mammography localization
    ii. Stereotactic lesion localization
    iii. Ultrasound localization
    iv. MR localization
        1. MR safety issues for personnel
        2. MR appropriate equipment
c. Interventional Procedures (definition, application and technique)
    i. Cyst aspirations
    ii. Fine-needle aspiration or biopsies
    iii. Core biopsy
    iv. Wire localization
    v. Vacuum-assisted breast biopsy
    vi. Galactography
        1. Alternative imaging procedures (e.g. breast MRI)
    vii. Specimen imaging

1. Imaging guidelines
    a. Core specimens
    b. Surgical specimens

d. Pathologic Analysis
    i. Specimen handling
        1. Universal precautions
        2. Solutions
            a. Saline
            b. Formaldehyde
        3. Specimen labeling
    ii. Record keeping

e. Patient Care
    i. Prebiopsy
        1. Knowledge of informed consent procedures
            a. Use of 2 patient identifiers
            b. Hard stop process
        2. Vital signs
        3. Explanation of procedure
        4. Time out
            a. Verify correct procedure, patient and site
                i. Proper documentation
                    1. Date
                    2. Time
                    3. Presence of procedure team members
    ii. During procedure
        1. Patient awareness
        2. Signs of vasovagal reaction and syncope
        3. Signs of allergic reactions to anesthesia
        4. Anxiety
    iii. Post-biopsy
        1. Post-biopsy imaging for clip placement
        2. Post-biopsy pressure and wound dressing
        3. Knowledge of post-biopsy care instructions
        4. Follow-up with patient

f. Diagnosis of Breast Carcinoma
    i. Fine-needle aspiration
    ii. Fine-needle biopsy
    iii. Core biopsy
    iv. Vacuum assisted breast biopsy
    v. Surgical biopsy
    vi. Other
    vii. Correlation to mammographic findings
        1. Concordance
        2. Nonconcordance

g. Treatment Options for Breast Cancer
    i. Surgery
        1. Lumpectomy
        2. Partial mastectomy
        3. Simple mastectomy
        4. Modified radical mastectomy
        5. Prophylactic mastectomy
        6. Sentinel, axillary node and axillary dessection
        7. Clear surgical margins
    ii. Reconstructive surgery
        1. Implant and tissue expander
        2. Tissue flap reconstruction methods
            a. Transverse rectus abdominis myocutaneous (TRAM)
            b. Deep inferior epigastric perforator (DIEP)
            c. Superficial inferior epigastric artery (SIEA)
        3. Latissimus dorsi (LD) flap (back)

4. Gluteal artery perforator (GAP) (buttock)
5. Transverse upper gracilis (TUG) flap (inner thigh)

iii. Radiation therapy
1. Whole breast
2. Focal
3. Methods

iv. Targeted therapy
1. Molecular therapy
2. Hormone and endocrine therapy
3. Immunotherapy
4. Gene therapy

v. Interventional procedures
1. Localization procedures
2. Biopsy procedures
3. Fine-needle aspiration or biopsy procedures

vi. Other
vii. Medical therapy
viii. Chemotherapy
ix. Nonsurgical interventions (e.g. ablation therapy)
x. Pain management

h. Computer-Aided Detection
i. Define
ii. Proper protocol for use
iii. Tool for mammography interpretation

i. Digital Breast Tomosynthesis (DBT)
i. Define
ii. Theory of DBT
iii. Personnel training requirements (MQSA)

Resources

American College of Radiology (ACR). ACR Mammography Manual. Reston, VA.

American Registry of Radiologic Technologists (ARRT). (Current) Content Specifications forMammography. St. Paul, MN. https://www.arrt.org/docs/default-source/discipline-documents/mammography/mammography-content-specifications.pdf?sfvrsn=8a6303fc_8

American Society of Radiologic Technologists (ASRT). (Current) *Mammography Curriculum*, Albuquerque, NM. https://www.asrt.org/docs/default-source/educators/curriculum/mammography/2018-adopted-mammography-curriculum.pdf

Cardenosa, Gilda. (2017) *Breast Imaging Companion*, Philadelphia: Wolters-Kluwer.

Lille, Shelly L. Marshall, Wendy. (2019) *Mammographic Imaging--A Practical Guide*, Philadelphia: Wolters-Kluwer.

Peart, Olive. (2022) *Lange Q and A: Mammography Examination*, New York: McGraw-Hill.

Peart, Olive. (2022) *Mammography and Imaging Prep: Program Review and Exam Prep*, New York: McGraw-Hill.

Resources Other

U. S. Department of Health and Human Services. Q*uality Determinants of Mammography Clinical Practice Guidelines*

Top of page
Key: 3868