

## **CURRICULUM FOR THE BREAST PATHOLOGY ROTATION UNIVERSITY OF FLORIDA DEPARTMENT OF PATHOLOGY**

JULY, 2003

The following is a conceptual curriculum and set of guidelines for Pathology Residents on the Breast Pathology Rotation. The following topics represent "Core Competency" requirements that should be met during a one month rotation, in the "first year" and in the "second year." This curriculum is not exhaustive, but represents the critical components of training in this subspecialty. These components will be formally tested to assess the resident's competency at the end of the rotation.

A first year resident's responsibilities should first and foremost include a working knowledge of normal histology and physiology of the breast, including the difference between male and female breast tissue, and its histology at different stages of life for the female breast. It is this knowledge of what is normal that can help alert the resident to what is actually abnormal. Thus the following resources for the description of normal histology are recommended:

1. Sternberg's Histology for Pathologists
2. Rosen's Breast Pathology
3. Tavassoli's Pathology of the Breast

Once this knowledge of normal histology is mastered, then pathologic entities can be easily recognized. The following resources for basic breast pathology are recommended:

1. Rosen's Breast Pathology
2. Tavassoli's Pathology of the Breast
3. AFIP fascicle on Tumors of the Mammary Gland
4. Carter's Interpretation of Breast Biopsies
5. USCAP and ASCP handouts
6. Selected hallmark papers

### **DUTIES AND RESPONSIBILITIES OF THE RESIDENT**

#### **GROSS EXAMINATION**

1. Faculty are always available to review gross specimens, if necessary.
2. For any resection specimen, the approach to sampling must be clear and directed. Questions can be referred to the expertise of the pathology assistants, or the attending pathologist, or if necessary, the surgeon. If there is any confusion, do not start cutting the specimen. Grossing in a specimen is controlled destruction of the specimen, and inappropriate handling of the specimen is harmful to the patient's care.
3. Learn the gross appearances of certain tumors: e.g. normal breast tissue is white, fibrous or occasionally wispy, and is strand-like or irregularly distributed through fatty tissue. Fibrocystic change is characterized by blue domed cysts and dense white fibrous tissue. A fibroadenoma is a solid mass that is well-circumscribed. Invasive carcinoma is a stellate lesion that is surrounded by sclerosis and a scirrhous reaction. Medullary carcinoma is well-circumscribed. Colloid carcinoma produces abundant mucin.
4. One valuable resource is Abrahams' Manual of Surgical Pathology which offers guidelines to grossing in resection specimens as well as the format of synoptic final reports.

#### **HISTOLOGIC EXAMINATION**

1. Imperative: Read the mammography report in needle core biopsy cases! This subspecialty is extremely fortunate to have access to the clinical correlation (mammography report). This must

be read in order to assimilate all possible information regarding the patient. A pathologist should not operate in a vacuum. He/She must be aware of what the radiologist saw or did not see on mammography, and of what the clinical suspicions are.

2. Read the clinician notes and/or the operative notes in HIS. These are extremely valuable, when a mammography report is not available or was not performed.
3. In mastectomy cases, previous diagnoses should be looked at, and in certain cases, the previous slides should be pulled in order to compare them to the current case at hand.
4. In writing up the cases, know what important to include in the final report (such as angiolymphatic invasion, number of positive lymph nodes, size of largest metastasis, presence of extranodal invasion, surgical margins, and co-existent disease, etc).
5. For breast biopsies done for microcalcifications, note their presence. If the conventional microcalcifications are not found, look for calcium oxalate calcifications (these will be birefringent). If these are not found, obtain deeper levels, and if this is also negative, x-ray the blocks to document their absence.
6. Understand which prognostic markers are important. The standard at UF is to order ER/PR on all DCIS cases, and ER/PR as well as Her2Neu studies on invasive carcinoma.
7. Lastly, communication with the clinician is important. Notification of the clinician of new malignancies will occasionally be the responsibility of the resident.

The weekly schedule of Conferences pertinent to the Breast pathology rotation is as follows:

Monday 7.30 am	Breast Tumor Board	Radiology Conference Room
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#### YEAR 1 ROTATION

Diagnostic Competency should be achieved in knowing the following entities, in understanding their etiologies, and in knowing the significant comments that should be issued regarding these diagnoses.

#### NORMAL HISTOLOGY

Lactiferous sinus

Terminal duct lobular unit (how are male breasts different from female breasts?)

Normal appearance of breast -

    During adolescence

    During menstrual cycle

    During pregnancy

    During/after menopause

#### INFLAMMATORY LESIONS

Fat necrosis (how does this occur? How does it look mammographically?)

Mammary duct ectasia (what is the etiology?)

Acute mastitis

#### PAPILLARY LESIONS

Intraductal papilloma (where are these most common? What is the typical clinical presentation?)

#### PROLIFERATIVE OR NON-PROLIFERATIVE FIBROCYSTIC CHANGE

Apocrine metaplasia

Sclerosing adenosis

Usual duct hyperplasia

## ADENOSIS AND MICROGLANDULAR ADENOSIS

Adenosis (what is the subsequent risk of breast cancer in patients with adenosis?)

Tubular adenosis

Blunt duct adenosis

Microglandular adenosis (what is the unusual finding regarding this tumor? What is the substance within the glands?)

## FIBROEPITHELIAL NEOPLASMS

Fibroadenoma (what are the two histologic patterns?)

Juvenile fibroadenoma

Phyllodes tumor (how are these graded? What are the prognostic indicators?)

Hamartoma

## MALE BREAST LESIONS

Gynecomastia (what differentiates male breast from female breast?)

## BENIGN NON-EPITHELIAL NEOPLASMS

Lipoma

Hemangioma

Granular cell tumor

## MALIGNANT NON-EPITHELIAL NEOPLASMS

Angiosarcoma

Fibrosarcoma

Lymphoma

Malignant fibrous histiocytoma

## IN SITU CARCINOMA

Lobular carcinoma in situ (what is the immunostain that can help you?)

Ductal carcinoma in situ (what is the immunostain that can help you?)

Micropapillary

Cribriform

Solid

Comedonecrosis

## INVASIVE CARCINOMA

Invasive ductal carcinoma

Invasive lobular carcinoma

## CURRENT PROGNOSTIC FACTORS

Modified Bloom-Richardson grading (what are its components for scoring?)

Hormone receptors

Her2Neu (which is the best method for detection of overamplification?)

Lymph node metastasis

Size

## YEAR 2 ROTATION

### INFLAMMATORY LESIONS

Diabetic mastopathy

Amyloid tumor

### PAPILLARY LESIONS

Intracystic papillary carcinoma

Collagenous spherulosis

Radial scar

Syringomatous adenoma of nipple

## MYOEPITHELIAL NEOPLASMS

Adenomyoepithelioma  
Myoepithelioma  
Myoid hamartoma

## MALE BREAST LESIONS

Myofibroblastoma

## ATYPICAL HYPERPLASIAS

Atypical ductal hyperplasia (what are Page's and Tavassoli's criteria?)  
Atypical lobular hyperplasia (what are the criteria?)  
Atypical papillary lesion

## BENIGN NON-EPITHELIAL NEOPLASMS

Fibromatoses (what do you need to exclude in these cases?)  
Pseudoangiomatous stromal hyperplasia  
Tumors of nerve sheath origin  
Leiomyoma  
Myxoma

## MALIGNANT NON-EPITHELIAL NEOPLASMS

Leiomyosarcoma  
Liposarcoma  
Hemangiopericytoma  
Rhabdomyosarcoma  
Dermatofibrosarcoma protuberans

## INVASIVE CARCINOMA

Invasive ductal carcinoma (what are the special types of carcinoma that have better prognosis?)

- Tubular carcinoma
- Medullary carcinoma
- Cribiform carcinoma
- Adenoid cystic carcinoma
- Colloid carcinoma

Invasive lobular carcinoma (what are the different subtypes?)

- Alveolar lobular\*
- Solid type lobular\*
- Pleomorphic lobular\*

Rare breast carcinomas

- Metaplastic carcinoma\* (what is the matrix producing carcinoma and why is it distinct?)
- Squamous cell carcinoma
- Pseudosarcomatous carcinoma
- Signet-ring cell carcinoma
- Salivary gland-like carcinoma
- Secretory carcinoma\*

## UNUSUAL PRESENTATIONS OF BREAST CARCINOMA

Paget's disease of nipple  
Inflammatory carcinoma  
Ectopic breast tissue with carcinoma

## OTHER PROGNOSTIC FACTORS IN BREAST CARCINOMA

P53  
Microvessel density  
Ploidy

Ki-67

#### DETECTION OF METASTATIC BREAST CARCINOMA IN UNKNOWN PRIMARY SETTING

ER, PR

Gross cystic disease fluid protein

Bcl-2

#### MYOEPITHELIAL MARKERS

What are the current markers? Others?

Smooth muscle myosin heavy chain

Calponin

S-100

#### SENIOR LEVEL RESIDENT ROTATION\*

At this level, the resident should become familiar with the controversies and challenging aspects of breast pathology. The resident should know of the difficulties in managing patients with micrometastatic disease and sentinel lymph node sampling, prognostic factors in breast carcinoma and their detection methods (such as Her2Neu immunocytochemistry versus FISH), management of DCIS and LCIS, and management of fibroepithelial lesions.

The resident is encouraged to pursue research projects that may be presented at the USCAP or ASCP meetings. The resident should also become aware of the relevant literature regarding new entities, new procedures, or new aspects regarding established diseases. The resident is encouraged to bring these articles to signout to support their diagnoses and to review them with the attending.

These activities occur in concert with ongoing didactic sessions in the Department, including slide conferences and slide clubs. Lectures are insufficient "experience" to fulfill rotation requirements.

At the end of both the first and second year rotations, the attendings on the service, will convene to determine whether core competency has been reasonably obtained. It should be noted that understanding all of the above diagnostic areas is a requirement for sufficient knowledge to pass the American Board of Pathology Examination.

#### ASSESSMENT OF COMPETENCY

On the last day of the rotation, a tray of 10 slides will be given to the resident. These will be representative of the core entities that should have been covered in the rotation. The resident will sit at the scope and go through the slide with the attendings. The resident will do a brief oral microscopic description, give a differential diagnosis, and then form an opinion as to the best diagnosis. Following this, the resident will answer questions directed towards him/her regarding the diagnosis or further issues regarding the diagnosis rendered. The slide test will be appropriate for the resident's level of training, and will serve to guide the resident towards improving their competency in deficient areas.

Evaluation of the resident will be based on the resident's fund and acquisition of knowledge throughout the rotation, how the resident's diagnosis is synthesized, complete with differential diagnoses and comments addressing issues