Benign Breast Disease

David Anderson, MD
Assistant Professor of Clinical Surgery
Overview

• Nipple Discharge
• Breast infection
• Breast Pain
• Gynecomastia
• Fibroepithelial lesions
• High Risk Lesions-Papilloma, Radial scar, ADH, ALH, and LCIS
A 35 year old woman presents with a complaint of bloody discharge from the left nipple. Clinical breast examination confirms inducible discharge from a single duct in the left nipple and a small palpable mass near the inferior areolar margin. Bilateral mammogram and left ultrasound show a small density that appears to correspond to the palpable mass, which measures 8mm by ultrasound and is solid. The lesion is amenable to ultrasound guided core biopsy. Which of the following is correct?

A. If a core biopsy confirms a benign papilloma, no further intervention is needed
B. If core biopsy confirms intraductal papilloma, then proceed to local excision with postoperative routine breast screening examination
C. If local excision shows DCIS, the patient can return to routine breast screening with no further intervention
D. This is most likely a benign process, does not need to be biopsied, and should be followed with clinical breast examination and mammogram every 6 months
E. Unilateral bloody discharge is usually associated with a history of breast trauma
Nipple Discharge

• Benign nipple discharge is frequently bilateral, clear or milky and occurs commonly with nipple manipulation.

• Negative workup, including clinical breast examination, ultrasound, and mammogram, should be followed by a second, delayed examination.

• Nipple discharge that is unilateral, serous or sanguinous, and spontaneous, can be either benign or malignant in origin. Workup should include mammogram, ultrasound and if those are negative, then MRI is sometimes helpful.

• Intraductal papillomas typically present with unilateral bloody or serous discharge from the breast. They may occasionally be palpable depending on their size, or subsequently detected on ultrasound, mammography, or core needle biopsy.

• While intraductal papillomas are benign, there may be a small increased risk of breast cancer. Surgical excision to rule out a coexistent early cancer is indicated.
Nipple Discharge

A 64 year old postmenopausal women presents complaining of clear, spontaneous discharge from her right nipple for the past several weeks. Examination reveals expressible serous discharge from multiple ducts and no palpable mass in the right breast. Mammography and ultrasound reveal fibroglandular breasts and no visible lesions. What is the best next step in management for this patient?

A. Close follow up with repeat imaging and clinical exam in 3 months
B. Proceed to microdochectomy
C. Send the nipple discharge for cytology
D. Check a prolactin level on the patient
E. Proceed to total duct excision
Nipple Discharge

• Accounts for 5% of referrals to breast clinics
• 95% of women who present with nipple discharge have a benign cause
• Symptoms associated with a significant underlying process:
  • Spontaneous, unilateral, arise from a single duct, persistent (more than twice per week), or bloody
• Cytology of discharge of little value
• Workup should include mammography (age >35) and ultrasound
Nipple Discharge

• Differential includes:
  • Physiologic
    • In 2/3 of nonlactating women, a small quantity of non-bloody fluid can be expressed if the breast is massaged and pressure applied. This is apocrine secretion.
  • Intraductal Papilloma
  • Carcinoma
  • Galactorrhea
    • Copious bilateral milky discharge not associated with pregnancy. Due to hyperprolactinemia. Check medications and for pituitary adenoma
  • Periductal Mastitis
    • Episodic periareolar inflammation, purulent nipple discharge. Associated with smoking and gram negative bacteria.
  • Duct Ectasia
    • Increased incidence in elderly. May see nipple retraction. Dilated ducts with creamy or cheesy discharge.
Nipple Discharge

Persistent spontaneous nipple discharge

- Investigations
  - Clinical exam
  - Mammogram, US

Abnormal

- Investigate as for mass lesion or mammographic abnormality

Single Duct Discharge

- Breast feeding not an issue
  - Microdochectomy +/- total duct excision

- Wishes to preserve ability to breast feed
  - Consider ductography or ductoscopy if available, otherwise
  - Localized duct excision

Normal

Multiple Duct Discharge

- Distressing symptoms
  - Total duct excision

- No distressing symptoms
  - Reassurance

Breast feeding not an issue
Breast Infection

A 28 year old female 8 weeks postpartum and actively breastfeeding presents to the ER with complaints of left breast pain, swelling, and redness. On exam, she is non-toxic with some mild erythema of the breast but no fluctuance. Her white blood cell count is 12. Ultrasound reveals a 2.5cm simple abscess deep in the breast. The most appropriate next step is:

A. Prescribe oral antibiotics and instruct the patient to apply warm compresses and continue breast feeding
B. Prescribe oral antibiotics and instruct the patient to apply warm compresses and to stop breast feeding
C. Proceed to incision and drainage under anesthesia
D. Proceed with aspiration of the abscess
Breast Infection

A 38 year old woman with a history of recurrent right breast abscesses presents with a firm, palpable right breast mass. Mammogram and ultrasound confirm a suspicious 1.6cm mass in the right breast. Core needle biopsy is performed and reveals noncaseating granulomas and inflammation. All of the following are true regarding this condition except:

A. The etiology is unknown
B. The standard of care is surgical excision to exclude malignant disease
C. It does not respond to immunosuppression with steroids or methotrexate
D. It will typically resolve spontaneously within 6-12 months
Breast Infection

• Most commonly affects women between 18-50

• Occurs as either a primary event or secondary to a lesion of the skin (e.g. epidermoid cyst, hidradenitis suppurativa)

• Treatment is to give antibiotics early on to stop abscess formation, and if fails to resolve with antibiotics then abscess formation or an underlying cancer should be suspected
Breast Infection

• Lactational:
  • Most commonly caused by *S. aureus*
  • Most common during a first pregnancy during the first 6 weeks of breast feeding
  • If abscess is evident, then treat with combination of antibiotics and repeated aspiration
    • If abscess is superficial, then may perform incision and drainage
  • Rarely is it necessary to perform I&D under general anesthesia
  • Breast feeding should be continued if possible to promote drainage of the engorged segment and help resolve infection
Breast Infection

• Nonlactational:
  • Periareolar Infection: seen in young women, smokers, underlying etiology is periductal mastitis.
    • May present with abscess which is treated with antibiotics and aspiration or incision and drainage.
    • If >35yo, then obtain mammogram as very rarely infection may be associated with comedo necrosis seen in DCIS.
  • Mammary Duct Fistula: most common with a major subareolar duct and after I&D of a nonlactational abscess. Treat surgically with fistulotomy or fistulectomy and excising the affected duct.
  • Granulomatous Mastitis: noncaseating granulomas and microabscesses. Presents as a firm mass. Idiopathic. Resolves over 6-12 months spontaneously. Do not excise. Only I&D if develop abscesses.
Breast Pain

• One of the most common problems for breast specialists

• No data to show it is associated with early breast cancer

• Once cancer has been ruled out, reassurance alone will resolve it in 86% with mild and 52% with severe mastalgia

• Etiology is unclear. Regarded as a physiologic disorder arising from hormonal activity with little connection to true pathologic conditions

• Can be cyclic (70% of cases), noncyclic (20%), or extramammary (10%)
Breast Pain

• Initial approach is analgesics, including NSAIDs, and dietary modifications (decrease caffeine and saturated fat intake) although evidence is poor

• Patients with severe, persistent pain resistant to above can be started on tamoxifen or danazol

• Surgical intervention should not be undertaken before a full psychiatric evaluation is completed
Gynecomastia

Gynecomastia is a side effect of:

A. Ketoconazole
B. Amphotericin B
C. Fluconazole
D. Miconazole
Gynecomastia

Breast enlargement in men (gynecomastia) is caused by excess action of:

A. Androgens
B. Estrogens
C. Follicle-stimulating hormone (FSH)
D. Luteinizing hormone (LH)
E. Oxytocin
Gynecomastia

• A benign enlargement of male breast tissue due to proliferation of the glandular component and is the most common breast condition in men

• Represents an imbalance between the stimulatory effect of estrogens and the inhibitory effect of androgens
  • Caused by increased concentration of estrogen or its precursors or from decreased androgen levels, through either reduced secretion, increased metabolism, or increased binding to sex hormone-binding globulin (SHBG).
  • may also arise under normal physiologic hormonal levels when there is an abnormal tissue response due to an underlying defect at the receptor level.

• Physiologic gynecomastia develops in 50-70% of healthy boys during puberty and resolves spontaneously in most cases within 1 to 2 years, with less than 20% of men having gynecomastia by the age of 20.

• Medications associated with gynecomastia, include:
  • hormones (androgens, anabolic steroids)
  • antibiotics (metronidazole, ketoconazole)
  • calcium channel blockers, spironolactone, H2 receptor blockers, HAART, and antipsychotic agents.

• Liver cirrhosis, hyperthyroidism, chronic renal failure may cause gynecomastia.
Gynecomastia

• Associated with concentric enlargement of tissue from beneath the nipple-areolar complex
  • Needs to be differentiated from pseudogynecomastia (fatty breasts) and cancer

• For a unilateral, eccentric, or hard lesion, cancer must be excluded through mammography or biopsy

• Medications known to cause it should be stopped and symptoms should resolve within one month

• If patient is pubertal, physical and testicular exam should be performed and if negative, give reassurance and follow up in 3 months
Gynecomastia

• If no evidence of liver, testicular, adrenal, or thyroid causes, then measure HCG, LH, estradiol, and free testosterone to differentiate among the pathologic causes

• If no reversible cause is found and the patient has pain or experiences embarrassment, then may give a trial of tamoxifen or plastic surgical removal may be offered
Fibroepithelial Lesions

A 47 year old woman presents with a rapidly enlarging 5cm right breast mass without palpable axillary nodes. Fine needle aspiration (FNA) is nondiagnostic. Core biopsy is performed and results are reported as equivocal, but suggestive of a phyllodes neoplasm. The appropriate next step in management is:

A. Close follow up
B. Simple mastectomy
C. Tumor enucleation
D. Tumor excision with a 1cm margin
E. Tumor excision with a 2cm margin and sentinel node biopsy
Fibroepithelial Lesions

- Phyllodes tumors are breast neoplasms composed of an epithelial component, which is always benign, and a stromal component that can be benign (60%), borderline (15%), or frankly malignant (25%)
- Account for less than 1% of all breast tumors, peak incidence is in the fourth and fifth decades of life.
- Present as a breast mass, sometimes rapidly enlarging, but rarely cause additional symptoms.
- Mammography and ultrasound cannot reliably distinguish fibroadenoma from phyllodes tumor, while FNA is diagnostic only in a minority of cases.
- Due to rapid growth and potential for malignancy, surgical treatment of phyllodes tumors is mandatory.
  - Simple tumor enucleation is insufficient due to high recurrence rates
  - no role for sentinel lymph node biopsy because malignant phyllodes tumors behave like sarcomas and rarely metastasize to lymph nodes.
- Recent data suggest that wide local excision with a 1cm margin is adequate even for malignant tumors.
A 26-year-old female visits your office concerned about a mass in her left breast. The patient explains that her mother was diagnosed with breast cancer at the age of 60 and her aunt was diagnosed with breast cancer at age 65. The patient’s last menstrual period was one week ago. Physical examination reveals a 1 cm, painless, firm, solitary mass in the lateral upper quadrant of her left breast. Which of the following is an appropriate next step in the patient’s management:

A. Mammography
B. BRCA1/2 genotyping
C. Ultrasound
D. Sentinel lymph node biopsy
E. Core needle biopsy
Fibroepithelial Lesions

• Spectrum of pathologic diagnosis which ranges from fibroadenoma to malignant phyllodes tumors

• Pathologic classification is based upon multiple criteria including stromal proliferation, stromal atypia, mitotic activity, and infiltrative vs. circumscribed tumor margin
Fibroepithelial Lesions

- Fibroadenomas are pseudoencapsulated and well circumscribed

- May become hylanized or calcified with age and may contain atypia (<1% of fibroadenomas) and less frequently carcinoma

- May biopsy based on clinical features- >2cm, rapidly growing, suspicious features on imaging

- Surgical excision if suspicion of phyllodes or for patient preference
Fibroepithelial Lesions

• Phyllodes account for 0.3-1% of breast tumors, most common in 40’s

• Present as painless, palpable masses that demonstrate continuous growth or periods of rapid growth

• Most are diagnosed postoperatively as difficult to distinguish phyllodes from fibroadenoma on imaging and needle biopsy

• Treat with local excision to negative margins with 1cm margins being adequate

• 20% will recur locally if excised with inadequate margins

• Role of adjuvant radiation is controversial, routine adjuvant systemic therapy is not recommended
A 40 year old premenopausal woman is seen by her physician for evaluation of a breast nodule. Physical examination confirms the presence of a 1cm movable mass; mammogram and ultrasound evaluation are both found to be consistent with a fibroadenoma. A core biopsy confirms this diagnosis. The lesion is excised at the patient’s request. Pathology results reveal a fibroadenoma with a small area of lobular carcinoma in situ (LCIS) in the surrounding breast tissue, focally extending to one margin. The next step in management is:

A. A partial mastectomy with sentinel lymph node biopsy
B. Counsel the patient about their future breast cancer risk
C. Remove further tissue from the positive margin side
D. Remove further tissue from the positive margin side with axillary node dissection
E. Sentinel lymph node biopsy alone
High Risk Lesions

• LCIS can be found incidentally on biopsy performed for other reasons

• LCIS is a marker of increased risk of subsequent breast cancer. Risk is for both breasts and can be approximately 25% over their lifetime

• Should undergo annual mammography and clinical examination

• Consider chemoprevention with 5 year course of tamoxifen which decreases their risk by half. Postmenopausal women may take raloxifene

• Bilateral prophylactic mastectomy is an aggressive measure and is considered with women who have difficult breasts to screen, high levels of anxiety, or other strong risk factors such as family history
A 47 year old woman undergoes core needle biopsy of a lesion found on routine mammography in the lower, outer quadrant of her right breast. Pathology is read as atypical ductal hyperplasia (ADH) of the breast. What is the most appropriate next step in this patient’s management?

A. Axillary lymph node dissection  
B. Excisional biopsy with wire localization  
C. Follow up mammography in 6 months  
D. Modified radical mastectomy  
E. Partial mastectomy with sentinel lymph node biopsy
High Risk Lesions

• ADH is defined as:
  1. A lesion that has some but not all of the histologic features of DCIS.
  2. A lesion with all the features of DCIS but <2mm in greatest dimension
  3. A lesion with all the features of DCIS but involving only two duct spaces.

• ADH is found in 31% of biopsies for mammographic calcifications and in 4% of benign breast biopsies

• ADH on core needle biopsy is associated with a 15% to 20% occurrence of DCIS and overall relative risk of 5% for developing any invasive breast cancer compared to age matched women of average risk.

• Surgical excision is the standard of care for further pathologic examination to exclude malignancy

• A patient whose excisional biopsy confirms only ADH should be closely followed.
High Risk Lesions

A 53 year old woman was found to have a suspicious lesion on routine screening mammography. She subsequently underwent stereotactic core biopsy of the lesion. Which of the following pathologic findings puts her at the greatest risk of breast cancer?

A. Apocrine metaplasia
B. Atypical ductal hyperplasia
C. Intraductal papilloma
D. Mammary duct ectasia
E. Sclerosing adenosis
High Risk Lesions

• A variety of pathologic variants are commonly found in breast biopsy specimens.

• All of the above answer choices fall into the category of benign breast diseases.

• Mammary duct ectasia, solitary intraductal papillomas, and apocrine metaplasia are not associated with an increased risk of breast cancer.

• ADH is associated with a moderately increased risk for invasive breast cancer.

• Sclerosing adenosis is associated with a mildly elevated cancer risk, but ADH places a patient at greater risk for subsequent breast cancer.
A 47 year old woman presents with a palpable breast mass discovered on self examination. Mammography demonstrates a Breast Imaging-Reporting and Data System (BI-RADS) 4 lesion found to be a 2 cm spiculated mass with heterogeneous calcifications. Core needle biopsy is read as atypia without malignant features. The best next step would be the following:

A. Excisional biopsy
B. Incisional biopsy
C. Mastectomy
D. Repeat needle biopsy
E. Surveillance with yearly mammography
High Risk Lesions

• Needle biopsy is generally sufficient to guide surgical management of a breast mass
  • Exceptions are tumors that cannot be biopsied (e.g. subareolar, posterior position in a large breast) and when discordance exists between biopsy results and other clinical findings

• Lesions with a high level of radiologic suspicion (BI-RADS 4 or 5) are usually evaluated first by using a core needle biopsy, which is typically diagnostic

• Given the finding of atypia on biopsy, the biopsy may represent a false negative due to sampling error, thus excisional biopsy is needed for ultimate diagnosis
High Risk Lesions

- Papillomas
  - Range from benign papillomas to atypical to invasive papillary carcinoma

- Atypical papillomas warrant excision
  - Upgrade rate of 15-20% to DCIS or invasive cancer on excision

- Controversy over surgical excision for benign papilloma on core biopsy
High Risk Lesions

• LCIS and ALH
  • Markers for increased risk of breast cancer in either breast

• Excision for classic LCIS and ALH is controversial
  • Upgrade rate varies widely in literature (0-50%) due to small, retrospective studies
  • Largest study showed upgrade rates of 2-3%

• Surgical excision is recommended for pleomorphic LCIS
High Risk Lesions

• Radial Scar
  • Found in <1% of all percutaneous biopsies
  • Pathogenesis is unknown

• May present as spiculated masses on mammography or as incidental microscopic lesions unrelated to the imaging abnormality for which biopsy was performed

• Upgrade rate to carcinoma of 8% thus surgical excision is recommended

• Microscopic radial scars have low upgrade rate and do not require excision