BREAST

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ANATOMY:

- Boundaries
- Arterial blood supply
- Lymphatic drainage
EVALUATION

A. Clinical Manifestation:

B. Physical Examination:

C. Radiological Examination:

- A positive result is only suggestive of carcinoma

  1. **Mammography (Screening):**
     - Uses low dose of radiation (0.1 rad), not proven to escalate breast CA
     - Complementary study, can not replace biopsy
     - **(+)** fine stippling of calcium – suggestive of CA
     - Early detection of an occult CA before reaching 5 mm.
       1. Indeterminate mass that presents as a solitary lesion suspicious of a neoplasm
       2. Indeterminate mass that can not be considered a dominant nodule, especially when multiple cyst are present
       3. Large, fatty breast that no nodules were palpated
       4. Follow up of contra lateral breast after mastectomy
       5. Follow up examination of breast CA treated with segmental mastectomy and irradiation

- **Recommended Program of Using Mammography:**
  1. Daily breast examination after 20y/o
  2. Baseline mammography 35-40y/o
  3. Annual mammography > 40 y/o
EVALUATION

C. Radiological Examination:

2. Computed Tomography or Magnetic Resonant Imaging:
   - Too expensive
   - For detection of vertebral metastasis

3. Ultrasonography
   - No radiation exposure
   - Can differentiate cystic lesions from solid mass
   - Can not detect less than 5mm.

4. Interventional Technique:
   Ductography:
     - Inject radio-opaque contrast media into the mammary duct

D. Biopsy: positive result is diagnostic

1. Excision biopsy
2. Incision biopsy
3. True-cut or core biopsy (Vim-Silverman)
4. Fine needle biopsy
BENIGN LESIONS OF THE BREAST

1. Non-proliferative lesions:
   a. **Chronic Cystic Mastitis** (Fibrocystic disease, fibroadenosis, Schimmelbuschs’ dse.)
      - most common breast lesion (30-40y/o)
      - Hormonal imbalance (exact etiology - ?)
        - Increase estrogen production – producing exaggerated responses
        - Some parts of the breast is hyper-reacting
      - Manifestations:
        1. Unilateral / Bilateral
        2. Rubbery in consistency, not encapsulated
        3. Size changes / can be tender ---> related to menstrual cycle
        4. 15% presents a nipple discharge
        5. (-) risk factor of carcinoma degeneration
        6. *Co-exist w/ breast carcinoma* (mammography is suggested)
   - **Schimmelbusch disease**: classic diffuse cystic disease
   - **Bloodgood cyst**: single, tense, large blue domed cyst
   - Treatment:
     - Conservative for small and not very painful and tender lesions
     - Danazol – alleviate mod to severe painful & tender
       - synthetic FSH and LH analog
       - Suppresses FSH and LH
       - 100 – 400mg
     - Surgery for Bloodgood cyst
2. **Fibroadenoma:**

- Well circumscribed lesion, movable, smooth, lobulated, encapsulated, painless, not associated w/ nipple discharge
- Etiology (?), could also be due to hormonal imbalance
- Size does not regress after menstruation
- **Treatment:**
  - Excision biopsy (rule out malignancy)
3. **Intra-ductal Papilloma:**

- Proliferation of the ductal epithelium; 75% occurs beneath the epithelium
- Commonly causes *Bloody Nipple Discharge*
  - Palpable mass – 95% is intra-ductal papilloma
  - Non-palpable mass – possibility of malignancy is increased: (Ductography)
    a. Paget disease of the nipple
    b. Adenoma of the nipple
    c. Deep lying carcinoma w/ ductal invasion

- Treatment:
  - Excision of a palpable mass by biopsy
  - Non-palpable mass --> do wedge resection of the nipple/areola based on ductographic result or PE (+) bloody discharge
4. **Phyllodes Tumor**

- Diagnostic problem separating it from *fibroadenoma* and it’s rare variant that is malignant, *sarcoma*.
- Bulk of the mass is made up of connective tissue, with mixed areas of gelatinous, edematous areas. Cystic areas are due to necrosis and infarct degenerations.
- Phyllodes has greater activity and cellular component than fibroadenoma (3 mitoses/hpf); while malignant component has mitotic figure.
- 80% are benign, usually large bulky lesions *(tear drop appearance)*
  - Malignant component is dependent on:
    - Number of mitotic figures/hpf
    - Vascular invasion
    - Lymphatic invasions
    - Distant metastasis
- **Treatment:**
  - **Excision biopsy:**
    - Benign – no further treatment, observe
    - Malignant – total mastectomy / MRM
5. **Mammary Duct Ectasia** (Plasma cell mastitis, Comedomastitis & Chronic mastitis)

- Sub-acute inflammation of the ductal system usually beginning in the subareolar area with ductal obstruction
- Usually present as a hard mass beneath or near areola with either nipple or skin retraction due to increase fibrosis
- Appears during or after menopausal period with history of difficulty of nursing
- Histologically, the duct are dilated and filled with debris and fatty material with atrophic epithelium. Sheets of plasma cells in the periductal area.

**Treatment:**
- Excision biopsy
6. **Galactocele:**
   - Cystic or solid mass w/ or w/o tenderness
   - Occurs during or after lactation
   - Due to obstruction of a duct distended w/ milk
   - Treatment:
     - w/ abscess ---> incision and drain
     - Solid mass ---> excision biopsy

7. **Fat necrosis:**
   - Present as a solid mass, usually asymptomatic
   - w/ or w/o history of trauma
   - Treatment:
     - Excision biopsy
8. **Acute Mastitis / Abscess:**

- Bacterial infection usually during 1st week of lactation
- s/sx of inflammation
- Treatment:
  - Proper hygiene
  - Cellulitis ----> antibiotics / analgesic
  - Abscess ----> incision and drain
9. **Gynecomastia:**

- Development of female type of breast in male
- Usually unilateral, if bilateral look for systemic causes:
  a. Hepatic cirrhosis (for elderly alcoholic)
  b. Estrogen medication for prostatic CA
  c. Tumor producing estrogen/progesterone
     - Pituitary / Adrenal / Testes
     - CT scan / PE

- **Treatment:**
  - Subcutaneous mastectomy (if other lesions, producing estrogen/progesterone, present)
  - Tumor secreting estrogen ---> tx primary cause
BENIGN LESIONS OF THE BREAST

10. Developmental Abnormality:
   a. Amastia
   b. Polymastia
   c. Athelia
   d. Polythelia

   Treatment:
   - plastic surgery
Malignant Lesions of the Breast

- One of the leading cause of death from CA

**Etiology:** - multifactorial

1. **Sex:** male : female ratio (1 : 100)
2. **Age:** almost unknown for pre-pubertal age
   - 20 – 40 y/o steady increase incidence
   - 40 – 50 y/o (menopausal) plateau
   - > 50 y/o higher incidence

3. **Genetic:**
   - Mother with carcinoma ---> (2 – 3x) daughter
   - (+) family history ----> younger, bilateral

4. **Dietary influence:**
   - Increase in developed countries (except) Japan
   - Increase in upper class society
   - Dietary: Increase in *animal fat*
Malignant Lesions of the Breast

5. **Hormonal Usage:**
   - Oral contraceptive has adverse effect if taken for prolonged time at early age or when before the 1st full term pregnancy
   - No effect if taken 25 – 39y/o
   - Slight increase risk if estrogen usage by peri-menopausal for hormonal replacement

6. **Physical Stature:**
   - Obesity ---> increase fat cells ----> increase tissue concentration
Malignant Lesions of the Breast

6. **Multiple primary neoplasm:**
   - Hx of primary breast CA ---> 4x fold increase of primary CA
   - Hx of primary CA of uterus and ovary ---> 1-1.5 risk

7. **Irradiation:**
   - Multiple exposure
   - Had radiotherapy for breast CA of contralateral breast
Malignant Lesions of the Breast

8. **Other factors**
   a. **1st pregnancy** – due to estrogen

   a. **Long term nursing**
      - > 36 months
      - No ovulation for 9 mos.
      - Decrease estrogen

   b. **Age of menopause**
      - Late menopause (55y/o) higher risk

   c. **Infertility**
      - Higher risk
Established Risk factors For Breast cancer in Females:

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>High risk</th>
<th>Low risk</th>
<th>Relative risk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>old</td>
<td>young</td>
<td>&gt;4.0</td>
</tr>
<tr>
<td><strong>Socioeconomic status</strong></td>
<td>high</td>
<td>low</td>
<td>2.0 – 4.0</td>
</tr>
<tr>
<td>Marital status</td>
<td>Never married</td>
<td>Ever married</td>
<td>1.1 – 1.9</td>
</tr>
<tr>
<td>Place of residence</td>
<td>urban</td>
<td>rural</td>
<td>1.1 – 1.9</td>
</tr>
<tr>
<td>Race &gt; 45 years &lt; 40 years</td>
<td>white</td>
<td>black</td>
<td>1.1 – 1.9</td>
</tr>
<tr>
<td>Race &gt; 45 years &lt; 40 years</td>
<td>black</td>
<td>white</td>
<td>1.1 – 1.9</td>
</tr>
<tr>
<td>Nulliparity</td>
<td>yes</td>
<td>no</td>
<td>1.1 – 1.9</td>
</tr>
<tr>
<td>Age of first full-term pregnancy &gt; 30 y/o &lt; 20 y/o</td>
<td>2.0 – 4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oophorectomy premenopausally no yes</td>
<td>2.0 – 4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at menopause late early</td>
<td>1.1 – 1.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age at menarchy early late</td>
<td>1.1 - 1.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight, postmenopausal women heavy thin</td>
<td>1.1 – 1.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hx of benign or cancer in one breast yes no</td>
<td>2.0 – 4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hx of breast Ca 1st degree relative yes no</td>
<td>2.0 – 4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother or sister w/ hx. Of breast CA yes no</td>
<td>&gt; 4.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hx. Of primary ovarian or endometrial CA yes no</td>
<td>1.1 – 9.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mammographic parenchymal patterns Dysplastic</td>
<td>Normal</td>
<td>2.0 – 4.0</td>
<td></td>
</tr>
<tr>
<td>Radiation to chest Large doses Minimal doses</td>
<td>2.0 – 4.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Malignant Lesions of the Breast

Natural history (Schirrhous adenocarcinoma)

- Doubling time (2-9mos)
- 1 cell --> 30DT/5 yrs --> 1cm. Mass/20DT --> increase size & fibrosis --> dimpling (retraction) --> invade the lymphatics --> edema --> invade regional LN/venous --> systemic.

- Successful implantation depends on:
  1. Number of cells
  2. Character of cell
  3. Host resistance
Histological Classification of Breast Cancer

Cancers of the Mammary Gland can be Classified:

1. **Histogenesis** – duct, lobule (acini)
2. **Histologic Characteristic** – adenocarcinoma, epidermoid CA, etc.
3. **Gross Characteristic** – Scirrhous, colloid, medullary, papillary, tubular
4. **Invasive Criteria** – Infiltrating, in-situ

Non-infiltrating (In-situ) Carcinoma of duct and lobules:

- Increase diagnosis due to mammography
- DCIS : LCIS (3:1)

1. **LOBULAR CARCINOMA in SITU:**
   - Considered as a risk factor
   - Observed only in females, premenopausal
   - No involvement of the basement membrane
   - **Tx:** 1. Closed observation
             2. Hormonal treatment (Tamoxifen/aromatase inhibitor) for 5 years
             3. Surgery (bilateral mastectomy) w/ immediate reconstruction
Histological Classification of Breast Cancer

Non-infiltrating (In-situ) Carcinoma of duct and lobules:

2. Tubular Carcinoma In Situ:
   - Absence of invasion of surrounding stroma hence confined within the basement membrane

Type:

1. **PAPILLARY**:
   - Duct epithelium are thrown into papillae with loss of cohesiveness, loss of cohesiveness, disorientation of cells with pleomorphism and increase mitotic figure

2. **MICRO-PAPILLARY**:
3. **SOLID**
4. **CRIBRIFORM**
5. **COMEDOCARCINOMA**:
   - Hyperplasia is more extreme choking the entire duct with masses of cells developing central necrosis of cells
   - Most aggressive

- Treatment: treated as an early cancer
# Histological Classification of Breast Cancer

## Non-infiltrating (In-situ) Carcinoma of duct and lobules:

<table>
<thead>
<tr>
<th></th>
<th>LCIS</th>
<th>DCIS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>44 - 47</td>
<td>54 – 58</td>
</tr>
<tr>
<td><strong>Incidence</strong></td>
<td>2 - 5%</td>
<td>5 - 10%</td>
</tr>
<tr>
<td><strong>Clinical Signs</strong></td>
<td>None</td>
<td>Mass, Pain, Nipple discharge</td>
</tr>
<tr>
<td><strong>Mammographic signs</strong></td>
<td>None</td>
<td>Microcalcification</td>
</tr>
<tr>
<td><strong>Incidence of Synchronous Invasive CA</strong></td>
<td>5%</td>
<td>2 – 46%</td>
</tr>
<tr>
<td><strong>Multicentricity</strong></td>
<td>60 – 90%</td>
<td>40 – 80%</td>
</tr>
<tr>
<td><strong>Bilaterality</strong></td>
<td>50 – 70%</td>
<td>10 – 20%</td>
</tr>
<tr>
<td><strong>Axillary metastasis</strong></td>
<td>1%</td>
<td>1 – 2%</td>
</tr>
<tr>
<td><strong>Subsequent carcinomas:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Incidence</strong></td>
<td>25 – 35%</td>
<td>25 – 70%</td>
</tr>
<tr>
<td><strong>Laterality</strong></td>
<td>Bilateral</td>
<td>Ipsilateral</td>
</tr>
<tr>
<td><strong>Interval to diagnosis</strong></td>
<td>15 – 20 yrs</td>
<td>5 – 10 yrs</td>
</tr>
<tr>
<td><strong>Histology</strong></td>
<td>ductal</td>
<td>ductal</td>
</tr>
</tbody>
</table>
Histological Classification of Breast Cancer

Infiltrating Carcinoma of the Breast:

1. **Paget’s disease of the nipple (1%)**:
   - Primary carcinoma of mammary duct that invaded the skin
   - Chronic eczematoid lesion of the nipple
   - Tenderness, itching, burning and intermittent bleeding
   - Palpable mass in the subareolar area
   - **PAGET cells**:
     - Characteristic cells
     - Large cell w/ clear cytoplasm and binucleated
   - 80% non-infiltrating CA
   - 100% 5yr survival
Histological Classification of Breast Cancer

2. **Scirrhous carcinoma**: (fibrocarcinoma, sclerosing CA):
   - 78% (most common)
   - Increased Desmoplastic response to invading CA cells (protective)
   - Neoplastic cells are arranged in small clusters or in single rows occupying a space between collagen bundles
   - Originate in the myoepithelial cells of the mammary duct
   - Desmoplastic ---&gt; shortend Cooper’s ligament ---&gt; dimpling over the tumor

3. **Medullary carcinoma**:
   - 2-15%
   - Large round cancer cells arranged in broad plexiform mass surrounded by lymphocytes and lymphatic follicles
   - Soft, bulky and large tumors w/ necrotic areas
   - 5 year survival = 85 – 90%
   - Good prognosis
4. **Mucinous (Colloid) carcinoma:**
   - 2%
   - Soft, bulky w/ ill defined borders
   - Cancer cells floats in large mucinous lakes
   - Cut surface is glistening, glaring and gelatinous

5. **Tubular carcinoma**
   - Well differentiated
   - Ducts lined by a single layer of well differentiated cancer cells
   - Absence of myoepithelial w/ well defined basement membrane
   - Common in premenopausal and detected w/ mammography
   - 5 yr survival ---> 100% if the CA contain 90% or more of tubular components
Histological Classification of Breast Cancer

6. **Papillary carcinoma:**
   - 2%; present in 7th decade
   - Thrown into papilla w/ well defined fibrovascular stalks and multilayered epithelium
   - Has the lowest frequency of axillary nodal involvement; has the best 5 and 10 yrs survival rates
   - Even if w/ axillary metastases, it is still indolent and slowly progressive disease than the common adenocarcinoma

7. **Adenoid cystic carcinoma:**
   - Indistinguishable from adenoid cystic carcinoma of the salivary gland
   - Rare axillary involvement.
8. **Carcinoma of Lobular origin:**
   - 10% of breast CA; LCIS – 3%
   - Small cell w/ round nucleus, inconspicuous nucleoli and scant, indistinct cytoplasm.
   - Arises from the terminal ducts and acini
   - Similar to colloid CA were mucin displaced the nucleus, resembling signet-ring carcinoma of the GIT.
   - High propensity for bilaterality (35-60%), multicentricity (88%) and multifocality

9. **Squamous Carcinoma:**
   - Metaplasia w/in the lactiferous duct system
   - Similar to epidermoid CA of the skin
   - Metastasize thru the lymphatic
Histological Classification of Breast Cancer

10. **Sarcoma of the Breast**: (Fibrosarcoma, liposarcoma, leiomyosarcoma, malignant fibrous histiocytoma, etc.)

- Large, painless breast mass w/ rapid growth
- Mammography ---> false (-)
- Grossly: --> it lacks the cut gabbage surface of phyllodes
- Histologically:
  - Spindle cell neoplasm that grows expansile and it’s margin either pushes or infiltrate adjacent structures
  - It invades the fat and tend to intervene between the glandular aspect of the breast parenchyma and expands the lobules and intralobular spaces
- Treatment: --> total mastectomy
Histological Classification of Breast Cancer

11. **Lymphoma of the Breast:**
   - Similar to other malignant lymphoma
   - Mastectomy w/ axillary LN sampling
   - Tx: radiotherapy / chemotherapy

12. **Inflammatory Carcinoma of the Breast**
   - 1.5 – 3%
   - Clinically: erythema, **Peau-d’ orange**, skin ridging w/ or w/o a mass. Skin is warm sometimes scaly and indurated (cellulitis), nipple retract.
   - Diagnosis: biopsy
   - Histologically: --- > no predominant histological type.
     - Subdermal lymphatic and vascular channels are permeated w/ highly undifferentiated tumor
     - Characteristically: --- > absence of PMN and lymphocyte near the tumor
   - Rapid growth and majority has (+) cervical LN and distant metastasis
TNM Staging System for Breast Carcinoma

Primary Tumor (T)

- **TX**: Primary tumor cannot be assessed
- **T0**: No evidence of primary tumor
- **Tis**: CA in situ (LCIS / DCIS), Paget’s dse of the nipple w/o tumor
- **T1**: 2 cm or less
  - **T1a**: 0.5 cm. or less
  - **T1b**: > 0.5 cm. to 1 cm.
  - **T1c**: > 1 cm. to 2 cm.
- **T2**: 2 to 5 cm.
- **T3**: > 5 cm.
- **T4**: any size w/ direct extension to chest wall or skin
  - **T4a**: extension to chest wall
  - **T4b**: edema / ulceration of the skin / satelite nodule
  - **T4c**: both T4a and T4b
  - **T4d**: Inflammatory carcinoma
TNM Staging System for Breast Carcinoma

Regional Lymph Nodes (N)
- **NX** – Not assessed (previously removed)
- **N0** – No regional LN metastasis
- **N1** – (+) movable ipsilateral axillary LN
- **N2** – (+) LN fixed to one another
- **N3** – (+) Ipsilateral INTERNAL MAMMARY LN

Pathological Classification LN (pN):
- **pNX** – not assessed
- **pNO** – (-)
- **pN1** – (+) movable ipsilateral axillary LN
  - **pN1a** – (+) micrometastasis (0.2 cm or less)
  - **pN1b** – any larger than 0.2 cm but less than 2 cm
    - **pN1bi** – (+) 1-3 LN
    - **pN1bii** – (+) 4 or more LN
    - **pN1biii** – extension of tumor beyond the capsule
    - **pN1biv** – (+) LN > than 2 cm
- **pN2** – Axillary LN fixed with each other
- **pN3** – (+) internal mammary LN
### TNM Staging System for Breast Carcinoma

#### Distant Metastasis (M):
- **MX** - not assessed
- **M0** - (-)
- **M1** - (+) including metastasis to ipsilateral supraclavicular LN

#### Stage Grouping:

<table>
<thead>
<tr>
<th>Stage</th>
<th>T</th>
<th>N</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Tis</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>I</td>
<td>T1</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>II A</td>
<td>T0</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T1</td>
<td>N1a</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T2</td>
<td>N0</td>
<td>M0</td>
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<tr>
<td>II B</td>
<td>T2</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T3</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>III A</td>
<td>T0  - T2</td>
<td>N2</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>T3</td>
<td>N1-2</td>
<td>M0</td>
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<td>III B</td>
<td>T4</td>
<td>Any</td>
<td>M0</td>
</tr>
<tr>
<td></td>
<td>Any T</td>
<td>N3</td>
<td>M0</td>
</tr>
<tr>
<td>IV</td>
<td>Any T</td>
<td>Any N</td>
<td>M1</td>
</tr>
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</table>
Survival Rates for patients with Breast Cancer Relative to Clinical Stage

<table>
<thead>
<tr>
<th>Clinical staging (American Joint Committee)</th>
<th>Crude 5-yr survival (%)</th>
<th>Range Survival (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STAGE I</strong> Tumor &lt; 2cm in diameter Nodes, if present, not felt to contain metastases w/o distant metastases</td>
<td>85</td>
<td>82 - 94</td>
</tr>
<tr>
<td><strong>STAGE II</strong> Tumors &gt; 5 cm in diameter Nodes, if palpable, not fixed w/o distant metastasis</td>
<td>66</td>
<td>47 – 74</td>
</tr>
<tr>
<td><strong>STAGE III</strong> Tumor &gt; 5cm in diameter Tumor any size w/ invasion of skin attached to chest wall Nodes in supraclavicular area Without distant metastases</td>
<td>41</td>
<td>7 – 80</td>
</tr>
<tr>
<td><strong>STAGE IV</strong> With distant metastases</td>
<td>10</td>
<td>-</td>
</tr>
</tbody>
</table>
### Survival Rates for patients w/ Breast Cancer Relative to Histologic Stage

<table>
<thead>
<tr>
<th>Histologic Staging (NSABP)</th>
<th>Crude survival (%)</th>
<th>5-yr Disease-free survival (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5yr</td>
<td>10yr</td>
</tr>
<tr>
<td>All patients</td>
<td>63.5</td>
<td>45.9</td>
</tr>
<tr>
<td>Negative axillary lymph nodes</td>
<td>78.1</td>
<td>64.9</td>
</tr>
<tr>
<td>Positive axillary lymph nodes</td>
<td>46.5</td>
<td>24.9</td>
</tr>
<tr>
<td>1 - 3 positive axillary lymph nodes</td>
<td>62.2</td>
<td>37.5</td>
</tr>
<tr>
<td>&gt; 4 positive axillary lymph nodes</td>
<td>32.0</td>
<td>13.4</td>
</tr>
</tbody>
</table>
# Relationship Between Morphologic Types of Invasive Breast Cancer, Lymph Node Involvement, and Patient Survival

<table>
<thead>
<tr>
<th>Type</th>
<th>Frequency</th>
<th>% w/ nodal involvement</th>
<th>5 yr</th>
<th>10 yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ductal w/ productive fibrosis</td>
<td>78</td>
<td>60</td>
<td>54</td>
<td>38</td>
</tr>
<tr>
<td>Lobular</td>
<td>9</td>
<td>60</td>
<td>50</td>
<td>32</td>
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<tr>
<td>Medullary</td>
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<td>63</td>
<td>50</td>
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<td>Comedo</td>
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<td>32</td>
<td>73</td>
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<tr>
<td>Colloid</td>
<td>3</td>
<td>32</td>
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<td>Papillary</td>
<td>1</td>
<td>17</td>
<td>83</td>
<td>56</td>
</tr>
</tbody>
</table>
Treatment:

1. **Benign:** hormonal, surgery (excision biopsy), antibiotics

2. **Malignant:**

   Selection of patients
   
   a. stage of lesion
   b. medical condition of pt

**Criteria of Inoperability / Incurability (Haangensen)**

- a) extensive edema of the skin over the breast
- b) satellite nodule in the skin over the breast
- c) inflammatory carcinoma of the breast
- d) parasternal tumor nodule
- e) supraclavicular metastasis
- f) edema of the arm
- g) distant metastasis
- h) Any 2 or more of the following locally advances cancer
  - i. ulceration of skin
  - ii. Edema of skin less 1/3
  - iii. Solid fixation of tumor to the chest wall
  - iv. Axillary LN 2 cm or more
  - v. Fixation of axillary LN to skin and dep structure
Surgical Management:

1. **Radical Mastectomy** (Willi Meyer, Halsted)
   - Stage III, IV

2. **Extended Radical Mastectomy**
   - Hardley – 21% of outer quadrant and 44% inner quadrant tumor has (+) internal mammary nodal involvement.
   - **Wangesteen** (Classical RM + Internal mammary mediastinal and supraclavicular LN)
   - **Urban** (CRM + ipsilateral half of sternum, part of 2nd to 5th rib and pleura and internal mammary LN)

3. **Modified Radical Mastectomy:**
   - **Patey** – preserved pectoralis major
   - **Madden / Auchincloss** – preserved both the pectoralis major and minor

4. **Total mastectomy w/ or w/o radiation:**
   - **Crile** – Total mastectomy
   - **Mc Whirter** – Total mastectomy and radiation (Axilla, supraclavicular and internal mammary nodes)
Surgical Management:

5. **Subcutaneous Mastectomy:**
   - Nipple is retained / for T1s

6. **Quandrantectomy, axillary, radiotherapy (QUART)**
   - Quadrant of the breast that has the CA is resected
     (quadrant of breast tissue, skin and superficial pectoralis fascia)
   - Unacceptable cosmetic result

7. **Partial Mastectomy and Radiation:**
   - Lumpectomy, segmental resection or tylectomy
   - Histologically free margin of breast CA (1cm)
   - Advent of supervoltage radiotherapy with skin sparing effect
   - Frozen section evaluation of margin
   - To determine adjuvant chemotherapy adequate sampling of axillary LN (level I), curvilinear incision should be done
     - If LN (+) ----> adjuvant chemotherapy

**Indications for Conservative Surgery:**

1. Small breast CA < 4cm
2. Clinically (-) axillary LN
3. Breast volume adequate size to allow uniform dosage of irradiation
4. Radiation therapist experience to avoid damage of retained breast
**Radiotherapy:**
- Local control
- Pre-operative / post-operative radiation

**Chemotherapy:**
- CMF, CAF, CA, AV, doxorubicin
- Side effect: nausea, vomiting, myelosuppression, alopecia, thrombocytopenia, exercise intolerance

**Hormonal Therapy:**
- Receptor Assay (ER/PR):
  - 1 gm of fresh tissue obtained by using cold scalpel and should be determined w/in 20-30 min.
  - ER (-) < 10% respond to endocrine ablation or exogenous estrogen
  - ER (+) > 60% responds
    - premenopausal – 30% (only due to masking effect of endogenous estrogen)
    - Menopausal – 60%
  - PR (+) 15% of premenopausal benefit from 15%
Hormonal Therapy:

1. **Ablation**:
   - Oophorectomy, adrenalectomy, hypophysectomy
   - Replaced by medical adrenalecetomy, etc.

2. **Anti-estrogen**:
   a. **Tamoxifen** – a non-steroidal anti-estrogenic compound that competes with estrogen at receptor site.
      - Estrogen receptor assay should be determined; if negative, chance of success is very low
   b. **Aromasin**
   c. **Aminogluthethimide** – it interferes with conversion of androstenedione to estrone and estradiol in the peripheral tissue and inhibits the conversion of cholesterol to pregnanolone
      - Hydrocortisone should be added
Hormonal Therapy:

<table>
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<tr>
<th>Receptor Status</th>
<th>Premenopausal</th>
<th>Postmenopausal</th>
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<tr>
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<td>O, T</td>
<td>T, CT</td>
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<td>O, T</td>
<td>CT</td>
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<td>? T + CT</td>
<td>T + CT</td>
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</tbody>
</table>
A. **Carcinoma in Situ:**

1. **DCIS:**
   a. Breast conserving surgery + radiation therapy w/ or w/o tamoxifen
   b. Total mastectomy w/ or w/o tamoxifen
   c. Breast-conserving surgery w/o radiation therapy

2. **Lobular Carcinoma in Situ:**
   a. Observation after diagnostic biopsy
   b. Tamoxifen to decrease the incidence of subsequent breast cancer
   c. Study, Tamoxifen versus raloxifene in high-risk postmenopausal women
   d. Bilateral prophylactic total mastectomy, w/o axillary dissection
Therapeutic Approach for Breast Cancer

B. Stage I & II

Modified radical mastectomy

(+) LN  
Hormonal / chemotherapy

(-) LN  
Low risk  
observe

(-) LN  
High risk  
chemotherapy

High Risk Patients (Stage I):

A. Histologic criteria:
   1. Poor cytologic differentiation
   2. Lymphatic permeation
   3. Blood vessel invasion
   4. Poor circumscritption

B. Rapid growth rate, by clinical history or thymidine labeling index
C. Youth of the patient
D. Estrogen receptor negative
Therapeutic Approach for Breast Cancer

3. **Advance Breast Cancer (III / IV):**

   - **Palliative Mastectomy**
     - (+) Estrogen
       - Chemotherapy/Hormonal/Radiotherapy
     - (-) Estrogen
       - Chemotherapy/Radiotherapy
4. **Inflammatory Breast Carcinoma:**

- 3 - 5% 5 year survival
- Main role of surgery is in the diagnosis
- Primary therapy is chemotherapy and radiotherapy and if possible surgery (mastectomy).

CAS ------ regression ------> extended mastectomy (level I) ---------> irradiation of axillary and skin flap (30% - 5 yr survival)

5. **Breast Cancer and Pregnancy/ Lactation:**

- The risk of aggressive and distant metastasis is profound due to high level of estrogen and progesterone secreted from the placenta and corpus luteum.
- *Treat patient as if she is not pregnant*
- Lactation should be suppressed promptly, even if biopsy was benign because milk from transected lactiferous will drain via the biopsy site
- If patient is undergoing radiotherapy and chemotherapy for breast CA, advice patient not to get pregnant. ( advice not to use contraceptive pills).

**Treatment:**

- MRM / Segmental resection + radiation (after delivery)
- (+) axillary ---> chemotherapy is delayed on the 2nd trimester (single agent) 11 – 12% teratogenicity on 1st trimester.
Therapeutic Approach for Breast Cancer

6. **Breast Cancer in Men:**

- **Factors:**
  - a. Klinefelter syndrome
  - b. Estrogen therapy
  - c. Testicular feminizing syndromes
  - d. Irradiation
  - e. Trauma

- **Age:** 60-70y/o

- **s/sx:** breast mass, nipple retraction and/or discharge, ulceration and pain.

- **Commonly ER positive and well differentiated**

- **Prognosis is similar w/ female**

- **Treatment:**
  - MRM + radiation if with ulceration and high grade
  - Orchiectomy / chemotherapy