BREAST CANCER SURGERY

HISTORY

• References to breast surgery in ancient Egypt (ca 3000 BCE)
• Mastectomy described in numerous medieval texts
• Petit formulated organized approach in 18th Century
• Improvements by numerous surgeons in early 19th Century
• WS Halsted reported radical mastectomy (removal breast, lymph nodes and pectoralis muscles) results in 1894
THEORIES OF TUMOR BIOLOGY

• Permeation - Organized percolation of tumor from original site to adjacent tissues (The bigger the operation, the better. Halstedian)

• Predeterministic - Unpredictable distant spread of cancer prior to diagnosis (A smaller operation is as good for cure, if all known tumor removed. Fisherian)
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20th Century Developments

• Ultra-radical procedures developed (including excision of clavicle and chest wall)
• Sharp decline in radical mastectomy, rapid rise in modified radical mastectomy around 1970
• Rare use of partial mastectomy (lumpectomy) prior to 1980
• Proof of equivalence of mastectomy and lumpectomy for early breast cancers in 1980’s
NSABP B06 PROTOCOL

- 1976-1984 2163 Women with breast cancer randomized to 3 groups
- Mastectomy, lumpectomy, lumpectomy plus radiation therapy (all had axillary dissection)
- 1851 women eligible for follow-up
- 20 year results published in 2002 (NEJM)
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B06 EFFECT OF RADIATION THERAPY
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PRESENT ROLE

• One form of therapy in a multimodality treatment regimen
• NOT curative as sole treatment for most aggressive cancers
• Removal of known tumor in breast (local control)
• Evaluation by sampling of “normal” axillary lymph node(s) (staging)
• Removal of grossly involved axillary lymph nodes (regional control)
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BREAST CANCER OPERATIONS PERFORMED IN 2016

• Modified radical mastectomy (removal of entire breast and lymph nodes (usually only levels I and II)
• Simple mastectomy (removal of entire breast)- skin sparing types with reconstruction
• Partial mastectomy or lumpectomy (limited breast excision)
• Sentinel lymph node biopsy (sampling of specific lymph node(s))
• Axillary lymph node dissection (removal level I and II lymph nodes)
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BREAST CANCER OPERATIONS PERFORMED IN 2016

- 19307
- 19303
- 19301
- 38500
- 38525
- 19302
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PRIMARY TUMOR EXCISION
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INDICATIONS FOR MASTECTOMY

• Extensive tumor not amenable to lumpectomy
• Unable to achieve clear margins with partial mastectomy
• Unable to receive radiation therapy (<70 years old)
• PATIENT PREFERENCE
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MASTECTOMY TECHNIQUE

• Horizontal or oblique elliptical incision (less skin excised, if immediate reconstruction)
• Raise flaps using avascular plane between breast and subcutaneous fat
• Most surgeons remove pectoral fascia with breast (good posterior margin)
• Spare motor nerves and lateral sensory nerves, when possible
• Routine subcutaneous drain use to prevent seroma formation
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MODIFIED RADICAL MASTECTOMY
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MODIFIED RADICAL MASTECTOMY
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LUMPECTOMY VS MASTECTOMY
INDICATIONS FOR PARTIAL MASTECTOMY

• Extent of tumor allows complete removal
• Expected good cosmetic outcome with complete removal of cancer
• Able and willing to receive postoperative radiation therapy (age <70 years)
• PATIENT PREFERENCE
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RADIATION THERAPY CONTRAINDICATIONS

• Prior radiation therapy to breast (e.g. breast cancer, Hodgkin’s)
• Radiation sensitivity (collagen vascular diseases, e.g. scleroderma)
• Pregnancy
• PATIENT PREFERENCE (often radiation phobia)
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LUMPECTOMY TECHNIQUE

• Preoperative wire localization, if tumor not palpable/readily localized
• Avoid extensive tunneling, biopsy within “mastectomy” incision
• Excise approximately 1 cm rim of normal tissue
• Orient specimen to allow pathology to report location of margin involvement
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LUMPECTOMY/PARTIAL MASTECTOMY
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LUMPECTOMY/PARTIAL MASTECTOMY
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LUMPECTOMY/PARTIAL MASTECTOMY
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AXILLARY LYMPH NODE REMOVAL
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**AXILLARY LYMPH NODES**

- Most common site of cancer metastasis
- Part of TNM staging (affects prognosis and treatment)
- Removal of “all” axillary lymph node once routine
- Axillary lymphadenectomy now selectively performed
- Sentinel lymph node biopsy allows less invasive staging
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**INDICATIONS FOR AXILLARY DISSECTION**

- Clinically palpable lymph node disease
- Multiple involved nodes present prior to neoadjuvant chemotherapy
- Major role is accurate staging/regional control of tumor
- No controlled evidence that lymphadenectomy improves survival
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AXILLARY DISSECTION
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WHY SENTINEL LYMPH NODE BIOPSY?
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SENTINEL LYMPH NODE BIOPSY

• Sentinel node is first node(s) draining tumor site
• Vast majority of lymphatic drainage via the axilla
• IF lymph node metastasis present, almost always involves axillary sentinel node
• Sentinel node identified in nearly 100% of primary cancers, accuracy in 95% range
INDICATIONS FOR SENTINEL LYMPH NODE BIOPSY

- All invasive primary breast cancer patients without clinical lymph node involvement
- High grade/extensive ductal carcinoma in situ (possible invasive cancer not seen on needle biopsy)
- Following neoadjuvant therapy for limited nodal involvement when clinical complete response (must remove node with clip)
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SENTINEL LYMPH NODE TECHNIQUE

• Can localize nodes with radioactive colloid, blue dye or both
• Remove as many hot (>10% highest counts) nodes as present
• Any hard or worrisome lymph node should also be excised
• Drain not needed
• Lymphedema of arm (but not breast) rare after sentinel node biopsy
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SENTINEL LYMPH NODE BIOPSY
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SUMMARY

• Recent trends in breast surgery have been toward less extensive operations
• When all tumor can be removed with limited resection and radiation therapy given, lumpectomy and mastectomy equivalent
• Sentinel lymph node biopsy has replaced axillary lymph node dissection for most patients
• Breast reconstruction is an option with mastectomy (next month)