Breast Surgery: Yesterday, Today and Tomorrow

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Disclosures
I have no relevant commercial relationships to disclose.

PRESIDENT THEODORE ROOSEVELT
"The more you know about the past, the better prepared you are for the future."

Surgical Treatment of Breast Diseases

- History of breast surgery
- Current surgical standards
- Future
Edwin Smith Papyrus

History

- Breast Cancer is described throughout history
  - In 2560 BC Egyptians reported treating breast tumors with cautery

Historical Figures

- Hippocrates
- Galen
- Andreas Vesalius
- Wilhelm Fabry
- Sir James Paget
- Sir Joseph Lister
- Joseph Pancoast
- William Steward Halsted
- Willie Meyer

William Steward Halsted
(September 23, 1852 - September 7, 1922)

- One of the founding professors of the Johns Hopkins Hospital
- Introduced the Halsted radical mastectomy in 1882 in Roosevelt Hospital in New York City
- Published his results 10 days before Willie Meyer of the New York Graduate School of Medicine
William Stewart Halsted

- Anesthetic agents
- Antisepsis
- Surgical gloves
- Residency training

Radical Mastectomy

- Rationale:
  - Achieve local and regional control of the breast cancer
  - Adjuvant therapy was evolving
    - Radiation therapy use declined briefly
    - Chemotherapy use exponentially increased
    - Hormonal therapy has been a mainstay

- Local recurrence rates were improved from 51-82% to 6%
- Would remain the standard of care for the next 70 years
What a difference a word makes

- Radical Mastectomy
  - Surgical removal of:
    - Skin overlying breast
    - Nipple areolar complex
    - Breast
    - Pectoralis major and minor muscles
    - Axillary lymph nodes Level I to Level III
    - Excision was wide and en bloc
  - Necessitated skin grafting for closure

Breast Surgery

- Present

What a difference a word makes

- Modified Radical Mastectomy
  - Surgical removal of:
    - Skin overlying the breast
    - Nipple areolar complex
    - Breast
    - BY DEFINITION INCLUDES AXILLARY NODE DISSECTION
    - Pectoralis major and minor muscles

Modified Radical Mastectomy

- In 1979, the Consensus Development Conference on the treatment of breast cancer concluded: modified radical mastectomy was the standard of care for women with Stage I and II breast cancer.
**Modified Radical Mastectomy**

- Surgical removal of:
  - Some degree of skin overlying breast
  - Typically skin sparing if paired with reconstruction
  - Nipple areolar complex
  - If no reconstruction being performed
  - May be preserved

**Simple Mastectomy**

- Surgical removal of:
  - Some degree of skin overlying breast
  - Typically skin sparing if paired with reconstruction
  - Nipple areolar complex
  - If no reconstruction being performed
  - May be preserved

**Breast Reconstruction**

- Options
  - No reconstruction
  - Expander and implant reconstruction
  - Flap reconstruction
  - Better and more readily available techniques likely contribute to increased rate of mastectomy over last decade
Indications for Mastectomy

- Disease not amenable to lumpectomy
- Strong family history
- Genetic predisposition
- Previous lumpectomy
- Patient choice
  - May include contralateral prophylactic mastectomy
  - Need to stress true risk of future contralateral breast cancer

Changing Tide

- National Surgical Adjuvant Breast and Bowel Project (NSABP)
  - NSABP B-06
  - Breast conservation showed no significant difference in overall survival

Breast Conservation

- Lumpectomy
  - Not always a lump
- Quadrantectomy or Segmentectomy
  - Larger resections, typically remove overlying skin

Quadrantectomy
Breast Conservation

**Rationale**
- Achieve survival equivalent to mastectomy
- With postoperative radiation therapy...
- Six randomized trials have demonstrated this

**Absolute Contraindications:**
- Patient that would require radiation during pregnancy
- Diffuse suspicious or malignant-appearing microcalcifications
- Widespread disease that cannot be incorporated by local excision through a single incision that achieves negative margins with a satisfactory cosmetic result
- Persistent positive pathologic margin
- ASBS consensus statement
  - 1mm for DCIS
- No tumor at inked margin for invasive tumors

**Relative Contraindications:**
- Prior radiation therapy to the breast or chest wall
- Knowledge of doses and volumes prescribed is essential
- Active connective tissue disease involving the skin (especially Scleroderma and Lupus)
- Tumors >5 cm
- Can consider preoperative chemotherapy
- Focally positive margin
- Woman with a known or suspected genetic predisposition to the development of breast cancer

Non-palpable lesions
Breast Conservation

- Relative Contraindications:
  - Prior radiation therapy to the breast or chest wall
  - Knowledge of doses and volumes prescribed is essential
  - Active connective tissue disease involving the skin (especially Scleroderma and Lupus)
  - Tumors >5 cm
  - Can consider preoperative chemotherapy to allow conservation
  - Focally positive margin
  - Women with a known or suspected genetic predisposition to the development of breast cancer

- Knowledge of doses and volumes prescribed is essential

Breast Conservation

- Considerations
  - Size of tumor relative to breast
  - Ptosis of breast
  - Location of tumor
  - Comorbidities
  - Access to radiation therapy facility

- Options
  - Variety of incisions
  - May use preoperative chemotherapy to allow conservation

Oncoplastic Techniques

- Combination of oncologic principles with reconstructive techniques
- Goal is to restore the contour of the breast while achieving negative margins

Oncoplastic Surgery

- Volume displacement techniques
  - using parenchymal remodeling
- Volume replacement techniques
  - with both local or distant tissue
- Volume reduction
  - macromastia
  - ptosis
Axillary Node Dissection

Sequelae
- Lymphedema
  - Treatable but not curable
- Stewart Treves Syndrome
  - Lymphangiosarcoma in long-standing lymphedema

Sentinel Lymph Node Biopsy
- Development of the sentinel node biopsy for use in melanoma
- Allowed removal only of lymph nodes most likely to have metastatic cancer

Sentinel Lymph Node Hypothesis
- A tumor free Sentinel lymph node predicts that the remaining axillary nodes are also benign
- Thus a patient may avoid morbidity of an axillary node dissection
In the 1990’s practical methods were developed leading to the widespread use of the method in axillary staging. Subsequently, over 6 randomized trials have validated the use of the sentinel lymph node biopsy.

Clinically node negative Stage I-IIIA disease

Total mastectomy with or without reconstruction for Ductal carcinoma in situ.
Breast Surgery

- Present and Future...

Nipple Sparing Mastectomy

- Not yet a standard of care
- No prospective randomized trials
- Retrospective reviews
- Long term follow-up not available

Mastery of Breast Surgery℠ Program
Nipple Sparing Mastectomy Registry

- What is the purpose of the registry?
  - compiling information on metrics utilized, techniques utilized, aesthetic outcomes, as well as oncologic outcomes of the Nipple Sparing Mastectomy
  - aim to provide a large prospective collection of data points
  - to provide evidence based medicine on outcome measures and metrics

Nipple Sparing Mastectomy: Considerations

- Oncologic Concerns:
  - Adequate resection of breast tissue through limited exposure
    - Different approaches can be used
- Aesthetic Concerns:
  - Position of nipple areolar complex (NAC)
  - Viability of NAC
    - 35% experience some degree of delayed healing
  - Sensation of NAC
    - Some report sensory loss in up to 50% of cases
Nipple Sparing Mastectomy:

- **Indications:**
  - Tumor less than 2.5 cm in size
  - Distance of 2 to 3 cm from the nipple areolar complex

- **Considerations:**
  - Large and ptotic breasts are poor candidates
  - Blood supply more limited
  - Position of NAC
  - Patients who received radiation therapy are not candidates

Future of Breast Surgery

- Endoscopic Breast Surgery?

Future of Breast Surgery

- Molecular assays to determine who does not need surgery?
  - Already used for selected omission of chemotherapy and radiation therapy
Multi-Disciplinary Care

- Evidence-based medicine guided by national guidelines
- Systematic team approach integrating sub-specialties and support services

Our Present
Our Future

Baptist Health Breast Center
moving to Miami Cancer Institute in 2016.

Clinical Pearls

- Choice of surgical treatment is tailored to the individual patient
  - Stage
  - Health
  - Family history
  - Ancestry
  - Wishes

Clinical Pearls

- Patients must understand that breast cancer treatment is divided into:
  - Local treatment
    - Surgery and radiation
    - Oncoplasty and reconstruction
  - Systemic treatment
    - Chemotherapy
    - Endocrine therapy

Clinical Pearls

- Do not choose mastectomy to avoid radiation...
  - My colleague will elaborate
- Do not choose mastectomy to avoid systemic therapy
  - My colleague will elaborate
- Do choose carefully and make the right choice for you
“If you can’t explain it simply, you don’t understand it well enough.”

Albert Einstein