Radioactive Seed Localization For Patients With NonPalpable Breast Lesions

Lung Cancer has the highest mortality rate

. . .

Breast Cancer has the Second Highest Mortality Rate for American Women

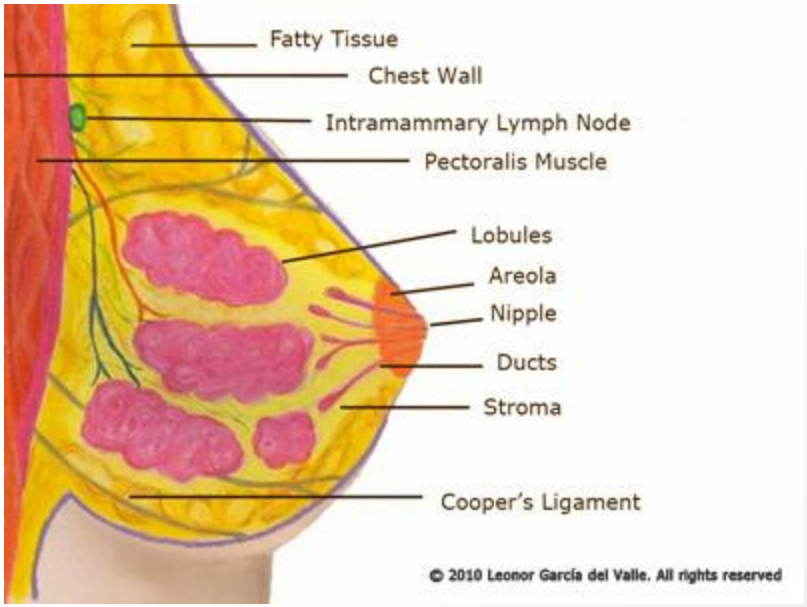
https://cancerstatisticscenter.cancer.org/?_ga=2.245795780.1780170072.1527174267-553535559.1526484045#!/

Factors that are contributing to a decline in Breast Cancer Death Rates

- Increased Awareness
- Early screening
- Improved Treatments
- All have contributed to decreased death rates since 1989

What is Breast Cancer?

- The female breast is made up mainly of:
- **Lobules-** the milk producing glands
- **Ducts-** the tubes that carry the milk from the lobules to the nipple
- **Stroma-**fatty tissue and connective tissue surrounding the ducts and lobules, blood vessels, and lymphatic vessels.



Definition

- **Breast Cancer is the growth of abnormal cells**
- **The cells can invade and damage the normal tissue**
- **Breast cancer can start in any part of the breast.**

Breast Cancer Risk Factors

1. **Gender**: women have greater risk factor
2. **Aging**: increases with age
3. **Genetic Risk Factors**: inherited from a parent
4. **Family History of Breast Cancer**: Blood relatives
5. **Personal History of Breast Cancer**: increased risk of redevelopment
6. **Certain non-cancer breast problems**: increased risk

Breast Cancer Risk Factors

1. **Previous chest radiation:** as a child or young adult
2. **Post menopausal hormone therapy (PHT):** use for many years
3. **DES Exposure:** slightly increased risk
4. **Recent Use of Hormonal Contraceptives:** slightly increased risk but decreases after use stops
5. **Race:** higher among white women than African American Women.
6. **Dense Breast Tissue:** as seen on Mammogram have a higher risk

Breast Cancer Risk Factors

1. **Not Having Children or having children later in life (after age 30):** slightly higher risk
2. **More menstrual cycles:** slightly higher if a woman started menstruation early or went through menopause later
3. **Not Breastfeeding:** breastfeeding may lower breast cancer risk
4. **Physical Activity:** Being more active lowers your risk
5. **Overweight:** Obesity raises the risk of having breast cancer after menopause
6. **Alcohol Use:** clearly linked to increased risk which goes up with the amount of alcohol you drink

The use of superior screening technologies will allow for early treatment

- The Rate of Breast Cancer Diagnosis has increased

BRCA 1 & BRCA2

- **DEFINITION:**

- BRCA1 and BRCA2 are human genes and it's protein product

- Blood test performed on Women who are likely to have an inherited mutation based on personal or family history or who have a specific type of breast cancer.

Newer Diagnostic Technologies that are available

- **Improved Imaging**
- **Genetic Fingerprinting for treatment individualization**
- **Sentinel lymph node biopsy**
- **BRCA (BReast CAncer) tests**

Patients are being diagnosed more quickly and at a younger age

Multiple treatment options are available to them including Breast Conservation Surgery **(Lumpectomy or Partial Mastectomy)** with Radioactive Seed Localization lumpectomy.

Why Choose Breast Conservation Surgery????

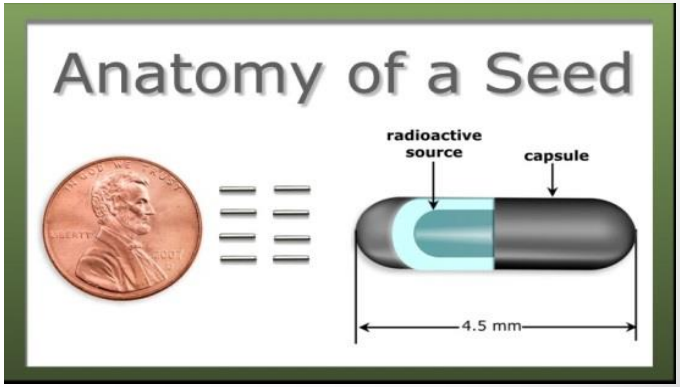
- Cosmetic Benefits
- Psychological Benefits
- Reduction of Musculoskeletal effects

What is the Survival Rate of Breast Conserving Surgery (BCS) versus Mastectomy

TREATMENTS	LENGTH OF TREATMENT			
		3 YEARS	5 YEARS	10 YEARS
	BCS	96.50%	92.90%	80.90%
	MAST.	93.40%	88.30%	67.20%
		KEY:		
		BCS = Breast Conservative Surgery		
		MAST. = Mastectomy		

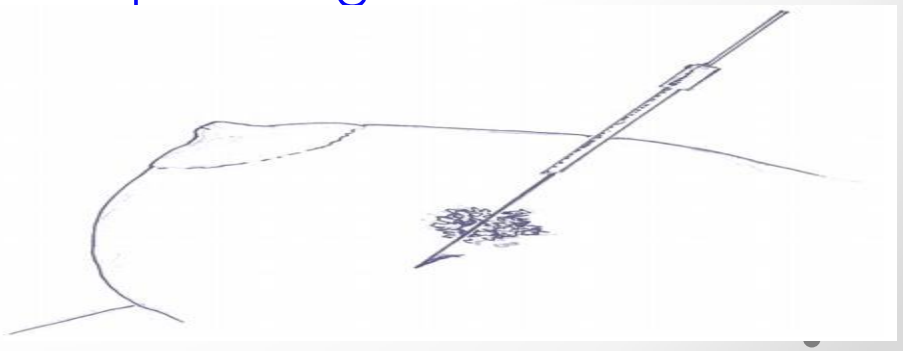
RADIOACTIVE SEED LOCALIZATION ADVANTAGES

- Reduced Number of Re-Excisions for Positive Margins
- Reduced volume of breast tissue excised
- Decreased Operative time
- Convenient surgery and mammography scheduling
- Less pain at the surgical or seed injection site
- Increased satisfaction among the surgery, radiology, and pathology staff
- Little or no migration of the seed



RSL VS WIRE GUIDED LOCALIZATION

- Re-Excision rates for positive margins were reduced by 68%
- RSL decreased re-excision and operative time
- Less pain with RSL
- RSL is more convenient
- Re-excision rates for positive margins decreased and less breast volume is excised
- Improved OR efficiency
- Migration of the radioactive seed was negligible in the RSL, unlike the WLE in which the localization wire can migrate
- Preferred method by surgeons and pathologist



Regulatory Compliance

- **Compliance with state and federal agency regulations is essential**

- **Compliance is required from the US Food and Drug Administration, Environmental Protection Agency, OSHA, Nuclear Regulatory Commission and other state and local agencies.**

EPA
United States
Environmental Protection
Agency

FDA

OSHA®
Occupational Safety
and Health Administration

U.S.NRC

Cost Savings

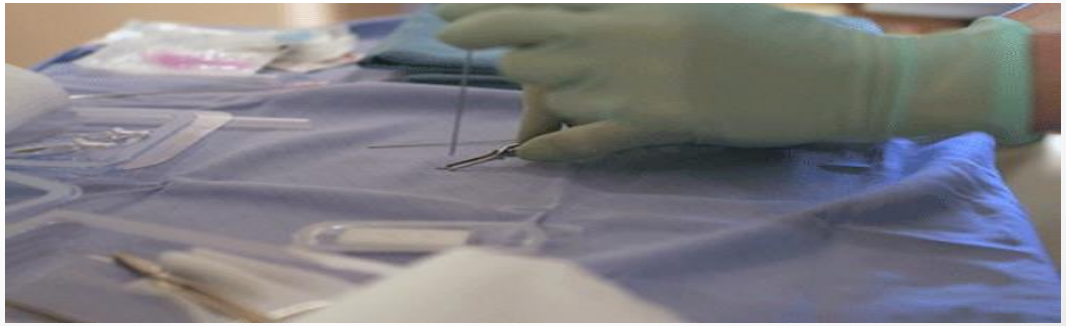
- By using the RSL Technique the savings is less than $5.00
- Because surgeons can more easily perform RSL procedures, studies show a greater potential cost savings as
  1. Surgical time is decreased
  2. Greater OR efficiency
  3. Fewer patients return to surgery for positive margins

RSL Procedure Pre-Op

- Patient undergoes a mammogram to identify the location for seed placement
- The Radiologist places a marking clip in the lesion when the initial needle biopsy is performed
- Local anesthesia is given
- The seed is placed by the Radiologist using mammography or Ultrasound guidance
- Patient will either go to Pre-op awaiting their surgical procedure or be discharged to home
- I-125 seeds give off only a low radiation exposure threat

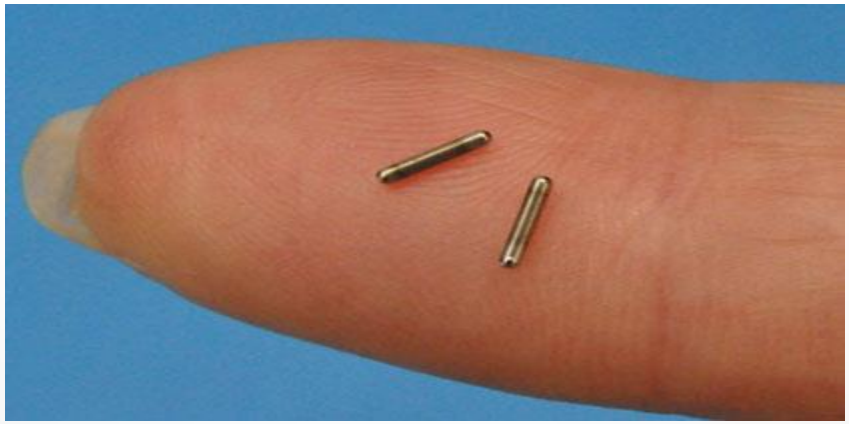
RSL Procedure Intra-Op

- Circulator should offer emotional support for the patient
- Attention to DVT precautions
- Patients are at high risk for SSI
- Be sure to verify marking at the time of surgery
- Place specimen in properly labeled biohazard materials bag. Be sure that it as labeled as containing radioactive seeds
- Place specimen in the lead envelope and bring to MRA (MPLS Radiology Associates)
- Surgery will transport the specimen from MRA to Pathology



Seed Tracking

- **Mandatory requirement to meet state and Federal Regulatory Agencies**
- **Radiologist needs to document the number of seeds placed**
- **A signature is required of every person transporting seeds is required on the form**
- **Documentation is required throughout the whole procedure**
- **Seeds are stored for decay in the Hot Lab**

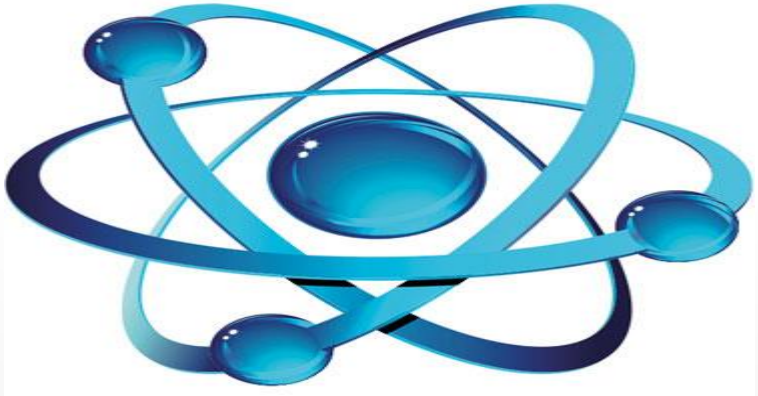


Radiation Seed Precautions

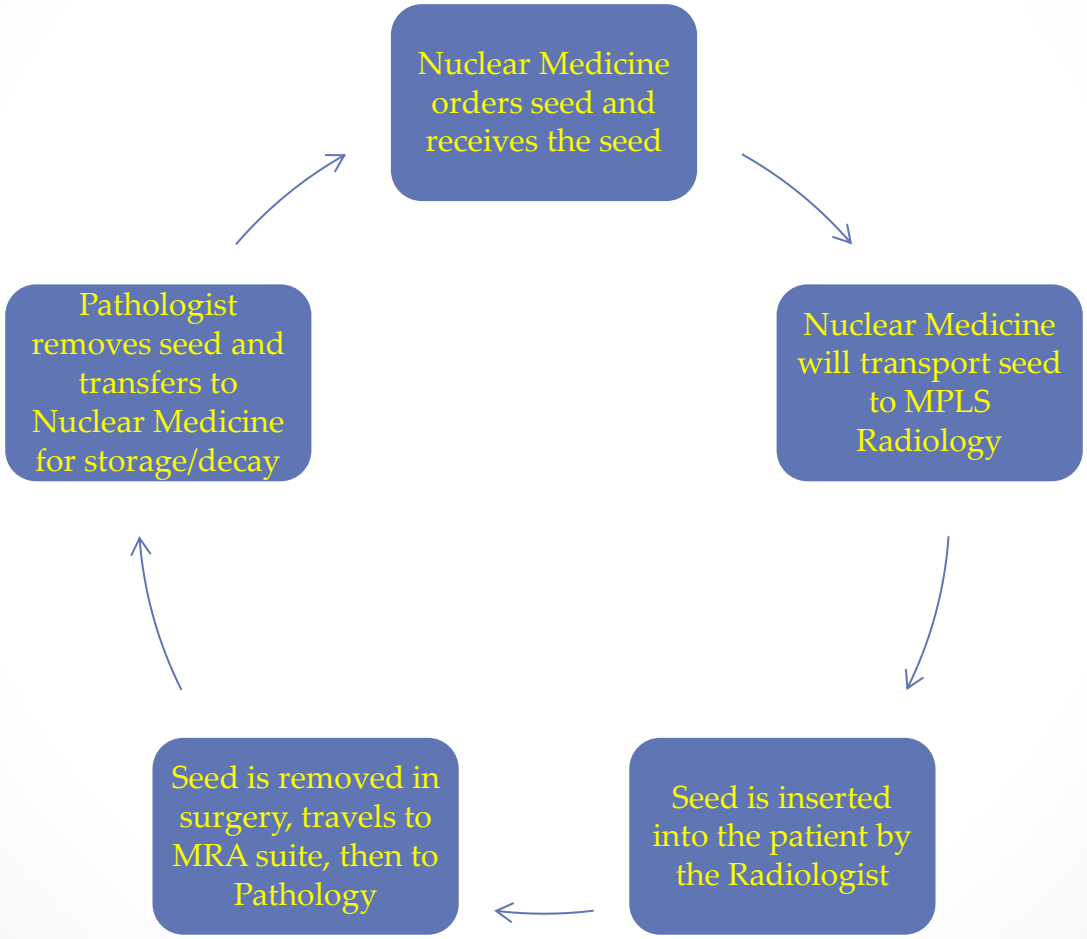
- ALARA (As Low as reasonably Achievable)
- Seeds can be both cut and suctioned if precautions are not taken
- Seed is Titanium coated so Electric Current from the Electrosurgical unit is safe
- Suction Equipment should not be offered until after the surgeon removes the seed from the breast specimen
- Never pick up the seeds with your hands. Use a long handled forceps to handle the seeds.

Loss of Radioactive Seed During a Procedure

- If seed is lost the surgery should be suspended and all members of the OR team should search for the seed
- **Nuclear Medicine should be called at extension 1-1180**
- No one should leave the room until the seed is located or the nuclear medicine team gives additional direction
- **If a Seed is cut all parts of the seed must be retrieved**
- Regulatory agencies can suspend or revoke authorization for a RSL program



Path of a Seed



North Memorial Ambulatory Surgery Center at Maple Grove

Non-Palpable Breast Lesion Seed Localization Policy and Procedure

- K:\ASC Policy Manual\SECT 5000 OPERATING ROOM\5036 Non-Palpable Breast Lesion Seed Localization.docx

- Additional Information can be found on the North Memorial staff Training page

http://www.northmemorial-asc.com/wp-content/uploads/2017/02/Seed-Loc-Training.pdf

Seed Localization Quiz

- http://www.northmemorial-asc.com/wp-content/uploads/2017/02/Seed-Loc-Quiz.pdf

Geiger Counter Survey

- \\Smpsd\nmasc\Home\CAmundson\Radiation Safety - Survey Procedures - 2018 - for clinics and MRA.pptx


Thank you!