Incidence of Re-Excision and Residual Disease following Breast Conserving Therapy at Carl R Darnall Army Medical Center

For many years, the margin status after breast conserving surgery has been a topic of much discussion, prompting work on guidelines to minimize unnecessary surgeries.

According to the literature, the re-excision lumpectomy rate ranges from 0-70% by individual surgeons.[1]

In a recent article, Dr. Meena Moran, Associate Professor of Therapeutic Radiology at Yale School of Medicine, stated that the re-excision rate after lumpectomy, is approximately 20-25%.[2]

The frequency of re-excision varies due to the institution's definition of what is an acceptable margin. Many strategies or techniques have been looked at to reduce the incidence of positive margins, to include but not limited to: intraoperative MRI, cavity shave excisions, intraoperative margin assessment by frozen section, and the recently FDA approved MarginProbe System that has the ability to identify cancer at the margin.

In Darnall, we are trying to evaluate the re-excision rate and residual disease after re-excision lumpectomies on patients with invasive and non-invasive breast cancer, and determine if an improvement is needed.

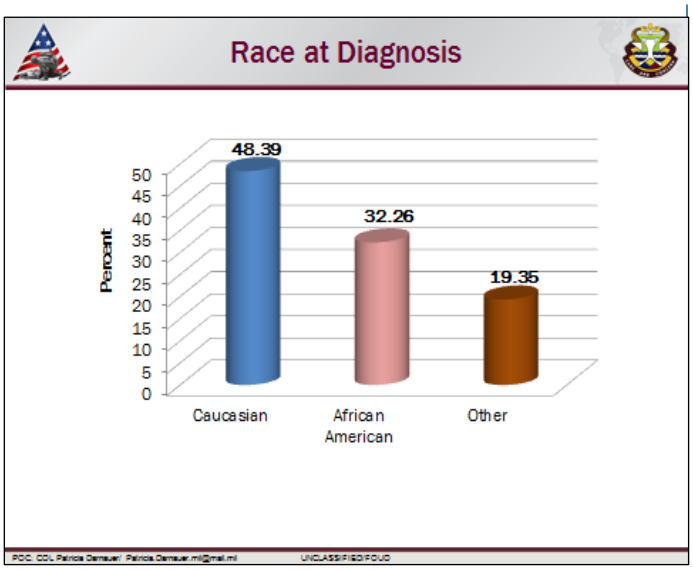
Method:

We gathered our data from the Cancer Registry data base, and selected all cases that underwent lumpectomies and re-excision following lumpectomy for either positive or close margins. All the cases had a diagnosis of invasive and/or non-invasive breast cancer.

During January 1, 2009 through December 31, 2013, we diagnosed 101 new cases of breast cancer. Of those, 31% opted for breast conserving surgery (lumpectomy) and 69% opted for mastectomy.

Results:

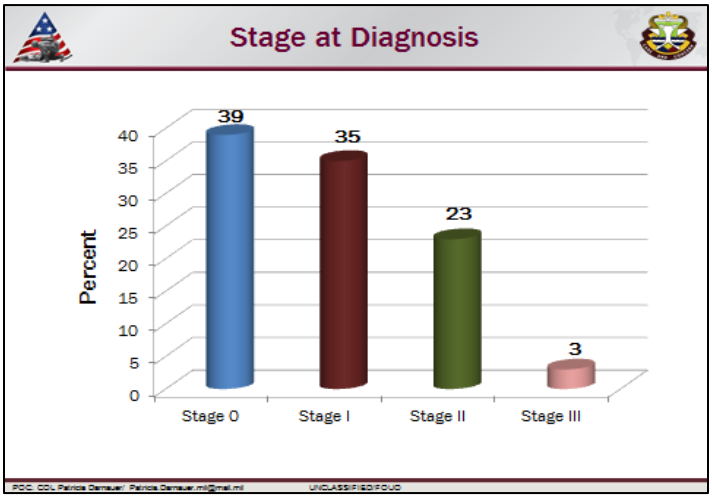
Figure 1



Among the cases that underwent lumpectomy, almost half of the cases were Caucasian with 48% of the cases.

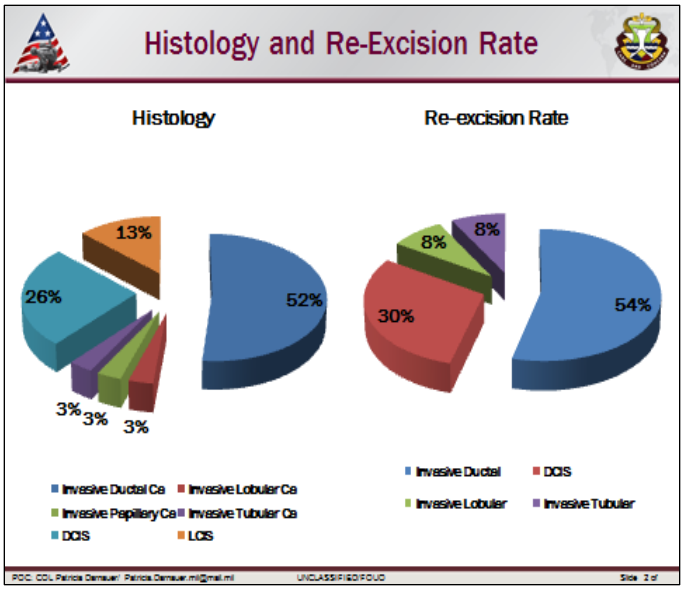
The median age of the group was 52 years of age.

Figure 2



All the cases had early disease with the exception of one case (3%) diagnosed with stage 3.

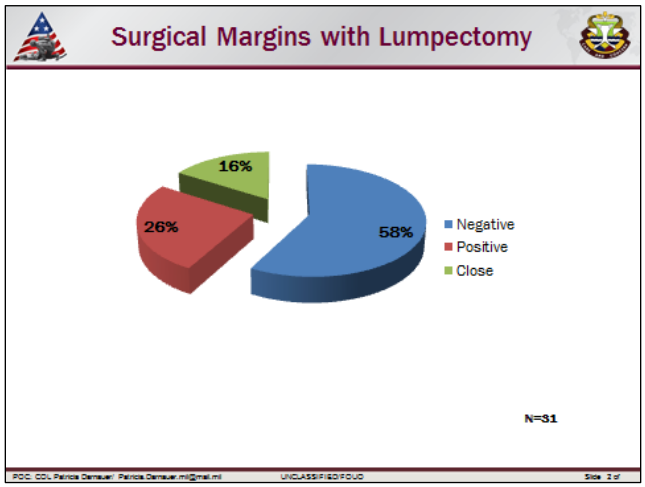
Figure 3



Invasive Ductal Carcinoma was the most common histologic type with 52%, as well as the histology with the most common re-excision for both positive and close margins, with 54%.

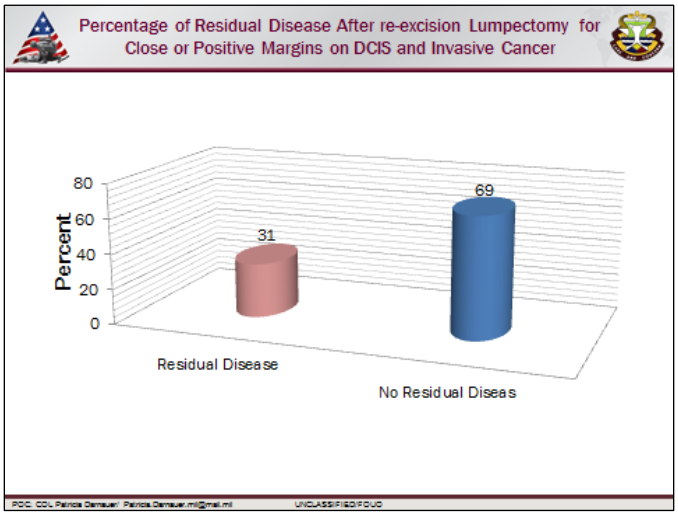
The overall re-excision rate for invasive and non-invasive cancer, including positive and close margins was 42%.

Figure 4



Of all the cases that underwent lumpectomy, 26% had positive margins and 16% close margins. This positive margin rate seems to be consistent with the literature. It has been reported that positive margins, at initial lumpectomy, range from 15% to 47% .[3]

Figure 5



Our percentage of residual disease, in cases with invasive and non-invasive carcinoma was 31%. The remaining 69% had no evidence of residual disease. All the re-excised cases achieved clear margins after the second surgery with the exception of one patient with a diagnosis of DCIS. The second surgery showed that the margins were not involved but were close, within 0.2 mm from ink and that multifocal DCIS was found. No residual disease after the 3rd surgery.

Summary/Conclusion

We found that the re-excision rate at CRADMC was 42%, which is higher than stated in the literature.

The overall residual disease, after re-excision, was 31% including positive and close margins. Even though these figures seem to be high, they are consistent with the literature which states that about 21-33% of the cases, that undergo re-excision lumpectomies, had residual disease. [4, 5]

The pattern seen in our institution, in most cases with close margins was that when the patient's margin approached within less than 1 mm, the patient underwent a second surgery. Only one patient with invasive cancer had a second surgery with a margin less than 2mm. This case specimen also had high grade DCIS with comedo necrosis, approaching within less than 0.5 mm; these factors may have contributed to the need to attain wider surgical margin.

We are trying to find out if we need to improve or lower the re-excision rate.

We will discuss and implement the new guidelines, recommended by the Society of Surgical Oncology (SSO) and the American Society of Radiation Oncology (ASTRO) on margins in breast-conserving surgery with whole breast irradiation for stages I and II invasive breast cancer.

The guideline establishes 8 clinical practice recommendations. The following is a summary of the guidelines: [6]

1. **Positive margins**

   A positive margin, defined as ink on invasive cancer or ductal carcinoma in situ (DCIS), is associated with at least a 2 fold increase in ipsilateral breast tumor recurrence (IBTR). This increased risk in IBTR is not nullified by: delivery of a boost dose of radiation, delivery of systemic therapy (endocrine therapy, chemotherapy, or biologic therapy), or favorable biology.

2. **Negative margin widths**

   Negative margins (no ink on tumor) minimize the risk of IBTR. Wider margin widths do not significantly lower this risk. The routine practice to obtain negative margin widths wider than no ink on tumor is not indicated.

3. **Systemic therapy**

   The rates of IBTR are reduced with the use of systemic therapy. In the uncommon circumstance of a patient not receiving adjuvant systemic therapy, there is no evidence suggesting that margins wider than no ink on tumor are needed.

4. **Biologic subtypes**

   Margins wider than no ink on tumor are not indicated based on biologic subtype.

5. **Radiation therapy delivery**

   The choice of whole breast radiation therapy (WBRT) delivery technique, fractionation, and boost dose should not be dependent on margin width.

6. **Invasive lobular carcinoma and lobular carcinoma in situ**

   Wider negative margins than no ink on tumor are not indicated for invasive lobular carcinoma (ILC). Classic lobular carcinoma in situ (LCIS) at the margin is not an indication for re-excision. The significance of pleomorphic LCIS at the margin is uncertain.

7. **Young age**

   Young age ($\leq$ 40 years) is associated with both increased IBTR after BCT as well as increased local relapse on the chest wall after mastectomy, and is also more frequently associated with adverse biologic and pathologic features. There is no evidence that increased margin width nullifies the increased risk of IBTR in young patients.

8. **Extensive Intraductal Component (EIC)**

   An EIC identifies patients who may have a large residual DCIS burden after lumpectomy. There is no evidence of an association between

increased risk of IBTR and EIC when margins are negative.

The full guidelines can be found in the Annals of Surgical Oncology at the following link: http://link.springer.com/article/10.1245/s10434-014-3481-4