

BACKGROUND

Although 97–99% of breast cancers occur in only one breast,¹ some women choose also to remove the healthy breast—a contralateral prophylactic mastectomy (CPM).

Majority of women with unilateral breast cancer (BC) do not have BRCA mutations and their risk of local and contralateral recurrence are extremely low with limited resections and advances in adjuvant management.²

We are seeing more women with unilateral breast cancer opt for bilateral mastectomy or more radical mastectomies³

Predictors of CPM may include fear of a subsequent breast cancer diagnosis, desire for cosmetic symmetry, family history of breast cancer, and genetic susceptibility related to BRCA1 and BRCA2 genes⁴. Increasing use of CPM is not always associated with increased recognition of patients at high risk for CBC⁵

As the use of MRI increased from 10% in 2003 to 23% in 2006. Patients with MRI were more likely to undergo mastectomy than those without MRI (54% v 36%)⁶

Regional and national cohorts suggest after an initial decline in late 90's⁶ a shift in mid-2000's toward increasing proportion of women choosing mastectomy over BCT, in patients eligible for BCS^{7,8}

In a recent AHRQ study among women undergoing treatment for early-stage breast cancer, the percentage of those having CPM increased more than fivefold between 1998 and 2011 (from 1.9 to 11.2 percent)⁸. No clear evidence for a survival benefit is seen in patient subgroups, other than in women with BRCA1/2 mutations or strong family history of cancer⁹

Between 2005 and 2013, BM with cancer more than tripled and BM without cancer more than doubled. but the rate of unilateral mastectomies with cancer remained stable. On average, women who had a bilateral mastectomy were approximately 10 years younger than those who had a unilateral mastectomy^{7,8}. Treatment factors, such as immediate reconstruction, and unsuccessful attempts at breast conservation, are associated with increased rates of CPM⁵

While most women undergoing CPM have decreased emotional concern about developing breast cancer and generally favorable psychological and social outcomes¹⁰. These must be weighed against the potential problems with implants and reconstructive surgery, and adverse psychological and social outcomes in some women¹¹

In addition to obvious higher costs and almost two-thirds of women undergoing bilateral prophylactic mastectomy had at least one complication following surgery¹² When adjusted for other risk factors CPM patients could be 1.5-2.7 times more likely to have a major complication compared with UM patients¹³

The study highlights the patterns of breast cancer care across three community rural practices in Southeastern NM. Our knowledge across such practices is limited. We aimed to assess types of surgical interventions performed in women with breast cancer in various early stages and to correlate that with surgical outcome including WHO stage II irreversible lymphedema, Other local surgical complications and local recurrence as part of care improvement across such practices.

METHODS

This is a retrospective study evaluating patients with resectable BC from three rural community cancer practices in Southeast New Mexico. A total of 533 patients had breast surgery between January 1989 and October 2015. Women with BC stages 0-3 were included. The objective was to determine the proportion of different types of surgeries: BCT, simple mastectomy (SM), modified radical mastectomy (MRM), BM and sentinel lymph node dissection (SLND) according to stage and their relationship with clinical outcomes (irreversible lymphedema and locoregional recurrence). Descriptive statistics were performed to describe the proportion of surgery types. Predictors of clinical outcomes were evaluated by multivariate logistic regression.

RESULTS

Among 533 patients, 510 (82%) had early stage (0-3) resectable BC. Among these, 48% (246/510) had either MRM (215/510) or BM (37/510) MRM was performed in 3% of stage 0 (6/209), 23% (49/209) stage I, 46% (97/209) of stage II and 27% (57/209) of Stage III patients (Figure 1,2). Overall, the rate of SLND was 42% among Early Stage Breast cancer.

Of 41 patients treated with bilateral mastectomy, 10 were positive for BRCA mutation, 6 for family history and 3 for contralateral disease (Fig. 3). Median age of BM was 53 ± 12 y. The local recurrence rate was 8.8% (45/510), and metastatic recurrence rate was 15.5% (79/510). Lymphedema rate was 9.2% (47/510). Using MRM as reference, the Odds Ratio (OR) for lymphedema after BM and BCT were 2.15 (95% CI, 0.84-5.50) and 0.58 (0.28-1.22), respectively (Table 1). With 9.6 years of median follow up, the predictive probabilities of lymphedema after BCT, SM, MRM and BM were 1%, 4%, 9% and 18% (Figure 4, 5a). Other post surgical complications were more common after MRM and Bilateral Mastectomy compared to BCT (Table 5b). The OR for LR in women with BCT were 1.46 (95% CI: 0.72-2.95), SM 0.27 (0.03-2.13), BM 2.06 (95% CI: 0.70-6.06) (Fig. 6)

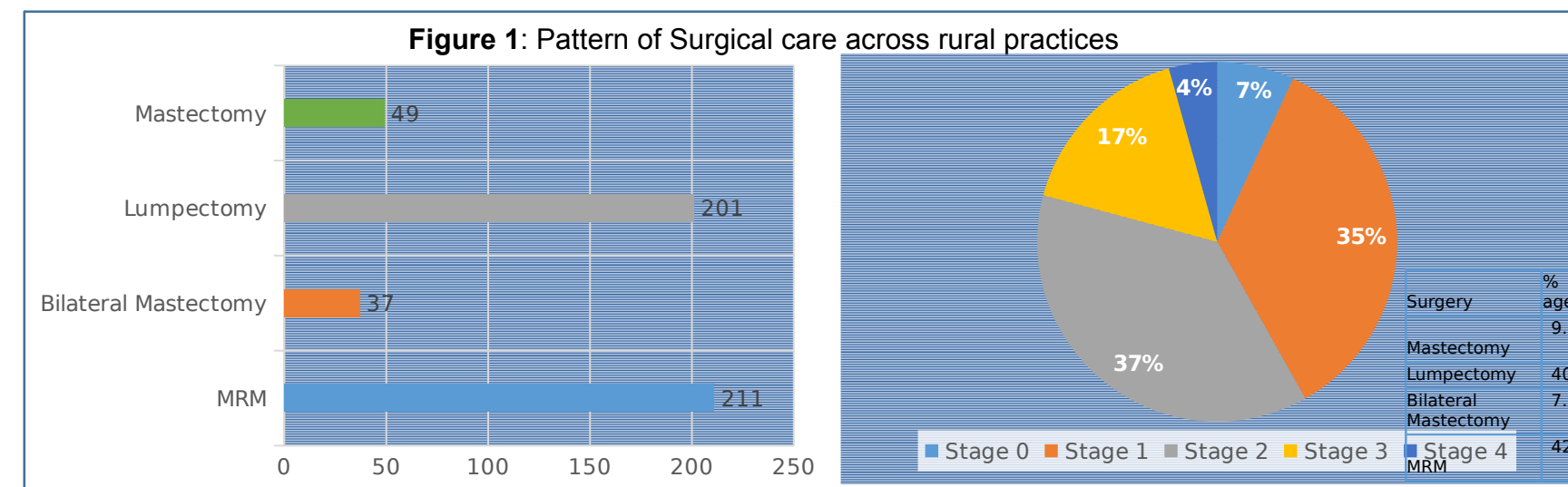


Figure 1: Pattern of Surgical care across rural practices

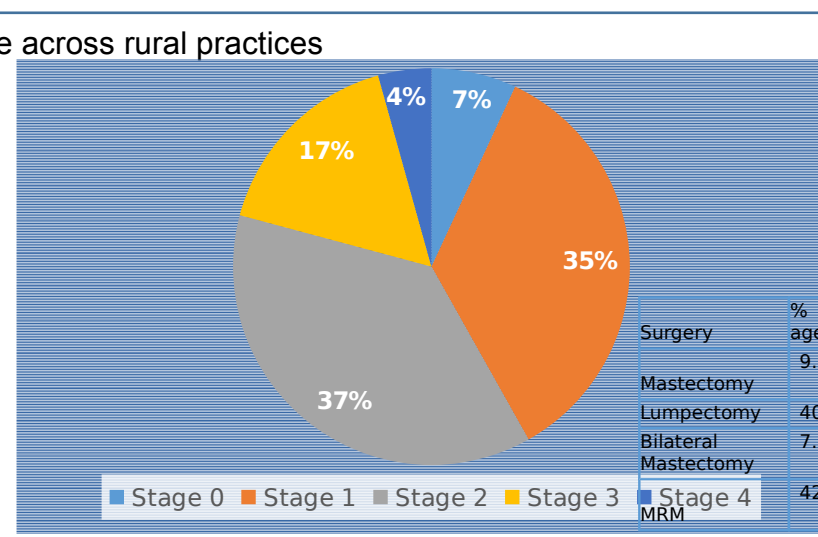


Figure 2: Surgical preferences based on staging

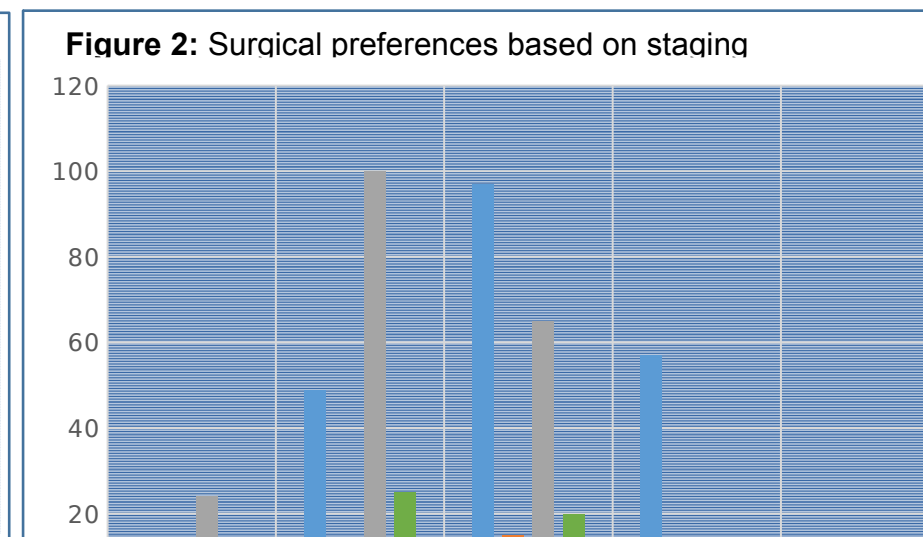


Figure 3: Association between surgery type and BRCA1/2 status | Pearson chi2(3) = 3.9703 Pr = 0.265

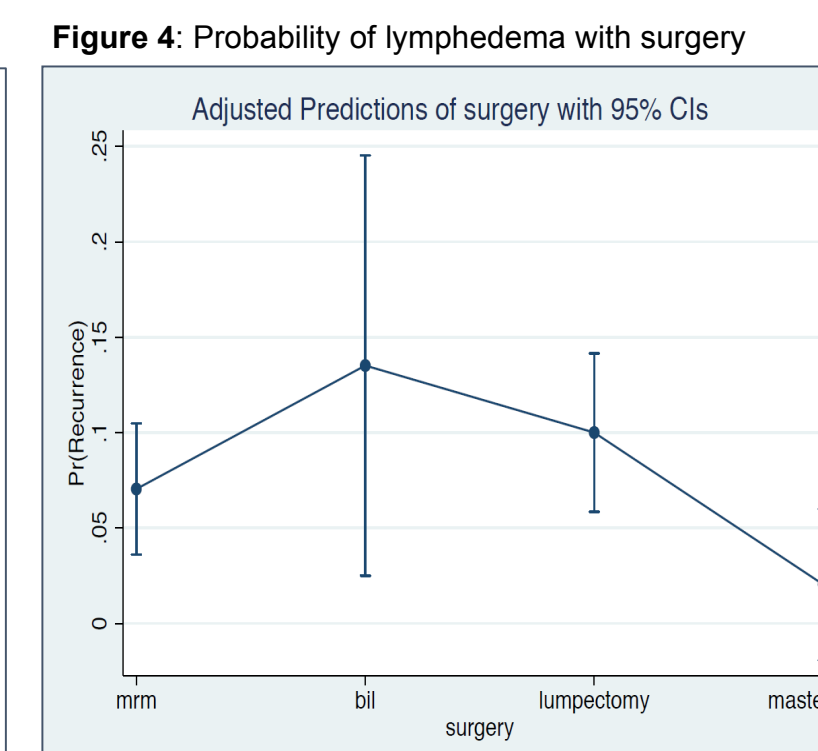


Figure 4: Probability of lymphedema with surgery

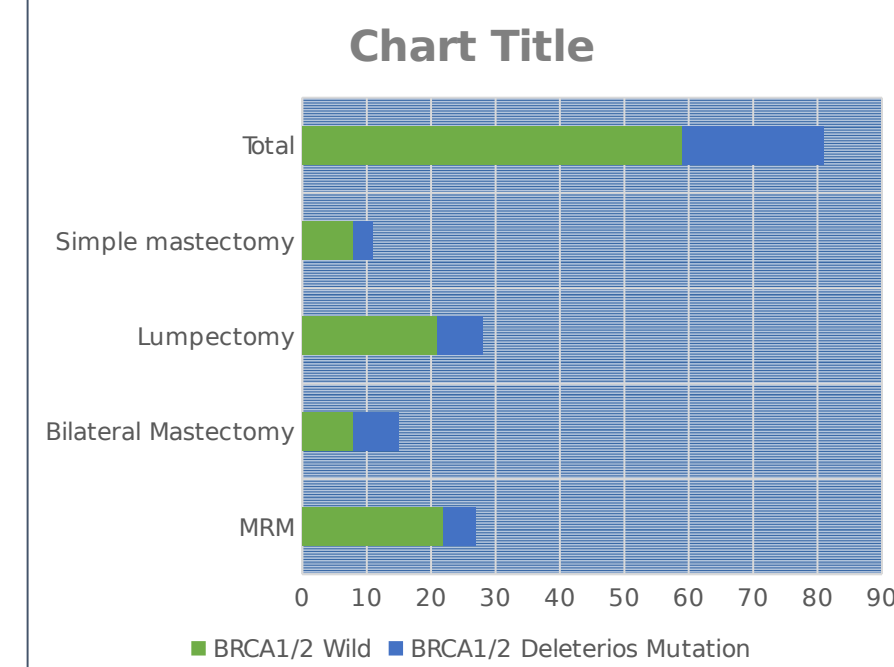


Figure 5a: Association between surgery type and lymphedema risk (Irreversible) over 9.6 Yrs [Median] | Pearson chi2(3) = 6.9631 Pr = 0.073

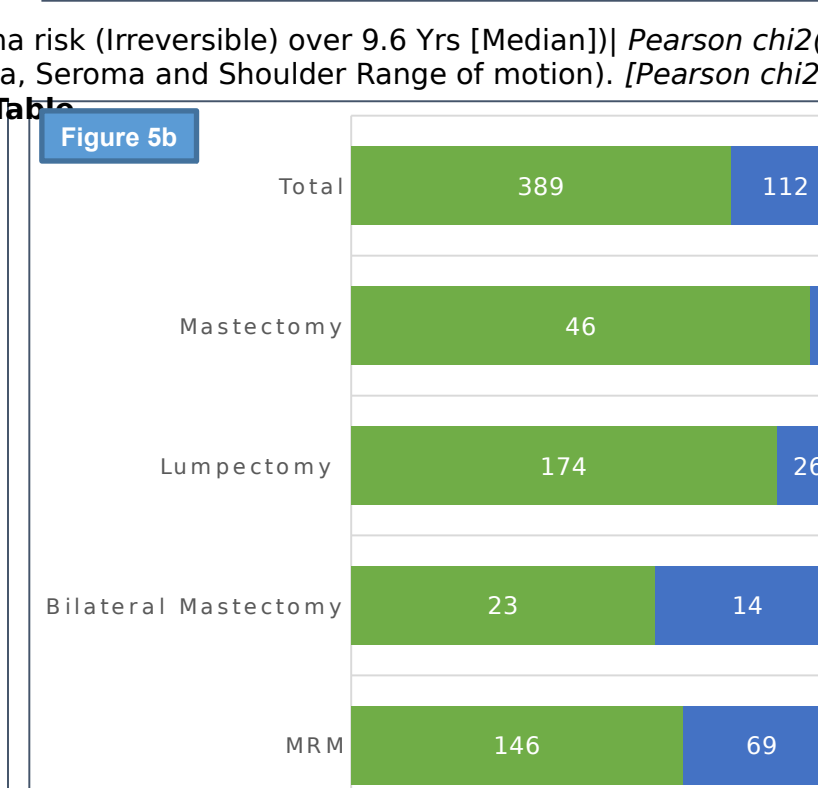


Figure 5b: Association between surgery type and other surgical complications (*Chest/Axillary paresthesia, Seroma and Shoulder Range of motion). | Pearson chi2(3) = 34.3780 Pr = 0.0001 | Figure 6: Probability of Local Recurrence

Surgery	Stage				
	0	1	2	3	4
MRM	6(2.8%)	49(23.2%)	97(46%)	57(27%)	2(0.9%)
Bilateral Mastectomy	2(5.4%)	9(24.3%)	15(40.5%)	11(29.7%)	0
Lumpectomy	24(12%)	100(50%)	65(32.5%)	9(4.5%)	2(1%)
Mastectomy	1(2%)	25(51%)	20(40.8%)	2(4%)	1(2%)

Table 1: Risk of Lymphedema (OR)

Lymphedema	Odds Ratio	Std. Error	[95% CI]
Bilateral Mastectomy	2.15	1.031438	0.843-5.50
Lumpectomy	5865457	.2205584	0.280-1.22

Local Recurrence*	Odds Ratio	Std. Error	[95% CI]
Bilateral Mastectomy	2.0625	1.130.701 - 6.066	
Lumpectomy	1.4666	0.52320.728 - 2.951	
Mastectomy	0.25	0.2870.035 - 0.128	

CONCLUSIONS

The study highlights the need for further evidence-based shared decision-making and surgical management of breast cancer, especially in a rural community setting.

Less BCT and more aggressive procedures are being performed

With 9.6 years of median follow up, the predictive probabilities of lymphedema after BCT, SM, MRM and BM were 1%, 4%, 9% and 18%. Suggestive of more severe and irreversible lymphedema with more aggressive surgery.

Local recurrence rates are not improved with more aggressive procedures

Presence of a BRCA 1/2 mutation was not the sole indicator of BM's in our patient population.

Factors associated with an increase in BM and MRM in this rural practice were not completely assessed. However, availability of radiation services, surgeon expertise, personal biases, family history of breast cancer and widely advertised celebrity reported of bilateral mastectomies may have a role to play.

A quarter of patients had other post surgical complications including mastalgia, paresthesia, range of motion issues and chronic seroma's. Significantly higher proportion of patients undergoing non- BCT surgery had these complications. Including 37% of BM and 1/3rd of MRM. Thirteen percent of lumpectomy patients had these complications

While most women undergoing Prophylactic mastectomy without BRCA mutation may have decreased emotional concern about developing breast cancer and generally favorable psychological and social outcomes¹⁰. These must be weighed against the potential problems of surgical complications

Over the next several years this trend could become a global issue in the management of unilateral breast cancer

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