Original Article

Re-operation Rates in Breast cancer after Breast Conserving Surgery in Malta

Alexia Farrugia, Gordon Caruana Dingli

Abstract

The Agatha Breast Unit at Mater Dei Hospital, Malta performed 340 wide local excisions for cancer in 2013-4. Further surgery for close or involved surgical margins was performed in 45 cases (13%), of these 26 (58%) underwent cavity excision and 19 (42%) underwent mastectomy. Residual tumour was found in 9 (35%) in the cavity excision group and 13 (68%) of the mastectomy group. The authors discuss how their unit follows the recommendations of the "Toolbox to reduce lumpectomy reoperations and improve cosmetic outcome in breast cancer patients of the American Society of Breast Surgeons Consensus Conference" and what can be done to reduce re-operation rates further.

Keywords

Breast neoplasms, Margins of Excision, Reoperation

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Introduction and Aim

Breast cancer is the most prevalent cancer in European women and the incidence is increasing but mortality rates are decreasing. In our unit 70% of patients undergo breast conservation therapy (BCT) aiming to control local disease and achieve cure with the best possible cosmetic result and allowing the patient to have a good quality of life.1 An inadequate surgical margin may lead to local recurrence but re-excision to achieve an optimum margin leads to a worse cosmetic outcome and other problems.

The aim of this study is to assess re-operation rates in breast cancer patients after wide local excision in our unit. This was done by reviewing the histology results of the original surgery and those of the subsequent cavity excision or mastectomy, studying residual tumour rates in the two types of re-operation.

Methods

Data Collection and Sampling.

Data was collected from theatre lists of the two local breast surgeons for all wide local excision operations performed for cancer during 2013 and 2014 at the Agatha Breast Unit at Mater Dei hospital, Malta. Histology reports were accessed from the hospital database and patient records were reviewed as necessary.

Results

A total of 340 wide local excisions were performed in 2013 and 2014. Further surgery was performed in 45 (13%) to achieve clear margins. Of these, cavity excision was performed in 26 patients (58%) and mastectomy in 19 patients (42%). Residual tumour was found at the second operation in 9 patients (35%) in the cavity excision group and in 13 (68%) in the mastectomy group (49% overall). This is outlined in table 1.

The collected data was analysed statistically using IBM SPSS to check if there is a statistically significant difference in the size of original tumour

between patients undergoing cavity excision or mastectomy at subsequent surgery.

***Table 1**: Wide local excisions and re-operations for breast cancer in 2013 and 2014*

2013		2014	
Wide Local Excision 172		Wide Local Excision 168	
Cavity Excisions 7	Mastectomies 12	Cavity Excisions 19	Mastectomies 7
Residual tumour 2 29%	Residual tumour 8 67%	Residual tumour 7 37%	Residual tumour 5 71%

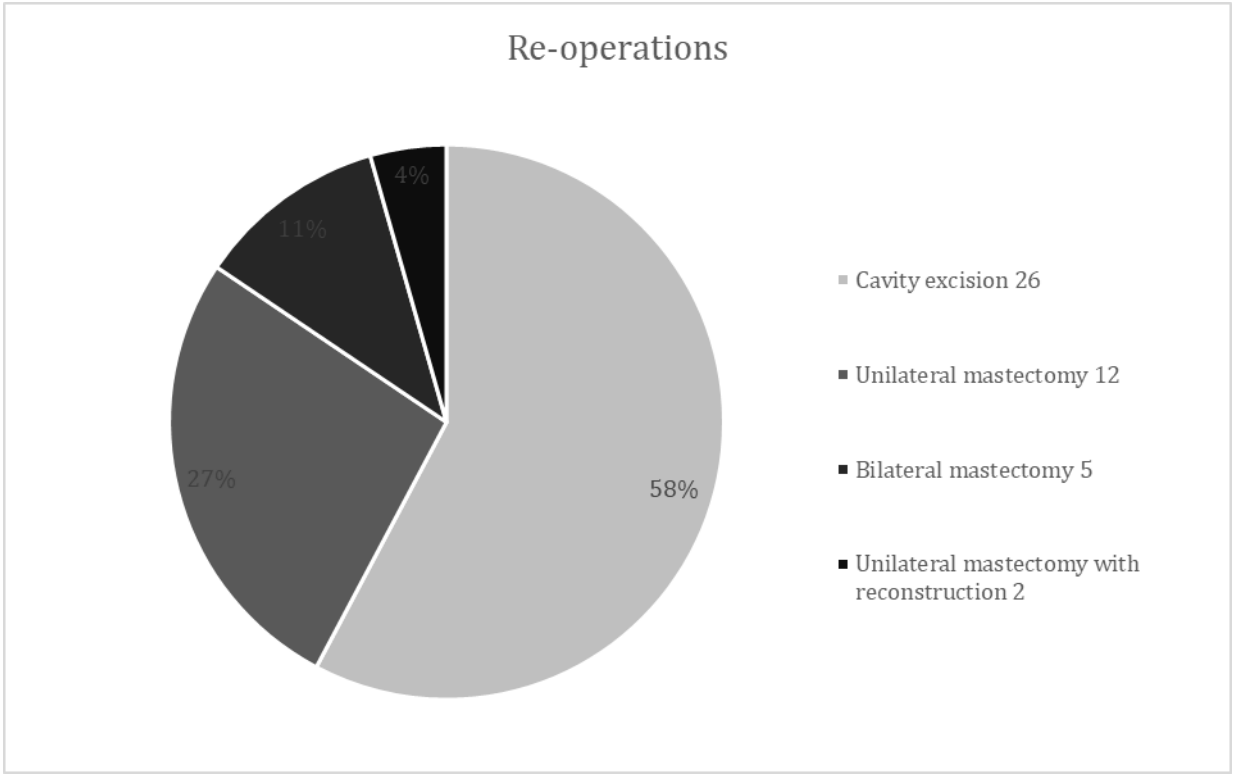
Out of the patients who underwent cavity excisions, 23(88.5%) had invasive carcinoma at original histology while 3(11.5%) had both invasive carcinoma and DCIS. The patients who subsequently had a mastectomy had 12 (63.2%) who had invasive tumour orginally and 7 (36.8%) who had both invasive carcinoma and DCIS. When comparing the two groups, more patients who eventually had mastectomy had both invasive tumour and DCIS in the original histology (P=0.009), while more patient who had a cavity excision had only invasive tumour initially (p=0.02).

The average size of the initial tumour was 23mm (range 8-48) in those who subsequently underwent cavity excision and 33mm (range 6-75) in those who underwent mastectomy. The difference in size was statistically significant, p=0.03 using a T-test.

Out of 26 cavity excisions, 9 (35%) had residual tumour on histological assessment and out of 19 mastectomies 13 (68%) had residual disease. The mastectomy group had a statistically significant higher rate of residual cancer when compared to the cavity excision group (p=0.025, using a Pearson Chi-Square test).

In the mastectomy group 5 patients (26%) had an initial tumour which was larger than 40mm on histology of the original operation, 7 patients (37%) had multifocal disease, 2 (11%) had chemotherapy between the initial and delayed surgery, 4 (21%) had extensive DCIS and one (5%) had previously undergone risk reduction bilateral subcutaneous mastectomy and immediate reconstruction for high-grade DCIS.

***Figure 1**: Re-operations for incomplete excision of breast cancer in 2013 and 2014*



The average length of time in between surgeries was 58.61 days for the mastectomy group (range 27-209 days) and 62.22 days for the cavity excision group, excluding those patients who had chemotherapy in between the surgeries (range 22-205 days). The total average time between surgeries was 60.41 days. This implies that patients undergoing re-operation undergo substantial delays to start adjuvant treatment.

Discussion

Surgery is the mainstay treatment of breast cancer with breast conserving therapy now being the preferred option. Breast conserving therapy (BCT) includes breast conserving surgery (BCS) followed by moderate dose radiation therapy to eradicate residual microscopic disease. An overview of completed trials and 9 prospective randomised clinical trials comparing BCT with mastectomy showed equivalent survival rates between the two approaches.2-11 The main aim of BCT is to provide a more cosmetically acceptable breast associated with a low rate of recurrence in the treated breast. 12 However in breast conserving surgery an adequate negative margin around the tumour is required to achieve full clearance. A positive margin may lead to further surgery which may either involve further local treatment (cavity excision) or mastectomy at a later stage.13 Reoperation may have consequences such as delaying adjuvant treatments, and increased rates of local and distal recurrence.14-16 Other consequences may include poorer cosmetic outcome and emotional distress which may delay recovery, with the resulting socioeconomic impact due to inability or delay in resuming work and also additional financial burden on the healthcare system.17

The latest NCCN guidelines state that for DCIS a margin status of less than 1 mm is considered inadequate, 10mm is considered a good margin but may affect cosmetic outcome. If the margin is between 1-10mm, the wider the margin the lower the local recurrence rate. For margins of less than 1 mm between the fibroglandular boundary (i.e. chest wall or skin) re-excision is not mandatory. However, this may require higher radiotherapy doses postoperatively.18 In infiltrating carcinoma, a negative margin is considered as 'no ink on tumour' as described by the 2014 Society of Surgical Oncology – American Society for Radiation Oncology Consensus Guidelines on Margins.19 Positive margin requires re excision in the form of further breast conserving therapy if appropriate or mastectomy, because there is increased risk of ipsilateral breast tumour local recurrence. There is still controversy regarding the appropriate margin however most surgeons take this to be 2mm. 20

It has been shown that 25% of local recurrences are associated with survival reduction at 20 years.2 Loco-regional recurrence is a product of sufficient tumour volume reduction (a clear margin is a surrogate marker), tumour biology, radiotherapy and systemic treatment. There are no prospective randomized trials that directly address the influence of margin width on local recurrence or define an optimal marginal width. What constitutes an acceptable margin must be individualized within the context of the tumour size, biology, stage and planned treatments.1

Reoperation rates after breast conserving surgery can be high, with rates of 17% to 68% quoted in various studies.21-28 Women having an in situ component were more likely to have at least one reoperation.29 The results from our unit compare well with these figures.

Our unit strives to decrease re-operation rates by following the recommendations of the Consensus Conference Toolbox to reduce lumpectomy reoperations and improve cosmetic outcome in Breast Cancer Patients of the American Society of Breast Surgeons. 30

Pre-operative imaging is done with full-field digital mammography and ultrasound as needed. MRI is used for patients with lobular carcinoma. All patients undergo breast biopsy before surgery and they are discussed at a multi-disciplinary team meeting that includes surgeons, radiologists, pathologists and oncologists. Non-palpable breast lesions are localized, and multiple wires or seeds are used for large lesions, multifocal tumours and extensive DCIS. Oncoplastic surgical techniques allow resection of larger amounts of breast tissue and this may include contralateral breast symmetrization surgery. All operative specimens are oriented by placement of sutures at surgery, a short suture is used to label the superior margin, a medium suture for the medial margin and a long suture for the lateral margin. All specimens are weighed to facilitate reconstruction when necessary. When the lesion is not palpable the specimen is

labelled with metal clips (Ligaclips™) and radiographed. This will document that the lesion has been removed and assessment of the margin. A cavity shave is performed if the margin is "close". We do not perform routine cavity shaves of side walls or intraoperative pathology assessment of lumpectomy margins.

Not all patients who have positive or close margins in the first operation are found to have residual tumour at the second operations. Rates of 18.8% to 33% have been quoted, while we report residual tumour in 49% of re-operated patients.20,22 Residual disease has been associated with multifocality but no other associated factors have been identified.22

Patients treated with repeat BCS had similar outcomes to those who underwent mastectomy. This was shown by a retrospective review and a prospective study which both showed no significant difference in survival rate following both management options i.e. mastectomy versus repeat BCS.31, 32

Our study compared two groups of women who underwent further excision after their initial breast-conserving surgery, for close or involved margins with tumour or in-situ disease. Some underwent a cavity excision while others had a mastectomy as their second surgery. Patients undergoing cavity excision were found to have residual tumour in 35% of cases compared to 68% of patients with residual tumour in the mastectomy group (p=0.025). This implies that mastectomy is more likely to result in a positive result and therefore more likely to result in complete histological excision than breast conserving cavity excision. It may also imply that in repeat cavity excision the surgeon might not manage to excise residual disease as this may be difficult to localize. There was also a significant difference in the initial tumour size, as those patients who underwent a mastectomy as a second procedure had larger average initial tumour size (p=0.03). This implies that a larger initial tumour size may influence the decision to perform a mastectomy as a second surgery if this is required.

Limitations of this study include a small sample size of re-operated patients and the retrospective nature of the study.

Lateral margin cavity shave during the initial breast conserving surgery has been shown to decrease the re-operation rates for margin clearance but the excised volume is increased and this may unnecessarily compromise cosmetic outcome.21,29,33-35 Intra-operative margin assessment using frozen section reduces re-excision rates but this is not widely available.36 A commercially available RF spectroscopy probe (MarginProbe) has been shown to decrease re-operation rates.37 Our unit proposes to study these three techniques in an effort to further improve our re-operation rate.

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