

# Excision Margins in Breast Conserving Surgery

Noel Cassar, Paul Torpiano, Joseph Debono

## Abstract

**Objective:** The ideal excision margin in breast conserving surgery is still a matter of debate. We aim to see if there is any correlation between increasing excision margin distance and local recurrence rate.

**Materials and Methods:** Patients who had breast conserving surgery at Mater Dei Hospital in 2009 had their notes reviewed retrospectively. Patient demographics, including the excision margins were recorded. Local recurrences within a 3 year follow up period were noted. Chi square was used to compare categorical data and a p value of less than 0.05 was considered statistically significant.

**Result:** 91 patients were recruited into the study. 74 patients (81.5%) had negative margins (>1mm), 10 patients (11%) had close margins (<1mm) while 7 patients (7.5%) had positive margins. 5 patients (5.5%) had local recurrence. The highest recurrence rate (14%) was in patients with positive margins, and no statistical significant difference in recurrence rates was noted with wider excision margins.

**Conclusion:** As long as the margins are negative, increasing excision margins will not result in a better local recurrence rate.

## Keywords

Breast Cancer, Breast-conserving surgery, Local Recurrence, Surgical Margin

## Introduction

Breast conserving surgery, thus avoiding mastectomy, has become the standard of treatment in early breast cancer (Stage I and II tumours).<sup>1,2</sup> Breast conserving treatment aims at achieving an acceptable cosmetic result whilst at the same time achieving good local control of disease, thus avoiding local recurrence. Debate still exists however as to what constitutes the ideal excision margin, i.e. the minimum distance between the frontline of the tumour and the edge of the resected specimen, with proposed distances varying from less than a millimetre to over a centimetre. Studies have shown that patients with involved margins (i.e. tumour at the edge of the resection) have a higher incidence of local recurrence, with a relative risk of 1.4 to 9 fold.<sup>3-9</sup> However how much normal tissue around a tumour needs to be removed (i.e. the excision margin) is still a matter of contention between surgeons. In a 2007 UK questionnaire survey, 65% of surgeons wanted a margin of 2mm or more, 24% wanted a margin of at least 1mm, whilst 7% were ready to accept margins of less than 1mm as long as there were no tumour cells touching the margin.<sup>10</sup>

The aim of this study was therefore to see if there is any correlation between increasing excision margin distance and the rate of local recurrence.

## Materials and Methods

Patients who underwent breast conserving surgery at Mater Dei Hospital in 2009 under the care of a consultant general and breast surgeon (JD) were recruited into the study. A retrospective study of their notes was done. Surgery was carried out within a dedicated breast unit where decisions are taken within the framework of a specialised multidisciplinary setup consisting of surgeons, pathologists, oncologists, physiotherapists and breast care nurses.

Patients who had locally advanced tumours (Stage III and IV), recurrent disease, or had missing information in their notes were excluded from the study. Surgery was carried out by the consultant or under his direct supervision. Patient demographics were collected and any local recurrence during the 3 year follow up period was noted. Chi-square was used for comparison of categorical data and a p value of <0.05 was considered significant.

## Results

91 patients were recruited into the study, with a

**Noel Cassar** MD, ChM (Edin), FEBS (GenSurg),\*  
FRCSEd (GenSurg)  
Senior Clinical Fellow in Minimal  
Access/Upper GI/HPB Surgery  
King's College Hospital NHS Foundation Trust  
London  
noel\_mt@yahoo.com

**Paul Torpiano** MD  
Basic Specialist Trainee in Paediatrics  
Mater Dei Hospital  
Msida, Malta

**Joseph Debono** MD, FRCSEd, FRCS (GenSurg)  
Consultant General and Breast Surgeon  
Chairman, Department of Surgery  
Mater Dei Hospital  
Msida, Malta

\*Corresponding Author

mean age of 60.2 yrs (range 32 – 87). Mean size of tumour was 20.5mm (range 3 – 63). Most tumours were grade 2 invasive adenocarcinomas (55%). Their characteristics are shown in Table 1. All patients were female. Most patients (81.5%) had negative margins, i.e. tumour not touching the edge of the resected specimen (table 2). Amongst these patients with negative margins (i.e. complete excision of tumour), there were varying distances of negative margins, as can be shown from table 3. Ten patients (11%) had close margins, i.e. the tumour cells were within less than 1mm from the edge, whilst seven patients (7.5%) had positive margins, i.e. tumour cells were touching the edge of the resected specimen.

Table 1: Patient Demographics

	No. of patients
Age (yrs)	
30-50	22(24%)
51-70	44(48%)
71-90	25(28%)
Size of tumour (mm)*	
0-20	48(60%)
21-50	27(34%)
51-70	5(6%)
Tumour grade	
Grade 1	20(22%)
Grade 2	50(55%)
Grade 3	11(12%)
DCIS	7(8%)
LCIS	3(3%)
Lymph node Involvement**	
Negative	45(57%)
1-3	24(31%)
4-6	5(6%)
7 or more	5(6%)

\*the size of some tumours was not available

\*\*Not all patients had lymph node removal

Table 2: Excision Margins

	No. of Patients
Negative	74 (81.5%)
Close	10 (11%)
Positive	7 (7.5%)

Table 3: Negative Margins

mm	No. of Patients
1-2	12 (16%)
3-5	11 (15%)
6-10	14 (19%)
>10	37 (50%)

Table 4: Recurrence Rates

Margin Distance (mm)	Number of recurrences*	Recurrence Rate (%)
Positive	1/7	14
Close	0/10	0
1-2	0/12	0
3-5	1/11	9
6-10	0/14	0
>10	3/37	8

\*denominator implies patients in that category  
 $p=0.34$

Five patients (5.5%) had local recurrence. As expected, the patients with positive margins had a higher recurrence rate (14%). Wider excision margins did not translate in a lower local recurrence rate. In fact there was no statistically significant difference between the various categories ( $p=0.34$ ).

## Discussion

This study is in keeping with published literature on the topic. A systematic review on the effect of margin distance on local recurrence by Singletary<sup>3</sup> found that centres who used 1 or 2mm margins, as opposed to wider excision margins, actually had some of the lowest recurrence rates. A large meta-analysis on the topic by Houssami et al.<sup>4</sup> confirmed that wider margins do not correlate with reduced local recurrence rate, but rather had a negative impact on cosmesis as more tissue is removed. Interestingly this meta-analysis also confirmed an increased rate of recurrence for close (i.e. less than 1mm) margin. Compared with a close margin, a 1mm margin was significantly associated with a lower recurrence rate. Unpublished data from Edinburgh is also in keeping with this view.<sup>11</sup> Although the issue is far from closed, international opinion and current evidence therefore favours a 1mm excision margin as the minimum acceptable margin for patient safety.

There are a number of drawbacks in this study. This

was a retrospective study with all the limitations such a study entails. Also we had a relatively small number of patients (91) when compared to other studies. For instance we did not find any significant difference between close margins and negative margins. Even the 14% recurrence rate for positive margins was not statistically significant. However we actually had only five recurrences in all, with only one in the positive margin group. With these small numbers, it is difficult to produce statistically robust results. In addition two of the patients who had recurrence had DCIS (in the more >10mm group), and one might argue that these shouldn't have been added to the study as DCIS is a separate entity from invasive cancer. The follow up period was also relatively short at three years.

This study is however in accordance with international published data that as long as the excision margins are negative, by increasing excision margin distance, the recurrence rate is not affected. With respect to patients with positive margins, further studies are necessary to identify patients who will not require further excision.

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