Why Taranaki women choose to have a mastectomy when suitable for breast conservation treatment

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ABSTRACT

Purpose

Breast conservation treatment (BCT) rate is recognized as a marker of surgical practice. An historically low BCT rate may reflect the requirement for Taranaki women, to travel for adjuvant radiotherapy. The aim of this study was to determine the reasons Taranaki women with breast cancer choose mastectomy or BCT.

Methodology

Prospective information, on all women presenting with breast cancer between May 2004-Dec 2006, was collected on a standardised questionnaire.

Results

BCT was offered to 68% (140 of 206), but chosen by only 46% (n=64) of suitable patients. If radiotherapy had been available locally 23% (17 of 73) of patients who chose mastectomy, would have instead opted for BCT. A quarter of each group of women thought they knew their surgeon's treatment preference and most chose this option. Fear of local recurrence and need for further surgery were significantly more important to those choosing mastectomy over BCT whereas what the surgeon was perceived to prefer was more important to those choosing BCT.

Conclusion

The rate of BCT in Taranaki is low, despite being offered by surgeons to the majority of patients. Local availability of radiotherapy may increase the BCT rate to a level more consistent with larger centres in New Zealand. Care must be taken to provide neutral patient guidance.

Keywords: Mastectomy; Surgical Procedures, Operative; Mastectomy, Segmental

INTRODUCTION

Breast conservation treatment (BCT), consisting of wide local excision and radiotherapy has an equivalent survival rate when compared with a modified total mastectomy. There is an increased rate of local recurrence or perhaps a new primary in the remaining breast in the BCT group(1-3). The absence of a survival benefit from mastectomy has led to the increasing use of BCT for women with breast cancer. BCT rates are increasingly becoming a performance marker of a breast surgeon or unit but vary nationally and internationally (4). Rates also vary between low volume versus high volume units(5, 6) and rural versus urban areas with particular reference to the distance to the nearest radiotherapy unit (7). The Auckland Breast Cancer Study Group, based in the largest centre in New Zealand has a BCT rate of 44.8% (8). Wairau Hospital, providing for a small provincial centre in NZ without radiotherapy facilities, has a BCT rate of 58.6%(9).

In the province of Taranaki, New Zealand there are no radiotherapy facilities available. The women are seen by a visiting radio-oncologist as an outpatient but they must then travel to Palmerston North, approximately 3.5hours by road for their treatment. A commuting bus and accommodation for the patient and a support person for the five weeks of their treatment are provided.

There are currently four General Surgeons and one Specialist Breast Care Nurse in the Taranaki region, all working in both public and private sectors. Data over the period 2002-2003 revealed a low BCT rate (19%, 24/127).

In patients suitable for both, all four surgeons believe they are impartially informing the women of Taranaki when offering the choice between mastectomy and BCT. They were

concerned that the low rate of BCT in the region would reflect poorly on their surgical unit. The absence of local radiotherapy facilities was hypothesised to be important for women choosing mastectomy but it was recognised that the womens' decision making was likely to be multifactorial.

The primary aim of this prospective, questionnaire based study was to examine if the absence of radiotherapy facilities locally influenced Taranaki women to choose mastectomy over BCT. The secondary aim was to examine other factors that were important to women choosing BCT or mastectomy.

METHODS

Prospective information, on all women presenting with breast cancer between May 2004-Dec 2006 in the province of Taranaki, NZ, was collected on a standardised questionnaire. The questionnaire was developed in discussion with the surgical department as a whole, with input from other specialties after presentation of the protocol at the Taranaki Base Hospital Grand Round. Minor adjustments were then made at the suggestion of the Ethical Approval Committee. (Figure 1)

Surgeons completed an audit form for all patients with breast cancer on BCT/mastectomy suitability to ascertain local case mix.

Patients eligible for both BCT and mastectomy were given impartial information on the risks and benefits of each option by the consultant surgeon or their registrar as they would in their usual practice. No surgeon at any consultation was aware of directing the patients towards one option or another when the patient was considered suitable for either.

After factual advice from their surgeon, patients suitable for both BCT and mastectomy completed a questionnaire on reasons for their treatment preference. The questionnaires were completed preoperatively and were collected by the Breast Care Specialist Nurse, usually face to face but occasionally by telephone if the decision was made at the last minute (Figure 2). Ethical Committee Approval was sought and granted prior to recruitment.

Figure 1: Questionnaire format

DEMOGRAPHICS:
(Please circle appropriate answer)
Age (years): <40 40-49 50-59 60-69 70-79 80-89 90-99
Ethnicity: Maori European/New Zealander Asian Pacific Island
Other (please specify): _____

1. How important was each of the factors (in the table below) in your decision to have a mastectomy?
Please circle the appropriate number in the table below

	N o t important	**A little important**	**Important**	**Very Important**	**Do not know or do not wish to answer**
What you think your body will look like	1	2	3	4	
What you think others will think of your body	1	2	3	4	
What you think your Surgeons preference is	1	2	3	4	
What you think your Partners preference is *If you do not have a current partner tick here* □	1	2	3	4	
Advice of others with breast cancer *If you do not know anyone with breast cancer tick here* □	1	2	3	4	
Appearance of others with breast cancer *If you do not know anyone with breast cancer tick here* □	1	2	3	4	
Possible need for further surgery with Breast Conserving Therapy (BCT)	1	2	3	4	
Possibility of further disease in the remaining breast tissue with BCT	1	2	3	4	

Breast conserving therapy includes radiotherapy whereas most mastectomy patients do not require radiotherapy.
How important where the following factors in your decision to have a mastectomy?

	N o t important	**A little important**	**Important**	**Very Important**	**Do not know or do not wish to answer**
Distance to travel for radiotherapy	1	2	3	4	
Being away from family/whanau	1	2	3	4	
Possible side effects of radiotherapy	1	2	3	4	
Financial loss e.g. employment/paying caregivers/travel costs while receiving treatment	1	2	3	4	
Wait to start Radiotherapy after operation	1	2	3	4	
Being exposed to Radiation in general	1	2	3	4	

2. If radiotherapy was available in New Plymouth would you have Breast Conserving Treatment?
Please circle one **YES** **NO**

3. Has your surgeon said specifically which operation they would prefer you to have? *Please circle one*
YES **NO**

4. What do you think your surgeon's preference is?

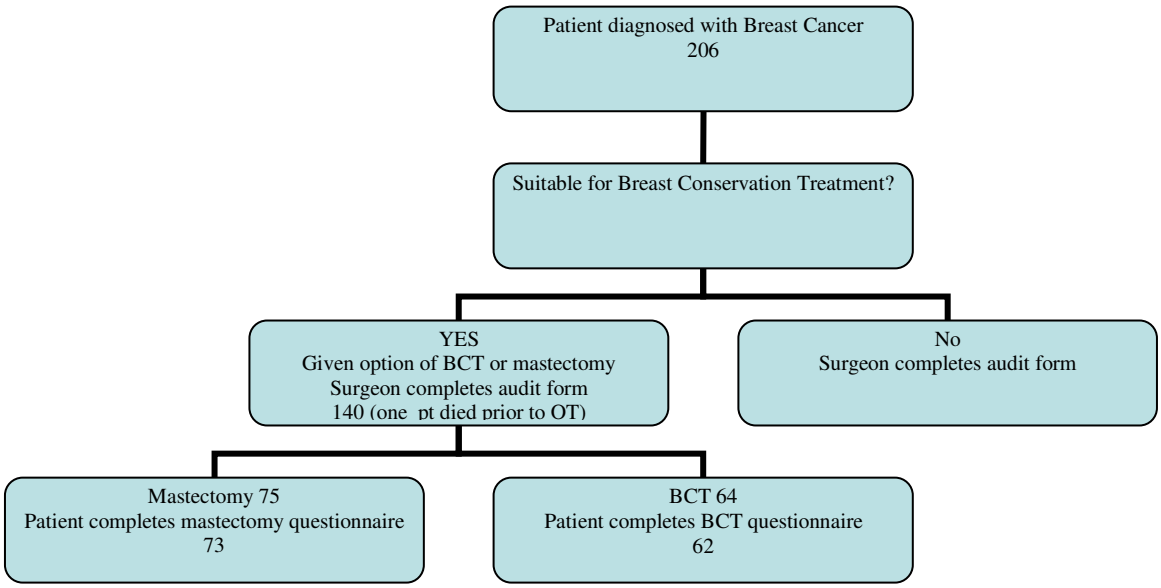
Please circle one
Breast Conserving Treatment
Mastectomy
Unknown

Please comment on anything else you feel has been important for you in your decision making regarding the management of your breast cancer:

Thank you once again for your time and patience in filling out this questionnaire.

The questionnaire given to women who had the choice of BCT but chose mastectomy. The women who chose BCT had the same questionnaire but without the second table with questions regarding radiotherapy.

Figure 2 : Study Protocol



Patient base:

All patients with breast cancer diagnosed in General Surgical Outpatient Clinics or as inpatients in both public and private sectors in the Taranaki region, between May 2004 and December 2006 were eligible for inclusion.

Inclusion criteria:

All clinically $T_{1\text{-}2}$, N_0, N_1, M_0 Breast Cancers where, in the opinion of the operating surgeon an acceptable cosmetic result is obtainable with wide local excision. A single primary or two small lesions immediately adjacent to one another.

Exclusion criteria:

Widespread associated DCIS, multiple primary tumours. Based on the ability of the patient to have post operative radiotherapy:

Pregnancy; collagen vascular diseases; previous therapeutic irradiation to the breast or thorax; physical disabilities preventing patient lying flat or abducting the arm.

To reduce bias due to wording the patient must have already made a firm decision before completing the questionnaire. Basic demographic data was requested with age recorded in 10 year age groups. All women were asked to rank factors surrounding their body image, surgeons/partners preference, advice/appearance of others with breast cancer, the possibility of further disease in the remaining breast and need for further treatment. They were also asked whether their surgeon had said specifically which operation they would prefer them to have and if radiotherapy was available in Taranaki would they have changed their mind. Those women who chose to have a mastectomy were asked to rank further factors regarding radiotherapy.

Statistical analysis:

The women were asked to rank the factors from 1(not important) to 4(very important). Each factor had a column for "do not know/do not wish to answer/no partner". Raw data is therefore presented to show the number of women responding to each question. For analysis the answers 1&2 were grouped together as low importance and those with 3&4 as high importance. To compare the importance of the various measures between the two treatment groups, a logistic regression was used to adjust for the different age distribution in the groups. The number of women in the two treatment groups are sufficient to detect differences of 25% or greater with a power of 80% at the 5% level of significance.

Only the women who chose mastectomy were given the questions regarding radiotherapy so no comparative data is available for these results.

RESULTS

In total 206 women were diagnosed and had audit forms completed between May 2004 and December 2006. Audit forms were checked against the monthly multidisciplinary breast meeting patient list. Of the 206 women diagnosed the majority had node negative T1 tumours (Figure 3) with 140 (68%) deemed appropriate for BCT by their surgeon, the reasons for not being appropriate are shown in Table 1. Overall 64 of 206 women (31%) chose to have BCT, 46% (64 of 140) of those given the choice. Seven women did not have surgery in Taranaki, only one of whom was appropriate for BCT; 2 had surgery outside of Taranaki; one was receiving neoadjuvant therapy at time of analysis; two patients died prior to an operation (one of cardiovascular disease who was appropriate for BCT, the other with metastatic breast cancer); two declined surgery, one of whom had metastatic disease. Questionnaires were completed by all women approached with only two from each group missing on final analysis. We therefore present the data from 62 women who chose BCT and 73 who chose mastectomy.

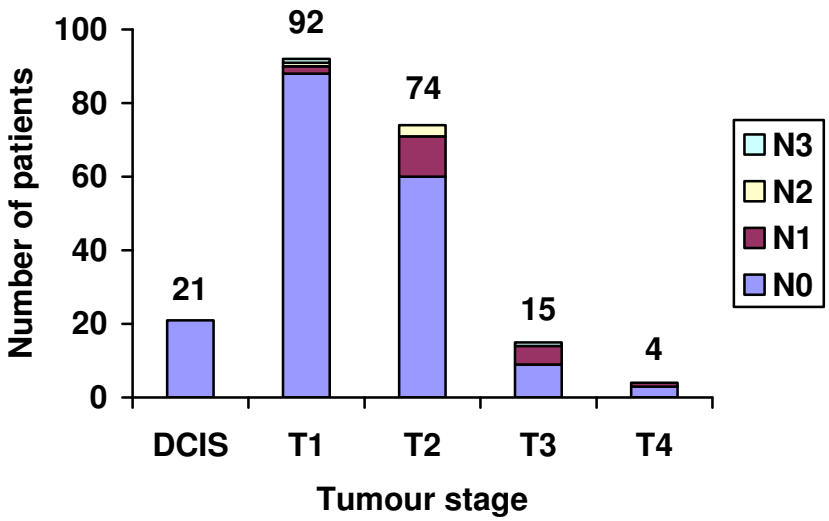
For those women choosing BCT 90% found 'what you think your surgeon's preference is' of high importance compared to 73% in the mastectomy group (p=0.008). For those women choosing mastectomy 94% found 'the possibility of further disease in the remaining breast' of high importance compared to 62% in the BCT group (p=0.0001) and 84% found 'the possible need for further surgery' of high importance compared to 66% in the BCT group (p=0.006), the difference, having been adjusted for age, being significant in each of these factors (Table 2).

The women who chose to have a mastectomy were asked to rate further factors relating to radiotherapy treatment. All factors seem to be important to these women

except for financial loss. Once financial loss was excluded from the analysis, the women fell into two groups – those finding the distance to travel and time away from family very important and those finding the side effects, waiting time and exposure to radiation important. Within each group if the respondent rated one of these variables of high importance they were more likely to rate the other factors in the group important (Table 3).

Of the 73 women who were appropriate for BCT but chose a mastectomy, 17(23%) stated that they would change their mind if radiotherapy facilities were available locally in Taranaki. In both the BCT and the mastectomy groups nearly a quarter (n=14,16) of women stated that the surgeon had said specifically which option they thought the women should choose. When asked if the women thought they knew what the surgeon's preference was (even if not stated explicitly) 27(37%) of the mastectomy group said the surgeon wanted them to have a mastectomy compared to only 2(3%) of the same group thinking BCT was preferred. Within the BCT group 34(55%) of the women thought the surgeon preferred them to have BCT, none of these women thought the surgeon wanted them to have a mastectomy (Table 4).

Figure 3: Staging of all breast cancers



Tumour and nodal stage for all breast cancers diagnosed during the study period as shown on the audit forms completed by the diagnosing surgeon. Totals for each tumour stage given at the top of the columns.

Table 1: Reasons deemed not appropriate for BCT

Size of tumour clinically	36
Size of tumour imaging	13
Good Cosmetic result not achievable	17
Multifocal Disease	15
Unable to have radiotherapy	1
Prev hx of breast ca in ipsilateral breast	5
Stage of Tumour	13

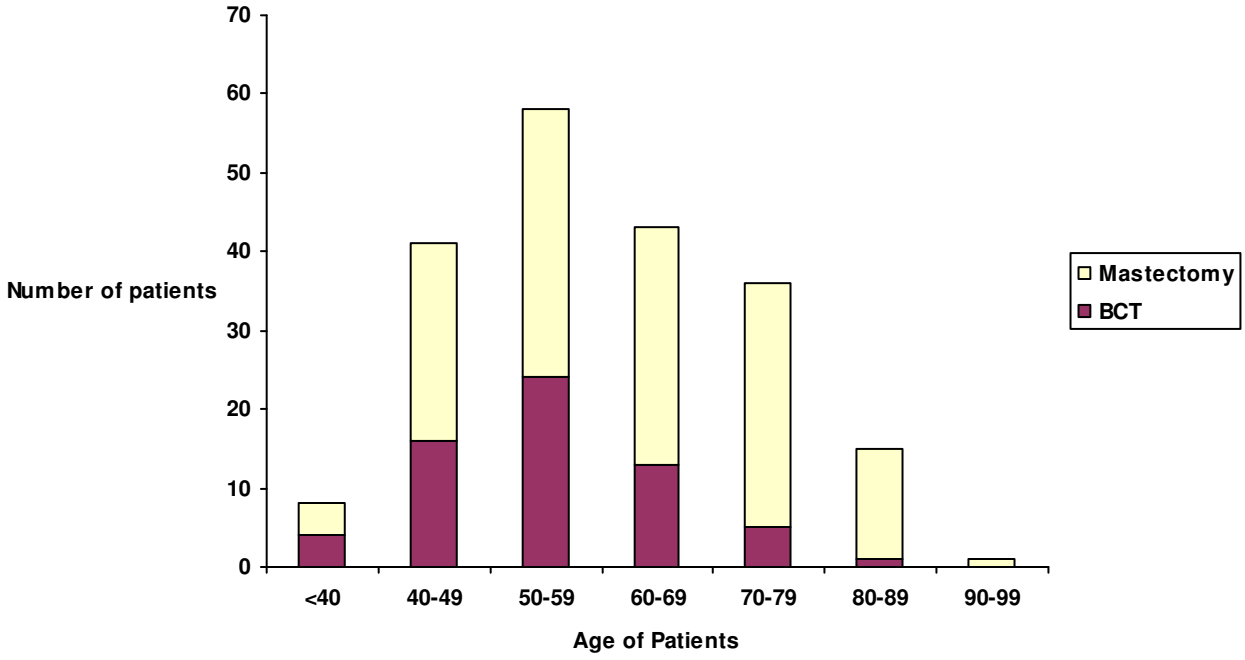
Each patient may have more than one reason for not being appropriate for BCT. These were collected on the audit form completed by the diagnosing surgeon

Table 2: Summary of questionnaire results

	BCT n(%)		Mastectomy n(%)		
	Low importance	High importance	Low importance	High importance	P value
Body will look like	35(56)	27(44)	58(79)	15(21)	0.057
Others will think	47(77)	14(23)	65(89)	8(11)	0.543
Surgeon's preference **	**5(10)**	**44(90)**	**12(27)**	**33(73)**	**0.008**
Partner's preference	26(57)	20(43)	23(46)	27(54)	0.319
Advice of others	22(43)	29(57)	25(45)	31(55)	0.723
Appearance of others	34(74)	12(26)	43(81)	10(19)	0.853
Need for further surgery **	**21(34)**	**40(66)**	**11(16)**	**58(84)**	**0.006**
Further disease in breast **	**23(38)**	**38(62)**	**4(6)**	**65(94)**	**0.0001**

The answers 1&2 are summed together as low importance and 3&4 as high importance, absolute numbers given with percentages in brackets. A logistic regression which has adjusted for the differing age distribution was performed to determine differences between the BCT group and the Mastectomy group, p values given in the final column. Surgeon's preference is significantly more important to the BCT group. Need for further surgery and further disease in the remaining breast are significantly more important in the mastectomy group. Not all women gave an answer to each factor so totals of absolute numbers differ. Percentages are given from total answering each question.

Figure 4: Age groups of patients



The BCT patients were significantly younger than the mastectomy group.

Table 3: Importance of radiotherapy variables

	Low importance	High importance
Financial Loss	45	27
Distance to travel	29	42
Time away from the family	26	47
Side effects	25	47
Wait for radiotherapy	16	52
Exposure to radiotherapy	26	44

Those answering 1 (not important) or 2 (a little important) were grouped as low importance and 3 (important) or 4 (very important) as high importance. Absolute numbers presented in table. Only those choosing mastectomy were asked to rate these variables so no comparative data is available.

Table 4: Surgeons perceived preferences

What patients perceived surgeons preference was		BCT group	Mastectomy group
	BCT	34	2
	Mastectomy	0	27

Patients perceptions of what they thought their surgeons wanted. For the mastectomy group total n= 73 and BCT n = 62, however only 40% of the mastectomy group and 55% of the BCT group were able to answer this question.

DISCUSSION

In women presenting with breast cancer to surgeons in Taranaki, 68% were deemed appropriate for BCT. Of this group of women 46% opted for BCT to give an overall BCT rate of 31%. This study has shown that the absence of local radiotherapy facilities played a role in the low BCT rate in Taranaki. The overall BCT rate would have risen to 39% if radiotherapy facilities had been locally available as 17 women would have changed their decision from mastectomy to BCT. This is still low but more comparable to both national and international rates (4, 8, 9). The distance to radiotherapy facilities (which is a surrogate for not only travel but time away from work, home and supporting family or friends) has been reported previously to be a potential factor in low BCT rates. Meden et al(10) found an association between distance to radiotherapy facilities and BCT with a 14.3% rate in rural areas (45 miles from radiotherapy facilities) compared to 41.7% in urban areas, n=66. This larger Taranaki study has not compared a rural to an urban group of women but has shown that within a province of New Zealand there are various subsets of women, nearly a quarter of whom find the lack of local radiotherapy facilities prohibitive to BCT.

In this prospective study with excellent compliance, the fear of recurrence and the possible need for further surgery in the affected breast were found to be significantly more important to those women choosing to have a mastectomy compared with those choosing BCT. A number of mostly retrospective, questionnaire based studies with poor compliance have looked at the psychological issues surrounding BCT versus mastectomy. Apart from body image, when naked or in bathing attire, being better in those women who had BCT, there have been no significant differences found between the two groups in psychological health (11-13). It is important to note that body image

deteriorates in the BCT group over time in keeping with ongoing radiotherapy changes to the remaining breast (11, 14).

Fallowfield et al(15) reported that patients treated by surgeons who offered the choice, no matter what they chose, initially showed less depression than those treated by surgeons who favoured one or the other (p=0.06), losing significance at 12 months. The BCT group of women ranking what their surgeons' are saying more highly than the women choosing mastectomy is of great relevance when 55% of the BCT group thought they were doing what their surgeons preferred. Indeed, 23% of women state that the surgeon had directly told them which option would be best. This is despite the fact that no surgeon in this study was aware of directing their patients to either BCT or mastectomy if they were suitable for either. In the days of informed, impartial consent this is of great concern. BCT rates are becoming a marker of performance in breast surgery but it should be remembered that a group of women find the higher rate of recurrence and possible need for further procedures of high importance. We must avoid either consciously or unconsciously influencing women to choose one option over the other. Giving women unbiased information both verbally and in the written form, allaying any unnecessary fears and allowing them to choose their preferred treatment gives women empowerment which is likely to result in a more satisfied post operative patient.

There was an increase in the BCT rate in Taranaki from 19% (24/127) in 2002-2003 to 31% (64/206) in the period 2004-2006 which may be due to the larger numbers or an observational effect. All surgeons believe they give impartial advice but it is difficult not to voice an opinion when directly asked or to mask our body language from a

perceptive patient. Conversely when trying not to swing a patient in one direction we may be guilty of giving the impression we would prefer the alternative option.

The number of women in each tumour staging group are comparable to national data (8). It was reassuring to find that only 21 (10%) women presented late with T3-T4 disease, although 35 women were deemed inappropriate for BCT on the grounds that their tumour size was too big clinically. These women may include a group with T2 tumours and small breasts. The exclusion criteria do allow some criticism regarding the ability of the surgeon to decide when a reasonable cosmetic result is obtainable which was attempted to be overcome by concurrently auditing all breast cancer patients. Every eligible woman consented to complete a questionnaire. The column "do not know/do not wish to answer" or "no partner/do not know anyone with breast cancer" resulted in uneven numbers of women responding to each question. However, the need for further surgery and potential for further disease in the remaining breast, the most significant factors, each had a 94% response rate.

The breast care specialist nurse was the one common factor in patients' care, a second nurse occasionally deputised during leave. We believe our nursing staff to be impartial and to play a supportive role rather than an instrumental role in the decision making process of each woman but this could be an area of bias. As the nurse was the member of the study group administering the questionnaires it was deemed inappropriate to include questions regarding their input. Future study in this area would be of interest.

Demographic data was important to ascertain, although the numbers are too small to state any difference between age brackets or ethnicity, we were able to adjust our analysis for a significant difference in age grouping.

In conclusion, within the Taranaki province surgeons classified 68% of patients as being suitable for BCT, with an actual BCT rate of 31% (64/206). The rate would have increased to 39% had radiotherapy facilities been available in the region. Of those women given a choice, 46% chose BCT over mastectomy with the surgeons perceived preference being very important. In the women choosing mastectomy over BCT, the risk of further disease in the remaining breast and potential need for further surgery were significantly more important than those choosing BCT.

Our prospective study has shown how easy it is to lead patients in their decision making process even when attempting to give them the choice. What may be important to the surgeon is not necessarily as important to the patient. However, a large proportion of patients, in particular those choosing BCT, will choose the option they believe their surgeon prefers.

The rate of BCT in Taranaki is low, despite being offered by surgeons to the majority of patients. Local availability of radiotherapy may increase the BCT rate to a level more consistent with larger centres in New Zealand. Care to provide neutral patient guidance rather than fixation on a surgical units' breast conservation rate is paramount.

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