



Original article

Influences on decision for mastectomy in patients eligible for breast conserving surgery



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ABSTRACT

Increasing emphasis is being placed on low mastectomy rates. Our objective was to investigate factors influencing rates of mastectomy and breast conserving surgery.

A group of 171 patients (27%) who could have had breast conserving surgery (BCS) but chose mastectomy was identified as well as all patients who underwent BCS over a 6 year period. A questionnaire asking patient's attitudes to factors which could influence their choice of operation was compiled and sent to this study group.

Results showed surgical advice to be the most important factor, with significantly more influence in BCS patients. No significant difference was found in distance to treatment between the groups. Shorter duration radiotherapy would have made 47% of mastectomy patients more likely to accept BCS.

BCS rates are a poor measure of quality of patient care. More emphasis should be put on choices offered to patients rather than overall uptake of a specific choice.

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Introduction

It is now well established that breast conserving surgery (BCS) followed by radiotherapy has an equivalent overall survival rate and disease free survival rate to mastectomy [1–4]. BCS also has the advantage of improved cosmetic outcome, resulting in lower levels of psychological morbidity and an improved body image, sexuality and self-esteem compared to mastectomy [5,6]. Recent literature has even suggested a survival advantage for BCS compared with mastectomy [7,8]. Both the Association for Breast Surgery in the UK and the National Institute for Health in the USA recommend that BCS should be discussed with all patients with early breast cancer [9,10]. A low mastectomy rate is increasingly being seen as a performance indicator for breast units. Insurance companies in the US are interested in using BCS rates as a method of assessing quality of breast cancer care [11].

Mastectomy rates vary across the UK, Europe and America [12,13]. The European Breast Cancer Conference in Hamburg 2004 [14] reported that the lowest mastectomy rates were observed in France

(28%), the UK (31%) and Belgium (37%). Somewhat higher rates were reported in Italy (41%), Germany (43%), Switzerland (47%), and the Netherlands (48%). The highest mastectomy rates were found in the USA (56%), Spain (66%), and Poland (98%). There were multiple causes cited for the observed variations including cultural differences, ease of access to radiotherapy, doctors and patients attitudes, and the presence of a screening program. The UK has a screening uptake of over 70% and would be expected to have a lower mastectomy rate as more cases would be detected at an earlier stage. The United States does not have a cohesive screening program, and the mastectomy rates vary from 33 to 56% [11,15]. Australia does have a screening program but with a suboptimal uptake of 54.9% [16].

There is little published data on Australian mastectomy rates in the literature. Un-published data from the BreastSurgANZ Breast Cancer Audit (personal communication, past president) gave a mastectomy rate of 44% in patients with invasive disease. The Royal Adelaide Hospital is a tertiary referral centre for breast surgery in a very large, sparsely populated state with a referral base extending interstate as far as Alice Springs (>1000 km) and Darwin (>2000 km). A mastectomy audit in our breast unit of both invasive breast cancer and DCIS revealed an average mastectomy rate between 2005 and 2010 of 48% (range 42–52). This is despite a policy of patient education and counselling regarding operative options and risk by both the surgeons and the breast care nurse. Patient education included but was not limited to information from cancer Australia, and cancer council booklets as well as those produced by our hospital and unit. Patients also have access to a complete range

Abbreviations: Mx, mastectomy; BCS, breast conserving surgery; BreastSurgANZ, Breast Surgeons of Australia and New Zealand.

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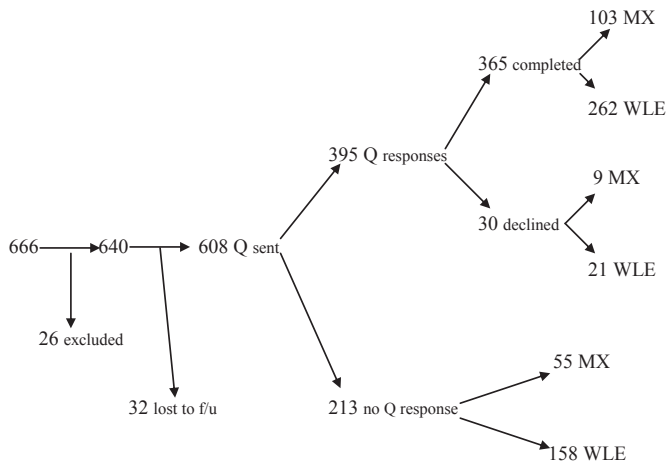


Fig. 1. Flow diagram of breakdown of patient cohort.

of level 1 and level 2 oncoplastic techniques as well as a reconstruction clinic if necessary.

The influences on mastectomy rates in Australia have not previously been investigated. The aim of this paper was to investigate factors influencing rates of mastectomy and breast conserving surgery in patients who had a choice and whether there is potential to modify these factors in order to improve breast conserving rates in the future.

Materials and methods

This study received approval from the ethics committee. All patients undergoing breast surgery between 1st January 2005 and 31st December 2010 were identified using a prospectively collected internal hospital database. Patients were excluded if they were male and/or did not have breast cancer. Case notes and pathology reports of all mastectomy patients were reviewed. Clinical and pathological criteria were used to exclude patients who would have been unsuitable for breast conservation. These were multi-focality, central tumour and/or small breast, previous ipsilateral breast cancer (recurrence), tumours greater than 4 cm or prophylactic mastectomy. A new database was then constructed containing the study group of patients i.e. all female breast cancer patients who underwent BCS, and all female breast cancer patients who underwent mastectomy despite being suitable for breast conservation.

A questionnaire derived from an existing New Zealand questionnaire [17] was used to assess patient demographics (age and ethnic background), distance from treatment centre and patient's attitude to those factors previously cited in literature as important with regards to surgical decision making, such as fear of cancer recurrence [18], fear of adjuvant treatment, body image and surgical opinion [19]. Questions were also asked about radiotherapy and whether the practicalities associated with this such as time away from family, financial burden [20,21] and distance to treatment [17,20], affected their decision about their type of surgery. Finally the effect of changing radiotherapy schedules was asked in light of new trials of shorter regimens [22,23] (see Appendix 1).

The questionnaire was sent out to all women in the study group with a cover letter explaining the reason for the questionnaire and that response was strictly voluntary and considered informed consent to being part of this research. Non-responders were sent the questionnaire a second time after 4 weeks. Results were collated and stored on a secure database. Histology records were examined to determine tumour size, grade and lymph node status, for all female breast cancer patients treated during the study period. For the purpose of statistical analysis, the questionnaire responses were categorised as not important (not important + a little important) and important

Table 1
Questionnaire participants for female breast cancer.

Year	Number BCS	Number mastectomies	Total cancer operations	Mastectomy rate (%)
2005	38	10	48	21
2006	30	8	38	21
2007	38	16	54	30
2008	49	15	64	23
2009	49	18	67	27
2010	58	36	94	38
Total	262	103	365	
Average	44	17	61	27

(important + very important). The results were analysed using Logistic Regression models, with treatment/group effects expressed as Odds Ratios (measure of association). Statistical significance was assessed at the two-sided $p < 0.05$ level. Analyses were all univariate and no adjustment for multiple comparisons was made as only 2 groups were compared. Analyses were performed using SAS version 9.3.

Results

In total 666 patients had a mastectomy or breast conserving surgery of the breast between January 2005 and December 2010. Of the 666 patients, 26 were excluded as they did not meet the inclusion criteria (male, not breast cancer). During the study period 171 (27%) women out of a total of 640 were eligible for BCS but chose mastectomy. Thirty-two patients were deceased or lost to follow up. This left a cohort of 608 patients who were sent questionnaires, of whom 395 replied (65%) (see Fig. 1). Thirty of the respondents did not wish to participate leaving a total of 365 completed questionnaires (103 mastectomy and 262 BCS) (see Table 1). The non-responding cohort was similarly distributed (see Table 2). The average mastectomy rates in the responding group was 27% and that of the non-responding group was 24%. Not all questions were answered by all respondents. In particular several mastectomy patients said they could not comment on radiotherapy questions as it was not relevant to their case.

The tumour characteristics of all female breast cancers patients treated during the study period, including patients who were deceased and lost to follow up, are shown in Table 3. Mastectomy patients had larger tumours ($p < 0.0001$), higher grade tumours ($p < 0.005$) and a higher proportion were node positive ($p < 0.0001$) compared to the breast conserving surgery group.

There was no significant difference in age at diagnosis between the groups, with a mean age of 58 in the mastectomy group and 60 for the BCS patients (see Fig. 2). There was, however, a trend for mastectomy in patients less than 60 years of age and BCS in the older than 60 year age group (not statistically significant).

The majority of patients were Australian, European and British (>90%) with no significant difference in ethnic origin between the two groups (see Fig. 3).

There was no significant difference in the distance between home and cancer treatment between patients undergoing BCS and

Table 2
Questionnaire non-participants for female breast cancer.

Year	Number BCS	Number mastectomies	Total cancer operations	Mastectomy rate (%)
2005	37	13	50	25
2006	39	9	48	18
2007	35	13	48	25
2008	23	10	33	30
2009	39	12	51	23
2010	34	11	45	24
Total	207	68	275	
Average	35	11	46	24

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