

# Recent Changes in the Surgical Management of T1/2 Breast Cancer in England

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Following the results of a study undertaken in 1985, a second survey was undertaken to examine whether there had been any changes in England in the surgical management of patients with a T1/2/NOMO breast cancer. The major findings were that: (i) there was a significant increase in the number of surgeons who would undertake breast conservation surgery; (ii) there was a significant increase in the number of surgeons who would discuss breast reconstruction where mastectomy was the preferred form of treatment; (iii) that significantly more surgeons would offer the patient a choice of surgery when there was more than one surgical option; and (iv) that significantly more surgeons had access to a breast specialist nurse and/or a cancer counsellor. These changes are consistent with the recommendations of the 1986 King's Fund Consensus' Conference for breast cancer treatment.

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## INTRODUCTION

A QUESTIONNAIRE survey of consultant surgeons in England was undertaken to determine the preferred management of a hypothetical 40-year-old patient with a T1/2NOMO tumour in the upper outer breast quadrant. At that time, the common forms of surgical management were either simple mastectomy with or without axillary clearance (37%) or breast conservation (60%), with 18% being treated by wide excision, axillary clearance plus radiotherapy, and 17% treated by wide excision and radiotherapy alone [1].

Since this survey was undertaken, there has been a great deal of publicity in the lay and professional press about the management of patients with early breast cancer. The consensus statement produced by the King's Fund Forum [2] contained the following recommendations: (i) the possibility of reconstruction surgery should be discussed with all women in whom a significant loss of breast tissue is necessary (p. 946); (ii) there are strong arguments in favour of women's participation in treatment decisions .... counselling should be available, supplemented by a booklet or tape recording which may be taken home (p. 947); (iii) one surgeon in each health district should be encouraged to take primary responsibility for running and auditing a service for women with breast cancer. This was recommended on the basis that those surgeons with no special interest in breast cancer are less likely to be aware of trial results and other advances, and may also be less skilled in appreciating the need for information and psychological and practical support (p. 947).

Furthermore, the national breast screening programme has been introduced in the United Kingdom [3], and consequently, there is likely to be an increase in the incidence of ductal carcinoma *in situ* (DCIS) [4]. To quantify how this condition is being managed, and the extent to which the management of T1/2 tumours has changed since the publication of the results

from the first survey, a follow-up study to the first reported survey was undertaken.

## METHOD

The first part of the questionnaire contained the same questions as those used in the original survey. These were included to establish the numbers of newly diagnosed breast cancer patients treated in 1989 and 1990; the preferred form of surgery for a 40-year-old patient with a T1/2 NOMO tumour in the upper outer breast quadrant; the extent to which patients were offered a choice of surgery and, when offered a choice, the extent to which written information was provided; factors which influence the surgeon's choice of treatment; breast reconstruction; the availability of breast specialist nurses; and amount of time spent with the breast cancer patients in an out-patient clinic. The second part of the questionnaire contained questions designed to quantify the preferred treatment for DCIS. The results from this part of the questionnaire will be reported in a separate paper.

By writing to each Regional Health Authority, a list was obtained of the names and addresses of 873 consultant surgeons in England. The numbers in each Regional Health Authority were as follows: Northern, 70; Yorkshire, 75; Trent, 60; East Anglia, 29; North West Thames, 66; North East Thames, 85; South East Thames, 48; South West Thames, 47; Wessex, 46; Oxford, 48; South Western, 64; West Midlands, 129; Mersey, 40; and North Western, 66. The questionnaires were mailed during the period May to October 1991.

## RESULTS

The data were analysed using the SPSS package on a VAX mainframe.

### *Response to questionnaire*

Of the 873 mailed, a total of 468 responses were received by the end of December 1991; this represents a response rate of 54%. These comprised 443 questionnaires, with all/some questions answered, eight letters and 17 unanswered questionnaires. Stated reasons for non-completion were: surgeon retired ( $n = 14$ ), death of the surgeon ( $n = 1$ ), no time to complete the questionnaire ( $n = 2$ ), the surgeon being on sabbatical leave

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( $n = 1$ ), and the surgeon not treating breast cancer patients ( $n = 2$ ).

The results of the survey are based upon the 358 surgeons (81% of those who completed the questionnaire) who indicated that they treated patients with breast disease. Any discrepancy between the response to each question and the overall sample of 358 is due to missing data.

#### *Numbers of newly diagnosed breast cancer patients treated*

In 1989, the median number of newly diagnosed breast cancer patients treated per consultant was 25 (minimum 0, maximum 631), interquartile range 38. In 1990, the median was 30 (minimum 0, maximum 718) and the interquartile range 45. This compares with a median of 25, minimum 3, maximum 321, in 1985. These numbers suggest that some surgeons replied according to the numbers of patients treated with breast disease in general.

In 1990, 96 (28%,  $n = 341$ ) of the surgeons treated more than 50 newly diagnosed breast cancer patients compared with 42 (16%,  $n = 260$ ) in 1985 ( $\chi^2 = 12.01$ ,  $df = 1$ ,  $P < 0.01$ ). Thus, it can be seen that the majority of breast cancer patients are still being treated by surgeons with no special interest in breast disease. However, 77 (21.6%) of the sample ( $n = 356$ ) reported that they made time as appropriate to examine and talk to their patients with breast cancer; and 71% spent between 10–15 min with breast cancer patients.

#### *Surgical management of T1/2 N0M0 tumour: 1985 and 1990*

**Surgical treatment.** Details of the treatment recommended for a 40-year-old patient with a T1/2N0 tumour in the upper outer breast quadrant are shown in Table 1.

87% of the surgeons who participated in the present survey indicated that they would undertake conservative surgery compared with 61% of those who participated in the first survey ( $\chi^2 = 57.54$ ,  $df = 1$ ,  $P < 0.01$ ). Furthermore, it is noteworthy that axillary clearance was recommended by 52% of surgeons in the first survey compared with 69% in the second ( $\chi^2 = 21.26$ ,  $df = 1$ ,  $P < 0.01$ ).

Factors which influenced the surgeon's decision concerning treatment ( $n = 356$ ) included size of the tumour (98%), meta-

Table 1. Treatment recommended for T1/2N0 tumour

	Previous survey <i>n</i> (%)	Present survey <i>n</i> (%)
TM	27 (9)	3 (1)
TM and AC	68 (22)	35 (10)
TM and AC and RT	8 (3)	4 (1)
TM and AS	19 (6)	3 (1)
Total mastectomy	122 (40)	45 (13)
WE	21 (7)	32 (9)
WE and RT	53 (17)	25 (7)
WE and AC	27 (9)	70 (21)
WE and AC and RT	57 (18)	126 (37)
WE and AS	9 (3)	20 (6)
WE and AS and RT	22 (7)	22 (6)
Total wide excision	189 (61)	295 (87)

TM = Total mastectomy, RT = radiotherapy, AC = axillary clearance, WE = wide excision, AS = axillary sampling.

In both surveys, some surgeons selected more than one option.

Table 2. Percentages of surgeons who would discuss breast reconstruction when mastectomy is the preferred form of treatment

Timing	In every case	In most cases	In some cases	In very few cases	Never
Previous survey					
Pre-operatively ( $n = 267$ )	6	31	4	48	9
Post-operatively ( $n = 244$ )	5	26	4	57	4
Current survey					
Pre-operatively ( $n = 355$ )	17	41	1	37	3
Post-operatively ( $n = 338$ )	12	42	1	41	4

stases (92%), site of the tumour (89%), the patient's age (83%), the size of the breast (76%), marital status (12%) and the patient's wishes (13%). These results were similar to those obtained from the first survey.

**Breast reconstruction.** Table 2 illustrates the extent to which the surgeons discussed the possibility of breast reconstruction with their patients when mastectomy is the preferred form of treatment.

As can be seen from the figures in Table 2, at the time of the present survey the majority of surgeons would discuss breast reconstruction 'in most/every case', whereas the results from the first survey indicated that the majority would discuss reconstruction 'in some/very few cases or never'. These differences are significant for both the pre-operative ( $\chi^2 = 25.40$ ,  $df = 1$ ,  $P < 0.01$ ) and post-operative ( $\chi^2 = 27.31$ ,  $df = 1$ ,  $P < 0.01$ ) data.

**Choice of surgery.** Of the 355 who responded, 308 surgeons (87%) would offer the patient a choice of surgery 'in every/most cases' when there is more than one surgical option. This compares with 62% ( $n = 285$ ) of the sample from the earlier survey ( $\chi^2 = 52.36$ ,  $df = 1$ ,  $P < 0.01$ ).

When a choice of surgery is offered 'in every/most cases' only 32 of 307 surgeons (10.4%) would provide written information about the options 'in every/most cases'. 275 (90%) would 'never or in very few cases' provide written information.

These figures are comparable with those obtained from the first survey in which 5% would provide written information 'in most cases', 2% 'in some cases' and 93% 'in very few cases' or 'never'. However, proportionately more of the consultants would now provide written information than those who participated in the earlier survey ( $\chi^2 = 4.19$ ,  $df = 1$ ,  $P < 0.05$ ).

#### *Availability of breast specialist nurse or cancer counsellor*

In the first survey, surgeons were asked whether they had access to a breast care nurse or a cancer counsellor. In this second survey, surgeons were asked whether they had access to a breast specialist nurse or, if not, whether there was anyone available to whom they could refer patients for additional counselling to that routinely offered. Noting these differences in the questions asked, the results are summarised in Table 3.

Table 3. Availability of staff who could provide counselling

	Previous survey n (%)	Current survey n (%)
Breast care/specialist nurse		
Yes	112 (45)	265 (74)
Don't know	2 (1)	5 (1)
No	135 (54)	86 (24)
Cancer Counsellor		
Yes	68 (28)	48 (55)
Don't know	4 (2)	3 (3)
No	168 (70)	37 (42)

The data show that more surgeons now have access to breast care/specialist nurses (74 vs. 45%,  $\chi^2 = 56.58$ ,  $df = 1$ ,  $P < 0.01$ ) and cancer counsellors (55 vs. 28%,  $\chi^2 = 20.71$ ,  $df = 1$ ,  $P < 0.01$ ) than they did at the time of the first survey.

If surgeons indicated that there was someone available to whom they could refer patients for additional counselling, then they were asked to state who this person was. The results are: experienced nurse or ward sister ( $n = 20$ ), experienced social worker ( $n = 5$ ), cancer support group ( $n = 2$ ), mastectomy association ( $n = 2$ ), breast counsellor ( $n = 3$ ), stoma therapist ( $n = 2$ ), breast screening nurse ( $n = 1$ ), clinical psychologist ( $n = 2$ ), psychotherapist ( $n = 1$ ), oncologist and cancer support nurse ( $n = 1$ ), Macmillan nurse ( $n = 1$ ), appliance officer ( $n = 1$ ).

#### Breast self examination

Given the recent publicity surrounding the role of breast self-examination (BSE), it is of interest to note the responses to this question. Surgeons were asked whether they recommended BSE to their patients and, if not, why not. Of the 356 who responded, 243 (68%) said they always recommended BSE, 99 (28%) did sometimes and only 14 (4%) never recommended BSE.

The reasons for not recommending this practice were that it has not been shown to be beneficial ( $n = 24$ ), recommendation depended on the patient's attitude ( $n = 5$ ), such practice increased anxiety ( $n = 4$ ), it added to the surgeon's workload ( $n = 1$ ), BSE was difficult for patients to do ( $n = 1$ ); one surgeon was unimpressed by breast screening generally, and finally, one surgeon felt this was best left for an annual examination to be undertaken by an experienced doctor.

#### Variations in practice according to numbers of new breast cancer patients seen annually

In an effort to determine whether there were differences in practice according to the numbers of patients treated per annum, surgeons were divided into two groups: those who treated less than the median number of 30 patients annually (in 1990), and those who treated equal to or greater than 30.

Analyses indicated that there were no statistical differences in results between these two groups regarding the type of treatment recommended (mastectomy or wide excision), and the time spent in clinic with patients. However, there was a difference regarding the extent to which surgeons offered patients a choice of surgery. Those who treated more patients than the median were more likely to offer a choice in 'every/most cases' than the others ( $\chi^2 = 7.50$ ,  $df = 1$ ,  $P < 0.05$ ).

## DISCUSSION

The response rate of 54% is lower than that of 62% obtained in the earlier survey; this may be due to the fact that non-responders were not followed up. There is no reason to believe that the results are skewed in any particular direction as questionnaires were received by those who treated large, as well as small numbers of patients with breast cancer.

The results indicate that the majority of patients are still treated by surgeons with no special interest in breast disease. This does not appear to affect the length of time spent with patients, or the type of treatment recommended. However, it is of interest to note that a significantly greater number of the surgeons who treated more patients than the median number would offer the patients a choice of surgery compared with the others.

There are some significant changes in the intended surgical treatment compared with the first survey. For a T1/2NOMO tumour located in the upper outer breast quadrant of a 40-year-old woman, significantly more surgeons would undertake conservative surgery than reported previously. Results from this second survey indicated that 87% of the surgeons would undertake some form of conservative surgery compared with 61% of those who participated in the first survey, and 13% would perform some form of mastectomy compared with a previous figure of 40%. With regard to the type of conservative surgery, the two most favoured options were wide excision plus axillary clearance (21%) and wide excision, axillary clearance and radiotherapy (37%).

When mastectomy was the preferred form of treatment, the results show that the majority of surgeons would discuss the possibility of breast reconstruction with patients; this is a reversal of the findings from the earlier study.

Clearly, patient preferences are taken into account by the majority of surgeons, as 87% stated they would offer the patient a choice of treatment in 'every/most cases'; this compares with a previous figure of 62%. Furthermore, significantly more of the surgeons have access to breast specialist nurses and/or cancer counsellors than those who participated in the first survey. However, only 10% of those who would offer a choice of surgery in 'every/most cases' would provide written information about the available treatment options.

In conclusion, the results are encouraging and suggest a significant trend towards conservative surgery in the intended surgical treatment for T1/2 breast cancer. Whilst it may be argued that such data are not representative of true practice, there is some support for such results from a study which documented that 79% of patients with stage I or II breast cancer were treated by lumpectomy at two London teaching hospitals [5].

With regard to the recommendations from the King's Fund Forum [2], it can be seen that there have been some encouraging developments.

Firstly, there is an increase in the numbers of surgeons who would undertake conservative surgery, and also in the number of surgeons who would discuss the option of breast reconstruction with those patients requiring mastectomy.

Secondly, it would appear that the majority of surgeons would offer the patient a choice of surgery wherever possible, and that there is access to a breast specialist nurse and/or a cancer counsellor. However, the recommendation that 'counselling should be available, supplemented by a booklet or tape recording which may be taken home' [2] (p. 947) has not been met.

It is encouraging to observe that there is now more of a

consensus towards the management of a T1/2NOMO tumour located in the upper outer quadrant of a 40-year-old woman than there appeared to be 5 years ago.

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## The Influence of Intramuscular 4-Hydroxyandrostenedione on Peripheral Aromatisation in Breast Cancer Patients

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The influence of the aromatase inhibitor 4-hydroxyandrostenedione (4OHA) given intramuscularly on the peripheral aromatisation of androstenedione into oestrone was investigated in postmenopausal women with breast cancer and compared with the suppression of plasma oestradiol ( $E_2$ ). 7 patients were investigated before and during treatment on day 7, i.e. midway between two weekly injections. After an intravenous injection of [ $^3H$ ] androstenedione and [ $^{14}C$ ] oestrone, urine was collected for 96 h and the isotope ratio determined in the urinary oestrogen metabolites after isolation with high performance liquid chromatography. At 250 mg, 4OHA inhibited aromatisation to [mean (S.D.)] 15.2 (5)% of baseline ( $P < 0.002$ ). There was significantly greater inhibition to 8.1 (2.7)% at 4OHA 500 mg ( $P < 0.01$ ). Plasma  $E_2$  was reduced to 41.2 (14.1)% of baseline at 4OHA 250 mg with a further reduction to 32.7 (19.8)% at 500 mg ( $P < 0.05$ ). These results confirm the dose–response relation previously established with plasma oestrogen measurements alone.

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### INTRODUCTION

ENDOCRINE TREATMENT is frequently used as first line therapy in postmenopausal women with advanced breast cancer. Most forms of endocrine therapy work by reducing the oestrogenic stimulation of breast cancer cells, either by antagonism of oestrogen receptors within the cells or by the reduction of the circulating oestrogen available to the cancer cell [1]. In postmenopausal women, the major pathway of oestrogen production is through the peripheral conversion of androstenedione produced in the adrenal gland and ovary to oestrogens [2]. This process of aromatisation occurs in several tissues through the actions of the aromatase enzyme complex. A number of selective inhibitors of aromatase have been developed and are under laboratory and clinical evaluation.

Aminoglutethimide, now regarded as a prototype aromatase

inhibitor, has been shown to inhibit peripheral aromatisation *in vivo* by approximately 95% [3] with a reduction in plasma oestrogen levels to approximately 30% of pretreatment values [4]. The response rate in patients with advanced breast cancer treated with aminoglutethimide is around 30% and is similar to the response rate which is achieved with tamoxifen [5–7]. The side-effects of aminoglutethimide, including rash, ataxia and bone marrow suppression, may be clinically important. Aminoglutethimide may also influence the disposition of other drugs [5]. The inhibition of other steroid hydroxylases by aminoglutethimide, due to its interaction with other cytochrome P450s [8], means that aminoglutethimide has to be given in combination with glucocorticosteroid for safety and maximal suppression of plasma oestrogen levels [9]. New drugs are under development in order to identify an effective and more specific aromatase inhibitor with a lower toxicity profile.

4-Hydroxyandrostenedione (4OHA, CGP 32349, Ciba Geigy) is a suicide inhibitor of aromatase and is more potent than aminoglutethimide *in vitro* [10]. 4OHA has been shown to be of clinical use in breast cancer patients when given by either the oral or intramuscular route [10–13]. In a study comparing 250 mg with 500 mg 4OHA intramuscularly given every 14 days, the maximal suppression of plasma oestradiol levels was

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