

A survey of surgical management of the axilla in UK breast cancer patients

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Abstract

The aim of our study was to survey management of the axilla by specialist breast surgeons in the United Kingdom (UK). The questionnaire was returned by 371 surgeons, 366 (99%) were consultants and 96% treated more than 50 cases of breast cancer every year. 28% treated patients with invasive breast cancer by axillary clearance (AxCl) alone, 5% used sampling alone (AxNS), 40% used both AxCl and AxNS, 10% AxCl and sentinel lymph node (SLN) biopsy and 17% AxCl, AxNS and SLN biopsy. 9% cleared to level I, and sometimes to level II, 42% to level II and 49% to level III. 56% tried to preserve one or multiple intercostal nerves and 44% routinely divided the intercostalbrachial nerves. 52% performed SNB within trials alone and 36% out side of trials only. A range of techniques were described for the SLN biopsy procedure. There is no consistent practice of managing the axilla in the UK and standardisation is required. SLN biopsy is performed both within and outside of trials and a variety of techniques are used. © 2004 Elsevier Ltd. All rights reserved.

Keywords: Breast cancer; Axilla; Surgical management; Sentinal node biopsy; UK

1. Introduction

Standard care for operable breast cancer involves breast-conserving surgery or mastectomy combined with an axillary surgical procedure [1–3]. Axillary node status remains the most significant prognostic factor for breast cancer survival, but, as yet, there is no reliable alternative to node excision and histological assessment. However, there are a number of surgical options that can be used to stage and/or treat axillary disease. The purpose of this study was to survey management of the axilla used by breast surgeons in the United Kingdom (UK) and, specifically, to ascertain the use of sentinel lymph node (SLN) biopsy.

2. Patients and methods

The names of all Consultant Breast Surgeons throughout the UK were obtained from the 1999

MacMillan Directory of Breast Cancer Services and a postal questionnaire was sent to each one. The questionnaire was also sent to members of the Breast Surgical group of the British Association of Surgical Oncology. As many surgeons received two questionnaires they were asked to complete and return only one. 439 different surgeons were sent questionnaires and the analysis was completed in February 2003. The questionnaire was divided into 3 sections. The first section collected information on the current post held by the respondent, the size of institution at which they worked, the number of breast cancer patients treated per year and whether they performed other types of surgery. The second series of questions asked what type of axillary surgery they performed for invasive breast cancer, specifically axillary clearance, an axillary sampling procedure or SLN biopsy or a combination of these. For both axillary clearance and sampling, further details of the procedures were sought including whether they routinely divided the *pectoralis minor* during axillary clearance and their attitude to intercostal sensory nerves. Those surgeons who performed a range of axillary surgery were asked how they selected individual

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patients for the different procedures. A section on SLN biopsy collected details of its use within or outside of trials, the methods of SLN biopsy used and how the patients were selected for SLN biopsy.

The third section asked breast surgeons what would make them adopt SLN biopsy as their standard policy for the treatment of clinically node-negative axilla breast cancer patients.

3. Results

Completed questionnaires were returned by 371 breast surgeons from across the UK, most of whom were consultants (366 = 99%). This was a response rate of 85%. Data on the surgeon's background are presented in Table 1. Most treated more than 100 breast cancer patients per year (66%). Most were based in a breast unit within a District General Hospital (DGH) (61%), they performed a variety of other types of surgery and the large majority had an on-call commitment for general surgical emergencies (87%).

The largest group of respondents (40%) performed both axillary clearance and some kind of axillary sampling procedure (Table 2). There were a substantial group of surgeons (28%) that performed axillary clearance only for all patients with invasive breast cancer.

When performing an axillary "clearance", most surgeons cleared to either level II (42%) or level III (49%); a small number (9%) cleared level I and sometimes took some nodes from level II as well. Most (74%) rarely divided the *pectoralis minor* during an axillary clearance, while there was an almost even split in those dividing (44%) and those attempting to preserve one intercosto-brachial nerve (45%). A small group (11%) tried to

Table 2

Results of the survey – axillary treatment ($n = 371$)

Question	Option	Result (%)
In axillary surgery which of the following operations do you regularly perform?	Axillary clearance alone	28
	Axillary sampling procedure alone	5
	Sentinel lymph node (SLN) biopsy alone	0
	Clearance + sampling	40
	Clearance + SLN biopsy	10
	Clearance + sampling + SLN biopsy	17

preserve multiple intercostal nerves. There was a variable success rate in the preservation of nerves. 40% reported nerve preservation 75% of the time, 40% of surgeons were successful 50% of the time and 20% of surgeons reported a 25% success rate. 41% of surgeons who performed axillary clearance did so for all patients with invasive breast cancer, while 59% had a selective policy. 29% cleared the axillary nodes of all mastectomy patients with invasive cancer, while 63% cleared selected mastectomy patients. Only 2% cleared all breast-conserving patients with invasive cancer, while 72% had a selective policy for these patients. Factors including tumour size, clinical node status and tumour histology influenced whether individual surgeons performed a sampling procedure or clearance (Table 3).

The responses to similar questions asked about axillary sampling procedures are illustrated in Table 4. Most (70%) breast surgeons who carried out axillary sampling performed a 4 node sample rather than a modified level I dissection yielding approximately 10 nodes.

Table 1

Results of the survey – general ($n = 371$)

Question	Option	Result (%)
Which grade of surgeon applies to you?	Consultant	98
	SpR	1
	Staff grade/associate spec	1
How many breast cancer patients do you treat in one year?	<50	4
	50–100	30
	>100	66
Which of the following best applies to the setting in which you work?	Specialist breast unit	34
	Breast unit within DGH	61
	General surgical	5
What other types of surgery do you perform?	General	81
	Endocrine	34
	GI	24
	Other	15
	Nil	3
Do you have an on-call commitment for general surgical emergencies	Yes	87
	No	13

DGH, District General Hospital; GI, Gastro-Intestinal; SpR, Specialist Registrar; Spec, Specialist.

Table 3
Results of the survey – axillary clearance ($n = 352$)

Question	Option	Result (%)
When performing an axillary clearance for invasive breast cancer do you...?	Clear to level I	9
	Clear to level II	42
	Clear to level III	49
If you clear to level II or III do you divide the <i>pectoralis minor</i> muscle?	Rarely	74
	Occasionally	14
	Usually	7
	Always	5
In a clearance do you?	Try whenever possible to preserve one intercostobrachial nerve	45
	Try and preserve multiple intercostal nerves	11
	Routinely divide the intercostobrachial nerve	44
Do you perform an axillary clearance...?	For all patients with invasive breast cancer	41
	Use a selective policy	59
If a selective policy do you perform a clearance for...?	All mastectomy patients with invasive cancer	29
	Selected mastectomy patients	63
	All breast-conserving patients with invasive cancer	2
	Selected breast-conserving patients	72
If you have a selective policy, what makes you select patients for axillary clearance?	Tumour size	68
	Clinical node status	73
	Tumour histology	50

Table 4
Results of the survey – axillary sampling ($n = 233$)

Question	Option	Result (%)
When performing an axillary sampling do you...?	Perform a 4 node sample	70
	Perform a level I axillary dissection (approximately 10 nodes)	30
Do you perform axillary sampling...?	For all patients with invasive breast cancer	21
	Have a selective policy	79
If you perform a level I dissection do you...?	Try whenever possible to preserve one intercostobrachial nerve	55
	Try and preserve multiple intercostal nerves	28
	Routinely divide the intercostobrachial nerve	17
If you use a selective policy do you perform sampling for...?	All mastectomy patients with invasive cancer	6
	Selected mastectomy patients	58
	All breast-conserving patients with invasive cancer	15
	Selected breast-conserving patients	86
If you have a selective policy, what makes you select patients for axillary sampling...?	Tumour size	78
	Clinical node status	71
	Tumour histology	59

The number of surgeons who performed SLN biopsy was 101. More than half performed SLN biopsy only within a trial setting (52%). There were a variety of methods used for the SLN biopsy, the most popular being a combination of vital blue dye, Gamma probe and pre-op lymphoscintigraphy scan (50%). Others used one or a combination of 2 of these methods. Most surgeons used a selective policy for patients having SLN biopsy and they were most frequently selecting breast-conserving patients within trials (51%). Again, there were varying factors as to whether a patient was selected for SLN biopsy, but a large proportion of surgeons

(56%) cited patients being eligible for a trial as a major factor (Table 5).

The results for the third section asking breast surgeons what would make them adopt SLN biopsy as their standard policy for the treatment of clinically node-negative axilla breast cancer patients is best illustrated in Fig. 1.

4. Discussion

The management of breast cancer is controversial [1] with treatment of the axilla being one of the greatest

Table 5
Results of the survey – SLN biopsy ($n = 101$)

Question	Option	Result (%)
Do you perform sentinel lymph node biopsy...?	Only within trials	52
	Within and outside of trials	12
	Outside of trials only	36
How do you perform sentinel lymph node biopsy?	Radionuclide techniques (technetium-99m) with gamma probe	1
	Radionuclide with probe and pre-op lymphoscintigraphy scan	5
	Vital blue dye	27
	Both dye and radionuclide with probe	17
	Both dye and radionuclide with probe and pre-op scan	50
Do you inject?	Around the tumour	82
	Intradermally	12
	Into the subareolar region	6
Do you perform sentinel lymph node biopsy...?	For all patients with invasive breast cancer	12
	Have a selective policy	88
If a selective policy do you perform sentinel lymph node biopsy for...?	All mastectomy patients with invasive cancer	1
	Selected mastectomy patients within trials	29
	Selected mastectomy patients outside of with trials	18
	All breast-conserving patients with invasive cancer	2
	Selected breast-conserving patients within trials	51
	Selected breast-conserving patients outside of trials	27
If you have a selective policy, what makes you select patients for sentinel node biopsy...?	Tumour size	52
	Clinical node status	45
	Tumour histology	22
	Patients eligible for a trial	56

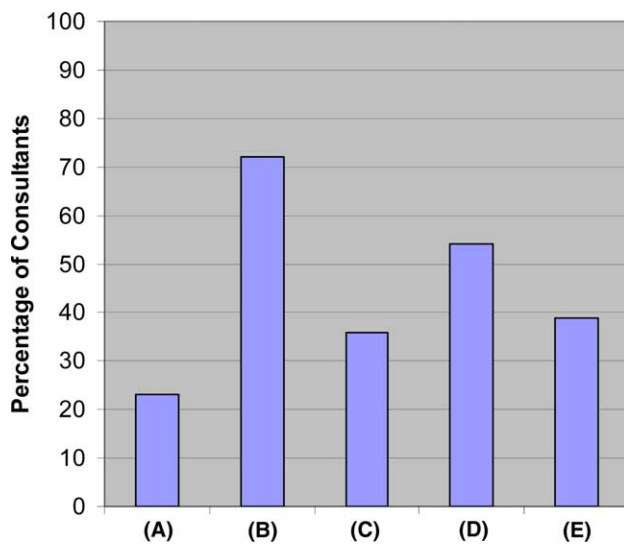


Fig. 1. Factors which would influence surgeons to adopt sentinel lymph node (SLN) biopsy as their standard policy for the treatment of clinically node-negative axilla breast cancer patients. (A) short-term results from randomised trials, (B) long-term results from randomised trials, (C) improved/or programme for personal training, (D) funding and support for sentinel lymph node biopsy, (E) more access and support from department of nuclear medicine.

areas of controversy [2,3]. Previous questionnaire studies examining the management of breast cancer [1] have concluded that opinion is divided over the surgical

management of the axilla and they published figures relating to the routine use of axillary clearance or selecting some patients for a lesser procedure such as axillary sampling. With an increasing number of reports demonstrating the potential advantages for SLN biopsy, we conducted this survey to determine how it has affected axillary lymph node management overall, and also to delineate changes in the use of clearance and sampling from earlier surveys.

Most breast surgeons who answered the questionnaire were specialists in this field or at least had a special interest, with most treating more than 50 patients per year. This is encouraging as a previous study showed that many patients who are managed by surgeons seeing less than 30 new cases of breast cancer per year have a poorer overall survival rate compared with surgeons who see more than 30 [4]. Most breast surgeons do carry an on-call commitment for general surgical emergencies.

Most surgeons agree that some form of axillary procedure is necessary in patients with breast cancer [2]. In fact, all surgeons are mandated to carry out some form of axillary procedure to stage both screen-detected and symptomatic cancers according to the British Association of Surgical Oncology (BASO) Guidelines and the National Health Service Breast Screening Programme (NHSBSP) Guidance for surgeons. It is the type of procedure performed that causes divisions amongst breast specialists. The number of surgeons in

the current survey advocating full axillary clearance alone was only 28% whereas this was reported to be approximately 40% in an earlier survey. It appears that most surgeons now use a combination of clearance and sampling, depending on patient and tumour characteristics.

Regarding the surgical technique used, current practice shows a wide variability in the clearance level achieved and preservation of the sensory intercostal nerves. In those who attempted to preserve nerves, there was a wide range in the rates of success. A consensus has been reached amongst those surgeons carrying out axillary sampling. Most now perform a 4 node sample rather than a modified level I dissection. The current variability in the management of the axilla remains unacceptable and standardisation, as within other branches of surgery, is necessary.

This inconsistency is added to by the variability within the UK with regard to SLN biopsy. Most SLN biopsy practice is within a trial setting and no surgeons are yet performing this procedure alone in the management of the axilla. Only about a quarter of all UK surgeons indicated that they use SLN biopsy in any form, whether this is due to a lack of either resources, training or evidence that it is effective is not clear. The department of health is planning to separately fund and provide support for SLN biopsy provided the surgeon can demonstrate adequate training and a suitable audit phase. However, nuclear medicine support is still necessary and this would cost this department somewhere in the region of £200 per patient. SLN biopsy remains a low-risk staging procedure and its accuracy is at least as good as sampling. Randomised control trials are ongoing and their results are awaited. Currently, a wide variety of techniques are being used to identify SLNs, both within and outside of clinical trials. Standardisation in the use of the optimal SLN biopsy technique is necessary.

There is little consensus with regard to the axillary management in breast cancer patients. In the last 20 years, the surgical treatment of the primary breast tumour has changed dramatically. Prospective randomised controlled trials comparing conservative surgery, axillary clearance and radiotherapy with mastectomy

and axillary clearance have shown equal survival rates [5,6]. A consensus as to management protocols has now been reached amongst most surgeons [7]. They now perform breast-conserving surgery where possible rather than mastectomy and only 13% of surgeons in one report performed mastectomy regularly for T_{1/2} N₀ cancers [8].

A similar accord is necessary for the surgical management of the axilla. There is already data available from the axillary lymphatic mapping against nodal axillary clearance (ALMANAC) study group showing that SLN biopsy is an easily learned technique and has a high degree of accuracy [9]. Axillary clearance needs to be restricted to those patients with involved axillary nodes and routine use in all patients is increasingly difficult to justify. A consensus of when and how SLN biopsy can be introduced for clinical node-negative patients is urgently required.

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