



Original article

Pre-operative factors indicating risk of multiple operations versus a single operation in women undergoing surgery for screen detected breast cancer

E.A.M. O'Flynn^{a,*}, R.J. Currie^b, K. Mohammed^c, S.D. Allen^a, M.J. Michell^d^a Department of Radiology, Royal Marsden NHS Foundation Trust, Downs Road, Sutton, Surrey SM2 5PT, United Kingdom^b Department of Radiology, Royal Devon and Exeter NHS Foundation Trust, Exeter, Devon EX2 5DW, United Kingdom^c Department of Statistics, Royal Marsden NHS Foundation Trust, Sutton, Surrey SM2 5PT, United Kingdom^d South East London Breast Screening Programme and National Breast Screening Training Centre, Kings College Hospital NHS Foundation Trust, London SE5 9RS, United Kingdom

ARTICLE INFO

Article history:

Received 23 February 2012

Received in revised form

31 May 2012

Accepted 20 June 2012

Keywords:

Reoperation

Ductal carcinoma in situ

Microcalcification

Lobular carcinoma

ABSTRACT

We aim to identify preoperative factors at diagnosis which could predict whether women undergoing wide local excision (WLE) would require further operations. 1593 screen-detected invasive and non-invasive breast cancers were reviewed. Age, presence of ductal carcinoma in situ (DCIS), invasive cancer size on mammography, mammographic sign, tumour type, grade and confidence of the radiologist in malignancy were compared. 83%(1315/1593) of women had a WLE. Of these, 70%(919/1315) had a single operation, and 30%(396/1315) multiple operations. These included repeat WLE to clear margins (60%(238/396)), mastectomy (34%(133/396)) and axillary dissection (6%(25/396)). The presence of mammographic microcalcification, lobular carcinoma and grade 2 malignancy on core biopsy were independent risk factors for multiple operations on multivariate analysis. Women with mammographic DCIS >30 mm were 3.4 times more likely to undergo repeat surgery than those with smaller foci. The multidisciplinary team should pay particular attention to these factors when planning surgery.

© 2012 Elsevier Ltd. All rights reserved.

Introduction

In the United Kingdom, 20% of women with a non-operative malignant diagnosis for a screening-detected breast cancer initially treated with breast conservation surgery require repeat therapeutic operations (breast conserving surgery or mastectomy) to clear margins.¹ Worldwide, surgical literature has reported reoperation rates up to 60% following breast conserving surgery.² Multiple operations can have a significant effect upon the patient, causing delays in adjuvant treatment and poor aesthetic results which lead to considerable physical and psychological morbidity. There are also implications for appropriate preoperative counselling as well as increased cost and time to the health service.

Wide local excision is a common place in the management of breast cancer having been proven equally effective as mastectomy for the surgical treatment of localised tumours³ with identical survival rates⁴ and superior cosmetic results. However, failure to achieve adequate surgical margins (taken as a tumour free margin

of at least 1 mm in the United Kingdom⁵) necessitates a re-excision or mastectomy to minimise the risk of recurrence. The intra-operative assessment of complete margin excision is crude, relying on visual and tactile assessment of the excision cavity by the operating surgeon.

Currently there is limited data on the relationship between various preoperative clinicopathological factors and reoperation rate. Reports have suggested lobular histology,⁶ small breast size² and mammographic microcalcification⁷ as the variables most associated with further surgery. The ability to define predictors of multiple operations would allow better preoperative evaluation of the patient and more appropriate surgical management. Therefore we have looked at data from screening-detected cancers in an aim to identify factors at diagnosis from mammography and core biopsy that could predict which women undergoing wide local excision are more likely to require further surgery.

Materials and methods

A prospective database analysis of all cases of histologically confirmed breast cancers detected in an NHS Breast Screening Programme over a 11-year period (1 April 1996 to 1 April 2007) was carried out. Invasive cancers and DCIS were included in the analysis. Ethical approval was sought and was not required.

* Corresponding author. Tel.: +44 208 915 6102.

E-mail addresses: lizoflynn@doctors.org.uk (E.A.M. O'Flynn), r.currie@nhs.net (R.J. Currie), kabir.mohammed@rmh.nhs.uk (K. Mohammed), stevenallen@nhs.net (S.D. Allen), michael.michell@nhs.net (M.J. Michell).

All patients had bilateral mediolateral (MLO) and craniocaudal (CC) mammographic projections with magnification views if necessary. The mammograms were read by two experienced radiologists with discussion for consensus in discordant cases. For each of the cases age and pre-operative factors from imaging and core biopsy were reviewed. Invasive cancer size, DCIS size, mammographic sign and confidence of the reporting radiologist in features of malignancy were documented from the mammograms. Histological type and grade from the core biopsy were noted.

The invasive cancer size or extent of DCIS was measured directly as the largest diameter in millimetres on the unmagnified view by an experienced radiologist. The mammographic sign was categorised into one of the following 8 categories: mass, mass + microcalcification, spiculated mass, spiculated mass + microcalcification, stellate, stellate + microcalcification, asymmetric density or microcalcification. The reporting radiologist's level of suspicion of malignancy was recorded as malignant (M5), suspicious (M4) or uncertain (M3) as part of a standard breast imaging reporting system.⁸

Biopsies were carried out either under ultrasound or stereotactic guidance using a 14 G Promag core biopsy device or a 11 G vacuum-assisted mamotomy device. Stereotactic biopsies were carried out on either an upright stereotactic or a Fischer prone table. Core biopsy specimens were fixed in 10% formalin and then embedded in paraffin. Sections at 4 µm intervals were made and stained with haematoxylin and eosin for histological examination. If required, immunostaining for the presence of cell proliferation markers, for example Ki-67 was performed on the sections. Each sample was reviewed by two experienced pathologists. Samples were categorised into specific histological type (invasive ductal carcinoma, invasive lobular carcinoma, DCIS etc.) and graded.

It was documented whether the patients underwent primary mastectomy or wide local excision (WLE) with axillary node clearance, and for those who had a WLE, whether they required a second or multiple operations (reoperation involved a new surgical procedure at a separate sitting). Non-palpable lesions were localised preoperatively using a hook wire either using sonographic or stereotactic guidance depending on the abnormality. Confirmation that the wire was appropriately positioned was with mammography. Surgical specimen radiography was routinely performed following WLE and mastectomy procedures as a single view and reviewed by a radiologist to confirm excision of the abnormality. It was not performed for repeat WLE for clearance of margins or axillary dissection. Post operative films were not routinely performed to rule out retained calcifications. The surgical specimen was orientated by the pathologist using the surgical sutures which marked the superior, inferior, medial and lateral borders. Following fixation in 10% formalin and embedding in paraffin the specimen was sectioned parallel to the long axis and the greatest dimension of invasive tumour in this axis recorded along with the grade and type.

Statistical analysis was carried out using a binary logistic regression method to determine the predictive effect of individual variables with respect to the likelihood of having a repeat operation in univariate and multivariate models. Only covariates with $p \leq 0.2$ in the univariate model were incorporated into the model for multivariate analysis using forward conditional set-up. Invasive tumours and DCIS were analysed separately. Statistical tests were two-sided and $p < 0.05$ was considered statistically significant. Where the data was not normally distributed the median was used for analysis as it is considered more accurate in this situation. SPSS version 18.0 for Windows (SPSS Inc., Chicago, IL, USA) software was used for analysis of data.

Results

One thousand five hundred and ninety three patients presented through an NHS National Screening Programme between 1 April 1996 and 1 April 2007 and were diagnosed with breast cancer including 1176/1593 (74%) invasive cancers and 418/1593 (26%) non-invasive cancers. 83% (1315/1593) of women had a WLE. Of these, 70% (919/1315) had a single operation and 30% (396/1315) went on to have further operations for curative treatment. These included a repeat WLE to clear the margins (60% (238/396)), mastectomy (34% (133/396)) and axillary dissection (6% (25/396)). 7% (28/396) went on to have a third operation which included a repeat WLE to clear the margins (21% (6/28)) and mastectomy (79% (22/28)). 17% (274/1593) of women had a primary mastectomy, with only 1% of these (3/274) requiring a second operation on the axilla.

There was no significant difference in the mean age of women undergoing single or multiple operations (mean 59.1 years and 58.7 years respectively ($p = 0.82$)) or in those having multiple re-excisions compared to more immediate mastectomy (mean 58.7 years and 58.8 years respectively ($p = 0.9$)).

72% (662/919) of women who had a single operation and 83% (328/396) of women who had multiple operations underwent preoperative wire localisation. 31 data sets were excluded from the statistical analysis: 25 of these had an axillary dissection as repeat operation and 6 had incomplete data. Therefore a total of 1284 patients were analysed, constituting 989 invasive and 295 DCIS cases.

Univariate analysis for invasive tumours

There were significant associations with the mammographic sign, histological type and grade on core biopsy and median preoperative mammographic cancer size with respect to having two or more operations (Table 1), although this was not confirmed for the final variable on multivariate analysis (Table 2). The presence of mammographic microcalcification and lobular carcinoma on core biopsy (both $p < 0.001$) were highly significant risk factors for multiple operations. Those with grade 2 carcinoma on core biopsy were also more likely to undergo repeat surgery ($p = 0.001$).

Multivariate analysis for invasive tumours

Mammographic microcalcification ($p < 0.001$), lobular carcinoma ($p = 0.001$) and other histology (including medullary and tubular carcinomas) ($p = 0.002$) and grade 2 malignancy on core biopsy ($p = 0.003$) were confirmed to be independently significant variables for multiple operations (Table 2). The presence of a spiculated mass on mammography was significantly associated with having one single operation ($p = 0.004$).

Women presenting with mammographic microcalcification on their screening mammograms were four times more likely to undergo multiple operations (odd ratio (OR) = 4.041). Women with lobular (OR = 2.486), other unusual types of histology (including medullary and tubular carcinomas) (OR = 2.039) or grade 2 malignancy on core biopsy (OR = 1.729) were approximately twice as likely to require repeat operations.

DCIS

The median size of mammographic DCIS was significantly greater in women undergoing multiple operations (20 mm (range 3–110 mm)) compared to those undergoing a single operation (10 mm (range 1–93 mm)). Table 3 shows the risk of having multiple operations in relation to DCIS size, <30 mm or >30 mm. Women with DCIS size >30 mm were 3.4 times more likely to

Download English Version:

<https://daneshyari.com/en/article/3908472>

Download Persian Version:

<https://daneshyari.com/article/3908472>

[Daneshyari.com](https://daneshyari.com)