

Wide excision of primary breast cancer: the incidence of residual carcinoma at the site of excision

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Summary

Fifty-one consecutive women with early breast cancer underwent wide excision and axillary clearance. After wide excision five biopsies were taken from the walls of the cavity. On histological examination tumour was present in the cavity biopsies in 13 cases (25%). The presence of ductal carcinoma in situ in the primary tumour was not associated with an increased number of positive cavity biopsies. In nine cases incomplete excision was due to separate foci of invasive or in situ carcinoma, in two cases tumour was contiguous with the primary carcinoma and in two, separate foci and contiguous disease both occurred. The high incidence of residual local tumour after wide excision of breast cancer demands the need for postoperative irradiation to the breast and frequent review.

Introduction

Conservative breast surgery is now an accepted surgical option in the treatment of primary operable breast cancer (1). If wide excision of a tumour is not followed by radiotherapy to the breast, the incidence of local recurrence may be as high as 30% at 5 years (2,3). This could be the result of unrecognised direct extension of the primary carcinoma or the presence of separate foci of *in situ* or invasive carcinoma remote from the primary tumour (4,5).

This study investigates the incidence of tumour in cavity biopsies following wide excision of a primary breast cancer.

Patients and methods

Since July 1986 women presenting to the Southampton Breast Clinic with non-central (ie more than 3 cm from the nipple) primary operable breast carcinoma (T₁, N₀₋₁, M₀) have been offered the choice of either wide excision, axillary clearance and breast irradiation, or simple mastectomy and axillary clearance. The preoperative diagnosis of cancer was determined by clinical examina-

tion, mammography and fine needle aspiration cytology. All operations were performed by a consultant or senior registrar.

In women undergoing wide excision the tumour was excised with a 1–2 cm circumferential margin of macroscopically normal tissue (1). Biopsies were then taken from the superior, inferior, lateral, medial and deep margins of the cavity wall. Axillary clearance was usually performed through a separate incision. The tumour specimen, cavity wall biopsies and axillary nodes were examined by one pathologist (AH). The site, maximum diameter of the tumour, and the number of involved lymph nodes were recorded. Postoperative irradiation to the breast was delivered to a total dose of 5000 cgy given in 25 daily sessions of 200 cgy over a 5-week period.

The significance of differences in distribution was determined by the χ^2 test.

Results

Fifty-one consecutive women of mean age 52 years (range 20–79 years) received wide excision of 52 primary breast carcinomas; there being one patient with bilateral tumours. Cavity biopsies from 13 of the 52 cases (25%) contained tumour. In ten cases a single biopsy was involved and in three cases two of the biopsies contained tumour.

Forty-nine tumours in the wide excision specimen were invasive ductal carcinomas (IDC), of which 23 (47%) of the specimens contained areas of ductal carcinoma-in-situ (DCIS). The overall incidence of DCIS was 44%. The presence of DCIS in the primary tumour was not, however, associated with more 'positive' cavity biopsies; in primary tumours containing DCIS the incidence of 'positive' cavity biopsies was 26% compared to 24% for the remaining cases (Table I).

Invasive ductal carcinoma was present in nine of the positive cavity biopsies. In seven biopsies IDC occurred as a separate focus but in two cases there was direct extension of the primary lesion. Thus the overall incidence of remote foci of invasive cancer was 13% (7/52). Remote foci of DCIS were seen in seven of the 'positive'

TABLE 1 Residual tumour in cavity biopsies and histological type of 52 primary breast carcinomas

	Cavity		Biopsies
	No residual tumour (negative)	Residual tumour (positive)	
IDC*	24	19	5
IDC and DCIS†	23	17	6
ILC‡	1	1	—
IDC and ILC	2	—	2
Colloid carcinoma	2	2	—

* IDC—Invasive ductal carcinoma

† DCIS—Ductal carcinoma-in-situ

‡ ILC—Invasive lobular carcinoma

biopsies and were the only evidence of residual tumour in four of these cases. Overall, the incidence of DCIS foci remote from the primary tumour was 13%. In primary tumours containing DCIS the incidence was 30% (6/23).

REASON FOR RESIDUAL CAVITY BIOPSY TUMOUR

Complete wide excision of the primary lesion was obtained in nine of the 13 'positive' cases. Residual tumour in these nine cases was due to separate foci of invasive and *in situ* carcinoma. In the remaining four biopsies tumour was contiguous with the primary lesion. In two of these cases direct spread appeared to be the only cause of failure, one with obvious extension of the primary IDC, the other with 'cancerisation' of lobules due to intraductal spread of the primary lesion. In the other two cases 'cancerisation' of the lobules and separate foci of invasive and *in situ* carcinoma coexisted.

LYMPH NODE INVOLVEMENT

Of tumours with 'positive' biopsies, 46% had one or more involved nodes compared to 30% of tumours with 'negative' biopsies (NS). However, in only 14% of 'negative' cases were five or more nodes involved compared to 31% of 'positive' cases (NS). The likelihood of a 'positive' cavity biopsy was not associated with tumour site or size or age of patient.

Discussion

The high incidence of 'positive' residual cavity biopsies supports several clinicopathological studies which have demonstrated that in the majority of patients breast cancer is a multifocal disease (4,5,6,7,8). Multifocal occult invasive carcinoma is found in approximately 7% of mastectomy specimens and remote foci of *in situ* disease in 25–30% of cases (4,8). These studies were all of mastectomy specimens. No previous reports record the presence of residual local cancer at the biopsy site after the increasingly common operation of wide excision. Discrepancies in the incidence of remote occult foci of invasive and *in situ* disease found in our study is likely to be explained by the small number of cases. The presence of DCIS in the primary tumour has been reported to be associated with an increased risk of local recurrence following local excision and irradiation in the treatment of breast cancer (9). This was not confirmed by Fisher and co-workers (10). Similarly, this study did not find the presence of DCIS in the primary tumour to be associated with more 'positive' biopsies.

The multifocal nature of breast cancer implies that

conservative surgery alone will not provide adequate local control in all patients. Indeed, after such treatment nearly 30% of patients develop local recurrence within 5 years (2,3). The addition of adjuvant postoperative breast irradiation in patients undergoing conservative surgery and axillary clearance reduces the risk of local recurrence to 8%, equivalent to that achieved by mastectomy and axillary clearance (2,11). Irrespective of whether postoperative breast irradiation is given or not nearly all local recurrences develop at or close to the site of primary tumour excision and are of similar histological type and differentiation as the primary carcinoma (10). This provides compelling evidence that these recurrences are the result of residual local primary tumour (10).

Is the likelihood of residual tumour following conservative surgery of clinical importance? Certainly in patients not receiving postoperative irradiation following conservative surgery and axillary clearance the subsequent need for a mastectomy is a devastating blow. However, the addition of postoperative irradiation diminishes this risk considerably, at least in the medium term. Longer follow-up is needed to determine whether or not there is an increased risk of late local recurrence. Despite the possible development of local recurrence and subsequent need for mastectomy, Fisher and co-workers found survival rates at 5 years to be slightly but significantly better in patients treated by conservative surgery, axillary clearance and irradiation than by total mastectomy and axillary clearance (2).

The favourable results with combined conservative surgery and radiotherapy obviously support a more limited surgical procedure in the treatment of primary breast cancer (2,11). Yet in both major trials which support this policy there was strict patient selection and adjuvant postoperative breast irradiation was always given. Veronesi *et al.* (11) only included tumours of less than 2 cm diameter and without palpable lymph nodes. The surgical treatment involved quadrantectomy, a far more radical procedure than wide excision. Fisher *et al.* (2) were less stringent, tumours up to 4 cm diameter were included and axillary nodes if palpable were mobile. At operation wide excision was performed and the specimen immediately examined histologically for evidence of tumour at the specimen margin. In 10% of cases resection was deemed incomplete and the patient underwent mastectomy. Adjuvant chemotherapy was also given to women with involved nodes.

Patients in our series with 'positive' cavity biopsies have only received the standard dose of irradiation. At present it is not known whether any additional treatment is required to prevent local relapse. As the majority of local recurrences are reported to occur at the site of primary tumour excision a booster dose of irradiation to the tumour bed may be valuable, however this will not prevent relapse elsewhere in the breast. At present we feel immediate mastectomy is not justified. Our results clearly underestimate the incidence of multifocal disease in the whole of the residual breast and therefore all patients receiving conservative treatment require frequent long-term follow-up.

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Notes on books

Practical Noninvasive Vascular Diagnosis edited by R F Kempczinski and J S T Yao. 555 pages, illustrated. Yearbook Medical Publishers, Chicago. £43.

It is only five years since the first edition of this book was published in 1982 but widespread changes in the field of noninvasive vascular diagnosis has necessitated a major revision. A third of the chapters in this new edition are entirely new and all the retained chapters have undergone extensive revision. There are twelve new contributors and the book has been reorganised to better reflect the *clinical* orientation of the book. Perhaps the greatest advances since the previous edition have occurred in the field of cerebrovascular evaluation and this section has been extensively rewritten with chapters on Doppler frequency analysis and B-mode imaging as well as chapters on ultrasonic arteriography and duplex scanning.

Heart Valve Replacement and Reconstruction: Clinical Issues and Trends edited by Peter J K Starek. 332 pages, illustrated. Yearbook Medical Publishers, Chicago. £43.

This volume records 26 papers given at the Fourth Heart Valve Replacement Symposium held in 1986. They are presented under six headings: patient evaluation and selection for surgery; surgical techniques; early postoperative care; clinical results; controversies and future trends; and complications of valve replacements. Each contribution has a list of up-to-date references for further reading and the volume reflects accurately the state-of-the-art of prosthetic heart valve use in patients in the mid 1980s.

Principles of Basic Surgical Practice edited by Edwin C James, Robert J Corry and John F Perry Jr. 587 pages, illustrated, paperback. Hanley and Belfus, Philadelphia. £33.

In the words of the editors in their preface "this book is designed unabashedly for students". The editors believe that most textbooks of surgery are too detailed for the average medical student and they have attempted here to choose the key topics in surgery that make up a solid foundation for understanding the scientific basis and practical skills of the modern general surgeon. It is well set out and illustrated but the paperback format of what is a large and heavy volume leads to somewhat unwieldy handling.

Total Hip Replacement edited by M Postel, M Kerboul, J Evrard and J P Courpied. 152 pages, illustrated. Springer-Verlag, Berlin. DM 148.

Translated from the original French edition published in 1985, this book summarises the experience gained with 8000 total hip replacements carried out over fifteen years at the Hôpital Cochin in Paris. It covers three aspects in detail: the evolution of the technique and the type of prostheses used, the results in relation to the relevant indications and a clinical study of the two major complications—aseptic loosening of the prosthesis and infection. A first-class study of one department's work which should be of wide interest to others.