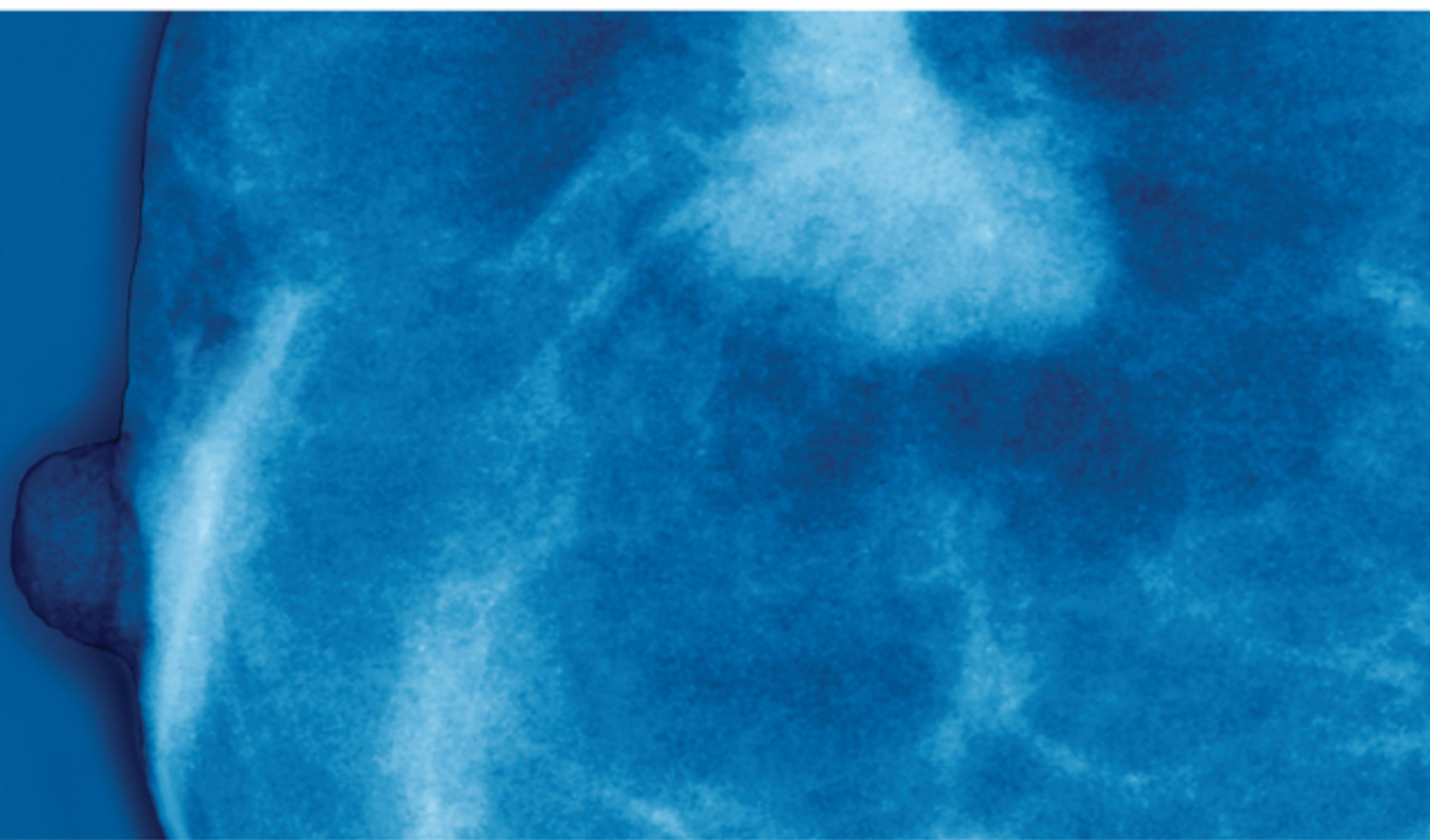


ABC_{of} Breast Diseases

FOURTH EDITION

Edited by J Michael Dixon



 **WILEY-BLACKWELL**

www.abcbookseries.com

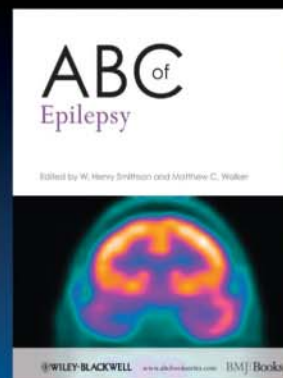
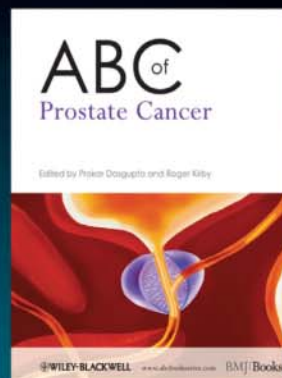
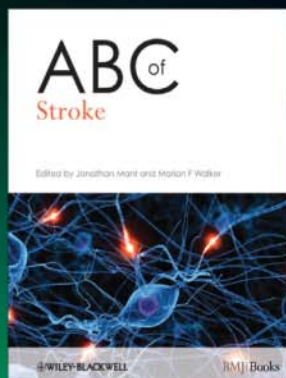
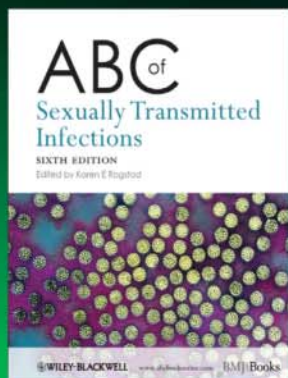
BMJ|Books

ABC^{of}
Breast Diseases

Fourth Edition

ABC series

An outstanding collection of resources – written by specialists for non-specialists



The *ABC* series contains a wealth of indispensable resources for GPs, GP registrars, junior doctors, doctors in training and all those in primary care

- ▶ **Now fully revised and updated**
- ▶ **Highly illustrated, informative and a practical source of knowledge**
- ▶ **An easy-to-use resource, covering the symptoms, investigations, treatment and management of conditions presenting in day-to-day practice and patient support**
- ▶ **Full colour photographs and illustrations aid diagnosis and patient understanding of a condition**

For more information on all books in the *ABC* series, including links to further information, references and links to the latest official guidelines, please visit:

www.abcbookseries.com

 **WILEY-BLACKWELL**

BMJ | Books

ABC^{of}

Breast Diseases

Fourth Edition

EDITED BY

J Michael Dixon

Professor of Surgery and Consultant Surgeon
Edinburgh Breast Unit, Western General Hospital, Edinburgh

 **WILEY-BLACKWELL**
A John Wiley & Sons, Ltd., Publication

BMJ|Books

This edition first published 2012, © 2012, 2006 by Blackwell Publishing Ltd.
© 1995, 2000 BMJ Books

BMJ Books is an imprint of BMJ Publishing Group Limited, used under licence by Blackwell Publishing which was acquired by John Wiley & Sons in February 2007. Blackwell's publishing programme has been merged with Wiley's global Scientific, Technical and Medical business to form Wiley-Blackwell.

Registered office: John Wiley & Sons, Ltd, The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, UK

Editorial offices: 9600 Garsington Road, Oxford, OX4 2DQ, UK
The Atrium, Southern Gate, Chichester, West Sussex, PO19 8SQ, UK
111 River Street, Hoboken, NJ 07030-5774, USA

For details of our global editorial offices, for customer services and for information about how to apply for permission to reuse the copyright material in this book please see our website at www.wiley.com/wiley-blackwell

The right of the author to be identified as the author of this work has been asserted in accordance with the UK Copyright, Designs and Patents Act 1988.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, except as permitted by the UK Copyright, Designs and Patents Act 1988, without the prior permission of the publisher.

Designations used by companies to distinguish their products are often claimed as trademarks. All brand names and product names used in this book are trade names, service marks, trademarks or registered trademarks of their respective owners. The publisher is not associated with any product or vendor mentioned in this book. This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold on the understanding that the publisher is not engaged in rendering professional services. If professional advice or other expert assistance is required, the services of a competent professional should be sought.

The contents of this work are intended to further general scientific research, understanding, and discussion only and are not intended and should not be relied upon as recommending or promoting a specific method, diagnosis, or treatment by physicians for any particular patient. The publisher and the author make no representations or warranties with respect to the accuracy or completeness of the contents of this work and specifically disclaim all warranties, including without limitation any implied warranties of fitness for a particular purpose. In view of ongoing research, equipment modifications, changes in governmental regulations, and the constant flow of information relating to the use of medicines, equipment, and devices, the reader is urged to review and evaluate the information provided in the package insert or instructions for each medicine, equipment, or device for, among other things, any changes in the instructions or indication of usage and for added warnings and precautions. Readers should consult with a specialist where appropriate. The fact that an organization or Website is referred to in this work as a citation and/or a potential source of further information does not mean that the author or the publisher endorses the information the organization or Website may provide or recommendations it may make. Further, readers should be aware that Internet Websites listed in this work may have changed or disappeared between when this work was written and when it is read. No warranty may be created or extended by any promotional statements for this work. Neither the publisher nor the author shall be liable for any damages arising herefrom.

First published 1995
Second edition 2000
Third edition 2006
Fourth edition 2012

Cover image: Breast cancer, mammogram. © Zephyr/Science Photo Library
Cover design: Meaden Creative

Library of Congress Cataloging-in-Publication Data

ABC of breast diseases / edited by J. Michael Dixon. – 4th ed.

p. ; cm. – (ABC series)

Includes bibliographical references and index.

ISBN 978-1-4443-3796-9 (pbk. : alk. paper)

I. Dixon, J. M. (J. Michael) II. Series: ABC series (Malden, Mass.)

[DNLM: 1. Breast Diseases. 2. Breast Neoplasms. WP 840]

616.99'449–dc23

2011049096

A catalogue record for this book is available from the British Library.

Wiley also publishes its books in a variety of electronic formats. Some content that appears in print may not be available in electronic books.

Set in 9.25/12 Minion by Laserwords Private Limited, Chennai, India

Contents

Contributors, vii

Preface, ix

- 1** Symptoms, Assessment and Guidelines for Referral, 1
J Michael Dixon and Jeremy Thomas
- 2** Congenital Problems and Aberrations of Normal Development and Involution, 12
J Michael Dixon and Jeremy Thomas
- 3** Mastalgia, 25
Julie Iddon and J Michael Dixon
- 4** Breast Infection, 31
J Michael Dixon
- 5** Breast Cancer: Epidemiology, Risk Factors and Genetics, 41
Ivana Sestak, Jack Cuzick and Gareth Evans
- 6** Prevention of Breast Cancer, 47
Ivana Sestak, Jack Cuzick, Gareth Evans and Ava Kwong
- 7** Screening for Breast Cancer, 51
Robin Wilson, Douglas Macmillan and Julietta Patnick
- 8** Breast Cancer, 59
J Michael Dixon and Jeremy Thomas
- 9** Management of Regional Nodes in Breast Cancer, 68
Nigel Bundred, J Michael Dixon and Jeremy Thomas
- 10** Breast Cancer: Treatment of Elderly Patients and Uncommon Conditions, 77
J Michael Dixon and Richard Sainsbury
- 11** Role of Systemic Treatment of Primary Operable Breast Cancer, 86
AA Kotsori and Ian Smith
- 12** Locally Advanced Breast Cancer, 102
J Michael Dixon and Robert Leonard
- 13** Metastatic Breast Cancer, 109
Robert Leonard and J Michael Dixon
- 14** Prognostic Factors, 119
Alastair Thompson and Sarah Pinder
- 15** Psychological Impact of Breast Cancer, 125
Belinda Hacking

16 Carcinoma in situ, 130*Nigel Bundred and J Michael Dixon***17** Breast Reconstruction, 138*J Michael Dixon, Cameron Raine and Eva M Weiler-Mithoff*

Index, 151

Contributors

Nigel Bundred

Professor of Surgical Oncology, Academic Department of Surgery, University Hospital of South Manchester, Manchester, UK

Jack Cuzick

Wolfson Institute of Preventive Medicine, Queen Mary University of London, London, UK

J Michael Dixon

Professor of Surgery and Consultant Surgeon, Edinburgh Breast Unit; Clinical Director Breakthrough Research, Western General Hospital, Edinburgh, UK

Gareth Evans

Genetic Medicine, St Mary's Hospital, Manchester, UK

Belinda Hacking

Consultant Clinical Psychologist and Head of Clinical Health Psychology, Western General Hospital, Edinburgh, UK

Julie Iddon

East Lancashire Hospitals NHS Trust, Lancashire, UK

AA Kotsori

Clinical Fellow, Breast Unit, Royal Marsden Hospital, London, UK

Ava Kwong

Chief of Division of Breast Surgery, Queen Mary Hospital, The University of Hong Kong; Chairman, The Hong Kong Hereditary Breast Cancer Family Registry, Hong Kong; Visiting Associate Professor Department of Oncology, Stanford University School of Medicine, USA

Robert Leonard

Professor of Medical Oncology, South West Wales Cancer Institute, Singleton Hospital, Swansea, UK

Douglas Macmillan

Oncoplastic Breast Surgeon, Nottingham Breast Institute, City Hospital, Nottingham, UK

Julietta Patnick

Director, NHS Cancer Screening Programmes, Oxford University, Oxford, UK

Sarah Pinder

King's College London and Guy's and St Thomas' NHS Foundation Trust, London, UK

Cameron Raine

Consultant Plastic Surgeon, St John's Hospital, Livingston, UK

Richard Sainsbury

Consultant Surgeon and Honorary Reader in Surgery Department; Princess Anne Hospital, Southampton, UK

Ivana Sestak

Statistician, Wolfson Institute of Preventive Medicine, Centre for Cancer Prevention, Queen Mary University of London, UK

Ian Smith

Consultant Medical Oncologist and Head of Breast Unit, Royal Marsden Hospital and Institute of Cancer Research, UK

Jeremy Thomas

Consultant Pathologist, Pathology Department, Western General Hospital, Edinburgh, UK

Alastair Thompson

Professor of Surgical Oncology, Centre for Oncology & Molecular Medicine, Ninewells Hospital & Medical School, Dundee, UK

Eva M Weiler-Mithoff

Consultant Plastic Surgeon, Canniesburn Hospital, Glasgow, UK

Robin Wilson

Consultant Radiologist, Department of Clinical Radiology, The Royal Marsden Hospital, London, UK

Preface

The incidence of breast cancer continues to increase year on year but thankfully the number of women who die from breast cancer continues to fall. Arguments surround how much of this reduction is due to earlier detection and how much is due to better treatments, but the falling death rate suggests that the vast amounts of money that has been invested in breast cancer is paying dividends. All this investment in research and clinical trials has resulted in an explosion of literature and keeping up to date with the latest advances in the treatment of benign and malignant breast conditions has never been more difficult. The aim of the fourth edition of the *ABC of Breast Diseases* has been to combine this new knowledge together with what we already knew in a concise, short, evidence based well illustrated book. Despite being compact, it is nonetheless comprehensive and I have tried to include everything even a breast disease specialist might want to know. My aim was also to make it of practical use to doctors in primary care, so the text covers guidelines for referral and management of common benign conditions which are much more frequently seen in general practice than is breast cancer. The numerous pictures make it equivalent in scope to many atlases of breast disease. If you see something related to the breast that you do not recognise the chances are there is a picture of it in the ABC.

There have been many changes since the last edition. New chapters by new authors have been added on the epidemiology of breast cancer, genetics, prevention, management of high risk women and psychological aspects of breast disease. The chapter on systemic therapy of early breast cancer has also been completely rewritten and all other chapters have been revised extensively. New authors have been added to some of these chapters and many new illustrations, tables and graphs have been included.

I write or edit many textbooks on breast disease but the one I use most frequently in my daily clinical practice is the ABC. I use it as

an *aide memoire* and to find it useful in discussions with patients, students and staff in breast clinics. I hope others in primary care and in all branches of hospital practice find this new edition of value and even more informative than the third edition.

Thanks to all who have made the book possible. The authors as always have done all that was asked of them. Monica McGill helped interpret my edits, coordinate the many images, and made sure the book arrived at the publishers in a timely and orderly manner. Keerthana Panneer, typesetter and Sally Osborne, copy editor at Wiley-Blackwell converted the authors' words, my scribbles and the many pictures and tables into the book that you now read. Books take an enormous amount of time and I acknowledge the support my wife Pam and my sons Oliver and Jonathan for their patience while I wrote and edited at home. Most of the clinical photographs are from patients in Edinburgh and I want to personally thank all the women and a few men who agreed to be photographed and signed the medical photography forms to allow me to use their photographs in this book. My patients are my inspiration and the main reason I do what I do. They understand that in the field of breast diseases there is much we do not know. They are also aware however that there is much we do know and they want their doctors to deliver optimal management and treatments that are effective and evidenced based. That brings me full circle and explains why an updated version of the ABC outlining the current optimal approach to the management of patients with benign and malignant breast conditions is needed.

Mike Dixon
Edinburgh

CHAPTER 1

Symptoms, Assessment and Guidelines for Referral

J Michael Dixon¹ and Jeremy Thomas²

¹Edinburgh Breast Unit, Western General Hospital, Edinburgh, UK

²Pathology Department, Western General Hospital, Edinburgh, UK

OVERVIEW

- Breast conditions account for approximately 25% of all surgical referrals
- Guidelines for referral exist to ensure that patients with breast cancer do not suffer delays in referral
- Cancer can present as localised nodularity, particularly in young women
- All discrete masses and the majority of localised asymmetric nodularities require triple assessment
- Delay in diagnosis of breast cancer is the single largest cause for medicolegal complaints

One woman in four is referred to a breast clinic at some time in her life. A breast lump, which may be painful, and breast pain constitute over 80% of the breast problems referred to hospital and breast problems constitute up to a quarter of all female surgical referrals (Table 1.1).

When a patient presents with a breast problem the question for the general practitioner is: 'Is there a chance that cancer is present and, if not, can I manage these symptoms myself?' (Figure 1.1; Tables 1.2 and 1.3).

For patients presenting with a breast lump, the general practitioner should determine whether the lump is discrete or there is nodularity, as well as whether any nodularity is asymmetrical or is part of generalised nodularity (Figure 1.2). A discrete lump stands out from the adjoining breast tissue, has definable borders and is measurable. Localised nodularity is more ill defined, is often bilateral and tends to fluctuate with the menstrual cycle. About



Figure 1.1 Bathsheba by Rembrandt. Much discussion surrounds the shadowing and possible distortion of the left breast and whether this represents an underlying malignancy. Such findings would be an indication for hospital referral. With permission of the Bridgeman Art Library.

10% of all breast cancers present as asymmetrical nodularity rather than a discrete mass. When the patient is sure that there is a localised lump or lumpiness, a single normal clinical examination by a general practitioner is not enough to exclude underlying disease (Tables 1.2 and 1.3). Reassessment after menstruation or hospital referral is indicated in such women.

Table 1.1 Prevalence of presenting symptoms in patients attending a breast clinic.

Breast lump	36%	Strong family history of breast cancer	3%
Painful lump or lumpiness	33%	Breast distortion	1%
Pain alone	17.5%	Swelling or inflammation	1%
Nipple discharge	5%	Scaling nipple (eczema)	0.5%
Nipple retraction	3%		

ABC of Breast Diseases, Fourth edition. Edited by J Michael Dixon.
© 2012 Blackwell Publishing Ltd. Published 2012 by Blackwell Publishing Ltd.

Assessment of symptoms

Patient's history

Details of risk factors, including family history and current medication, should be obtained and recorded. Knowing the duration of a symptom can be helpful, as cancers usually grow slowly but cysts may appear overnight.

Inspection should take place in a good light with the patient's arms by her side, above her head, then pressing on her hips

Table 1.2 Conditions that require hospital referral.

Lump

- Any new discrete lump
- New lump in pre-existing nodularity
- Asymmetrical nodularity in a woman over the age of 35
- Asymmetric nodularity in a younger woman that persists at review after menstruation
- Abscess or breast inflammation that does not settle rapidly after one course of antibiotics
- Palpable axillary mass including an enlarged axillary lymph node

Pain

- If associated with a lump
- Intractable pain that interferes with a patient's lifestyle or sleep and that has failed to respond to reassurance, simple measures such as wearing a well-supporting bra or anti-inflammatory drugs
- Unilateral persistent pain in postmenopausal women that is in the breast rather than in the chest wall (see Chapter 3)

Nipple discharge

- All women aged >50
- Women aged ≤50 with either
 - bloodstained discharge
 - spontaneous single duct discharge
 - bilateral discharge sufficient to stain clothes

Nipple retraction or distortion

Nipple eczema

Change in skin contour

Family history

Request for assessment of a woman with a strong family history of breast cancer should be to a family cancer genetics clinic.

Table 1.3 Patients who can be managed, at least initially, by their GP.

- Women with bilateral tender, nodular breasts provided that they have no localised abnormality on examination
- Young women (≤35 years) with asymmetrical localised nodularity; these women require assessment after their next menstrual cycle, and if nodularity persists hospital referral is then indicated
- Women with minor and moderate degrees of breast pain who do not have a discrete palpable lesion
- Women aged <50 who have nipple discharge that is small in amount **and** is from more than one duct and is intermittent (occurs less than twice per week) and is not bloodstained. These patients should be reviewed in 2–3 weeks and if symptom persists hospital referral is indicated

(Figure 1.3). Skin dimpling or a change in contour is present in up to a quarter of symptomatic patients with breast cancer (Figure 1.4). Although usually associated with an underlying malignancy, skin dimpling can follow surgery or trauma, and can be associated with benign conditions or occur as part of breast involution (Figures 1.5–1.7).

Breast palpation

Breast palpation is performed with the patient lying flat with her arms above her head (Figure 1.8), and all the breast tissue is examined using the most sensitive part of the hand, the fingertips. It is important for the woman to have her hands under her head to spread the breast out over the chest wall, because it reduces the depth of breast tissue between your hands

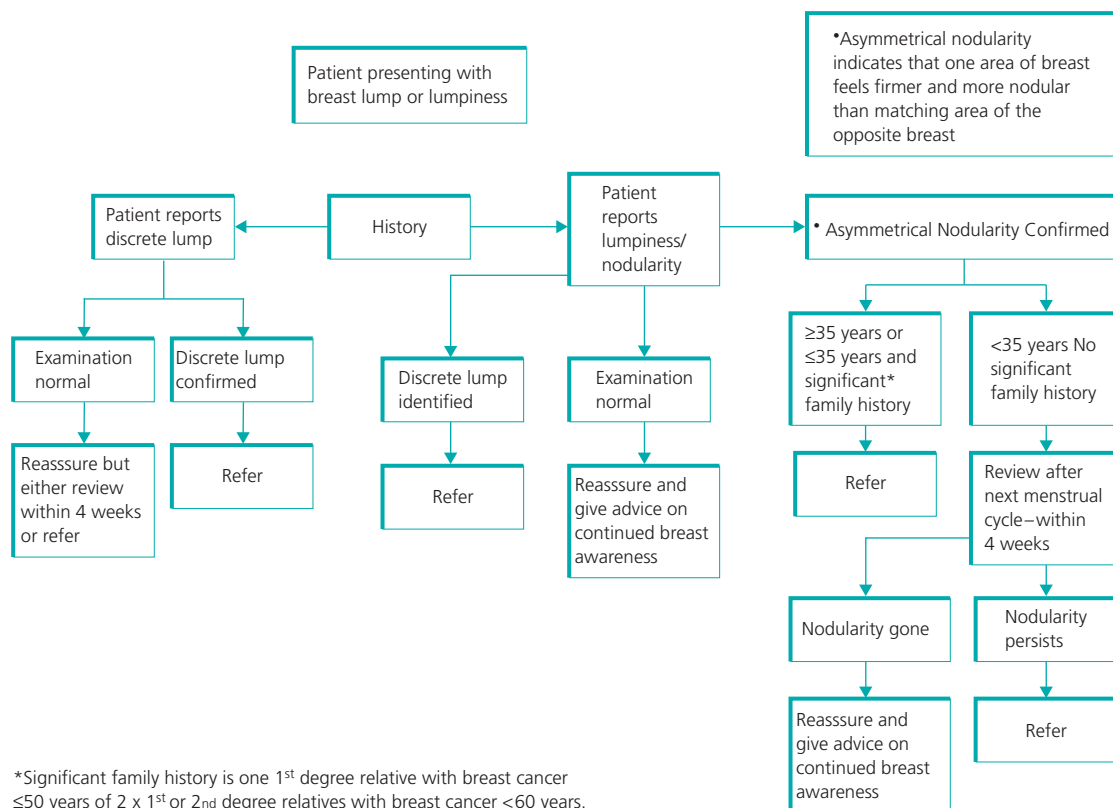


Figure 1.2 Management of patient presenting in primary care with a breast lump or localised lumpiness area or nodularity.

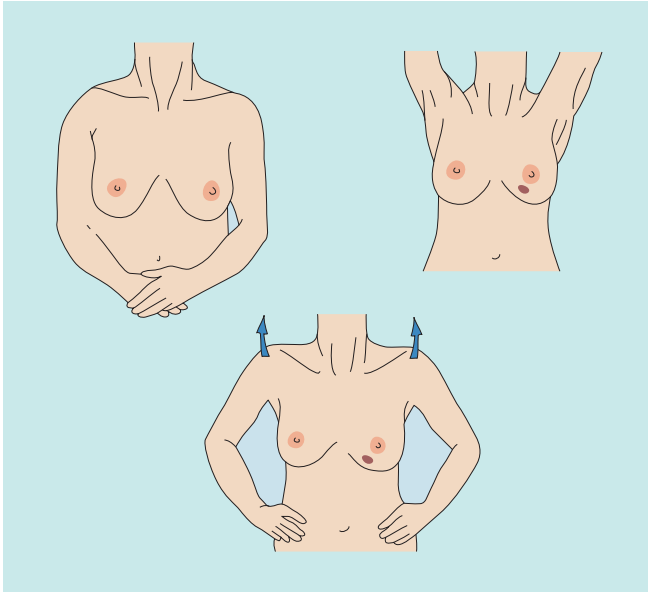


Figure 1.3 Position for breast inspection. Skin dimpling in lower part of breast evident only when arms are elevated or pectoral muscles contracted.

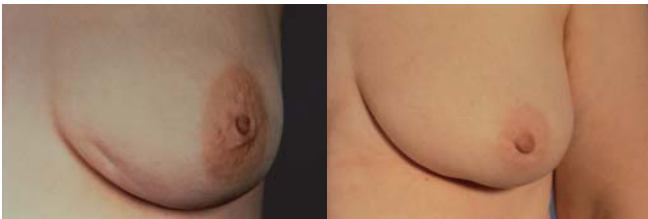


Figure 1.4 Skin dimpling (left) and change in breast contour (right) associated with underlying breast carcinoma.

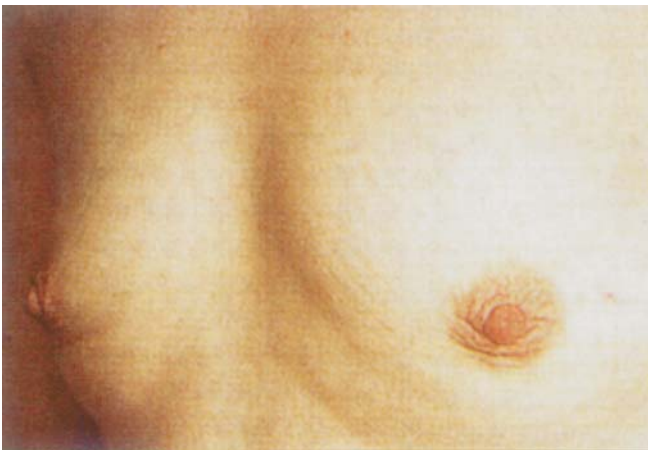


Figure 1.5 Skin dimpling visible in both breasts due to breast involution.

and the chest wall and makes abnormal areas much easier to detect and define. If an abnormality is identified, it should then be assessed for contour and texture. The presence of deep fixation is checked by tensing the pectoralis major, which is accomplished by asking the patient to press her hands on her hips. All palpable lesions should be measured with calipers. A clear



Figure 1.6 Skin dimpling after previous breast surgery.



Figure 1.7 Skin dimpling associated with breast infection.

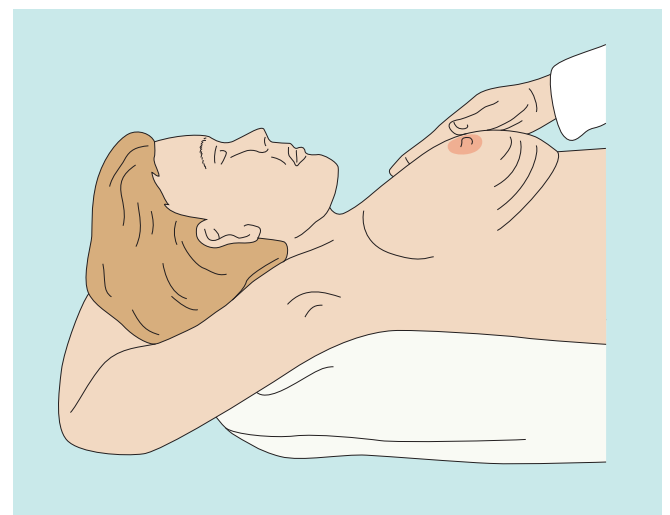


Figure 1.8 Breast palpation.

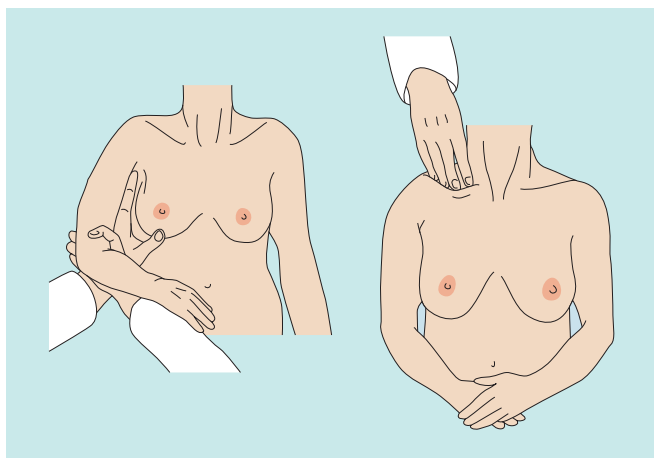


Figure 1.9 Assessment of regional nodes.

diagram of any breast abnormalities, including dimensions and the exact position, should be recorded in the medical notes.

Patients with breast pain should also be examined, the underlying chest wall being palpated for areas of tenderness while the woman lies on each side (see Chapter 3). Much so-called breast pain in fact emanates from the underlying chest wall.

Assessment of axillary nodes

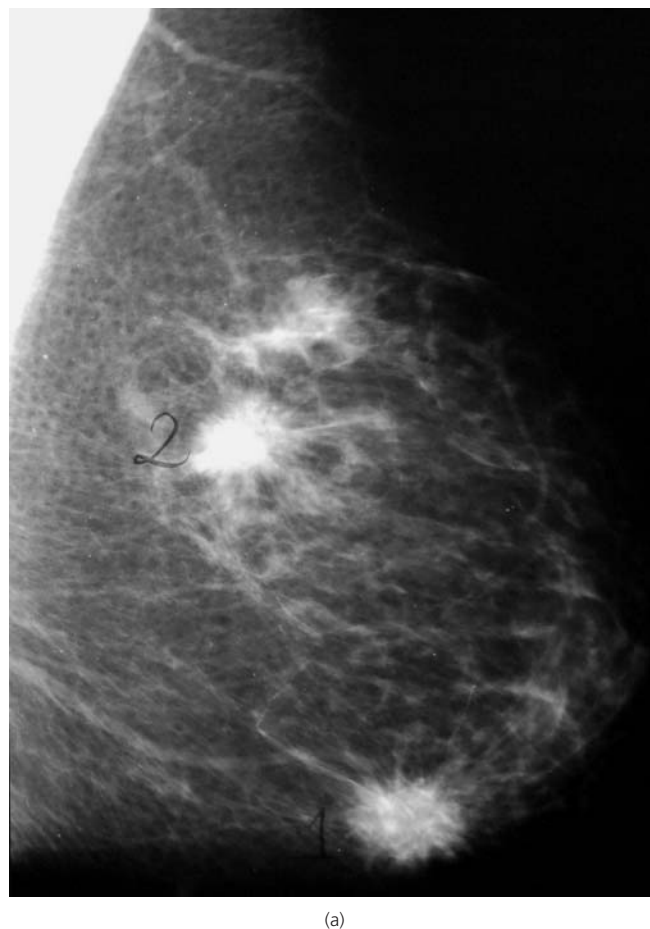
Once both breasts have been palpated, the nodal areas in the axillary and supraclavicular regions are checked (Figure 1.9). Clinical assessment of axillary nodes can be inaccurate: palpable nodes can be identified in up to 30% of patients with no clinically significant breast or other disease, and up to a third of patients with breast cancer who have clinically normal axillary nodes have axillary nodal metastases.

Mammography

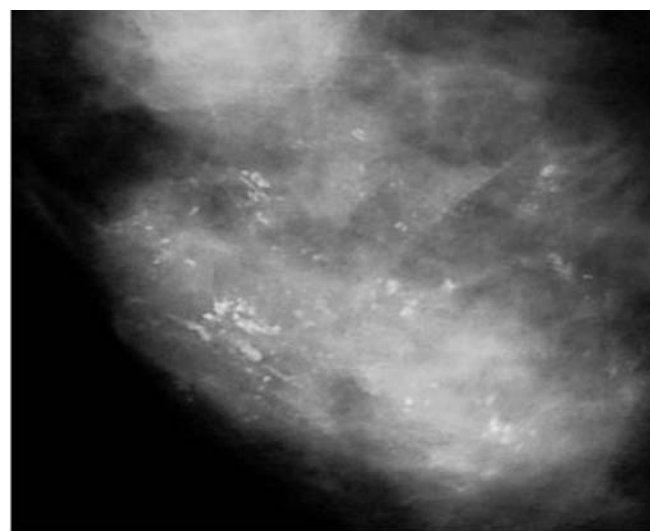
Mammography requires compression of the breast between two plates and is uncomfortable. Two views – oblique and cranio-caudal – are usually obtained. With modern equipment a dose of less than 1.5 mGy is standard. Mammography allows detection of mass lesions (Figure 1.10), areas of parenchymal distortion and microcalcifications. Breasts are relatively radiodense, so in younger women aged under 35 mammography is of more limited value and should not be performed unless on clinical examination, cytology or core biopsy there is a suspicion that the patient has a cancer (Figure 1.10). Digital mammography, which is now being used in most units, has a greater sensitivity for cancer detection in young women than standard film mammography. All patients with breast cancer, regardless of age, should have mammography before surgery to help with assessment of the extent of disease.

Ultrasonography

In ultrasonography high-frequency sound waves are beamed through the breast and reflections are detected and turned into images. Cysts show up as transparent objects; other benign lesions tend to have well-demarcated edges (Figure 1.11(a)), whereas cancers usually have indistinct outlines (Figure 1.11(b)). Blood



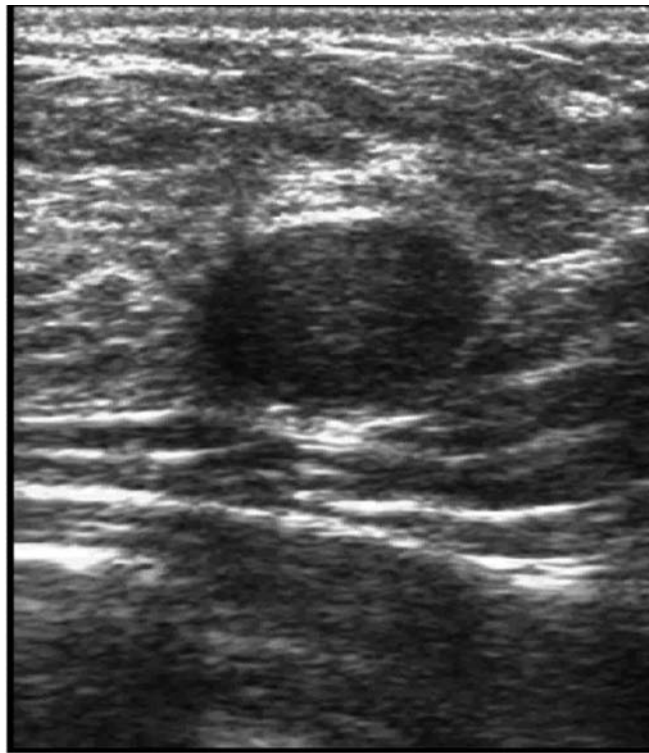
(a)



(b)

Figure 1.10 (a) Oblique mammogram showing two spiculated mass lesions characteristic of breast cancers in left breast. (b) Malignant calcification characteristic of high-grade DCIS.

flow to lesions can be imaged with colour flow Doppler ultrasound. Malignant lesions tend to have a greater blood flow than benign lesions, but the sensitivity and specificity of colour Doppler are insufficient to differentiate benign from malignant lesions



(a)



(b)

Figure 1.11 (a) Ultrasound showing a solid irregular mass lesion characteristic of a cancer. (b) Ultrasound of a fibroadenoma.

accurately. All patients with a diagnosis of breast cancer should have both a whole breast and an axillary ultrasound. If other evidence of disease is identified or abnormal nodes are seen, they should be biopsied under ultrasound guidance. Ultrasound contrast agents are available and continue to be investigated, but they are of no proven value in the routine assessment of breast masses or axillary nodes.

Magnetic resonance imaging (MRI)

Magnetic resonance imaging is an accurate way of imaging the breast (Figure 1.12). It has a high sensitivity for breast cancer

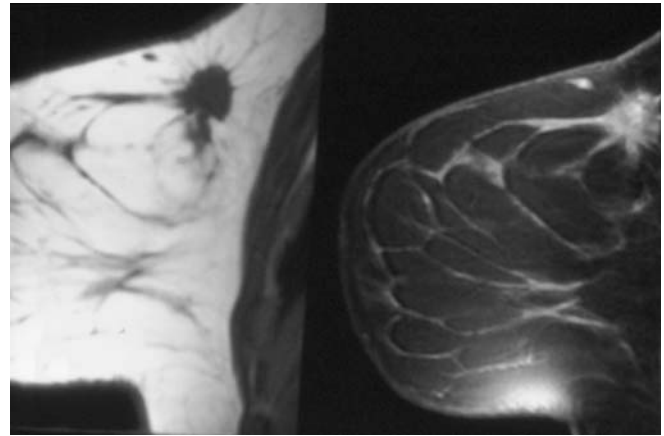


Figure 1.12 MRI scan showing cancer.

and may be valuable in demonstrating the extent of both invasive and non-invasive disease. The problem with MRI is a relatively low specificity and a positive predictive value of only two-thirds. It appears to be particularly valuable in assessing the extent of invasive lobular cancers, which are sometimes not well seen on mammography and ultrasound. It is also of value in assessing early response to neoadjuvant therapy in women with established breast cancer. MRI is useful in the treated, conserved breast to determine whether a mammographic lesion at the site of previous surgery is due to scar or recurrence. It has been shown to be a valuable screening tool for high-risk women between the ages of 35 and 50. MRI is the optimum method for imaging breast implants.

Fine needle aspiration cytology (FNAC)

FNAC is no longer commonly used to assess breast masses, but is valuable in assessing enlarged axillary or supraclavicular nodes visualised on ultrasound. Needle aspiration can differentiate between solid and cystic lesions. Aspiration of solid lesions requires skill to obtain enough cells for cytological analysis, as well as to interpret the smears. Image guidance increases accuracy, particularly in small lesions. A 21- or 23-gauge needle attached to a syringe is introduced into the lesion and suction is applied by withdrawing the plunger; multiple passes are made through the lesion. The plunger is then released and the material is spread onto microscope slides. These are then either air dried or sprayed with a fixative, depending on the cytologist's preference, and are stained (Figure 1.13). In some units a report is available within 30 minutes. The disadvantage of FNA in the breast is that it cannot differentiate invasive from in situ cancer.

Touch prep cytology of core biopsy samples and sentinel lymph nodes is possible and allows immediate reporting. If the biopsy sample contains a significant amount of tumour this technique is very accurate. Sensitivity of touch prep cytology of lymph nodes approaches 90%, which is better than the sensitivity of frozen section.

Core biopsy

Local anaesthetic containing adrenaline solution is infiltrated into the overlying skin and breast tissue surrounding the area to be