

Lymphoedema Care

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Clinical Nurse Specialist/Head of
Lymphoedema Services, MSc. BSc.
(Hons) RGN Onc. Cert.



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Blackwell Publishing editorial offices:
Blackwell Publishing Ltd, 9600 Garsington Road, Oxford OX4 2DQ, UK
Tel: +44 (0)1865 776868
Blackwell Publishing Inc., 350 Main Street, Malden, MA 02148-5020, USA
Tel: +1 781 388 8250
Blackwell Publishing Asia Pty Ltd, 550 Swanston Street, Carlton, Victoria 3053, Australia
Tel: +61 (0)3 8359 1011

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First published 2007 by Blackwell Publishing Ltd

ISBN: 978-1-4051-4628-9

Library of Congress Cataloging-in-Publication Data
Woods, Mary, 1957–
Lymphoedema care / Mary Woods.
p. ; cm.

Includes bibliographical references and index.

ISBN-13: 978-1-4051-4628-9 (pbk. : alk. paper)

1. Lymphedema. 2. Lymphedema—Treatment. I. Title.
[DNLM: 1. Lymphedema. 2. Lymphedema—therapy. WH 700 W896 2007]
RC646.3.W66 2007
616.4'2—dc22
2007020582

A catalogue record for this title is available from the British Library

Set in 10/12.5pt Palatino
by Graphicraft Limited, Hong Kong
Printed and bound in Singapore
by Fabulous Printers Pte Ltd

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Preface

The development of lymphoedema in a limb heralds the onset of a chronic condition which can require significant personal and professional resources in order to keep the swelling under control during what may be a lifetime of awareness. The intention of this book is to equip health-care professionals with the necessary knowledge and skills to identify those at risk of the development of lymphoedema and enable them to provide advice and information to patients concerning the management of mild, uncomplicated lymphoedema in order to minimise the risk of problematic swelling developing.

As cancer becomes more prevalent and patients live longer with their disease, health-care professionals working within a wide range of health-care settings will encounter patients with, or at risk of the development of, lymphoedema. Although the focus of this book is predominantly on secondary, cancer-related lymphoedema, the contents will also be invaluable to health-care professionals caring for patients with primary lymphoedema who continually struggle to find help and information for their condition. This book will help to address the gaps in knowledge that still exist about the care required by this group of patients.

The book consists of 12 chapters, leading the reader from an outline of what lymphoedema is to a consideration of who is at risk of its development and how to identify lymphoedema. Aspects of assessment and important areas of care for all patients, whether swelling in the limb is present or not, are then discussed and the book concludes by considering what it is like to live with lymphoedema and providing an outline of complications requiring more specialist intervention.

A comprehensive but focused approach has been used with the intention of providing core knowledge and skills regarding the management of lymphoedema for a wide group of professionals. It is hoped that this approach

highlights the importance of this area of care and how, rather than being just for specialists, it can be the responsibility of all health-care professionals.

Mary Woods
April 2007

Acknowledgements

I am indebted to the many patients with lymphoedema from whom I have been privileged to learn so much and without whom this book would not have arisen. Thanks are due to Beth and Katharine at Blackwell Publishing for their guidance along the journey and to my colleagues for their encouragement. I also wish to thank those who have provided permission for me to include photographs within this book. Finally, special thanks are due to Robin, Alex and Bryony who provided endless patience, support and understanding whilst enduring many hours of my absence from family life during the completion of this challenge.

The case studies at the end of each chapter have been included to highlight aspects of lymphoedema management and are based upon patients whose care I have been involved with. Their names and some of the details have been changed to protect the identity of those concerned.

Dedicated to my mother Nora

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What is Lymphoedema?

Introduction

Lymphoedema affects millions of people worldwide, but has different causes for its development. The most common cause of lymphoedema in modern western society is cancer and its treatment, whilst in tropical and subtropical climates, transmission of the filarial worm through the vector of mosquito bites leads to lymphatic filariasis. A congenital abnormality of the lymphatic system due to underdevelopment of the lymphatic system is called primary lymphoedema, the onset of which may be gradual or sudden and is often delayed until teenage years or later life.

In order to understand the management of a patient with lymphoedema, an understanding of the cause of the swelling is essential. The aim of this chapter is to explain the principles of oedema formation and why lymphoedema, as one type of oedema, may develop.

Learning objectives

At the end of this chapter the reader will be able to:

- outline the structure and function of the normal lymphatic system
- describe the physiological causes of oedema
- describe the term lymphoedema and the different types that are identified
- describe the reasons for the development of lymphoedema
- outline how lymphoedema is diagnosed.

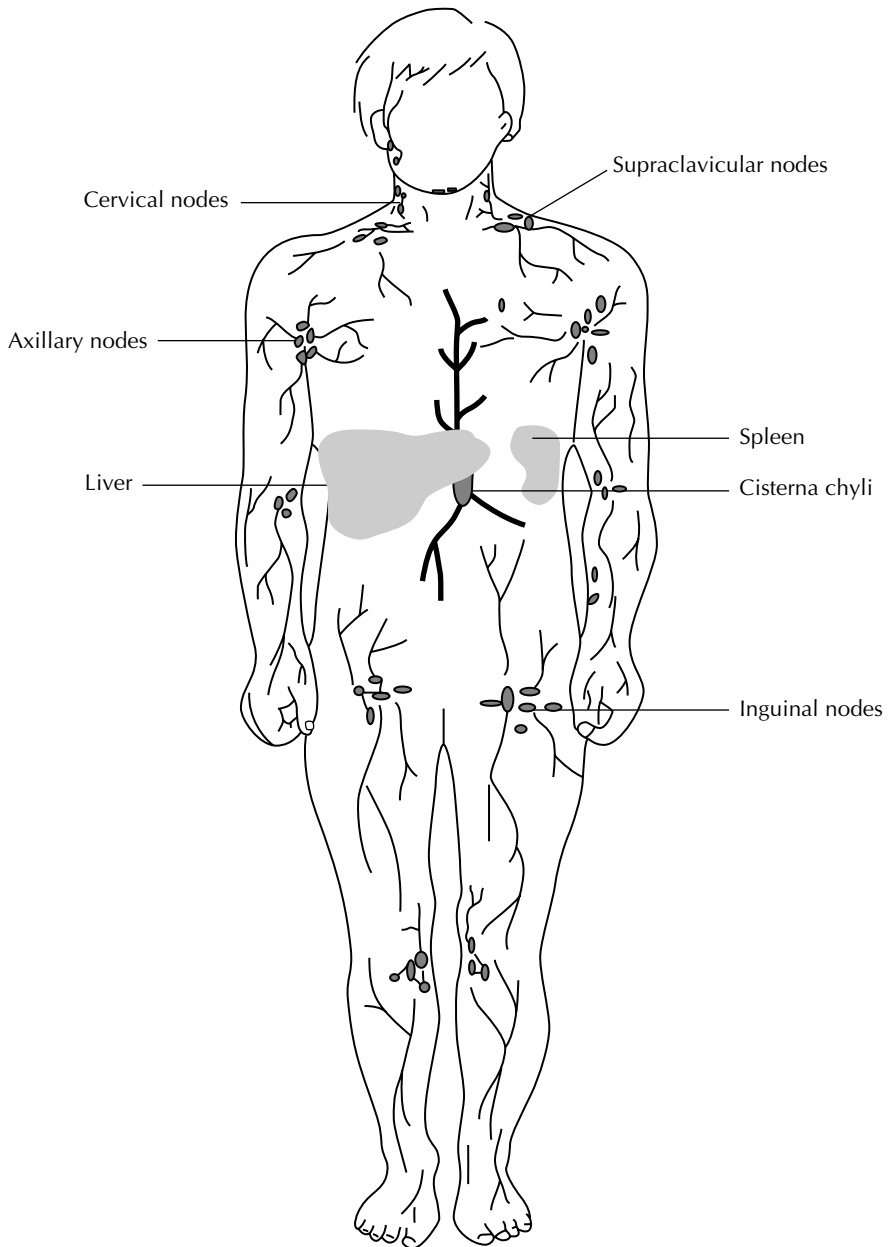


Figure 1.1 The lymphatic system (courtesy of Patient UK, www.patient.co.uk).

The lymphatic system

The lymphatic system is a one-way drainage system leading fluid from the tissues of the body to the veins in the neck. Lymphatic vessels are present in all tissues except the brain and bone marrow. Tiny lymph vessels converge to form larger vessels which pass through a series of lymph nodes to drain into two ducts, the thoracic duct and the right lymphatic duct, and finally empty into the venous system. A diagram of the lymphatic system can be seen in Figure 1.1.

Structure

- *Initial lymphatics.* These are blind-ended tubes which are found in the connective tissue spaces and are bathed by intracellular tissue fluid. The initial lymphatics are composed of a single layer of thin, flat endothelial cells with flaps which close when the vessel is full and lymph then moves into the adjacent lymph vessel. The movement of fluid in the initial lymphatics is dependent upon changes in local tissue pressure and muscle activity in the body rather than valves which are not found in the initial lymphatics.
- *Larger lymph vessels.* These delicate vessels are surrounded by smooth muscle cells and contain valves formed of thin layers of fibrous tissue covered by endothelium which ensure a unidirectional flow of lymph away from the tissues. The valves are most numerous close to the lymph nodes and in the upper extremity of the body. The larger lymph vessels have their own blood and nerve supply and contract actively to propel lymph. Movement of lymph in these larger vessels is influenced by skeletal muscle contraction, peristalsis in the gut and intrathoracic pressure changes in the lungs during breathing.
- *Lymph nodes.* The lymph nodes are surrounded by a fibrous capsule and have an internal honeycomb structure. They have a small, bean or kidney-shaped appearance and are situated in groups of various sizes within the lymphatic vessels. Lymphocytes within the nodes act like filters, collecting and destroying bacteria and viruses. Lymph nodes range in size from a few mm to 1–2 cm in their normal state, but may become enlarged due to tumour or infection. The number of lymph nodes in the body ranges from 500 to 1500 with the largest clusters found in the head and neck region, axillae, groin, pelvis and abdomen. Figure 1.2 shows the structure of a lymph node.
- *Lymph.* Lymph is found in closed lymphatic vessels as a transparent, colourless fluid with a similar composition to blood plasma. It contains plasma proteins, dead cells, organic matter, foreign bodies and fat from

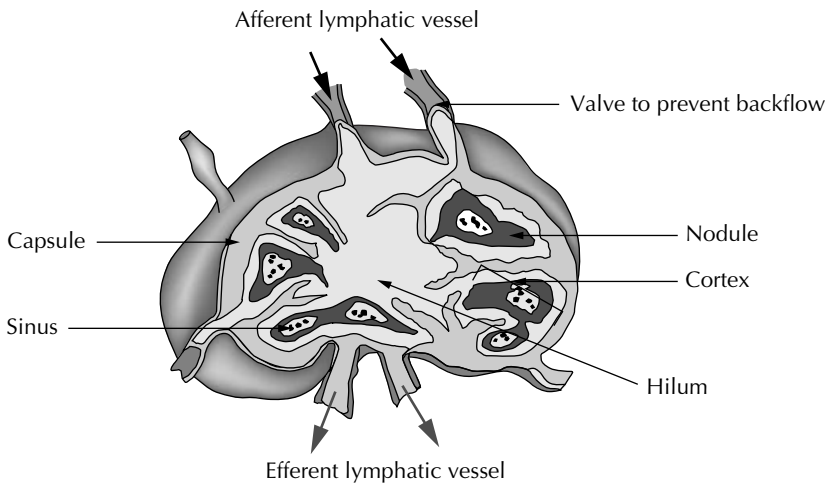


Figure 1.2 The structure of a lymph node.
Source: Wikipedia.

the intestine. Lymph circulates to the lymph node via afferent lymphatic vessels, draining into the node just beneath the capsule in a space called the subcapsular sinus. Foreign bodies are trapped here and the lymph is filtered before leaving the lymph node via the efferent lymphatic vessel.

Functions of the lymphatics

The lymphatics have three important functions in the body.

- A waste disposal function, reabsorbing plasma proteins and absorbing cell debris and particulate matter.
- An immunological function, absorbing microorganisms and defending against infections.
- The maintenance of tissue fluid levels, returning excess filtered fluid and protein to the blood.

The physiological causes of oedema

Fluid and protein continuously leak out of capillaries and enter the interstitial compartment of the tissues to form interstitial fluid. The fluid then enters the smallest lymphatic vessels and is transported away by the