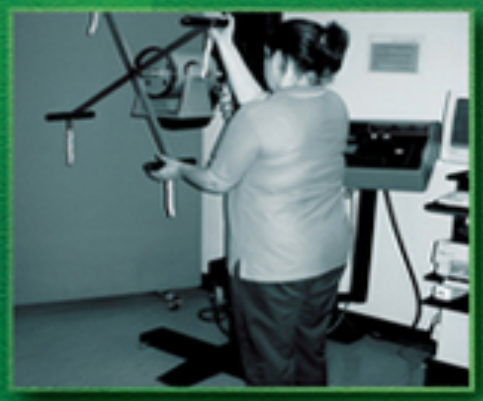
Occupational Therapy in Orthopaedics and Trauma



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Contents

Occupational Therapy in Orthopaedics and Trauma

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Foreword

Occupational therapy has played a key and well-established role in the lives of people with disabling or potentially disabling conditions for a number of years. Currently health care practices are being revolutionised with, for example, the use of keyhole and robotic surgery and the reduction in lengths of hospital stay, so occupational therapy, like all other health care professions, is rapidly changing too.

The pressures of working in today's demanding health care environment mean that occupational therapists new to the field of orthopaedics and trauma need quick access to up-to-date and trusted information. This includes the aetiology and current treatment techniques of the most common musculoskeletal conditions matched with evidence based occupational therapy. The aims are as always, to ensure that patients achieve the maximum benefits from surgery and have safe and effective hospital discharges as well as to enable them to maintain independence and quality of life in their own terms.

This book has been compiled with the needs of a busy practitioner in mind. The editors, Madeleine Mooney and Claire Ireson, are both highly respected and experienced specialists in the field of orthopaedics and trauma. They have drawn on their years of experience and the knowledge and best practice of eminent surgical colleagues and other specialist occupational therapists to create a book that can be studied in depth or dipped into for reference.

Spanning assessment, short-term and long-term rehabilitation, together with inpatient and outpatient care, this book has something to offer everyone. Students and occupational therapists returning to work, junior occupational therapists new to orthopaedics and trauma who need to 'hit the ground running', rehabilitation

assistants and other members of the rehabilitation team working in hospital or in the community, will all find this text an invaluable resource. Although written in the UK, its application is international.

I congratulate Madeleine and Claire for their excellent editing skills and all the authors for their expert and highly readable contributions and I heartily recommend this much needed addition to the occupational therapy literature.

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Preface

In our respective roles as a senior occupational therapist working in a trauma unit within an acute general hospital, and head of occupational therapy services within a specialist orthopaedic centre, colleagues, staff and students regularly questioned us regarding occupational therapy practice within these musculoskeletal settings.

These clinical enquiries were usually received from newly qualified occupational therapists embarking on their first post. This was often within a mixed speciality rotation and these practitioners wished to develop their orthopaedic and trauma skills and knowledge. It was evident that many had not had the opportunity to obtain clinical experience in these areas during their clinical placements when training. Pre-registration occupational therapy students undertaking their practice placement education within a trauma or orthopaedic service were also seeking practical and evidence based knowledge to support their learning in the clinical environment.

Also, as leading committee officers (chair and secretary) of the College of Occupational Therapists Specialist Section: Trauma and Orthopaedics (UK), we received many national and international musculoskeletal occupational therapy practice enquiries. These not only included students and junior occupational therapists, but also practitioners who had recently changed their field of practice, commenced working in new and emerging services providing continuity of care for people with musculoskeletal conditions with which they had limited or out-of-date experience and knowledge or for those who rarely encountered an individual with a musculoskeletal condition in their caseload.

Throughout our collaborative working, while providing support, information and guidance to these practitioners, we

became very aware that a well-recognised, practical and evidenced based text, specifically written for occupational therapists working in the field of trauma and orthopaedics was not available to support learning. There are a number of excellent well known orthopaedic textbooks and separate occupational therapy practice texts, but none of these are combined to give easy and quick access to information for busy practitioners.

We were approached to consider producing such a text by Colin Whurr, (then Whurr Publications), who wished to add to the range of occupational therapy publications. Following discussion, we were encouraged and persuaded to embark upon the task. Writing for publication was a new venture for both of us, but proved to be an irresistible challenge. Our agreed scope for the book was to cover the conditions, treatment and management of people with trauma and orthopaedic conditions most commonly encountered by occupational therapy practitioners. We acknowledged that we were by no means experts in all these fields and therefore we agreed we would approach specialist and expert contributors from both occupational therapy and surgical practice to help develop the content of the book.

For ease of reference, the book is divided into two parts: orthopaedics and trauma, with chapters linking the anatomy, aetiology and medical and surgical management of the condition, followed by the application of occupational therapy theory and practice. The chapters describe the most common musculoskeletal conditions and trauma that occupational therapists encounter in their daily practice. With over 200 musculoskeletal conditions affecting millions of people worldwide, there are many more conditions, syndromes and injuries that occur that we are not able to cover here. More information regarding these can be located in the classic orthopaedic texts, via specialist websites and

interactive media (some of which are listed at the end of the book).

We have described the theory of occupational therapy intervention and processes, and have presented practical treatment media that is evidence based, and those that are considered best practice by our expert occupational therapy colleagues. We have suggested frames of reference or models of practice and treatment approaches and interventions that are appropriate in this area of practice.

The text has been written to ensure it is appropriate for a wide international readership. Therefore reference to country specific guidelines and legislation has been avoided in most cases. We therefore encourage readers to review their own government, health and professional bodies' guidelines, legislation and policies and adopt these within their service development and clinical practice. We also acknowledge that access to resources and services will also range tremendously from region to region and from country to country, therefore we have tried to avoid being prescriptive or too specific in terms of recommending equipment or services. We believe our book is unique, and that it demonstrates collaboration and an inter-professional approach to sharing expert knowledge regarding the management of people with musculoskeletal conditions.

The fields of orthopaedics and trauma are constantly developing and evolving as advances in medicine, surgery and technology are made. Occupational therapy practitioners will need to ensure that they remain up to date and that their practice continues to develop and adapt so they remain flexible and innovative in the skills and approaches to the problems people referred to them may face resulting from trauma or musculoskeletal disease. It is certain that the population will continue to be affected by musculoskeletal conditions that limit functional ability and capacity, and that those with functional impairment will

continue to need and benefit from the skills and interventions of occupational therapists in the future.

Occupational therapists must ensure that they continue to meet the challenge of being an inter-disciplinary team member who remains focused on the individual's psycho-social needs, and impact of disease or trauma on their occupations, rather than narrowing their interventions solely on the management of a specific joint or injury. We will see throughout the text that occupational therapists offer a unique and holistic approach to the management of people, ranging from those with acute trauma to those living with a long-term musculoskeletal condition.

We have both learnt many new skills and acquired new knowledge during our editing and publishing journey. We are delighted that *Occupational Therapy in Orthopaedics and Trauma* has brought together contemporary talents in this field and hope that our book will become the definitive and indispensable text that enhances and develops the reader's knowledge. Our aspiration is that the reader will be inspired to continue and learn more about this challenging but satisfying area of clinical practice. Ultimately, we anticipate that this will lead to additional reading, study and investigation, thus contributing and expanding the body of research and knowledge base to inform future occupational therapy practice. This will ensure that best practice that is reliable and valid is disseminated. In turn, this will assist in providing the best quality of occupational therapy intervention for people in our care.

Madeleine Mooney and Claire Ireson

Acknowledgements

The editors would like to extend their appreciation to the many friends and colleagues who have helped and supported them in putting this book together.

In particular we are extremely grateful to all our contributors, we appreciate the time and effort you have put into your chapters, while working in demanding jobs, studying for examinations and striving to achieve a healthy work–life balance.

We are also indebted to those of you who read and provided constructive comments on individual chapters, in particular, Dr Chris Mayers for her helpful comments which guided revision of Chapter 3, Badri Narayan for his advice and guidance on Chapter 9 and Fiona Cashin for her thoughts and comments on Chapter 13.

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Our gratitude also goes to Philip Hall for his illustrations in Chapters 4 and 11 and Figures 5.1 and 5.2, from originals by T. J. C. Upton. We would also like to thank him for his computer ‘know how’ and invaluable assistance with the photographs throughout the book.

We also acknowledge the kind permission of Emis and Pip 2005 and Elsevier Publications for their kind permission to reproduce photographs, figures and tables, respectively.

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Part I

Orthopaedics

Chapter 1

Principles of orthopaedic surgery

Neil M. Orpen

Introduction

In this chapter we will explore some of the more recent developments in orthopaedic surgery, in particular, those aspects that form the basis of everyday practice. In recent years there has been a rapid expansion in the treatment options available to people with musculoskeletal disease. This has resulted from the development of safe anaesthesia, improved engineering of implant materials and refinement of surgical techniques. With this improvement, a greater emphasis has been placed on the person's recovery from surgery which, in turn, has led to the development and importance of rehabilitation and the multi-disciplinary approach to people's care.

History and early development

Orthopaedics derives from the Greek words 'straight' and 'child' and was a term described by Nicholas Andry (1658–1759) in his book *Orthopaedia: or the Art of Correcting and*

Preventing Deformity. Much of the early practice of orthopaedics was concerned with the correction of deformity. More recently, as our population age has changed, the conditions that form part of our everyday practice have changed too. To mention all the important developments in the process of orthopaedic history would be exhausting, but some names of interest follow.

Ambroise Pare (1510–1590) was a prominent surgeon in France in the sixteenth century and published on anatomy and physiology and later on surgery. He described a number of surgical techniques relating to amputation such as the use of ligatures for large vessels, and tourniquets. He also designed a number of surgical instruments and artificial limbs. At times of conflict, limb amputations were common and often the only treatment for limb injury and deformity. Limb amputation skills were displayed with amazing speed and precision in experienced hands.

Antonius Mathysen (1805–1878) invented the plaster of Paris (POP) bandage which remains part of everyday orthopaedic and trauma practice. Little has changed in the principle of this form of splintage since its creation and only some of the indications have been altered to keep up with alternatives offered by surgery. Joseph Lister (1827–1912) became James Syme's (of Syme amputation fame 1942) house surgeon and later married his daughter. While working as assistant surgeon to the Royal Infirmary in England he introduced antisepsis, which had a dramatic effect in reducing infection, and infection related mortality. This paved the way for further developments in surgical techniques and is a crucial part of successful surgery and specifically to orthopaedic surgery today. Wilhelm Conrad Rontgen (1845–1923) was a professor of Physics at Wurzburg and discovered roentgen rays (X-rays). The first radiograph taken was of his wife's hand and this was allegedly offered to her as a Christmas present. Something

he may not get away with today! In 1901 he received the Nobel prize for his work in this area.

Gathorne Robert Girdlestone (1881–1923) was the first professor of orthopaedics in Britain and has a long association with a number of prominent centres, including the Nuffield Orthopaedic Centre in Oxford. His technique of excision arthroplasty of the femoral head is a procedure now used mainly as a salvage procedure after failed hip replacement and carries his name. Originally it was commonly used to treat hip tuberculosis prior to the advent of antibiotic therapy and joint replacement surgery. In 1942, an American, Austin Moore (1899–1963), performed and reported the first metallic hip replacement. Although it involved replacing the entire upper portion of the femur with a vitallium prosthesis, this was the start of a rapid development in better designs and techniques. Sir John Charnley (1911–1982) improved the design of the total hip replacement and was also involved with the development of self-curing acrylic cement. Many of the hip joint arthroplasties performed in the 1960s by him are still surviving well. It is open to debate as to whether his excellent design was luck or brilliance, but it was to form the benchmark for total hip replacements for the next 40 years.

Other centres such as Exeter have now proven results of joint replacement while those such as Birmingham are in the early stages of producing promising long-term results with newer designs. The Birmingham hip resurfacing arthroplasty, designed by Derek McMinn and colleagues at the Royal Orthopaedic Hospital in Birmingham in the early 1990s has had widespread interest due to a successful return to early design principles but now with better manufacturing techniques and better results. Other designs of this metal on metal resurfacing arthroplasty have followed and these types of replacement are now widely used throughout Europe, the USA and Canada.

Although huge strides have been made in the past century in the field of orthopaedics, it is expected that similar ongoing advances will continue to be made. Developments in cartilage replacement options hold promise as alternatives to joint replacement and there is continued development in the field of stem cell research. These and many others offer tremendous therapeutic options for an ever-increasing population of people with orthopaedic problems.

Prevention of infection

Prevention and management of infection in orthopaedic surgery has been one of the most important advances over the past century, which has allowed rapid development in our practice. Over 70% of hospital-acquired infections occur in people who have undergone surgery and these lead to considerable morbidity and rise in surgical costs. Treatment of infection in bone can be very difficult, and following implant surgery even more of a challenge, and so the prevention of infection is where we place a great deal of our efforts.

Definitions

- **Decontamination** – a process of removing microbial contaminants which can be carried out by cleaning, disinfection or sterilisation.
- **Cleaning** – a process that removes visible contaminants but does not necessarily destroy microorganisms.
- **Disinfection** – reduces the number of viable organisms to an acceptable level but may not inactivate some viruses, hardy organisms such as mycobacteria, or

spores. A topical disinfectant that can be safely applied to epithelial tissue (like skin) is called an *antiseptic*.

- **Sterilisation** – this involves complete destruction of all viable microorganisms, including spores, viruses and mycobacteria. This may be accomplished by heat, radiation or chemical means and often the choice depends on the nature of the material being sterilised.

Prevention strategies

Handwashing has been shown to be the single most important method of controlling the transmission of hospital-acquired infection, as organisms are passed from one person to the next via staff caring for them. Washing the hands before and after physical contact with people and after activities where they are likely to become contaminated cannot be overemphasised.

Soaps, detergents or alcohol-based agents are now commonly provided in areas such as wards, clinics and outpatient departments where staff come into direct contact with people. A set of 'universal precautions' are typically taught and are available as a way of reminding staff of ways to prevent the transmission of infection. These include instructions on wearing gloves, dealing with wounds, sharp instruments and contaminated products. All staff should make themselves familiar with local policies and guidelines relating to these.

Screening of at-risk patient groups is important especially in the more controlled environment of planned or elective surgery. Organisms that can be detected and controlled, such as methicillin-resistant *Staphylococcus aureus* (MRSA), are important to detect prior to high-risk surgery and particularly in implant surgery. It is advisable to isolate a person found to be carrying these organisms so as to prevent the transmission to other people in the ward.