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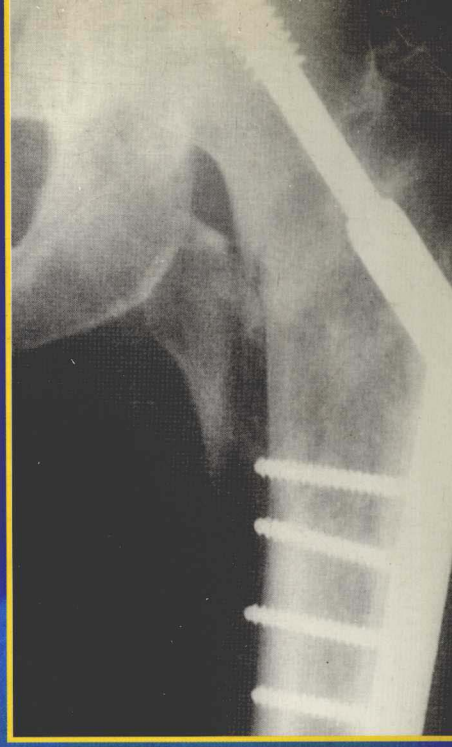

（第3版）Third Edition

骨科与创伤学基础

Essential O and Trauma

David J. Dandy
Dennis J. Edwards

科学出版社
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Essential Orthopaedics and Trauma

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Preface to the Third Edition

Orthopaedic surgery continues to make rapid advances and the specialty remains as exciting and dynamic as a decade ago when the first edition was written. This edition of Essential Orthopaedics and Trauma has been revised throughout to reflect recent developments while retaining the original layout.

New sections on the correction of angular deformities and the management of limb inequality have been added, the treatment of fractures has been updated and new illustrations included. The errors drawn to our attention by readers have been corrected and, doubtless, replaced by others.

Essential Orthopaedics and Trauma is now read in many countries where the spectrum of disease or the provision of health-care may be very different from our practice in Cambridge. Comments from readers or suggestions for improvements, especially those from overseas, are always greatly appreciated.

Cambridge, 1997 D.E./D.J.D.

Preface to the Second Edition

The second edition of *Essential Orthopaedics and Trauma* retains the same basic layout as the first, but with a number of improvements.

A few errors were discovered in the text – as predicted in the Preface to the First Edition – and these have been corrected. Some operations and investigative techniques have become obsolete since the first edition appeared in 1989 and have been deleted. The pace of innovation and development in orthopaedics is such that many new procedures and techniques have become available in the last three years and as many of these as possible have been added.

The principle that a textbook of orthopaedic surgery should be as enjoyable as the subject which it describes remains unchanged. May the reader enjoy this description of orthopaedic surgery as much as those who practise it.

Cambridge, 1993 D.J.D.

Preface to the First Edition

When starting to prepare this text, we had three main objectives. The first was to write it from scratch without reference to any other texts in the hope that this would avoid the perpetuation of old errors. In doing so, we have almost certainly introduced a few new mistakes of our own which have eluded us and the reviewers. If any reader feels strongly about a point in the text, we would like them to write to us.

The second aim was to produce a text that was relevant to modern orthopaedics. Many textbooks dwell at length on the Grand Old Diseases of the past, even if they are seldom seen today. We have tried to avoid this temptation in the belief that textbooks must change just as the spectrum of disease changes, but will doubtless be criticized because important conditions have not received their customary space. We will not help the critics by listing the conditions to which we refer.

Our third aim was to allocate space in proportion to the frequency with which the conditions occur, rather than their degree of fascination. There is more, for example, on Colles' fracture than on the mucopolysaccharidoses and facts about rare conditions are reduced to the minimum essentials. It is to be hoped that examiners approve of this approach, but there is still a tendency to believe that the candidate who knows all about extreme rarities must know even more about very common conditions.

Some sections of the text may appear so basic as to be patronizing, but we make no apologies for this. There is no fact so basic that it can be left unstated. Finally, we have tried to make the text easy to read. Orthopaedic surgery is neither dull nor boring, and its textbooks should be equally enjoyable. We hope that this textbook will serve the undergraduate student well, lay a good foundation for the Fellowship examination, and be a useful manual for family practitioners, physiotherapists and nurses who work closely with orthopaedic patients.

Cambridge, 1989 D.J.D.

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Finally, we would like to record our thanks to Mr Ian Ramsden for the line drawings and to Miss Nicola Townley for preparing the radiographs for publication.

Contents

Part 1

Background knowledge

1

Introduction

History and development

Orthopaedic surgeons deal with deformity, diseases of bones and joints, and injuries to the musculoskeletal system. Because these are among the commonest things to affect mankind there must always have been orthopaedic surgeons of one kind or another, even in the most primitive communities. Wherever there was a witch doctor or medicine man dealing with illness and disease as General Practitioners and physicians do now, somewhere there would have been a bone setter treating fractures and straightening limbs.

Despite these ancient origins, the word 'orthopaedic' is a recent introduction derived from the title of a book published by a French physician, Nicolas Andry, in 1741 entitled *Orthopaedia: Or the Art of Correcting and Preventing Deformities in Children: By such Means, as may easily be put in Practice by Parents themselves, and all such as are Employed in Educating Children.*

The word itself is derived from the Greek 'orthos pais' and means only 'straight child', but orthopaedic surgery has expanded from the correction of deformities in children to embrace every aspect of musculoskeletal surgery. Apart from coining the word orthopaedics, Andry also designed the symbol which has now become the worldwide logo of orthopaedic surgery. The 'tree of Andry' is taken from an engraving in 'Orthopaedia' which showed a crooked tree tied to a stake in order to straighten it (Fig. 1.1). The fact that it is virtually impossible to straighten a crooked limb by tying it to a straight splint has not affected the popularity of the symbol, which has been adapted for many purposes (Fig. 1.2).

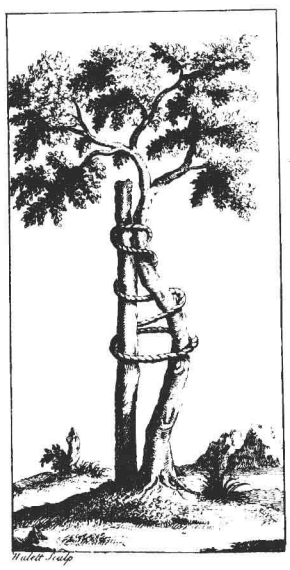

Fig. 1.1 The Tree of Andry. By kind permission of the Wellcome Institute Library, London.

In some countries, the work of the bone setter was willingly carried out by physicians, and Hippocrates himself is credited with the development of a technique for reducing dislocated shoulders which stood the test of time until general anaesthesia made it easy to overcome muscle spasm. Hippocrates is also said to have treated recurrent dislocation of the shoulder by applying a flaming torch to the axilla, but this treatment has not survived.

Physicians were not always as enlightened as Hippocrates. The 'bone setter', who earned his

living by his ability to manipulate broken limbs, was often regarded with disfavour by the established medical profession and this was certainly true in Britain. When the Medical Act of 1858 restricted the use of the title 'Doctor' to those who had passed certain recognized examinations, bone setters were excluded and became unregistered practitioners, but this did not stop them practising and their success remained a source of continual irritation to the medical profession. Orthopaedic hospitals existed in London and other large cities during the middle of the 19th century but they remained under the direction of registered medical practitioners.

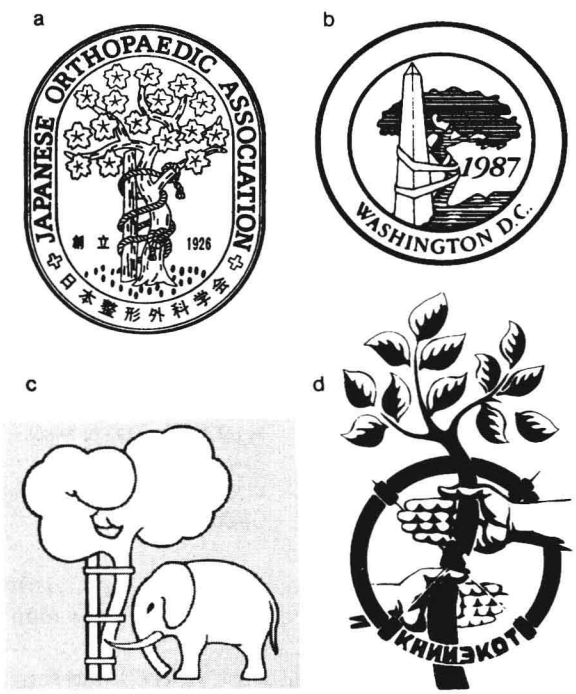

Fig. 1.2 (a) The emblem of the Japanese Orthopaedic Association. By kind permission of the Japanese Orthopaedic Association. (b) The emblem of the Eighth Combined Meeting of the Orthopaedic Associations of the English Speaking World, Washington DC, 1987. By kind permission of the American Orthopaedic Association. (c) Emblem of the Orthopaedic Department, Katholieke Universiteit, Nijmegen, by kind permission. (d) Emblem of the Kurgan Scientific Research Institute of Experimental and Clinical Orthopaedics and Traumatology, Kurgan, USSR. By kind permission of Professor GA Ilizarov and the Pan Union Kurgan Scientific Centre for Reconstructive Traumatology and Orthopaedics.

The medical profession might have been denied access to the 'black arts' of the bone setters altogether if it had not been for Evan Thomas, renowned as the last of the great Welsh bone setters, who decided to put all five of his sons through medical school. One of these sons was the legendary Hugh Owen Thomas (1834–1891), who trained in Edinburgh but qualified with the London MRCS in 1857 (Fig. 1.3). It is ironic that when Hugh Owen Thomas joined his father's practice in Liverpool, they found themselves unable to work together and quickly parted.

Hugh Owen Thomas had an enormous impact on the development of orthopaedic surgery in Britain both by his own effort and his influence upon his nephew, Robert Jones (1857–1933). Between them, Hugh Owen Thomas and Robert Jones laid the foundations of British orthopaedic surgery so successfully that it is easy to forget that less than a century ago much of its present work was carried out by practitioners regarded as charlatans by the rest of the profession.

Fig. 1.3 Hugh Owen Thomas. By kind permission of the Wellcome Institute Library, London.

As orthopaedic surgery became established, it attracted much the same attention from factions within the medical profession as the profession had shown the bone setters of the previous century. In 1918, 12 surgeons founded the British Orthopaedic Association. Also in 1918, the Royal College of Surgeons in England found time in a busy schedule to 'View with mistrust and disapprobation the movement in progress to remove the treatment of conditions, always properly regarded as the main portion of the General Surgeon's work, from his hands and place it in those of "orthopaedic specialists."' The general surgeons were right to be worried; they are now almost outnumbered by orthopaedic surgeons and the gap is closing fast.

ORTHOPAEDIC SURGERY TODAY

Modern orthopaedic surgery has changed radically since the time of Andry and now extends from the neonate to the elderly. The following are some of the more important segments of orthopaedic surgery today.

Neonates

The orthopaedic surgeon takes care of congenital deformity. Prompt treatment of some conditions in the first few days of life can produce an almost perfect result, but treating the same condition later may be much more difficult (see 'Congenital dislocation of the hip', p 344).

Children

As in Andry's time, children's deformities are the province of the orthopaedic surgeon, but children's orthopaedics now presents so many unusual and difficult problems that it has become a specialty in its own right (Chapter 21).

Trauma

Trauma has always filled much of the surgeon's time (Fig. 1.4). Today, multiple injuries, particularly road trauma, keep many beds full and form a large part of orthopaedic practice, sometimes to the exclusion of elective orthopaedic surgery.

Sports medicine

In some countries sports medicine is a separate specialty but in the UK, sports injuries fall within the scope of orthopaedics. Because the fitness of sportsmen attracts the interest of the public and the Press, the orthopaedic surgeon can find this part of his work receiving special scrutiny.

Degenerative joint disease

Like trauma, degenerative joint disease occupies a great deal of orthopaedic attention. Total joint replacement, particularly of the hip and knee, is a hugely successful operation which relieves pain and restores mobility to patients who would otherwise be condemned to persistent pain and restricted movement for the rest of their lives.

The elderly

Finally, there are the disorders of old age. With increasing age, the bones become progressively more

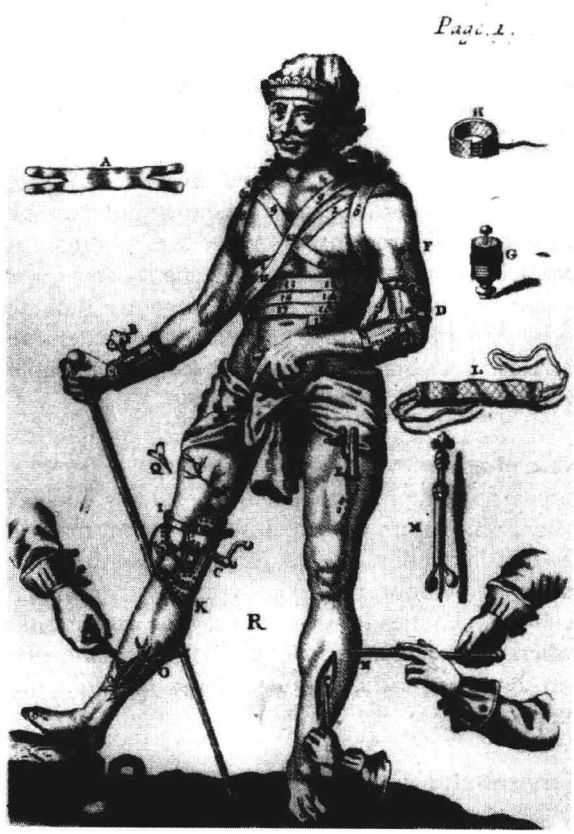

Fig. 1.4 Orthopaedic apparatus and instruments. From Cooke J (1685) Mellificum Chirurgiae. By kind permission of the Wellcome Institute Library, London.

brittle until they fracture with negligible trauma. All too often, fracture of the neck of the femur in an old patient living alone with little family support creates social problems that prove insuperable and mark the start of a downhill path that leads to death.

INVOLVEMENT WITH OTHER SPECIALTIES

No modern doctor can practise 'general' medicine in isolation from his colleagues, and this is particularly true for orthopaedic surgery. The orthopaedic surgeon must therefore have a working knowledge of many other disciplines.

Rheumatologists

Rheumatologists and orthopaedic surgeons deal with the same structures and must work closely together. A working knowledge of rheumatology is essential to the orthopaedic surgeon, just as a knowledge of orthopaedics is essential to the rheumatologist. In some countries the orthopaedic surgeon doubles as the rheumatologist.

Plastic surgeons

The management of trauma involves treating extensive skin loss and close liaison with the plastic surgeons is important to make the best use of available skin. If the initial management of a wound is bad, the work of the plastic surgeons is made more difficult. This is true not only of extensive skin loss but also the suturing of seemingly simple wounds in the accident department.

Neurologists

Apparently simple 'orthopaedic' problems, such as a recurrent sprain or weakness of an arm, may be the first indication of a neurological disorder such as a spinal tumour, muscular dystrophy, or multiple sclerosis. To be able to detect the exceptional patient who has a neurological disorder and not a truly orthopaedic problem takes considerable experience.

General and thoracic surgeons

In the treatment of trauma, a good knowledge of the management of thoracic and abdominal injuries is mandatory. Much major trauma is first seen by the orthopaedic surgeon because of the damage to the limbs, and he must also assess the damage to the chest or abdomen (p 161).

Community services

Community services are important to orthopaedic surgeons because they are closely involved with the health services outside hospital. An elderly lady with a fractured hip, for example, cannot be sent home to fend for herself without careful consultation with both the general practitioner and the community nurses (p 85). The orthopaedic surgeon must also know how to arrange special educational facilities for children with physical handicap and arrange the rehabilitation of disabled patients.

What does orthopaedic surgery achieve?

The wide range of conditions and different types of patients makes orthopaedic surgery an unusually interesting specialty which offers 'something for everybody', but there is also the satisfaction of knowing that the majority of patients can be helped. Patients with disabling arthritis are made more comfortable, deformities can be corrected or prevented, few orthopaedic patients are 'ill' in the true sense of the word, and malignant disease is rare. Trauma patients, in particular, are usually healthy individuals plucked from the community at random quite literally by accident and restoring them to full fitness is very rewarding.

ORTHOPAEDIC OPERATIONS

From a technical point of view, orthopaedic operations require a wide range of skills and techniques. Although many of the operations involve the traditional 'wet carpentry' of bone using hammers, chisels and drills, techniques such as joint replacement demand a sound knowledge of mechanics and materials science. Orthopaedic surgery can also include the microsurgical repair of nerves and vessels, massive spinal surgery, intricate operations on the tendons of the hand and endoscopy, all of which require different skills. This wide variety of techniques, involving instruments ranging from the operating microscope to the traditional hammer and chisel, demands a technical ability not required by surgeons in other specialties.

2

History and clinical examination

Most of the 'orthopaedic' words are explained in detail the first time they appear in the text but some words, which most people will already know, are not explained. These words are printed in **bold type** when they first appear and their meaning, together with those of obscure or ancient terms, is explained in the Glossary.

If you are uncertain about the meaning of a word, look it up in the Glossary on p 453

History

In most branches of medicine there is seldom any argument about the correct management once the diagnosis has been established. Orthopaedic surgery is different; the diagnosis is easy but the choice of management is difficult. The appropriate treatment varies from one patient to the next and is determined by age, sex, occupation and home circumstances, all of which must be established while the history is taken. The patient's attitude is also important and it is helpful to consider these points while taking the history:

General aspects of a consultation

1. Why has the patient come?
2. How well motivated is the patient?
3. Does the patient have a reason (litigation, for example) *not* to hope for recovery?
4. Does the patient have realistic expectations of treatment?
5. Has the patient *really* understood what you have said?

THE PATIENT

Reason for consultation

Most patients will be looking for the relief of pain or deformity but many seek only an explanation of their condition and its likely progress. A patient with sudden pain in one joint may be worried because he/she had a relative with severe **arthritis** which began with pain in just one joint and fears that he/she, too, is destined for a wheelchair. Other patients fear that their pain is the first sign of widespread cancer, particularly if a relative died with bone metastases, and parents' worries about the shape of their children's feet can be fuelled by concerned grandparents, friends, or health visitors.

These patients need nothing more than a sympathetic ear, firm and authoritative reassurance, and a careful explanation of the condition and its prognosis. To treat the symptoms energetically will only increase the patient's anxiety.

Motivation

Motivation is very important. Many orthopaedic operations demand hard work and complete