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Notes on Orthopaedic Nursing

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Foreword

Jane Webb's excellent little book has already become a popular and established work in its field as a result of the first edition, where the foreword was written by the late Charles Manning. In writing the foreword to the second edition, therefore, it is a double honour for me to be associated with two people who have contributed so much to orthopaedics, and especially to its practice at the Royal National Orthopaedic Hospital, Stanmore.

The following pages are not meant to be comprehensive for this is the role of the bulky textbook. In this slender tome the essential features of orthopaedics and trauma are covered with precision, balance and clarity. It is difficult to be brief and yet to maintain an attractive and readable style. The author must be complimented for having achieved this combination so well.

The size of the book is ideal for the pocket, handbag or briefcase according to the occasion, be it the ward or the bus. It is not designed for the bookshelf; it is meant to be used. The first edition certainly was, and undoubtedly the second will be also.

Middlesex, 1985

M.A.E.

Preface

The idea behind this book is to present the orthopaedic syllabus in a brief synoptic form. Quick reference is an advantage throughout training and particularly whilst revising for examinations.

It is hoped that the information will be of use, not only to nurses studying for their Orthopaedic Nursing Certificate, but also to students, qualified nurses, physiotherapists and other paramedical staff who wish to know more about orthopaedics.

Nurses and physiotherapists all receive a basic training in anatomy and physiology which is not included in this small book, but I hope they may use it in connection with their larger tomes. A suggested reading list to be used in conjunction with this book may be found on page 95.

I would like to thank my mother for all her help typing the script and all my friends at work for their encouragement.

Middlesex, 1977

J. T. W.

Second edition

Orthopaedic nursing never stands still. I have attempted to up-date this book, maintaining the note form.

Many more diagrams have been included, which I hope will clarify the text. Larger sections are included on children's topics and rheumatological conditions.

Middlesex, 1985

J. T. W.

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Introduction

Over the past two decades the type of work done in orthopaedic units and wards has changed considerably. Trauma, of course, continues but with modern treatments and trends the patient is out of hospital far quicker. Since the introduction of the compulsory use of seat belts, the number of facial and associated injuries has been reduced. The introduction of arthroscopes has meant that diagnoses may be confirmed more accurately, and in fact some operations such as a meniscectomy can now be performed through an arthroscope.

Despite the fact that treatments now take less time, the waiting lists for orthopaedic operations still lengthen – perhaps because far more is now on offer to patients. Replacement surgery is becoming almost commonplace. With the general population now living much longer, orthopaedics have a very important part to play in keeping the elderly patient mobile, pain-free and independent. Tumours in bones used to mean an early death, particularly for children and young adults, but the combination of chemotherapy with custom-made prostheses for the patient has changed the outlook considerably.

New cases of poliomyelitis are rarely seen these days; the orthopaedic care required is normally for the patient who developed the disease during the outbreaks thirty to forty years ago, and now presents with joint problems, due often to the unequal strain that has been put on to the sound joint. Tu-

berculosis has not disappeared completely, but with modern-day testing and immunisation it is more commonly seen in foreign people who have settled in this country or who are studying here.

Rehabilitation is now a very important topic in any orthopaedic syllabus. As with most orthopaedic conditions, teamwork in a rehabilitation unit is extremely important. Independence for the individual is greatly desired and this must be worked for and attained if at all possible. Nursing the rehabilitating patient is particularly difficult – having to stand by and watch someone struggle to achieve a goal is far more stressful than giving the helping hand, but the latter does nothing to help the patient.

Perhaps over the next twenty years things will develop to such an extent that it may be possible to repair the spinal cord, enabling paraplegic patients to walk again; perhaps the reason for idiopathic conditions such as scoliosis will be discovered; and if the cause of rheumatoid arthritis cannot be found, perhaps cures will be discovered that prevent the deterioration in joints. Osteoarthritis I fear will always be with us, but the growing interest in diets and keep-fit programmes can only lead to a healthier population. We already have replacement prostheses for the hip, knee, shoulder, elbow and finger joints, but no doubt others will be added to this list before long.

Orthopaedic conditions

The following chapter outlines the main conditions in orthopaedics and common types of surgery performed. Individual conditions will be found under the relevant chapter.

Tuberculosis

Incidence of disease is decreasing. Tuberculous bacillus may be either human or bovine. It reaches bone through blood stream from other foci e.g. intestinal tract or lungs. Bacillus may infect bone or synovial membrane. Causes inflammatory reaction followed by necrosis of bone and tissue.

Larger joints more commonly affected, also spine. Synovial membrane becomes thickened and inflamed. Articular cartilage destroyed and underlying bone eroded. Cold abscesses may form and track down muscles to skin surface: may rupture and form sinus.

Patient is usually child or young adult. Complaints of pain, swelling and lack of movement in joint. Joint often warm and surrounding muscles wasted. Erythrocyte sedimentation rate raised. Mantoux test positive. Joint aspiration may confirm diagnosis. Careful check necessary to exclude other tuberculous foci.

Treatment. Rest, good diet, fresh air and anti-tuberculous drugs, e.g. rifampicin and isoniazid which are usually given with either ethambutol, streptomycin or pyrazinamide. A

combination of three drugs is necessary and they must be continued for a minimum of six months. Affected joint or spine rested in bed. Plaster splintage may be helpful.

Abscesses drained if necessary. When disease quiescent erythrocyte sedimentation rate will drop. Physiotherapy commenced on affected joint until movement restored. If particular cartilage has been destroyed joint will be painful and non-functioning. Arthrodesis of joint in optimum position of function may be necessary.

Infective arthritis

Infection of joint by bacteria. May enter joint from bloodstream, externally from wound or extend from focus of osteomyelitis already in body. Any age group affected. Onset may be acute or insidious. Patient ill and pyrexial; affected joint hot and swollen due to effusion in joint and thickening of synovial membrane. X-rays show no change at start of disease. White cell count and erythrocyte sedimentation rate both raised.

Treatment. Bed rest and good diet. Causative organism identified if possible by culture of joint aspirate. Broad-spectrum antibiotics may be commenced before sensitivity reports available. Appropriate antibiotics given for minimum of three months. Joint rested in plaster, on traction or bed rest. Excessive fluid may be aspirated to relieve tension in joint. Antibiotics may be injected locally into joint. When disease quiescent, physiotherapy commenced to restore joint movement. If joint damage has been severe and recovery impossible, arthrodesis of joint at later date will render it painfree.

Rheumatoid arthritis

Chronic systemic disease affecting many joints. Occurs mainly in women between 25 and 45 years. Similar disease affecting

children is Still's disease. Cause unknown. Small joints affected first. Onset gradual. Synovial membrane inflamed causing swelling of joint, capsule and tissues, effusion into joint and thinning of adjacent bone. All cause pain and stiffness. Erythrocyte sedimentation rate will be raised and haemoglobin often lowered. Rheumatoid factor will be positive. Synovial biopsy performed to exclude infection. See Chapter 8.

Treatment. Bed rest in acute stages, with splints or plaster casts to support joints. Analgesic and anti-inflammatory drugs given. Passive physiotherapy followed by active use of joints as pain lessens. Wax baths and hydrotherapy may help. Synovectomy of diseased joint may improve function. Ruptured tendons in hand require repair. Arthrodesis of smaller joints may be helpful. Secondary osteoarthritis common.

Osteoarthritis

Degenerative wear-and-tear disease affects any joint but always one that has been under stress. Lower limbs affected more than upper.

Primary osteoarthritis occurs middle age onwards. Being overweight is only predisposing cause.

Secondary osteoarthritis may follow interference with blood supply to joints, e.g. Perthes' disease, fractures, traumatic dislocations, or interference with joint surfaces – congenital dislocation of the hip, infective arthritis, tuberculosis, slipped upper femoral epiphysis, rheumatoid arthritis, fractures and surgery. Articular cartilage, normally $\frac{1}{8}$ inch thick, frays and becomes fibrillated and may disappear altogether exposing bone. Synovial membrane becomes thicker and more vascular and protrudes into joint folds. Capsule thickens and contracts giving diminished movement. Bone hardens and increases in density and where exposed eburnates forming shiny surface. Osteophytes appear at periphery of bone. Cysts may form in bone: if numerous cause collapse of bone (Fig. 1.1).

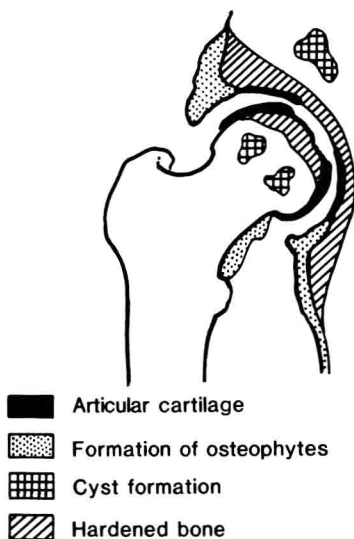


Fig. 1.1 Osteoarthritic changes in a hip joint. Note loss of joint space and wearing of articular cartilage.

Onset is gradual. Patient complains of pain and joint giving way. Pain not localised and often referred, e.g. hip pain felt in back and knee. Swelling not marked but may occur where there is little skin cover e.g. Heberden's nodes on finger joints.

X-ray shows loss of joint space, sclerosis of bone, lipping of bone edges with osteophyte formation and maybe formation of cysts.

Treatment. No known means of arresting degenerative process. General methods – Analgesics and anti-inflammatory drugs for pain. Weight reduction to reduce stress on joint. Local methods – Preservation of movements with physiotherapy and manipulations. Supply of crutches, sticks, corsets, collars, etc., as required. Hydrocortisone injections into joint help ease pain but increase rate of degeneration.

Operative methods – Four main types of operation used: osteotomy, arthrodesis, arthroplasty and excision arthroplasty. (Descriptions – see below.)

Osteotomy

Surgical cutting of bone. Used to correct angulation, bowing or rotation in a long bone, to help correct discrepancies in limb length. In case of arthritic joint, displacement osteotomy alters weight-bearing angle through joint and provides new weight-bearing surface (Fig. 1.2).



Fig. 1.2 Intertrochanteric displacement osteotomy with pin and plate fixation

Fractured bone ends following an osteotomy are usually held with internal fixation but splintage may be adequate. Weight is kept off joint until union is sound.

Arthrodesis

Fusion of joint abolishes pain at expense of movement. Greater strain placed on surrounding joints. Thought must be given to position of joint arthrodesis to allow optimum function. Operation particularly useful following tuberculosis or infective arthritis of joint when joint ends are severely damaged. Also useful for small joints in rheumatoid arthritis and in osteoarthritis when pain disabling (Fig. 1.3).

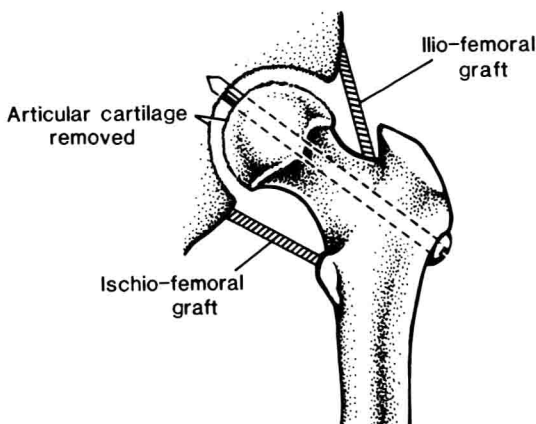


Fig. 1.3 Different ways in which a hip joint may be arthrodesed

Arthrodesis also used for correction of deformity, e.g. hammer toe and spinal curve after correction in structural scoliosis. When muscle power deficient as in poliomyelitis arthrodesis helps stabilise joint.

Arthroplasty

Surgical introduction of replacement joint. May be used for hip, knee, shoulder, elbow and finger joints. Great advance

has been made in this field and more joints are becoming available. Prosthesis may be specially designed for patients with extensive malignant bone tumours.

Cup arthroplasty is used in hip to cover shaped head of femur. May be useful in younger person. When only femoral head damaged, e.g. following fracture, single component arthroplasty used – Thompson or Austin Moore prosthesis. For arthritic hips double replacements are used, often with metal portion in femur and plastic in acetabulum, e.g. Charnley, Stanmore, McKee-Farrar. Knee, shoulder and elbow joints are commonly all metal. Finger spacer joints are made of silastic material (Fig. 1.4).

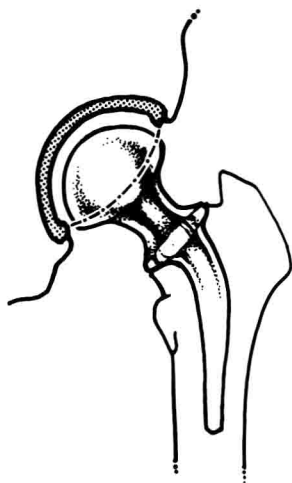


Fig. 1.4 Total hip arthroplasty with metal femoral component and plastic acetabular component

Following arthroplasty patient is mobilised quickly. Provides pain-free efficient joint.