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Editor's Message

We are pleased to publish this issue of CHARM that features Osteoarthritis, the most common arthritis in the community. Osteoarthritis has been a global health issue related to a predominance of elderly population in most countries. As the world's population is ageing, osteoarthritis is likely to cost higher demand in medical and surgical needs and resources in allied health care. Thus, discussion of the topic of osteoarthritis in this issue of CHARM is timely and necessary to draw your attention to better care for these patients.

The scientific committee of the Hong Kong Arthritis & Rheumatism Foundation has been organizing conferences as annual event of the Multidisciplinary Educational Series for Health Care Professionals involved in the management of patients with rheumatic diseases for a couple of years. A conference focused on Osteoarthritis was organized on 12 August 2017 and was well received. If you have missed the chance to join the educational talks, you will enjoy reading this issue of CHARM, for which we have the privilege of inviting most speakers to contribute to an article in their specialty.

Dr Helen Tsang, Specialist in Rheumatology, contributed to the clinical features and diagnosis of osteoarthritis. Ms Christina Leung wrote a review on the pharmacological treatment and guidelines in the management of patients with osteoarthritis. Mr WC Lam gave us a totally different view of using acupuncture as a form of traditional Chinese medical intervention in pain management for these patients. Dr C Zhang and Dr CH Yan revealed the different surgical modalities commonly used for patients who have advanced osteoarthritis over various joints. Ms Leona Yan showed us the workflow on fast track rehabilitation for joint replacement at a local public hospital. Dr KH Yip walked us through the nursing care for patients undergoing total hip replacement.

This is an informative issue to read supplemented by many clinical photos that is self-explanatory. Enjoy reading!

Clinical Features and Diagnosis of Osteoarthritis

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Introduction

Osteoarthritis (OA) is the commonest form of arthritis characterized by failed repair of joint damage, leading to eventual joint destruction and functional impairment. The clinical presentation of OA varies from an asymptomatic, incidental finding on radiographs to a painful, disabling disorder requiring joint replacement.

Clinical features and diagnosis of osteoarthritis

Clinical features

The principal symptoms of OA include pain, stiffness and locomotor restriction.[1] Pain is typically worse with joint use (mechanical pain) and relieved by rest. However, some patients can have early morning or nocturnal pain. The early morning stiffness in OA is usually less than 30 minutes and there may be short-lived inactivity-related stiffness (also known as gelling). Patients with OA have a limited range of motion of the affected joint (equal for both active and passive movement), which may be due to development of marginal osteophytes, capsular thickening and/or joint effusion.

OA typically affects patients over the age of 40. The common signs of OA include crepitus, joint line tenderness, bony swelling, deformity and/or reduced range of movement. The crepitus is due to friction between damaged articular cartilage and/or the bone and is manifested as a coarse crunching sensation on movement of the affected joint. Tenderness around the joint line is suggestive of an articular disorder, whereas tenderness away from the joint line suggests a peri-articular soft tissue disorder. Occasionally, patients can present with neuropathic or widespread pain in the peri-articular soft tissue, which may suggest comorbid fibromyalgia. Bony swelling is usually evident in small joints (e.g. proximal interphalangeal joints (PIP) and distal interphalangeal joints (DIP), first metatarsophalangeal joint) or in large joints (e.g. knee). In advanced OA, patients can have fixed flexion deformities at the knees, hips or elbows.

Principal manifestations of OA

Age of onset	>40 years old	
Symptoms		
Joint pain	- Usually affects one or a few joints at a time - Insidious onset - Variable intensity	- May be intermittent and relapsing - Increased with joint use and impact and relieved by rest - Nocturnal pain may occur in severe OA
Stiffness	- Usually short-lived (<30 minutes) early morning stiffness - Short-lived inactivity-related stiffness (gelling)	
Swelling	- Some (e.g. nodal OA) patients present with swelling and/or deformity	
Constitutional symptoms	Absent	
Signs		
Appearance	- Swelling - Deformity	- Muscle wasting
Palpation	- Absence of warmth - Bony swelling or effusion	- Joint-line tenderness - Periarticular tenderness (especially knee, hip)
Movement	- Coarse crepitus - Reduced range of movement	- Weak local muscles

Table 1. Principal manifestations of OA
Adapted from Abhishek A, Doherty M. Disease diagnosis and clinical presentation. OARSI Online Primer 2011

Diagnosis of OA

OA is a clinical diagnosis and it may be diagnosed without laboratory tests or radiographs in the presence of typical symptoms and signs in the at-risk age group. OA can be categorized into localized or generalized forms based on the number of joints affected. For localized OA, only 1-2 joints are involved, with knees, hips, interphalangeal joints, first carpometacarpal joints, first metatarsophalangeal joints and apophyseal joints of the lower cervical and lower lumbar spine being most commonly affected. For generalized osteoarthritis (GOA), 3 or more joints are involved, with the hands or spinal joints being one of the regions affected. The clinical marker for GOA is the presence of multiple Heberden's nodes (in the DIP joints) or Bouchard's nodes (in the PIP joints), which is also known as nodal GOA. Nodal GOA is more common in women, whereas non-nodal GOA is more common in men.

Peripheral joint OA can be diagnosed clinically if the person is: 1) 45 years or above, 2) has activity-related joint pain and 3) has no morning joint-related stiffness, or morning stiffness that lasts less than 30 minutes. However, relevant imaging and laboratory assessments should be performed in the following situations: 1) In patients <45 years of age in the absence of prior joint trauma, 2) atypical features are present (e.g. unusual distribution, signs of significant joint inflammation, rapid progression, severe nocturnal pain) and 3) presence of constitutional signs and symptoms e.g. weight loss, and 4) presence of true locking at the knee, which may suggest co-existing mechanical damage. Blood tests for inflammatory markers such as C-reactive protein and erythrocyte sedimentation rate are typically normal or marginally raised in OA, and they can be useful in excluding other diagnoses. Arthrocentesis for synovial fluid examination is not routinely utilized to support the diagnosis of OA. However, joint fluid analysis is indicated if there is suspicion of infection or co-existing crystal deposition disease.

Imaging in OA

1) Radiography

Radiographic examination may be useful in supporting the clinical diagnosis of OA but they should not be relied on solely to establish the diagnosis of OA given the poor correlation between radiographic structural changes and clinical symptoms in OA.[3] On the other hand, a normal radiograph should not be used to refute a clinical diagnosis of OA. Radiographic examination can play a role in assessing the prognosis in patients with OA especially in patients with knee OA. In a previous prospective study of 1507 patients with knee OA, those with more severe joint space narrowing (JSN) at baseline developed more rapid joint space loss than those with no JSN at baseline.[4]

Clinical features and diagnosis of osteoarthritis

2) Magnetic resonance imaging (MRI)
MRI is usually not required for most patients with typical OA. However, it can be used to identify OA at an earlier stage showing changes such as cartilage defect and bone marrow lesions. MRI can also be used to assess the periarticular soft tissue for pathologies such as effusion and synovitis.

3) Ultrasonography
Ultrasonography is useful for assessing OA-associated structural changes and for detecting synovial inflammation, joint effusion and osteophytes. However, it cannot assess deeper articular structures nor detect lesions in the subchondral bone.

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Pharmacological treatment on osteoarthritis and the roles of Clinical Pharmacist

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Osteoarthritis (OA) refers to a clinical syndrome of joint pain accompanied by varying degree of functional limitation and reduced quality of life[1]. It is the most common form of arthritis, and one of the leading causes of pain and disability worldwide and is associated with increasing age and obesity.

Initial management

Current management of OA is directed at providing symptomatic relief. Pharmacological treatments are adjuncts and the key to management is lifestyle change. Paracetamol or topical non-steroidal anti-inflammatory drugs (NSAIDs) are recommended as first-line pharmacological treatment in patients with hand or knee OA[1]. If paracetamol or topical NSAIDs offers insufficient pain relief, then the addition of an opioid analgesic can be considered. An adequate therapeutic trial for a topical NSAID is four weeks, and paracetamol is taken on an as required basis before starting a regular treatment regimen. Topical NSAIDs are recommended by both the American College of Rheumatology (ACR) and the European League Against Rheumatism (EULAR) for use in hand and knee OA[2,3]. A Cochrane review concluded that topical NSAIDs provide good level of pain relief in OA but with increase in local adverse events compared with placebo or oral NSAIDs[4]. Pain relief with topical NSAIDs may not be instant and is likely to increase over a period of several days.

NICE recommended management of hand and knee osteoarthritis

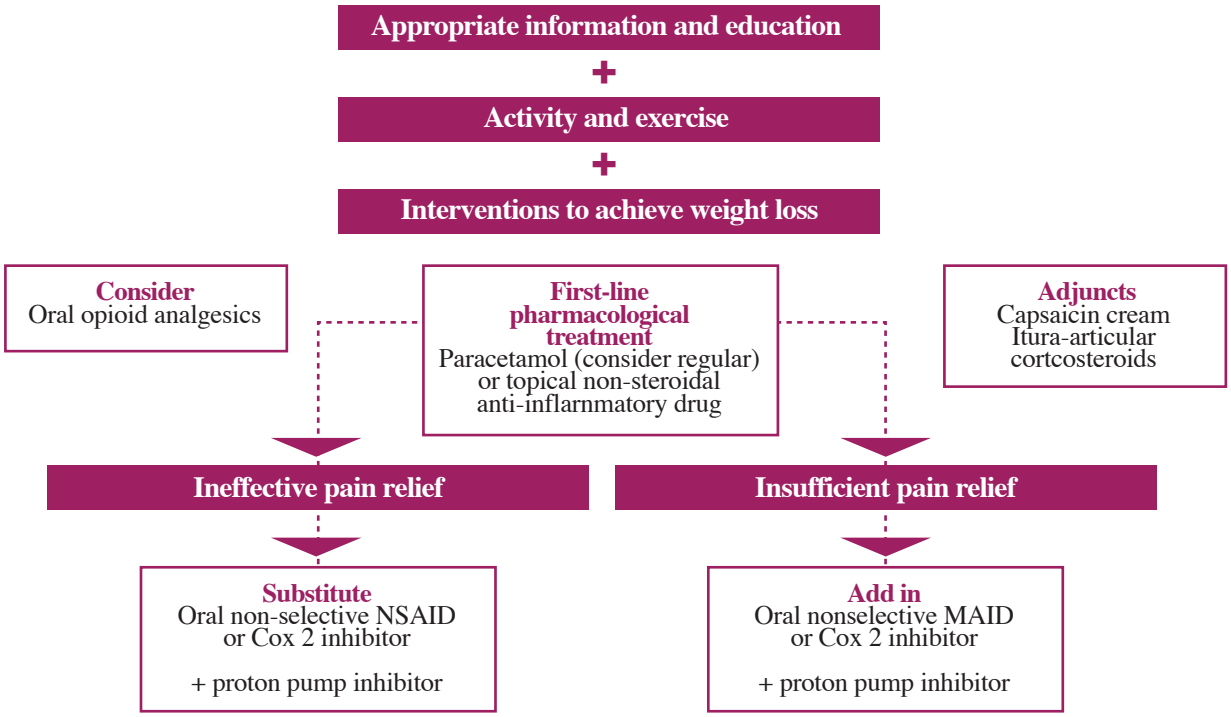

Figure 1 - Source: UK National Institute for Health and Care Excellence (NICE), 2014

Pharmacological treatment on osteoarthritis and the roles of Clinical Pharmacist

Oral NSAIDs

The National Institute for Health and Care Excellence (NICE) in the United Kingdom (UK) recommends evaluating clinical response to paracetamol and/or a topical NSAID before adding oral NSAID which can be a non-selective NSAID or a cyclo-oxygenase-2 (COX2) selective inhibitor[1]. The selection is based on the patient's comorbidities (e.g. age, concomitant medication, cardiovascular disease, renal function, history of peptic ulcer disease) and side effect profiles (e.g. gastric, renal and cardiovascular toxicity). The non-selective NSAID is recommended to be used at its lowest effective dose for the shortest possible period, and co-prescribed with a proton pump inhibitor (PPI) because of the risk of gastrointestinal bleeding. The use of alternative analgesics (e.g. opioids, or topical capsaicin with regular paracetamol) is recommended by NICE before substituting or adding a non-selective NSAID or COX2 inhibitor in OA patients taking low-dose aspirin[1]. Patients who do not respond to one NSAID might respond to a different one. Each treatment should be given an adequate therapeutic trial before changing to an alternative; a full analgesic effect would be achieved in one week, while an anti-inflammatory effect may not be achieved for at least three weeks. Recent studies suggest that increased cardiovascular risk may apply to all NSAID users irrespective of their baseline risk[5]. The greatest concern relates to chronic users of high doses. Naproxen is associated with a lower thrombotic risk than the COX2 inhibitors.

Opioid analgesics

Opioid analgesics may be indicated for patients with unacceptable pain despite treatment with oral paracetamol or topical NSAIDs when oral non-selective NSAIDs or COX2 inhibitors are contraindicated. Elderly patients may be particularly sensitive to the side effects of opioid analgesics, and concomitant medicines may contribute to the sedative and constipating effects of these medicines. Current ACR guideline recommends the use of tramadol in OA, but does not support the use of opioids in the management of OA[3].

Other treatments

Topical capsaicin cream is recommended by NICE as adjunct therapy for knee and hand OA and by the ACR for knee OA. A comparative efficacy review in 2011 concluded that topical capsaicin was better than placebo for 50% pain reduction (number needed to treat 8.1)[6].

Duloxetine is a serotonin and noradrenaline reuptake inhibitor and is recommended by the ACR for some patients with hip OA[3], and OARSI guidelines state that the use of duloxetine is appropriate in patients with multiple joint OA[6]. Duloxetine is not licensed for the treatment of OA in the UK. In the United States, the license for the Cymbalta brand includes the management of chronic musculoskeletal pain. Both a systematic review and a randomised controlled trial comparing duloxetine with placebo found duloxetine to be tolerable and efficacious for chronic pain associated with OA.

Chondroitin and glucosamine are available for purchase over the counter for pain relief. NICE does not recommend glucosamine and chondroitin products for the management of OA. The ACR also does not support the use of glucosamine or chondroitin in OA of the hip or knee.

Chondroitin sulphate belongs to a class of very large molecules called glycosaminoglycans, which are made up of glucuronic acid and galactosamine. It is manufactured from natural sources such as shark and bovine cartilage. The rationale for taking this supplement in OA is that chondroitin is found endogenously in the cartilaginous tissues of most mammals and serves as a substrate for the formation of the joint matrix structure. The most recently published meta-analysis showed no statistically significant benefit of chondroitin when compared with placebo. In a stratified analysis of larger, high quality trials, the effect sizes for pain were small to non-existent[6].

Glucosamine is available in three forms: glucosamine hydrochloride, glucosamine sulphate and N-acetyl glucosamine. Glucosamine is required for the synthesis of mucopolysaccharides; these are carbohydrate containing compounds found in tendons, ligaments, cartilage and synovial fluid. A meta-analysis concluded glucosamine does not improve in relation to pain relief in hip or knee OA[7]. A systematic review also failed to demonstrate any effect on disease modification when compared with placebo at one year follow-up.

Hyaluronic acid intra-articular injections are not recommended by NICE, but current ACR guideline recommends the use of hyaluronic acid injections in people aged over 74 years with knee OA that is refractory to standard pharmacological treatments. Hyaluronan is a natural substance found in the body and is present in high amounts in the synovial fluid of joints. It acts as a lubricant and shock absorber within the joint. Synthesized hyaluronic acid is gel-like in nature and is injected intra-articularly into the knee joint to supplement the natural hyaluronan in the joint and reduce pain associated with OA of the knee. The injection may reduce pain over a period of one to six months, but there may be an increase in knee inflammation in the short term. Inconsistent conclusions from meta-analysis and conflicting results regarding safety have led to reluctance to support use in the management of knee OA. A recent systematic review found a small but significant effect on knee pain by week 4 and a peak at week 8 with moderate clinical significance. The effects lasted up to 24 weeks[6].

Pharmacological treatment on osteoarthritis and the roles of Clinical Pharmacist

Disease-modifying anti-rheumatic drugs (DMARDs) may be of benefit in the management of OA, as imaging techniques have demonstrated that OA is associated with inflammation of the synovium (synovitis). A 12-month randomised trial involving 248 patients with hand OA and moderate-to-severe pain who were assigned to 200–400 mg hydroxychloroquine or placebo, in addition to on-going usual care did not show any significant difference compared with placebo group. Current guideline does not incorporate the use of DMARDs in the treatment of OA[8].

Roles of clinical pharmacist

The care of OA patients should be managed in a multi-disciplinary approach including doctors, nurse specialists, pharmacists, surgeons, dietitians and physiotherapists. Clinical Pharmacists play a significant role to improve the quality of care in OA patients. The areas that pharmacists can contribute include patient counselling to improve patient compliance, recommendation of drug treatments using evidence-based approach, with the medical doctors in the preparation of clinical guidelines, designing patients leaflets, delivery of patient education talks, recommending appropriate antibiotic prophylaxis before surgery and its monitoring, and participation in clinical trials on new treatments.

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針灸如何處理骨性關節炎的術前疼痛

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骨性關節炎（Osteoarthritis）是一種退化性病變。人體各個關節受歲月摧殘、長期反復勞損或受到外力損傷，導致關節內的軟骨組織出現磨蝕及損耗，使骨與骨互相磨擦，產生疼痛腫脹等發炎症狀。骨性關節炎可發生在各個關節，如手指關節、肩部、髖部及雙膝關節等，當中以膝關節最為多見，故本篇將以探討治療膝關節為主。膝關節是由股骨、腓骨、脛骨及髕骨組成，它們分別組成兩個關節面：股髕關節及股脛關節，而骨與骨之骨間存在着軟骨組織，這些軟骨有承受着上半身壓力及潤滑關節的作用。當人隨着年齡增長，關節內的軟骨會因缺少水份而失去彈性，再加上反復的屈伸運動，軟骨組織會因過度受壓而受損，破壞了膝關節完好結構，而骨膜發炎腫脹進一步使膝關節內的力學失衡，使症狀加重。膝關節退化大多於中老年時期發生，而近年亦有年輕化的趨勢。其初期症狀大多以雙膝酸軟、步行乏力及關節發出響聲為主，以上症狀大多不大影響生活，所以大部分初期患者都不會尋求治療，待受累關節出現疼痛腫脹，影響生活時已發展至中期，出現疼痛、腫脹、僵硬及關節變形等症狀。

退化性膝關節炎可分為初、中、後期三個階段，而西醫會根據患者嚴重情況，給予消炎止痛藥、物理治療及手術介入等治療。根據醫院管理局統計數字，2010年至2015年於公立醫院輪候接受關節置換手術的病人有12,000 人，病人平均需輪候四年才能接受手術，此類病人在等侯接受手術前，部分會選擇中醫治療；亦有部分病人未能承受消炎止痛藥的副作用，從而選擇接受中醫診治。

從中醫角度，退化性膝關節炎所引起的各種症狀屬「痹症」、「傷筋」的範疇，其病因大多以本虛標實為主。退化性膝關節炎是因年齡增長，身體機能減退所致，中醫認為腎為人體先天之本，過度的勞逸損耗藏於腎內的先天之精，所以肝腎不足為老年人腰酸膝痛的主要因素，而各個臟腑虛弱亦會使經絡氣血不足，出現「不榮則痛」的「本虛」情況；另一方面，風寒濕外邪入侵膝部經絡（或因外傷致局部瘀血停滯）亦可使局部經絡出現「不通則痛」的「標實」情況。

針灸如何處理骨性關節炎的術前疼痛

現時，接受中醫治療骨性膝關節炎患者大多以針灸治療為主，再根據病者的狀況，配合中藥內服，外敷，推拿及拔罐等治療。治療原則為行血化瘀，通痹止痛，主流穴位為梁丘(ST34)、血海(SP10)、內膝眼(EX-LE4)、膝眼(EX-LE5)、陽陵泉(GB34)、陰陵泉(SP9)、足三里(ST36)等[1]。一項於2016年所發表的研究，使用了以上類似的穴位為骨性膝關節炎患者進行治療，發現經四周治療後，患者於疼痛、活動度及生活質量皆有良好的進展，而膝關節於磁力共振下亦產生變化[2]。再者，亦有研究顯示針灸可啟動人體內鎮痛機制，有效舒緩膝關節炎症狀[3]。

中醫在針灸治療骨性膝關節炎仍在不斷發展。「筋針」是一種有別於傳統方法的一種針灸方法，根據中醫「經筋」理論，於人體上尋找「筋結」的地方進行治療，有效地達到即時鎮痛的效果[4]，而此方法只於人體表皮處進行針刺，是一種可配合運動的針刺方法，改善膝關節的整體結構。

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Surgical Management of Osteoarthritis

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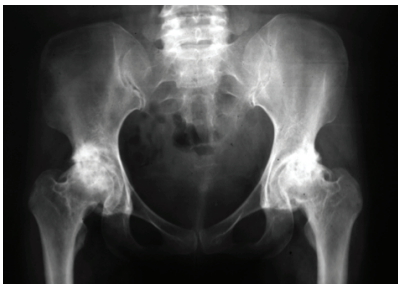
Osteoarthritis (OA) is the most common form of arthritis, affecting millions of people worldwide. It occurs when the protective cartilage on the ends of bones wears down over time. Although OA can damage to any joint in the body, the disorder most commonly affects joints such as knees, hips, hands, elbows, and shoulders.

Diagnosis and Investigation

Signs and symptoms

Symptoms of OA vary, depending on which joints are affected and how severely they are affected. However, the most common symptoms are pain and stiffness, particularly early in the morning or after resting. Affected joints may get swollen progressively with limited range of motion and joint deformity.



Investigations

- X-ray: Cartilage loss is revealed by a narrowing of the space between the bones in a joint. An X-ray may also show bone spurs (osteophytes) around a joint.
- Magnetic resonance imaging (MRI): An MRI produces detailed images of bone and soft tissues, including cartilage.
- Joint aspiration: The doctor will insert a needle into the joint to withdraw fluid. The fluid will be examined for evidence of crystals or joint deterioration. This test can help rule out other medical conditions or other forms of arthritis.

Figure 1a: A pelvis X-ray showing osteoarthritis changes in both hip joints. The disease is characterized by loss of joint space, osteophytes formation, subchondral sclerosis and subchondral cyst formation.

Figure 1b: A knee X-ray showing osteoarthritis. The medial joint space is decreased.

Surgical management of osteoarthritis

Surgical management

Osteotomy around knee

Osteotomy literally means "cutting of the bone." In a knee osteotomy, either the tibia (shinbone) or femur (thighbone) is cut and then reshaped to relieve pressure on the knee joint. Knee osteotomy is used when a patient has early-stage OA that has damaged just one side of the knee joint. By shifting weight off the damaged side of the joint, osteotomy can relieve pain and significantly improve function in an arthritic knee.

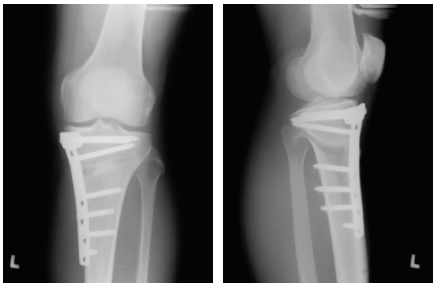


Figure 2. High tibial osteotomy is one of the surgical treatment of medial compartmental osteoarthritis in knee.

Osteotomy does have disadvantages. For example, pain relief is not as predictable after osteotomy compared with a partial or total knee replacement. Recovery from osteotomy is typically longer and more difficult as weight bearing may not be allowed on the operated knee right away. In some cases, having had an osteotomy can make subsequent knee replacement surgery more challenging.

Joint replacement surgery

The surgeon takes out the diseased parts of the bones and replaces them with an artificial joint using metal or plastic parts.

(i) Unicompartmental knee arthroplasty (UKA)

In UKA surgery, only a portion of the knee is resurfaced. This procedure is an alternative to total knee replacement for patients whose disease is limited to just one area of the knee. Because a partial knee replacement is done through a smaller incision, patients usually spend less time in the hospital and return to normal activities sooner than total knee replacement patients.

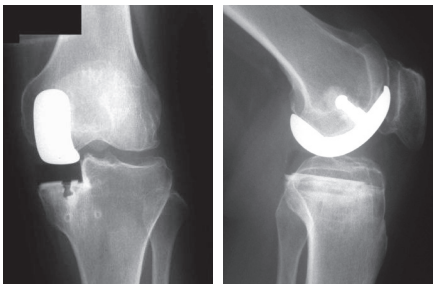


Figure 3. X-rays after unicompartmental knee replacement.

(ii) Total knee arthroplasty (TKA)

During a TKA surgery, the distal end of the femur is removed and replaced with a metal shell. The proximal end of the tibia is also removed and replaced with a channeled plastic piece with a metal stem. A plastic "button" may also be added under the kneecap surface. The posterior cruciate ligament is either retained, sacrificed, or substituted by a polyethylene post. Each of these various designs of total knee replacement has its own particular benefits and risks.

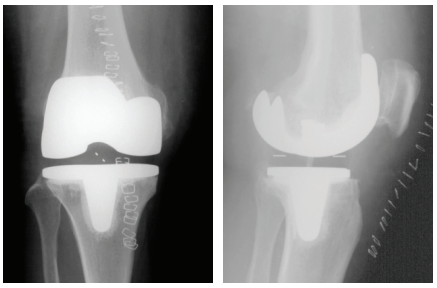


Figure 4. X-rays after total knee replacement

(iii) Total hip arthroplasty (THA)

The normal hip joint is a ball and socket joint. The socket is a "cup-shaped" component of the pelvis called the acetabulum. The ball is the head of the femur. THA involves surgical removal of the diseased ball and socket and replacing them with a metal (or ceramic) ball and stem inserted into the femur bone and an artificial plastic (or ceramic) cup socket.

Figure 5. X-rays after bilateral total hip replacement.

Although joint replacement surgery is successful in most of cases, complications may still occur, including, but not limited to: wound infection, infection around the prosthesis, blood clotting, malfunction of the prosthesis (may be caused by wear and tear, breakage, dislocation, or loosening), or nerve injury (although rare, nerves in the surrounding area may become damaged during the surgery).

Surgical management of osteoarthritis

Upper limb OA management

(i) Total shoulder/elbow replacement
Total shoulder replacement involves replacing the damaged humeral head (or joint "ball") with a metal ball, and putting a new smooth plastic surface on the glenoid (called the "socket"). Similarly, in total elbow replacement surgery, the damaged parts of the humerus and ulna are replaced with artificial components.

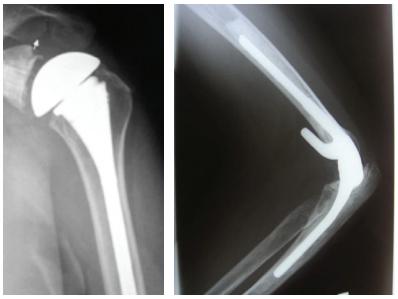


Figure 6a. total shoulder replacement; 6b. total elbow replacement

(ii) Hand and finger joint fusion versus replacement
The two main surgical options for hand OA are fusion (arthrodesis) and total knuckle replacement. In arthrodesis, the bones of the joint are fused together, creating a stronger, more stable and essentially pain-free knuckle, but one with little flexibility or movement. Arthroplasty relieves pain and restores shape and some function in the hand, but the results are usually less satisfactory than with hip and knee replacements. One problem is that hinged finger implants do not fully replicate normal finger motion. Most are made from silicone rubber, which is flexible but breaks and slips easily. Whether arthrodesis or arthroplasty is used depends mainly on the joint needing repair but also on a person's age, activity level and the amount of stiffness the finger that the patient can tolerate.

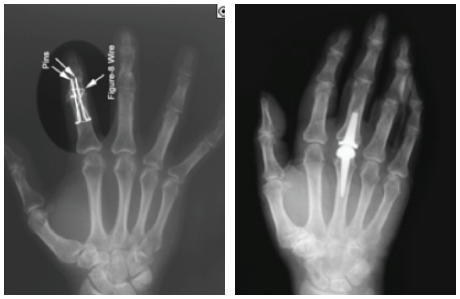


Figure 7a. finger joint fusion; 7b. finger joint replacement

Local experience on fast track rehabilitation for operative hip and knee joint replacaement

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Introduction

Osteoarthritis is the leading cause of pain and disability in older people[1,2]. As a consequence of the aging population in Hong Kong, the demand for total knee and total hip replacement surgery is also increasing. Since 2009, joint replacement centers are successively established in Buddhist Hospital, Yan Chai Hospital, Pok Oi Hospital, Alice Ho Miu Ling Nethersole Hospital and Duchess of Kent Children's Hospital to meet the increasing service demand. A one-stop service to patients undergoing joint replacement surgery, including pre-operative comprehensive care, integrated surgical treatment and early rehabilitation, has been provided in the Joint Replacement Centre[3].

Physiotherapy is accepted as the standard and essential treatment which contributes to effective recovery after joint replacement surgeries[4,5] . The aim is to maximize a person's functionality and independence and minimize complications such as hip dislocation (for hip replacement), wound infection, deep vein thrombosis, and pulmonary embolism[4]. The physiotherapy rehabilitation routine has 4 components: therapeutic exercise, transfer training, gait training, and instruction on activities of daily living[4]. The effectiveness of physiotherapy exercise following total knee replacement is well documented in systematic review and meta-analysis which showed that patients receiving physiotherapy exercise had improved physical function at 3-4 months when compared with controls receiving minimal physiotherapy[5].

According to the internal audit report of Hospital Authority on Management of Total Joint Replacement Programme in 2016, with joint effort of physiotherapists, ward nurses, anesthetists and orthopedic surgeons, almost all patients could start their mobilization exercise off the bed the next day after the surgery, the average length of stay was reduced from 16.5 days in 2009 to 9 days under the multi-disciplinary care of the Joint Replacement Centre.

In Yan Chai Hospital, physiotherapy service has also covered all weekend and public holidays since October 2017 to further enhance post-operative rehabilitation for joint replacement patients.

Local experience on fast track rehabilitation for operative hip and knee joint replacement

Local Experience:

1. Fast Track Rehabilitation: From pre-operative to post-operative

Fast-track protocols have been introduced worldwide to improve recovery after total hip arthroplasty (THA)[6] and total knee arthroplasty (TKA)[7]. Fast track rehabilitation improves early functional outcome and has shown a continued improvement of reported passive range of movements, reduction of pain and gradual improvement in quality of life and function during the first 6 weeks[6,7]. In the following, a local fast track rehabilitation protocol in Yan Chai Hospital is introduced:

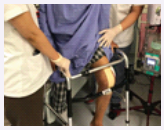
A. Pre-operative education talk

Pre-admission education is given to patients for better preparation and engagement 4-6 weeks before the operation. Information regarding joint protection skills, transfer techniques, pre and post-operative exercises, joint care and home-base exercise are delivered to patients.

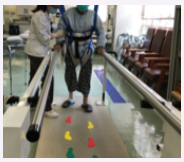
B. In-patient physiotherapy

I. Rehabilitation Protocol

In-patient physiotherapy with a comprehensive rehabilitation protocol starts Day 1 after surgery.

	Objective	Physiotherapy intervention
Post-Operative	For total Hip (THR) / Knee (TKR) Replacement	
Day 1	Minimize post-operative complication	Post-operative chest physiotherapy Ankle and toes exercises
	Relieve pain and reduce swelling	Ice therapy / Magnetopulse therapy 
	Prevent hip dislocation	Joint protection care / device 
	Mobilize joint and strengthen muscle	THA: Static quads / Gluteal set exercise for THR Assisted active/active hip mobilization  TKA: Quadriceps muscle strengthening and hamstring muscle stretching exercise Assisted active/ active knee mobilization 
	Prevent joint dislocation during transfer (for hip replacement) and promote early mobilization	Bed mobility training Transfer training  Full-weight Bearing walking 

Local experience on fast track rehabilitation for operative hip and knee joint replacement

	Objective	Physiotherapy intervention
Day 2	Promote functional independence	+ Lower limb strengthening exercise  
Day 3	Further training to promote functional independence, stability and home care	+ Home exercise and gait training 
Day 4	Prepare for discharge and reinforce home care	+ walking aid prescription & arrangement  + Stair training  +Home exercises and ice therapy reinforcement + Carer Training

II. Weekend and public holiday physiotherapy service

Since October 2017, there are 7 acute hospitals including Yan Chai Hospital started the 365-day physiotherapy service. This service covers in-patient physiotherapy during weekend and public holiday. The aim is to provide early mobilization, daily exercises and treatment for patients with arthroplasty or lower limb fracture within 6 days post-operatively.

C. Fast Track Physiotherapy Clinic

To assess the progress and ensure compliance of home care and exercises, the patient is followed up at the fast track physiotherapy clinic 2 weeks post discharge. Home-based exercises, and joint care are revised and modified. Patient who achieves the goal of physiotherapy is advised to continue home exercises and is discharged immediately after the clinic. Patient who need further physiotherapy training is referred outpatient accordingly. This fast track process ensures timely intervention to maximize favorable result after the surgery.

D. Out-Patient Physiotherapy

Out-patient physiotherapy is arranged within 2 weeks after the fast-track clinic. Intensive physiotherapy training further improves joint function and enhances functional recovery and quality of life after joint replacement surgery.

Conclusion

Patients usually suffer from joint pain and dysfunction as well as walking difficulties long before the operation. Joint replacement surgery is a significant advance in treatment of a painful and disabling joint condition. Postoperative rehabilitation is of utmost importance following total joint replacement to ensure pain-free function of the joint and improve the patient's quality of life. Early and intensive physiotherapy is one of the keys to success. Fast-track rehabilitation ensures timely intervention to achieve best outcome of surgery.

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Nursing care for patients undergoing total hip arthroplasty

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Introduction

This article describes nursing care provided to patients who undergo total hip arthroplasty (THA) in the pre- and post-operation period with the aim to help patients to adapt to the new mobility status and to reduce adverse complications.

Preambles

Patients undergoing THA are commonly 60 years old or above and with osteoarthritis (OA) developing severe and chronic hip pain. THA is a surgery to treat OA, together with other conservative management including physiotherapy, ice therapy, daily limit of joint mobility, keep rest, using walking aids, analgesic administration, and hyaluronic acid injection, etc. The patient who undergoes THA need to pay special attention in pre- and post-operative care. Nurses will perform health care to decrease the risk of complications before and after the operation. Nurses will also monitor complications including avascular necrosis, and loosening of the prosthesis[1].

Pre-operative health care services

A patient undergoing THA is admitted for rehabilitation placement for approximately 5-7 days in a public hospital in Hong Kong. Pre-operative education will be given on the importance of rehabilitation placement and pre-operative preparations. Laboratory investigations are performed to check the patient's clinical condition. There are screening of haemoglobin level for anaemia, blood glucose level for diabetes, and mid-stream urine test for urinary tract infection[2]. As precautionary measures, the nurse will examine the patient for any tooth problem or decay to prevent and reduce the risk of prosthesis infection after operation[3], and monitor skin condition at the operative site for preventing joint infections[4] e.g. fungal infection and eczema.

Post-operative health care services

Post-operative health care is important for patients with OA receiving THA. The nurse needs to aware of signs of bruises after the surgery. There may be bruises at the wound site after operation. These will disappear after a few days after the patient's condition has been stabilized and no bleeding disorder occurred. Further, the portable suction device (e.g. redivac drain) to collect bloody drainage can usually be removed within one day after the operation. Upon removal, the nurse should clean the drain tube site with antiseptic solution and with a small sterile dressing applied if there is any oozing at the site1. The nurse will also perform simple dressing to the main wound without crepe bandage applied. Subject to the physician's prescription for reducing the risk of deep vein thrombosis, the nurse will apply anti-embolism (TED) stockings and sequential compression device to prevent the development of blood clots in deep vein in the lower extremities. The nurse will remove wound stitches upon physician's prescription after operation as part of the post-operative nursing care.

The patient who has undergone THA is encouraged early mobilization on the day of operation for the benefit of reducing duration of hospitalization, complications, hospital costs and, on the other hand, preparing the patient to take care of themselves at home, moving around and functioning with high level of independency[1]. On Day 1 after the operation, the nurse will encourage the patient to walk with assistance of walking devices (e.g. walking stick or frame) to prevent complications associated with prolonged immobility. The patient will also be encouraged to sit out from bed and begin ambulation gradually from small to greater distance[1].

After the surgery, dislocation may occur when the hip is in full flexion, legs together and internally rotated. It is essential for the nurse to educate the patient about protective positioning and hip precaution. Advices will be given to the patients to maintain correct positioning and keep the knees apart at all times. The nurse will also provide abduction pillow to the patient when sleeping, and remind the patient to avoid flexed hip more than 90°, and use fracture bedpan to avoid flexing the affected hip. The patient should also be reminded to maintain limited flexion during transfer and when sitting up. High-seat chair with arm rests and raised toilet seat can be used to minimize hip joint flexion.

As an important part of post-operative nursing health care, the nurse will remind the patient to take medical prescription e.g. paracetamol (panadol), or ultram (tramadol) to mitigate pain. As a collaborative effort with allied health professionals, the nurse will also encourage the patient to undertake the exercise regime taught by physiotherapist to enhance activities of daily living during the recovery period.

Nursing care for patients undergoing total hip arthroplasty

Home care measures after THA

Before the patient is discharged home, the nurse will provide education to the patient and the carers to promote continuity of therapeutic regimen (e.g. limbs exercise), active participation and understanding of the rehabilitation process and home care after THA. For example, the patient will be advised to maintain ideal body weight, and be extra careful when walking down the stairs or ramps to prevent weight bearing and joint hazard and damage of prosthesis. The patient should also maintain regular limb and walking exercise to regain mobility.

The nurse will also remind the patient to notify health care providers of discomfort such as increased body temperature, pulse and respiration rate, signs of influenza, redness, purulent drainage, tenderness, swelling, and pain, some of which could be vital signs of infective complications. The patient will also be taught to note any shortening of the affected extremity that may reflect dislocation of the prosthesis. If in doubt or concern, he or she should seek for medical consultation.

The nurse will remind the patient on follow-up consultation. Regular time schedule for follow-up appointments will then be arranged. The patient is encouraged to carry a medical identification (e.g. implant card) indicating that he or she has a joint replacement and may be sensitive to security check at port control when he or she takes a trip. Important post-operative nursing health care services is to encourage the patient to adopt and practise good health measures, stable ambulation and function of the extremity to achieve good quality of life.

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