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香 港 醫 訊

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Orthopaedics

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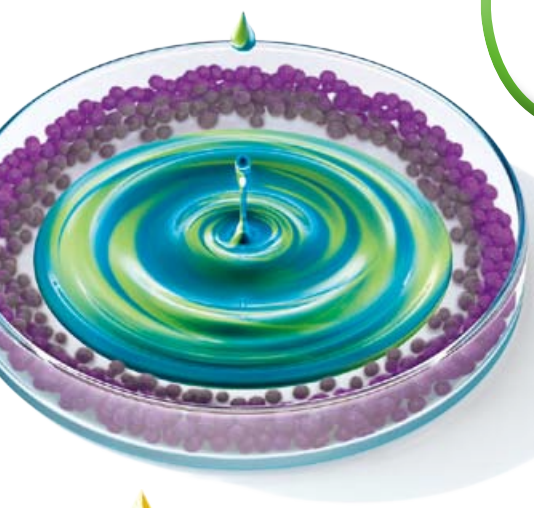

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MRSA, methicillin-resistant *Staphylococcus aureus*; CAP, community-acquired pneumonia; PORT, Pneumonia Outcomes Research Team; MIC, minimum inhibitory concentration.

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Reference: ZINFORO HK PI (version: July 2017)
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The Cover Shot

Take a rest 歇息

This photo was taken at Wun Chuen Sin Kwoon on a sunny day. The Dragonfly took a rest on top of a lotus bud. It spread its wings wide and pointed its tail upward. The dragonfly adopted a symmetrical posture in order to achieve stability and balance. You can clearly see the patterns of the dragonfly wings in this view.

Dr Hin-keung WONG

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Editorial

Dr Kwai-ming SIU

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Editor

Dr Kwai-ming SIU

As in other parts of the world, Hong Kong is facing the challenge of an ageing population in the coming years. The prevalence of chronic orthopaedic diseases is increasing. Therefore, orthopaedic surgeons are playing an important role in the management of these ageing associated diseases.

One of the commonest ageing-associated diseases is osteoarthritis of the lower limb joints such as the knees, hips and, to a lesser extent, ankles. With further enhancement of surgical instruments, implants and techniques of arthroplasty of these joints in the past few decades, the surgical outcome has improved significantly. Degenerative diseases of the spine are also getting increasingly prevalent in our population. These patients, particularly those with osteoporosis, will benefit from new surgical techniques which attempt to achieve satisfactory operative results.

Furthermore, fragility hip fracture, one of the more common fragility fractures, imposes a major healthcare burden in Hong Kong. A comprehensive multidisciplinary management approach should be adopted. Implementation of an appropriate clinical pathway, fracture liaison service to provide rehabilitation in the community and secondary fracture prevention, and enhanced surgical techniques and implants can achieve better patient outcome and prevent further fractures.

The issue of an ageing population has made a significant impact on the orthopaedics service. Hence, in order to update the releivant knowledge, 'Rebuild and Rebrighten Ageing Orthopaedics to the Next Century' is taking centrestage as the main theme of the Annual Congress of the Hong Kong Orthopaedic Association in November this year. I firmly believe that our orthopaedic fraternities will benefit from the sharing and discussion of our overseas and local faculties.

In particular, I would like to thank all the following experts for their great contribution to this issue. Dr Yiu-chung Wong and Dr Qunn-jid Lee has enlightened us on the recent advances in knee replacement. Dr Chong-hing Wong has given an update on the management of degenerative lumbar spine diseases. Arthroscopic management of shoulder disorders has been illustrated by Dr Stephen Chor-yat Chung. Dr Angela Wing-hang Ho has addressed us on the management of fragility hip fractures. I must also thank Dr Hin-keung Wong for sharing with us his expertise on photography of 'lotuses' and his splendid photos.

Finally, I hope you will enjoy reading this issue on orthopaedics and find our articles informative.

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Update on Surgical Management of End-Stage Ankle Arthritis

Dr Kwai-ming SIU

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Dr Kwai-ming SIU

This article has been selected by the Editorial Board of the Hong Kong Medical Diary for participants in the CME programme of the Medical Council of Hong Kong (MCHK) to complete the following self-assessment questions in order to be awarded 1 CME credit under the programme upon returning the completed answer sheet to the Federation Secretariat on or before 30 November 2019.

INTRODUCTION

End-Stage ankle arthritis can be a decapacitating and painful condition. Post-traumatic osteoarthritis is the most common cause of end-stage ankle arthritis. Idiopathic osteoarthritis, post-infection arthritis, rheumatoid arthritis and arthritis resulting from chronic ligamentous instability are other causes of ankle arthritis.

CLINICAL PRESENTATION AND RADIOLOGICAL INVESTIGATION

Pain is the usual presenting symptom in end-stage ankle arthritis. It is characteristically deep in the ankle. On physical examination, tenderness, swelling and stiffness in the ankle are the typical findings. It is also associated with deformity of the ankle and hindfoot.

Radiographs should include weight-bearing anteroposterior and lateral views of the feet and ankles. Weight-bearing films of both ankles are essential to demonstrate the actual deformity and joint space narrowing. Moreover, standing scanogram of both lower limbs is recommended to assess the alignment of the lower limbs for any significant deformity of the hip and knee joints. CT scan can reveal the osteoarthritic changes, deformity, malalignment and condition of the different joints in the foot and ankle region in detail.

NON-SURGICAL TREATMENT

Non-surgical treatment should be considered before surgery. The pain from ankle arthritis may be alleviated by non-pharmacological modalities such as activity adjustment, weight loss, use of walk aids, orthotics and braces, and shoe modification.

Medications are commonly used to relieve the pain from ankle arthritis. In additional to paracetamol and opiate-type drugs, non-steroidal anti-inflammatory drugs (NSAIDs) can also relieve pain significantly. Newer COX-2 inhibitors offer pain relief with fewer gastrointestinal side effects such as peptic ulcer, gastric bleeding or perforation.

Furthermore, some studies have shown the usefulness of oral glucosamine/chondroitin and intra-articular injection of hyaluronan in the ankle[15].

SURGICAL TREATMENT

In symptomatic end-stage ankle arthritis, surgical treatment should be considered if the symptoms persist despite non-operative treatment. The mainstay of surgical treatment for end-stage ankle arthritis includes ankle arthrodesis and total ankle replacement.

Ankle Arthrodesis (Fusion)

Ankle arthrodesis is considered the gold standard treatment for end-stage ankle arthritis. The first open ankle arthrodesis was performed in 1879. Along with a better understanding of ankle anatomy, enhancement of the arthroscopic instruments and the development of arthroscopic techniques of joint preparation and stabilisation for arthrodesis, arthroscopic ankle arthrodesis (AAA) is increasingly used to treat end-stage ankle arthritis.

Compared with open fusion, AAA, as one type of minimally invasive surgery, offers the advantages of a decrease in morbidity, including less pain, less blood loss and a lower wound complication rate. Additionally, a higher union rate[12, 13] , shorter hospital stay and better clinical outcome[14] have also been shown. However, if the valgus or varus deformity of the ankle is more than 15 degrees and the deformity cannot be corrected passively, traditional open surgery should be considered.

Post-operatively, a short leg cast is applied with non-weight-bearing walking exercises for about 6-8 weeks. Then, partial weight-bearing walking in an ankle brace or walker may start if signs of bone healing are shown on X-rays. At 10-12 weeks post-operatively, the ankle brace is weaned off if the X-rays reveal bony union. (Fig. 1)

Total Ankle Arthroplasty

Total ankle arthroplasty (TAA) has become increasingly popular in recent years. As a result of advances in implant designs, improvement of operative techniques and increase in patient acceptance, primary TAA volume increased by more than 100% from 1991 to 2010 among medicare beneficiaries in the United States.[1] In Hong Kong, TAA is more and more commonly performed. (Fig. 2)

Fig 1. Arthroscopic ankle arthrodesis (fusion). A: X-rays of the left ankle demonstrating late stage osteoarthritis. B: Insertion of two cannulated screws under fluoroscopy for compression and stabilisation of the fusion site. C: Bony fusion noted in the X-rays at 10 weeks post-operatively (Personal collection)

The potential advantage of total ankle replacement over ankle fusion is conservation of motion at the ankle joint with improved gait and function. Moreover, the incidence of osteoarthritis of adjacent joints may be decreased. As a result, TAA may be indicated over AAA in the presence of significant hind-foot deformity or arthritis. Saltzman et al. reported ankles treated with STAR demonstrated better function and equivalent pain relief by 24 months when compared to ankles treated with fusion AAA.[2] Flavin et al. showed greater increase in walking velocity, greater stride length and cadence, and more normalised 1st and 2nd rockers of the gait cycle in patients with TAR.[3]

A systematic review by Zaidi et al. reported overall 10-year survivorship of modern TAAs of 89% and an annual failure rate of 1.2%.[4] A more recent study by Koivu et al. reviewed the results of 34 STAR prostheses at a mean follow-up of 13.3 years and found the implant survival rates of 93.9% at five years, 86.7% at ten years, and 63.6% at 15 years.[5]

Some studies reported similar outcomes and satisfaction rates for TAA and AAA. However, a recent review article comparing the outcomes between TAA vs AAA over the last decade reported that the adjusted overall complication rate was higher for AAA (26.9%) compared to TAA (19.7%), with similar findings in the non-revision reoperation rate (12.9% for AAA compared to 9.5% for TAA). The adjusted revision reoperation rate for TAA (7.9%) was higher than AAA (5.4%). Furthermore, TAA was thought to achieve a more symmetrical gait and less impairment on uneven surfaces in comparison to AAA.[6]

An article published in 2019 by Clough et al. reported a consecutive series of 200 total ankle arthroplasties (TAAs, 184 patients) at a single centre using the STAR

Fig 2: Total ankle arthroplasty. A: X-rays (Standing) and CT scan showing end-stage osteoarthritis of the left ankle of a 67 year-old gentleman with severe left ankle pain. B: Post-operative standing x-rays of the left ankle 19 months after total ankle arthroplasty. His left ankle pain had completely been relieved. AOFAS score (Ankle): Full (Personal collection)

implants. A total of 84 patients (87 ankles) were alive at the time of the study. A total of 32 implants failed (16%), requiring revision surgery. The mean time to revision was 80 months (2 to 257). The implant survival at 15.8 years, using revision as an endpoint, was 76.16%. The mean AOFAS score improved from 28 (10 to 52) preoperatively to 61 (20 to 90) at long-term follow-up. This study showed the encouraging long-term results of STAR prosthesis, one of the commonly used TAA models, with five, ten and 15.8-year survival rates of 90.41%, 82.76% and 76.16% respectively.[7] A systematic review reported overall 10-year survivorship of modern TAAs of 89% and an annual failure rate of 1.2%.[8]

Another article in 2019 by Palanca et al. reported 84 TAAs performed between 1998 and 2000. Twenty-four (29%) of the 84 patients were available for participation

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9 Dec, 2019	Common Ophthalmic Eye Drops & New Drug Delivery Method
	Glaucoma and Glaucoma Surgery Update
16 Dec, 2019	Squint
	Pediatric Ophthalmology
23 Dec, 2019	Functional and Cosmetic Orbital & Oculoplastic Surgery
	Neuro-ophthalmology
30 Dec, 2019	Retinal Detachment and Diabetic Retinopathy
	Common Macular Diseases and Treatment Update

Date : 25 November & 2,9, 16, 23, 30 December, 2019 (every Monday)
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with a minimum 15-year follow-up. Metal implant survival was 73% at 15 years. Eighteen of the 24 patients (70.7%) had no change in prosthetic alignment when compared to the immediate postoperative radiographs. Only one subtalar fusion was required for symptomatic adjacent joint arthritis. Three patients sustained a broken polyethene component. AOFAS scores improved from an average of 39.6 points preoperatively, to an average of 71.6. More than half (52.4%) of patients with retained implants required an additional non-ankle surgical procedure. Their cohort demonstrated STAR ankles with retention at nine years were highly likely to survive to 15 years, and patients continued to have significant improvement in pain relief and minimal decrease in function. At 15 years from TAA, metal survivorship was 73%.[9]

Elizabeth et al. performed a study of 553 patients post-TAR. Age, BMI, and amount of deformity were not associated with higher failure rates. Only patients with ipsilateral hindfoot fusion or who received the INBONE I prosthesis were at significantly higher risk of implant failure.[10]

Loewy reported a clinical follow-up data of a prospective, consecutive cohort of patients who underwent TAA using the STAR prosthesis by a single surgeon from 1999 to 2013. A total of 138 STAR TAAs were performed in 131 patients. The mean age at surgery was 61.5 ± 12.3 years (range, 30-88 years). The mean duration of follow-up was 8.8 ± 4.3 years (range 2-16.9 years). The mean change in AOFAS Ankle-Hindfoot scores from preoperative to final follow-up was 36.0 ± 16.8 ($p<0.0001$). There were 21 (15.2%) implant failures that occurred at a mean of 4.9 ± 4.5 years post-operation. Ten polyethene components in 9 TAAs (6.5%) required replacement for fracture at an average 8.9 ± 3.3 years postoperatively. The authors concluded that the cohort of patients with true intermediate follow-up after TAA using the STAR prosthesis had acceptable implant survival, maintenance of improved patient-reported outcome scores, and low major complication rates.[11]

Table 1: Favourable patient factors rendering the patient more suitable for total ankle arthroplasty (Developed by author)

1.	Age > 55-65 years
2.	Modest activity level
3.	Bodyweight: Not excessive
4.	Inflammatory arthritis
5.	Bilateral ankle arthritis
6.	Hind-foot stiffness
7.	Medically well
8.	Satisfactory soft tissue envelope
9.	Lower limbs: neurologically intact

If there is significant deformity of the lower limb in addition to end-stage arthritis of the ankle on the same side, the lower limb deformity should be corrected before TAR. For example, severe osteoarthritis of the knee with significant varus or valgus deformity should be treated with a total knee replacement to restore the normal alignment of the lower limb before TAR. Moreover, significantly associated foot deformities such as hindfoot varus, should be corrected surgically either at the same time with TAR or at 2nd stage operation. Substantial osteoporosis, peripheral vascular disease, active ankle infection and Charcot arthropathy are considered contraindications for TAR.

In general, weight-bearing on the operated ankle should be allowed at about two weeks after surgery. Then, partial weight-bearing using a walker may begin. At 4 to 6 weeks after surgery, the patient may proceed to full weight-bearing walking.

CONCLUSION

As there is a continuous ageing trend in the population of Hong Kong, degenerative arthritis of ankles will become increasingly common. The demand for operative treatment will rise. Although ankle fusion has been considered the gold standard treatment for end-stage ankle arthritis, total ankle arthroplasty may bring about improving functional outcome and implant survivorship, thanks to the significant advancement in implant design and operative techniques. Total ankle arthroplasty is a promising surgical treatment option for end-stage ankle arthritis. In the future, total ankle arthroplasty will play a more important role in end-stage ankle arthritis.

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MCHK CME Programme Self-assessment Questions

Please read the article entitled "Update on Surgical Management of End-Stage Ankle Arthritis" by Dr Kwai-ming SIU and complete the following self-assessment questions. Participants in the MCHK CME Programme will be awarded CME credit under the Programme for returning completed answer sheets via fax (2865 0345) or by mail to the Federation Secretariat on or before 30 November 2019 Answers to questions will be provided in the next issue of The Hong Kong Medical Diary.

Questions 1-10: Please answer T (true) or F (false)

1. Post-infection arthritis is the most common cause of end-stage ankle arthritis.
2. On physical examination, stiffness of the ankle is not one of the typical findings in end-stage ankle arthritis.
3. Weight-bearing X-rays of both ankles can show the actual deformity better than non-weight-bearing X-rays.
4. CT scan cannot reveal conditions of the different joints in the foot and ankle region in detail.
5. Total ankle replacement is one of the mainstays of surgical treatments for end-stage ankle arthritis.
6. Arthroscopic ankle arthrodesis is considered one type of minimally invasive surgery.
7. The decrease in the wound complication rate is not regarded as one of the advantages of arthroscopic ankle arthrodesis when compared with open ankle arthrodesis.
8. The potential advantage of total ankle replacement over ankle fusion is conservation of motion at the ankle joint with improved gait and function.
9. An article published by Clough et al. in 2019 reported the long term results of STAR prosthesis, one of the commonly used TAA models, with five, ten and 15.8 year survival rates of 90.41%, 82.76% and 76.16% respectively.
10. Total ankle arthroplasty is a promising surgical treatment option for end-stage ankle arthritis and is more and more commonly performed in Hong Kong.

ANSWER SHEET FOR NOVEMBER 2019

Please return the completed answer sheet to the Federation Secretariat on or before 30 November 2019 for documentation. 1 CME point will be awarded for answering the MCHK CME programme (for non-specialists) self-assessment questions.

Update on Surgical Management of End-Stage Ankle Arthritis

Dr Kwai-ming SIU

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Answers to October 2019 Issue

Early Mobilisation in the Intensive Care Unit

1. T **2.** F **3.** F **4.** F **5.** F **6.** F **7.** T **8.** T **9.** T **10.** F

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- Understand how you manage the circumstances that led to the conversation being difficult in the first place.

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30 Oct	Open Disclosure & Dealing with Angry Public	Dr Kai Ming CHOW 周啟明醫生 Specialist in Nephrology
6 Nov	Patient Complaints	Dr Ludwig TSOI 蔡振興醫生 Specialist in Emergency Medicine
13 Nov	Presentation in Disciplinary Hearing	Dr Robert LAW 羅致廉醫生 Specialist in Obstetrics & Gynaecology
20 Nov	Communication Problems	Dr Sandy CHAN 陳潔瑩博士 Registered Nurse
27 Nov	Breaking Bad News	Dr Kah-lin CHOO 俞佳琳醫生 Specialist in Respiratory Medicine

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Recent Advances in Total Knee Replacement

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As one of the biggest successes in orthopaedics, total hip replacements (THR) and total knee replacements (TKR) are widely practised in the world with an increasing trend owing to rising demand and increase in life expectancy. Decades ago, elderlies were reluctant for surgery and worried much about the operative risks and prosthesis longevity; but now they are convinced by the improvements and safety of the surgery especially having witnessed the benefits enjoyed by their peers. These changes have brought on a surge in the demand for knee replacement. Along with Hong Kong having the longest life expectancy in the world and an ageing population, the throughput and waiting time for knee replacement surgery in the Hospital Authority are rising steeply despite the fact that several total joint replacement centres have been established in the last ten years.

New techniques such as kinematic alignment and robotic surgery have emerged and produce good results and instil challenges. New Implant designs, such as a medial pivot or ultra congruent TKR, cementless tibial monoblock tray, and bicruciate stabilised or retaining TKR, have evolved. Apart from these, there is new progress in perioperative pain control, blood management and fast-track surgery. There is even outpatient day surgery in the United States.

Four interesting areas under TKR will be discussed in the following sections, namely TKR alignment, computer-assisted surgery, robotic surgery, and Enhanced Recovery After Surgery (ERAS).

TKR ALIGNMENT

Mechanical Alignment

Conventional coronal alignment as popularised by John Insall advocates on zero mechanical axis. The rationale is to dissipate the stress equally to both the medial and lateral compartments, which in turn may decrease loosening and wear. The zero-degree joint-line tibial cut is better reproduced with the human eyes than the natural three-degree varus joint-line inclination. The use of the latter as the aim of alignment may inadvertently produce excessive varus which may result in early failure. In order to produce a rectangular flexion gap, the femoral cut will be rotated externally by three degrees thus benefitting the patellofemoral tracking.

One of the drawbacks of using "mechanical alignment" includes changing the natural varus obliquity of the joint line. According to Bellemans[1], constitutional varus alignment exists in 17% of females and 32% of males. Bone cuts using "mechanical alignment" will produce collateral ligament imbalance as lateral laxity. Thicker inserts may be required, and elevation of the joint line may result. Compensatory external rotation of the femoral component is also required and may be non-physiological.

Kinematic Alignment

In the past decade, Howell has advocated "kinematic alignment"(Fig. 1) and emphasised it as the patient-specific "original alignment"[2]. In following this approach of "resurfacing", minimal soft tissue release is needed, and a calliper is used for measured resection. No joint-line elevation will occur, and more natural kinematics and function are preserved.

Fig 1. TKR alignment: Mechanical (right knee) vs Kinematic (left knee) (Personal collection)

Some outcome studies[3,4] have demonstrated a more normal gait pattern, and functional scores may be better in the short term with comparable short-term survivorship. There were no differences in complications. Potential problems such as long-term survivorship and join- line slanting, especially in severe deformities will need to await further and longer-term studies. This method may be more indicated in milder deformities which are not the majority in present local targets needing TKR.

However, modifications, such as "restricted kinematic alignment" which aims at component alignment of ≤ ± 5° and hip-knee angle ≤ of ±3° may be more appealing.

COMPUTER NAVIGATED TKR

Interests in computer-assisted TKR (Fig. 2,3) in the past 20 years have now been slowly superseded by Robotic TKR. However current evidence has shown computer-assisted surgery helps to minimise outliers in coronal alignment (<3°) and femoral component rotation[5]. Critics have argued that alignment and bone cut are not the only factors leading to failure and navigated TKR has not been proven to improve post-operative range of motion, clinical scores, nor long-term survivorship but is associated with a higher cost and longer operation time. The role of computer navigation may be more important with non-mechanical alignment and as part of robotic surgery.

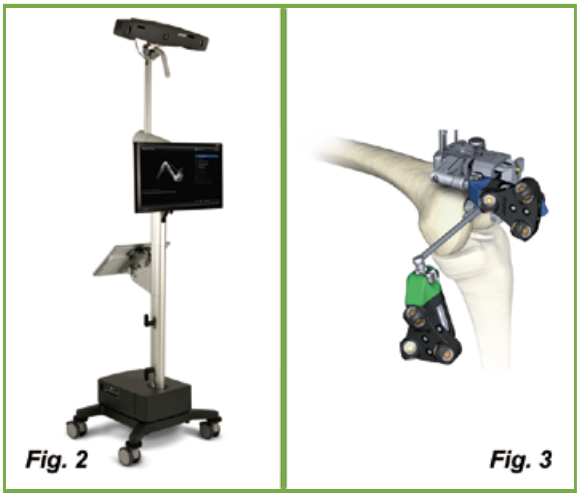

Fig 2 & 3. Computer Navigation (ASM, Stryker) (Reproduced with permission from Stryker)

ROBOTICS KNEE REPLACEMENT

In the past decade, robotic TKR has rapidly evolved (Fig. 4), offering potential advantages including greater component accuracy and less iatrogenic bone and soft-tissue injury[6-8]. As a result, there may be increased patient satisfaction resulting from a more accurate gap balance and reproduction of kinematics. The cost-effectiveness and long-term benefits are yet to be seen but as technology is advancing rapidly, operation time and cost will go down. Total joint replacement may be the first specialty that is overwhelmed by robotics as the most important benefit of robotics is the ability to achieve the same "ideal" alignment in nearly all patients without inadvertently cutting into nearby ligaments and neurovascular soft tissue. Facing such a challenge, the surgeon needs to readjust his identity. "Who is the robot, machine or I?"

ENHANCED RECOVERY AFTER SURGERY (ERAS)

Shortening the length of hospital stay for total joint replacement is a common global efficiency-enhancing goal without jeopardising patient safety and clinical result. Early ambulation offers many benefits such as better outcome, including reduction in mortality and in complications (pneumonia, venous thromboembolism, urinary retention)[9,10]. In the United States, day surgery total joint replacement is practicable in hospitals or even day centres given appropriate patient selection and well-planned logistics and support[11]. Powerful and concerted pain management is the prerequisite. A multimodal protocol including acetaminophen, oxycodone, COX2-inhibitors and gabapentinoids are commonly used. Compared with morphine group analgesics, COX2-inhibitors like celecoxib and etoricoxib reduce the occurrence of delirium in the elderly[12]. It could also lessen the gastrointestinal complications compared with conventional non-steroidal-anti-inflammatory drugs. Furthermore, the use of intravenous corticosteroids used in some centres can decrease the inflammatory response which causes pain and swelling. Studies have shown the use of corticosteroid is associated with reduction in Interleukin-6, pain, nausea and hospital stay[13]. Local infiltrative analgesia (LIA) has become the workhorse in ERAS given it shares the same efficacy as regional nerve block[14]. The common cocktail consists of Ropivicaine or Bupivicaine, Ketorolac and adrenaline. This cocktail injection is associated with reduced opioid consumption, earlier return of range of motion and quadriceps power and reduced length of stay[15].

SUMMARY

There are numerous advances in total knee replacement in the last decade. These advances aim at improving surgical outcome in terms of patient satisfaction, complication rate and implant survivorship. Secondary benefits are reduced hospital stay and improved cost-effectiveness. While there is evidence for improved satisfaction, reduced morbidity and mortality associated with many advances, evidence for long term benefits remains eagerly awaited.

Fig 4. Robotic TKR (Mako, Stryker) (Reproduced with permission from Stryker)

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Dermatology Quiz

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Fig.1: Dystrophic Nail

This 24-year-old man with good past health attended our clinic complained of some small holes and discoloration on the nail plates (Fig.1). There was no history of trauma. He also complained of increased dandruff.

Questions

1. What signs are on the nails?
2. What is the diagnosis?
3. What is the pathogenesis?
4. How do you treat this gentleman?

(See P.36 for answers)

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Update on Management of Degenerative Lumbar Spine Disease

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Hong Kong comes the first in life expectancy in the world. Medical professionals are facing more and more degeneration-related diseases in their daily practice. Degenerative spinal disease is one of them. Patients can present with simple transient low back pain to severe degenerative scoliosis with multi-planar deformities. Management of these patients requires not only consideration of the disease severity but also evaluation of their medical co-morbidities. Moreover, osteoporosis is often more common in the advanced age group, and predisposes this age group to fixation failures. Formulating the surgical treatment requires taking into consideration of all these factors. In this article, we will review the treatment of degenerative lumbar spinal disease, one of the most commonly encountered orthopaedics problems.

LUMBAR SPINAL STENOSIS

The most common spinal surgery performed for the age group > 65 years old is for lumbar spinal stenosis. The spinal canal dimension diminishes owing to various degenerative components such as hypertrophic facet joint, intervertebral disc protrusion and thickening of ligamentum flavum. This causes compression of the neural and vascular structures inside the spinal canal at the central region, lateral recesses and foraminal area. In the more severe patients, the spinal canal has turned into a trefoil shape in the axial plane. Patients may present with neurogenic claudication with leg pain and numbness which is provoked by an upright posture and walking. The symptoms improve with resting and flexion of the trunk because of an increase in the spinal canal dimension with that posture. Other symptoms including gluteal pain, thigh pain, easy fatigue and leg cramps can occur with or without back pain. The natural history of lumbar spinal stenosis is still not yet well defined. Many such patients remain unchanged, and some patients with mild and moderate severity can achieve satisfactory outcome following conservative management. Sudden catastrophic deterioration is very uncommon. Magnetic resonance imaging (MRI), or computed tomography (CT) myelogram in the event that the MRI is contra-indicated, is a useful tool for the diagnosis of lumbar spinal stenosis. Standing MRI and flexion and extension MRI myelograms are occasionally used to increase the sensitivity.[3] Bear in mind that the radiological parameters correlate poorly with the clinical symptoms and with the postoperative outcome.[2,4] Operation should not be considered just for radiological spinal stenosis. Trial of conservative management via medication and physiotherapy, which is supported by limited evidence only, is usually adopted before operative approach. Intra-laminar and transforaminal epidural injection is proven to provide short- to medium-term symptomatic relief. Bracing with a corset can improve the pain and walking distance; but there is no evidence that the improvement can be sustained after removal.[1]

Decompression with laminectomy is the gold standard for lumbar spinal stenosis, and it provides good sustained relief of leg symptoms.[9] In some literature, decompression alone can also improve the axial back pain.[7] Minimally invasive spinal surgery with microscopy or endoscopic unilateral laminotomy and bilateral decompression (ULBD) also yields satisfactory results. Other surgical techniques, such as bilateral laminotomies, lumbar spinous process splitting laminectomy are also developed to preserve the posterior midline structure. Preservation of the posterior tension band potentially maintains the spinal stability. Other less invasive surgeries such as interspinous process spacer have also been developed: a spacer is put into the space between the target level spinous processes. This keeps the motion unit in a flexed position which results in an increase in the spinal canal dimension. It is also used to relieve back pain due to facet joint arthrosis and posterior discogenic pain by unloading those structures. The operation is performed outside the spinal canal; hence there is minimal risk of neurological complications. The short-term result is comparable to that of direct decompression surgery.[5] Despite the aforementioned advantages, inter-spinous spacer is gradually falling out of favour because of a high revision rate due to fractured spinous processes especially in those elderlies with osteoporotic bone and also dislodgement of the implant.

There is always a debate on patients with concomitant lumbar spinal stenosis and low-grade spondylolisthesis; such combined pathology is not uncommon. According to the Wakayama spine study, the prevalence of spondylolisthesis is up to 15.8% in adults, and it is significantly associated with symptomatic lumbar spinal stenosis. Fusion with decompression has been considered to provide a better long-term result. Fusion procedure can reduce the deformity or avoid further progression of the spondylolisthesis. The reduction of deformity can also improve the general sagittal imbalance. It also allows more extensive decompression by reconstructing the stability. Implantation of a cage into the intervertebral disc to restore the disc height can also relieve foraminal stenosis, which is difficult to tackle by decompression alone. Besides, it can prevent recurrent stenosis at the index level, the most

common reason for re-operation in the decompression alone group. Fusion is more important in the group with spondylolisthesis as this group of patients bears a higher risk of developing re-stenosis. However, recent studies have shown that decompression alone surgery results in functional and symptomatic relief not inferior to the decompression plus fusion surgery.[6,8] The re-operation rate in the fusion group is not less than the decompression alone group. Further surgeries may be needed to tackle pseudoarthrosis, implant failure and also adjacent level diseases (ASD) which are specific for the fusion group. In the study by Shinya et al., the prevalence of radiological ASD, symptomatic ASD and ASDs that need operation at ten years after single segment posterior lumbar interbody fusion are 75%, 31% and 15% respectively. Degenerative spondylolisthesis at the cranial segment is the most common pathology that needs re-operation. Tero et al. also showed the re-operation rate in the fusion group to be up to 19.3% in four years postoperatively.[10-12] In general, the decision on decompression alone versus decompression with fusion is based on patient selection and surgeon preference and belief.

DEGENERATIVE LUMBAR SCOLIOSIS

Degenerative lumbar scoliosis is very common. Shizuo et al. conducted a 12-year follow-up study on the general population and found 29.2% at the beginning of the study, and another 29.4% of participants having developed degenerative lumbar scoliosis within the study period. In patients with low back pain, some studies have reported a prevalence of up to 68%.[15] Fortunately, most of the patients run a relatively benign course, and observation is just what they need. Curves reflecting natural history of degenerative lumbar scoliosis remain static in some, and while in some others, the curve does progress. Predictors for progression of the curve include vertebra size, patient's age, and the degenerative lumbar scoliosis angle and coronal L4 tilt. Patients with a Cobbs angle of more than 15 degrees are associated with sagittal balance modification.

Scoliosis is a 3-dimensional deformity involving coronal, sagittal and rotational deformities. There are different parameters to measure the deformity including the Cobbs angle, the sagittal vertical axis (SVA), C7 plumb line, pelvic incidence (PI) and lumbar lordosis (LL). Jean Dubousset has demonstrated the concept of 'Cone of Economy' in which a greater amount of energy and tension is needed from ligaments and muscles to maintain the balance if the alignment of the spine lies outside that cone. A positive sagittal balance, defined as the C7 plumb line lying anterior to the posterior-superior corner of S1 (+SVA), is particularly poorly tolerated, and is associated with hyperlordosis of the lumbar spine (increase in PI and LL mismatch) and an increase in thoracic kyphosis. In order to compensate for the deformity, patients will develop pelvic retroversion (increase in PT) with hip extension, followed by knee flexion and ankle dorsiflexion to keep the patients upright. This compensatory adaptation explains why these patients commonly experience hamstring tightness.

Symptomatic degenerative scoliosis can present as axial back pain or neurological symptoms. Degenerative scoliosis such as disc degeneration, facet arthrosis and sometimes vertebral collapse/wedging and spondylolisthesis in up 55% of degenerative scoliosis, shares the same pathology as lumbar spinal stenosis. It is not surprising that the co-incidence of lumbar spinal stenosis and degenerative scoliosis can be up to 50%.[13,14] The question always arises as to how much should be done if conservative treatment fails. Ensor et al. reported the result of patients managed by decompression alone, decompression with limited fusion and decompression with full curve fusion. The satisfaction questionnaire showed the highest score in the full curve fusion group with correction of the scoliosis. However, this group of patients had the highest complication rate. The decompression alone group and the decompression with limited fusion group but not the full curve fusion group reported improvement In Oswestry Disability Scores highlighting that all three treatment options carry their own set of good and bad outcomes. The choice of the surgical option should be tailor-made, and when the care team formulates the treatment plan, due consideration should be given to the patient's predominant symptom and general health. Although in this study, the decompression alone group were older than the other two groups.[16] decompression alone can fare well in patients with rotatory olithesis. If full fusion is planned, sagittal balance should be restored with the aim of PI-LL <10 degree and SVA < +5 cm.

Since the focus of this review is on the elderly, it is important not to overlook that they may suffer from osteoporosis. Osteoporosis predisposes to pulling out of pedicle screws and also to proximal junction kyphosis in long construct. Proximal junction kyphosis is defined as more than 20 degrees of kyphosis between the upper instrumented vertebra (UIV) and the two vertebrae above. It significantly reduces the functional scoring and it may be averted by treating the underlying osteoporosis. Bisphosphonates is commonly used for the treatment of osteoporosis but its peri-operative usage is still controversial. Some reported to lead to a higher fusion rate but other centres have recommended stopping the drug at least 3 weeks prior the index operation in order to allow normal bone remodelling. Intermittent recombinant teriparatide is proven to decrease the screw loosening rate as well as increasing the rate of fusion. It can be administrated both pre- and postoperatively. Study of denosumab in this context is still limited. Other means to improve the stability including cement augmentation, expandable screw, larger pedicle screw and under tapping should also be considered to prevent implant failure in severe osteoporotic bone.[17]

SUMMARY

Degenerative lumbar disease is a growing challenge to medical carers because of the ageing population. It consists of a spectrum of pathologies from simple radiological degeneration to multiple levels of lumbar spinal stenosis with scoliosis and deformity. Treatment for each patient should be individually tailor-made because of the complexity of the disease together with

multiple medical co-morbidities. Medical treatment or surgical modifications may be needed to avert implant failure or other complications.

Remarks:

- Cobbs angle: the angle formed between the end plate of end vertebras of the scoliosis curve.
- Sagittal vertical axis (SVA): the length of a horizontal line connecting the posterior superior sacral end plate to a vertical plumb line dropped from the centroid of C7 vertebral body, An SVA greater than 4.7 cm associated with increase in disability.
- Pelvic Incidence (PI): the angle between a ling perpendicular to the sacral plate at its midpoint and a line connecting this point to femoral head.
- Lumbar lordosis (LL): the angle between upper endplate of L1 and superior end plate of sacrum.

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Arthroscopic Management of Shoulder Disorders

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INTRODUCTION

Minimally invasive surgery is the trend of orthopaedic surgery in the modern era. The use of an arthroscope allows a small camera to be put inside a joint or into a soft tissue compartment to visualise the pathology. With small keyhole wounds (5-10 mm), instruments can be introduced into these spaces to tackle the pathology. Despite the fact that the shoulder is a complex region comprising four joints, encapsulating ligaments as well as rotator cuff muscles, various shoulder conditions can be managed operatively with arthroscopic shoulder surgeries. In this article, common arthroscopic procedures in the shoulder region will be discussed.

SHOULDER ARTHROSCOPY SET UP

Proper patient positioning is vitally important in achieving safety and ease of arthroscopic shoulder procedures. Generally the lateral decubitus orientation or the beach chair orientation is advisable (Fig. 1a & 1b). Both of these positionings have their respective advantages and disadvantages, and the choice of positioning is mainly related to the surgeon's previous training and own preference.

In the lateral decubitus position, the patient is placed on a normal operation table laterally. The body is supported by beanbag or stabilising devices. The shoulder is vertically orientated, and the operated arm is placed into a foam traction device. The lateral decubitus position usually takes less set up time; it allows increased access into the glenohumeral joint to tackle all labral pathology. It also allows better cerebral perfusion preventing major adverse cerebrovascular events. In the beach chair position, the patient is placed on a special beach chair table with the head supported with special traps or head holder. The hips and knees are flexed and supported. The back is elevated to approximately 70 degrees. Beach chair positioning allows more anatomical position of the joint, facilitating an arthroscopic assisted procedure that needs to be used together with an open incision. It also leads to fewer tractional neurological complications.

TECHNIQUES OF SHOULDER ARTHROSCOPY

The ease and success of shoulder arthroscopic surgery rely on accurate portal placement, good haemostatic control and proper suture management. The posterior portal is usually established as the first viewing portal. Various anterior and lateral portals are then established using spinal needles under direct arthroscopic visualisation guide. It is important to identify the coracoid as a bony anatomical landmark and stay lateral to it to avoid neurovascular injury. As no tourniquet can be applied for shoulder arthroscopy, hypotensive anaesthesia and radiofrequency probe for haemeostatic control are essential for achieving a bloodless arthroscopic view for surgery. Suture management is the most challenging aspect of shoulder arthroscopic surgery. Establishing a systematic routine of suture management, practise on cadaveric models and familiarise with the use of various suture anchors can overcome the technical difficulty. Recent development of all suture anchors and knotless anchors improve the safety and reduce the complexity of suture management in shoulder arthroscopic surgery.

Fig. 1a & 1b.
1a) Patient positioned in the lateral decubitus orientation with traction device.
1b) Patient positioned in the beach chair orientation with head support by traps. (Personal collection)

SHOULDER DISORDERS

Shoulder Impingement Syndrome

Impingement shoulder pain occurs at overhead activities and internal rotation of shoulder. Shoulder pain is generated when the undersurface of the acromion irritates the bursal side of the rotator cuff tendons. The symptoms can be reproduced during positive Hawkins and Neers impingement tests. Subacromial injection of local steroids and lignocaine carries diagnostic, therapeutic and prognostic values. When shoulder impingement pain has subsided for a period after subacromial steroid injection but recurs after a couple of weeks or months, such response bodes good prognosis for arthroscopic subacromial decompression. Patients who suffer from shoulder impingement syndrome can be offered arthroscopic subacromial decompression if they have failed conservative treatment for more than three months.

Arthroscopic subacromial decompression is performed with three small keyhole wounds. An arthroscope is introduced into the subacromial space posteriorly as the viewing portal. The lateral and anterior portals are used as working portals to remove inflamed bursa and bone spurs underneath the acromion using a shaver, radiofrequency probe and bone blur. Inter-switching among the various viewing and working portals allows complete visualisation of the whole subacromial space. The release of coracoacromial ligament from the anterolateral acromion edge and adequate removal of anterolateral corner bone spurs are essential to increase the subacromial space so as to prevent mechanical irritation of the bursal side of the rotator cuff (Fig. 2).

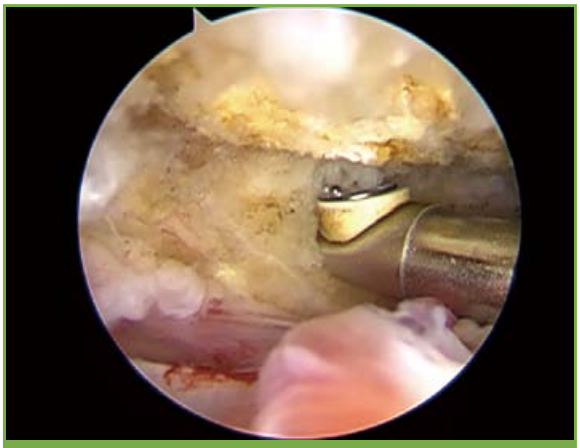

Fig. 2. Arthroscopic removal of the subacromial bone spur with radiofrequency probe. (Personal collection)

Partial Thickness Rotator Cuff Tear

Partial thickness rotator cuff tears can be asymptomatic or present as shoulder pain at night and during overhead activities. Partial thickness tears of the rotator cuff may involve either the articular surface, bursal surface or both sides of the rotator cuff; the tear can also be intratendinous. These can be distinguished by T1-weighted magnetic resonate imaging (MRI). An increase in signal in the rotator cuff without evidence of tendon discontinuity is suggestive of a partial tear. The natural history of partial thickness rotator cuff tears appears to be worsening with increasing age, the initial larger tear size and the absence of a traumatic episode. The risk of progression of a partial thickness tear to a full-thickness tear is significant, and it ranges between 28% to 81% [1].

For patients who have failed conservative treatment, surgical intervention via shoulder arthroscopy arthroscopic debridement, debridement with subacromial decompression, arthroscopic repair of partially torn rotator cuff and restoration of partially torn tendon followed by repair with suture anchors are the accepted operative choices[2]. The choice of these operative procedures is usually based on the patient's age, physical demand, the location and size of partial-thickness rotator cuff tear. In particular, symptomatic partial articular side supraspinatus tendon avulsion (PASTA) lesions can be effectively treated with arthroscopic suture bridge technique[3].

Full Thickness Rotator Cuff Tear

Night pain and weakness are classical features of full-thickness rotator cuff tears. An acute traumatic full-thickness tear is best managed surgically by rotator cuff repair. Both open and arthroscopic rotator cuff repair give equally good clinical outcome[4]. Arthroscopic surgery has the advantage of less post-operative pain, shorter hospital stay and faster recovery time. Patients with chronic rotator cuff tears should first be offered conservative treatment with NSAID and physical therapy for a period of 6 to 12 weeks. Those who have failed conservative treatment and experience persistent shoulder pain, weakness and limitation in daily activities should be offered rotator cuff repair operation.

For arthroscopic repair of full-thickness rotator cuff tears, multiple portals are usually created for insertion of suture anchors and passage of sutures. In general full-thickness rotator cuff tears should be identified and adequately mobilised. The footprint bone-bed should then be prepared with radiofrequency and bone burr to remove overlying soft tissue before repair with sutures and insertion of sutures anchors. Full-thickness subscapularis tendon repair is a challenging procedure. Intraarticular biceps tendon release is usually needed to identify the comma tissue of medial biceps sling. The use of 70 degrees arthroscopy and shoulder rotation and manipulation helps to identify and prepare the footprint bone-bed. Three sides mobilisation of retracted subscapularis tendon and dual or triple anterior portal establishment help the passage of sutures and insertion of sutures anchors for subscapularis repair. Both single row and double row rotator cuff repairs for supraspinatus and infraspinatus tendons are well-described repair options. The choice of these operative techniques is usually based on size, location and tension of the tear, as well as the surgeons' preference and beliefs[5]. Arthroscopic full-thickness rotator cuff repairs are commonly done in combination with subacromial decompression and biceps procedures (tenotomy or tenodesis) to achieve a better clinical outcome in terms of pain control (Fig. 3).

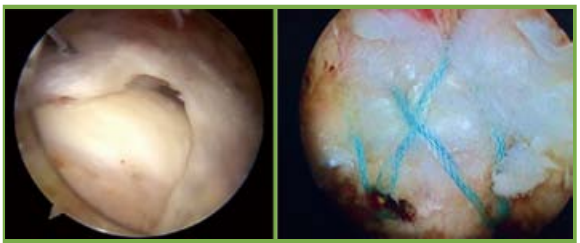

Fig. 3. Full-thickness supraspinatus tear repaired with double-row suture technique. (Personal collection)

Massive Rotator Cuff Tear

A massive rotator cuff tear is defined as two or more tendons tears or tear size larger than 5cm[6]. Even after surgical repair of these rotator cuffs, the re-tear rate approaches 50%[7]. Weakness rather than pain is predominant. Clinically there is significant atrophy of supraspinatus and infraspinatus muscle bulks. The rotator cuff muscle power is very weak, and often there is positive drop arm sign where the patient is

unable to hold active forward flexion of shoulder. In the MRI, irreparable features of massive rotator cuff tears include tendon retraction beyond the glenoid rim, muscle atrophy and fatty infiltration of more than 50%. Non-operative treatment with NSAID, physiotherapy, subacromial injection of corticosteroids can be offered to elderly patients with low functional demand.

A wide range of surgical interventions with different levels of surgical complexity may be performed. Arthroscopic debridement, biceps tenotomy, partial repair of rotator cuffs to reduce the size of the tendon as well as insertion of an 'inspace balloon' into the subacromial space to prevent proximal migration of the humeral head gives promising clinical outcome (Fig. 4).

Fig. 4. Massive rotator cuff repair managed with arthroscopic partial rotator cuff repair and 'Inspace balloon' insertion. (Personal collection)

Adhesive Capsulitis (Frozen Shoulder)

Frozen shoulder is referring to primary adhesive capsulitis not associated with any inciting event, and secondary adhesive capsulitis is associated with a history of trauma. Synovitis within the shoulder joint can present with pain and limitation in range of motion. The mainstay of treatment for adhesive capsulitis is conservative with NSAID and physiotherapy. It is a self-limiting shoulder disorder which can eventfully resolve within two years. However, the painful and freezing phase of adhesive capsulitis with chronic pain and stiffness can be very disabling. In case of failed conservative treatment including intraarticular injection of corticosteroids, arthroscopic capsulolabral lysis and synovectomy together with manipulation under anaesthesia can be offered to shorten the painful freezing and frozen stage of adhesive capsulitis.

With the use of shoulder arthroscopy, inflamed synovitis can be removed within the glenohumeral joint. The contracted rotator cuff interval, the anteroinferior ligament complex, and the posteroinferior complex can be released with a radiofrequency probe to improve the range of forward flexion, external rotation and internal rotation respectively (Fig. 5). Excellent post-operative pain control and immediate mobilisation exercises are essential to maintain the shoulder range of motion.

Fig. 5. Arthroscopic removing of inflamed synovitis and adhesion lysis with the radiofrequency probe for adhesive capsulitis management. (Personal collection)

Recurrent Dislocation of Shoulder Joint

Anterior shoulder instability after a traumatic dislocation is a common problem in the young athletic population. The risk of recurrent shoulder dislocation is closely related to the age at the time of the first dislocation. The risk of recurrent dislocation in younger patients less than age 20 can be as high as 90% following non-operative treatment[8]. Repeated shoulder dislocation can result in cartilage loss and thinning of rotator cuff tendons resulting in chronic shoulder pain.

Arthroscopic Bankart repair can be performed for recurrent shoulder dislocation. This arthroscopic procedure uses three portal wounds to repair and reattach the torn anterior capsulolabrum complex to three small suture anchors (Fig. 6). This restores the 'pumper effect' on the anteroinferior labrum, thus averting future anterior shoulder dislocation. In the event that the humeral head carries a moderate to large 'Hill-Sachs' lesion that can easily engage onto the anterior glenoid rim, a Remplissage procedure can be performed to prevent an engaging Hill-Sachs lesion. This arthroscopic procedure fills the Hill-Sachs lesion with infraspinatus muscle, and turns the Hill-Sachs lesion from an intraarticular lesion to an extraarticular lesion so that the humeral head can never be engaged onto the anterior glenoid rim, thus minimizing chance of dislocation. The combined arthroscopic Bankart repair and Remplissage procedure can effectively prevent recurrent dislocation of the shoulder without affecting the external range of the shoulder joint[9].

Fig. 6. In arthroscopic Bankart repair, the torn anterior capsular labral complex are mobilised and then repaired with small suture anchors. (Personal collection)

Biceps Pathology

Superior labrum anterior to posterior (SLAP) lesions are common in young throwing athletes or after a traumatic event. A tear in the proximal biceps anchor occurs at the 12 o'clock of the glenoid face. The most prevalent complaints include anterior shoulder pain, and clicking and popping in the shoulder. A positive O'Brien test suggests of a SLAP lesion[10]. The mainstay of initial treatment is posterior capsular stretching exercise. Surgical intervention with arthroscopic debridement or repair depends on the different subtypes of SLAP lesion.

Biceps tendonitis involves inflammation of the tendon within the bicipital groove. It is associated with shoulder impingement syndrome and rotator cuff disease. Most biceps tendonitis responds well to the traditional method of rest, ice and NSAID. If conservative treatment fails after 3 months, surgical treatment can be considered. Arthroscopic debridement, tenotomy (surgical release) of proximal biceps tendon and tenodesis (reattachment) of long head of biceps tendon are different surgical options. Typically, tenotomy is reserved for elderly sedentary patients with larger body build, whereas tenodesis is indicated in younger active patients who require full elbow flexion and supination strength[11].

Acromioclavicular Joint Pathology

Acromioclavicular joint (ACJ) injury is common following direct contusion to the shoulder. ACJ separation is managed according to the Rockwood classification (Table 1). Plain radiograph of bilateral Zanca views for comparison with the unaffected side is needed. Treatment for type III ACJ injury is controversial. Usually surgical intervention is offered if conservative treatment has failed or if the patient has high physical demand. For type IV, V and VI ACJ separations, the trapezius fascia is disrupted. Operative treatment is preferred in order to obtain the best clinical results. Shoulder arthroscopic assisted ACJ stabilisation is one of more popular methods nowadays. It involves insertion of a suspensory device underneath the coracoid with arthroscopy and reduction of the ACJ separation with fibre tape suture using a 3-4cm open wound over the clavicle. (Fig. 7)

Table.1: Rehabilitation modality in patients with musculoskeletal diseases or cancer

Classification	Description	Notes
Type I	AC Joint strain	Normal radiograph
Type II	AC disrupted, CC strain	Mild vertical separation (normal AC interval 5-8 mm)
Type III	AC and CC disrupted	CC distance 25-100% of contralateral side
Type IV	Distal clavicle positioned posterior to acromion	
Type V	Stepping of AC Joint	CC distance >100% contralateral side
Type VI	Distal clavicle positioned Inferior to coracoid	Rare: Deep to conjoined tendon (coracobracialis, short head biceps)

AC = arcomioclavicular, CC = coracoclavicular.

(Ref: Rockwood CA Jr, Green DP, Buchoiz RW, Hickman JD. Fracture in Adults. 4th Ed. Philadelphia, Pa: Lippincott-Raven; 1996.)

ACJ arthritis can present as shoulder pain when the articular disc of the ACJ is torn. Lignocaine test by injection of lignocaine (1%, 2cc) directly into the ACJ can help to make the diagnosis. When conservative treatment fails, ACJ excision maybe performed with arthroscopy as an isolated procedure or in combination with other subacromial and rotator cuff procedures.

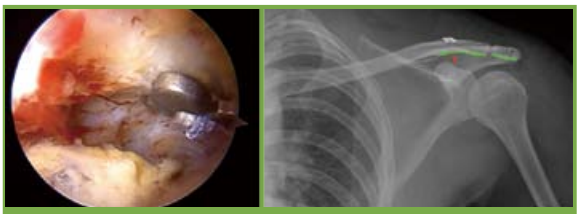

Fig. 7. Arthroscopic assisted ACJ stabilisation operation with Dogbone Endobutton (Arthrex®) and fibre tape suture. (Personal collection)

Shoulder Osteoarthritis

Degenerative joint diseases of the shoulder usually present with pain and loss of motion. The hallmark of the treatment for shoulder osteoarthritis is a slow and stepwise progression through conservative to aggressive management. Operative treatment can be considered when conservative treatment such as physical therapy, NSAID and intra-articular steroid injection fails. Arthroscopic treatment includes synovectomy, removal of loose bodies, micro-fracture of glenoid surface, biceps tenotomy, subacromial decompression and distal clavicle excision. All these procedures aim at better control of shoulder pain.

CONCLUSION

With modern technology and the development of innovative arthroscopic instruments, many common shoulder disorders can be managed through minimally invasive surgery via the shoulder arthroscopy. Nevertheless, arthroscopic shoulder surgery has a high learning curve. A well trained and experienced shoulder surgeon is required to achieve an excellent clinical outcome.

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Update on Management of Fragility Hip Fractures

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INTRODUCTION

Geriatric hip fractures place an increasing burden on healthcare providers around the world. Hip fractures are a well-known fragility fracture for which the lifetime risk is around 11-23% and 3-11% in women and men respectively. Hip fractures also pose a significant economic burden to the society; this burden will increase in the future, in part due to the increasing number of elderlies.

EPIDEMIOLOGY

With the ageing populations in many parts of Asia, it has been estimated that over half of all hip fractures will occur in Asia in 2050[1]. Epidemiological studies performed in Hong Kong in 2007 and 2012 showed that, similar to Western countries, there was a drop in the incidence rate of hip fractures in the territory[2,3]. However, due to the increase in the elderly population, the actual number of hip fractures has been increasing, and the projected annual incidence of geriatric hip fractures in 2040 will be more than 14,500, which is more than a 3-fold increase in a 30-year period from 2011 to 2040. The number of geriatric hip fractures managed in the Hospital Authority (HA) increased from 3,678 in 2000 to 4,579 in 2011[4].

BEST PRACTICE INTERNATIONAL GUIDELINE

Current international guidelines and national model of care for geriatric hip fractures recommend early surgery to improve the clinical outcome for elderly patients, including morbidity and mortality. The Blue Book of the British Orthopaedic Association in 2007 stated six standards for hip fracture care[5]:

1. Admission to an orthopaedic ward within 4 hours;
2. Surgery within 48 hours and during working hours;
3. Patients developing pressure ulcers;
4. Preoperative assessment by an ortho-geriatrician;
5. Discharged with bone protection medication;
6. Received a falls assessment prior to discharge.

The National Institute for Health and Care Excellence (NICE) Clinical Guideline (CG 124) from the United Kingdom recommends that surgery be performed on the day of, or the day after admission, based on the reason that early surgery within 24 or 48 hours is associated with lower mortality risk[6]. In Canada, access to surgery should be no later than 48 hours or two days after admission to the emergency room[7].

CURRENT CONDITION IN HONG KONG

In early 2000, various clinical pathways for geriatric hip fractures were established in HA hospitals. A geriatric hip fracture clinical pathway, led by an orthopaedic surgeon, consisting of surgeons, physicians, anaesthetists, nurses, physiotherapists, occupational therapists, medical social workers, dieticians as well as voluntary support groups, was reported to show that after the implementation of the pathway, the preoperative length of stay was markedly shortened by 4 days, from an average of 6.1 days in 2006 to 1.5 days in 2011. The postoperative length of stay and the overall acute hospital length of stay also improved significantly. The length of stay in rehabilitation hospitals was also significantly shorter in the 4-year period. Although the number of hip fractures increased annually with increased age and with number of comorbidities each year, the inpatient mortality rate showed a gradual decrease from 2.7% in 2006 to 1.25% in 2010. The 30-day mortality rate also showed a decrease from 3.65% in 2006 to 2.75% in 2010. The geriatric hip fracture clinical pathway is an excellent approach in a geriatric hip fracture service. The most significant improvement is the dramatic shortening of the length of hospital stay[8].

A study in 2012 led by the Hong Kong Fragility Fracture Registries (FFR) Working group reviewed the management of hip fractures in six major acute hospitals in Hong Kong. Clinical data on fragility hip fracture patients admitted in 2012 were captured. The analysis was performed studying the local standard of practice and taking reference from the standards set by the British Orthopaedic Association (BOA). Overall, 91.0% of patients received orthopaedic care within 4 hours of admission, and 60.5% received surgery within 48 hours. Preoperative geri-orthopaedic co-management was received by 3.5% of patients and was one of the reasons for delayed surgery in 22% of patients. Only 22.9% were discharged with medication that would promote bone health. Institutionalisation on discharge significantly increased by 16.2% ($p<0.001$). Only 35.1% of patients attended out-patient follow-up one year following fracture, and mobility had deteriorated in 69.9% compared with the premorbid state. Death occurred in 17.3% of patients within a year of surgery compared with 1.6% mortality rate in a Hong Kong age-matched population[9]. These results were far from being satisfactory when compared to the BOA standard.

Before 2017, the post-fracture care gap has been overlooked in Hong Kong, and the situation was not

improving. Diagnosis and treatment of osteoporosis differs among hospitals and specialties. There are no standardised guidelines for treating this particular group of elderly patients. According to a study from 2008 to 2012 of 15,866 geriatric hip fracture patients, the initiation intervention rate for anti-osteoporosis medicine prescription between 2009 and 2012 was found to be different each year, from as low as 9% in 2010 to as high as 15% in 2009. Among the specialties prescribing anti-osteoporosis medication, orthopaedic surgeons initiated 63% of the prescriptions, whereas physicians initiated 37%. There is a large post-fracture care gap in secondary drug prevention for patients with osteoporotic hip fractures in Hong Kong. The majority of the patients are neither diagnosed nor tested for osteoporosis. Most remained untreated for one year after the osteoporotic hip fractures[10]. With the new funding input from Hospital Authority for the fracture liaison service, we hope the post-fracture care gap can be closed in the not too distant future.

WAY FORWARD

Advanced Surgical Techniques

The goal of hip fracture surgery is to permit the patients to bear weight as tolerated after surgery. Elderly patients may have difficulties in limiting their weight-bearing on injured limb because of poor muscle power, or follow mobility restrictions, especially in those with cognitive impairment. Allowing patients to bear weight will help with mobilisation and recovery and is recommended when stable surgical repair has been achieved. Surgeons should choose a procedure that will allow immediate full weight-bearing postoperatively.

For displaced femoral neck fractures, hemiarthroplasty with a cemented stem (Fig. 1) is recommended in the very elderly patients (more than 85 years old) as it is superior to cementless stems. Excellent long-term results with cemented stems should give assurance that a well-placed stem will last the length of the patient's life.

For intertrochanteric fractures, stable fractures typically have 2 or 3 parts with intact medial and lateral buttresses and should be treated with sliding hip screw fixation. Over time and along with weight-bearing, the screw may slide, further compressing the fracture. Unstable fractures are characterised by comminution, a reverse obliquity fracture line, or extension into the shaft of the femur. In these cases, the lateral buttress is not intact and will not provide an endpoint to sliding, so a sliding hip screw carries a higher rate of failure in these fracture patterns. The unstable fracture is best treated with an intramedullary nail (Fig. 2) because it provides the buttress for the proximal fragment. The biggest problem associated with internal fixation on osteoporotic hip fractures is that firm internal fixation is difficult to achieve due to reduced bone quality and strength, which also increases the risk of fracture reduction loss, nonunion, and the failure and fracture of the internal fixture (even after internal fixation). If necessary, this procedure can be performed together with autologous bone grafting or augmentation using bone cement (Fig. 3) or other bone substitutes.

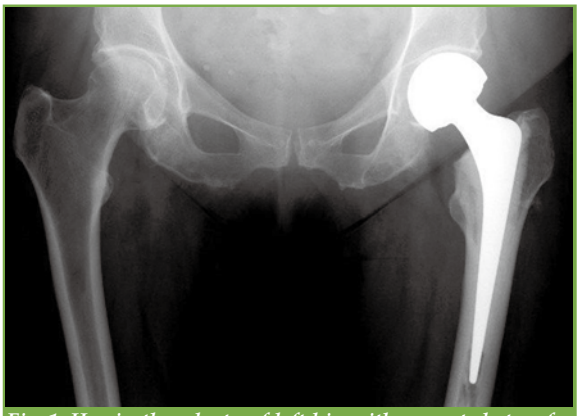

Fig. 1. Hemiarthroplasty of left hip with cemented stem for fracture of neck of femur. (Personal collection)

Fig. 2. Intramedullary hip screw for unstable trochanteric fracture of femur. (Personal collection)

Fig. 3. Intramedullary hip screw with cement augmentation. Arrow: cement augmentation. (Personal collection)

Medical Treatment of Osteoporosis

Drugs of choice for osteoporosis include anti-resorptive e.g. bisphosphonates and denosumab. Intravenous bisphosphonates, i.e. zoledronic acid has the benefit of a yearly dose. It is recommended for patients with recent hip fractures, contra-indications to oral bisphosphonates, existing polypharmacy or poor compliance with oral medications. Denosumab is indicated in patients with polypharmacy, poor compliance to oral drugs, contra-indications to oral bisphosphonates, or who have suboptimal response to suboptimal bone mineral density responses to other antiresorptive therapies. There is no contra-indication for its use in patients with renal impairment up to stage 4 chronic kidney disease. Bone forming agents such as teriparatide is especially indicated for patients with severe osteoporosis, history of fragility fracture, experience of fracture while taking anti-resorptive, or continuing bone loss and not responsive to previous anti-resorptive treatment.[11]

Fracture Liaison Services

Fracture liaison services (FLS) are coordinated services that identify patients with fragility fractures, assess and treat their bone health, make referrals for rehabilitation, and aim to prevent secondary fractures. A recent meta-analysis of 74 controlled studies showed that FLS programmes improved outcomes, with significant increase in bone mineral density assessment (48.0% vs 23.5%), treatment initiation (38.0% vs 17.2%) and adherence (57.0% vs 34.1%), and reduction in re-fracture incidence (6.4% vs 13.4%) and mortality (10.4% vs 15.8%)[12]. A systematic review has also shown that FLS per the International Osteoporosis Foundation Best Practice Standards conducted in Canada, Australia, the US, the UK, Japan, and Sweden were all found to be cost-effective in comparison with usual or no treatment, regardless of programme intensity or country[13].

According to the International Osteoporosis Foundation (IOF), only 10% to 25% of public hospitals in Hong Kong have FLS[14]. A pilot study in a trauma centre to compare the outcome before and after the formation of a designated hip fracture team and hip fracture pathway reports the average Key performance index (KPI) (operation within 2 days from admission) has improved from 49.2% to 70.0%; the average acute length of stay (days) has improved from 13.7 to 11.3; the total surgical complication rate has improved from 6.2% to 5.8%. The 30-day mortality rate and the unplanned readmission rate (within 28 days) have remained below 2.7% and 2.2% respectively[15]. The early results are very promising. Fracture liaison services could effectively bridge the gap between the patients and the prevention of further fragility fractures.

One essential element of FLS is a dedicated coordinator, who provides proactive recruitment of patients aged ≥50 years with new fragility fractures. All patients should be evaluated for future fracture risk within three months. In addition to DXA scanning, the cause of osteoporosis should also be recognised, and blood tests including serum calcium, phosphate, creatinine, and 25-hydroxyvitamin D should be performed to look for secondary osteoporosis. All patients with osteoporosis should be treated promptly with anti-osteoporotic medications and reviewed regularly during follow-up. Calcium and vitamin D supplement are given routinely. Treatment of osteoporosis should be given. Fall risk and lifestyle risk factors should be evaluated accordingly. A dedicated database with long-term management should be established for these patients[16].

Sarcopenia Intervention

Sarcopenia leads to falls, disability, and increased mortality. A local study showed that the prevalence of sarcopenia was 73.6% in men and 67.7% in women with geriatric hip fractures. This prevalence is much higher than that in community-dwelling elderly people, and therefore, the health status of their muscle tissue should be investigated during hospitalisation[17]. Resistance exercises and supplements, including vitamin D should be recommended to strengthen muscle and hence reduce falls[18,19]. Studies have also shown that nutrition is important for sarcopenia and that protein intake of 1.0 to 1.2 g/kg per day is recommended for older adults[20]. Multi-disciplinary approach sarcopenia intervention programmes are emerging in many hospitals, aim at to prevent the related morbidity of sarcopenia. However limitations, e.g. nutritional support, social support still exist. Awareness and understanding of the condition are crucial for better care and quality of life for elderly patients.

SUMMARY

Management of fragility hip fractures is improving in recent years. Important initiatives, including streamlining the pre-operative optimisation with input from geriatric and anaesthesia, early surgery, advanced surgical techniques, bone health assessment and treatment, functional rehabilitation and sarcopenia management, will help to close the post-fracture care gap and improve the quality to meet the international standard.

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How to Take Photos of Lotus?

Dr Hin-keung WONG

MBBS (HK), FHKCOS, FRCS Ed (Ortho), FHKAM (Ortho Surgery), MMedSc (HK)

Specialist in Orthopaedics and Traumatology
President, The Hong Kong Society for Surgery of the Hand
Chief of Service and Consultant, Department of Orthopaedics and Traumatology,
Princess Margaret Hospital and North Lantau Hospital

Dr Hin-keung WONG

Nelumbo nucifera is a rhizomatous aquatic perennial herb of the genus Nelumbo in the family Nelumbonaceae. It is also known as the Sacred Lotus or Indian Lotus. In Hong Kong, we can find blossoms of lotuses in the summer time (from May to September). Where can we find them? We can go to the following places to take photos of lotuses: Shing Mun Valley Park, Hong Kong Wetland Park, Wun Chuen Sin Kwoon, Hong Kong Park, The University of Hong Kong Lotus Pond, The Chinese University of Hong Kong Weiyuan Lake, Nan Lian Garden, Lions Nature Education Centre, Lai Chi Kok Park, Sha Tin Park, etc. Lotuses should be photographed in diffused light without breeze. The still golden hours in the morning are the best time for photography.

We can use a macro lens to take photos of a lotus if we can go very close to one. Unfortunately, lotuses grow from the bottom of a muddy pond. Therefore, it is often difficult (if not impossible) to shoot up close. We usually need a telephoto lens with focal length of 200mm or even longer. A zoom lens with a long reach is another good option. A tripod stand is a good way to provide stability to the camera and the lens. We can, using large aperture and telephoto lenses, take a photo with a blurry background to make the subject stand out. In other words, we try to create a shallow depth of field when we take the photos. In order to make a blurry background, we should also come closer to the flowers and select a flower with a background which is far away from it.

Another technique to accentuate the beauty of a lotus is to make use of lighting and colour contrast. We can use a camera setting which will produce vivid colours and rich gradation. Besides, we can increase the contrast and colour saturation levels. For composition, we can choose a monochrome background such as a dark pond or deep green leaves. Furthermore, we can use a high output power flash to create a dark background. In this scenario, we can use a small aperture, low ISO and maximum flash sync shutter speed (e.g. 1/200s) to minimise the ambient light effect to create a darker background but the lotus can be optimally exposed.

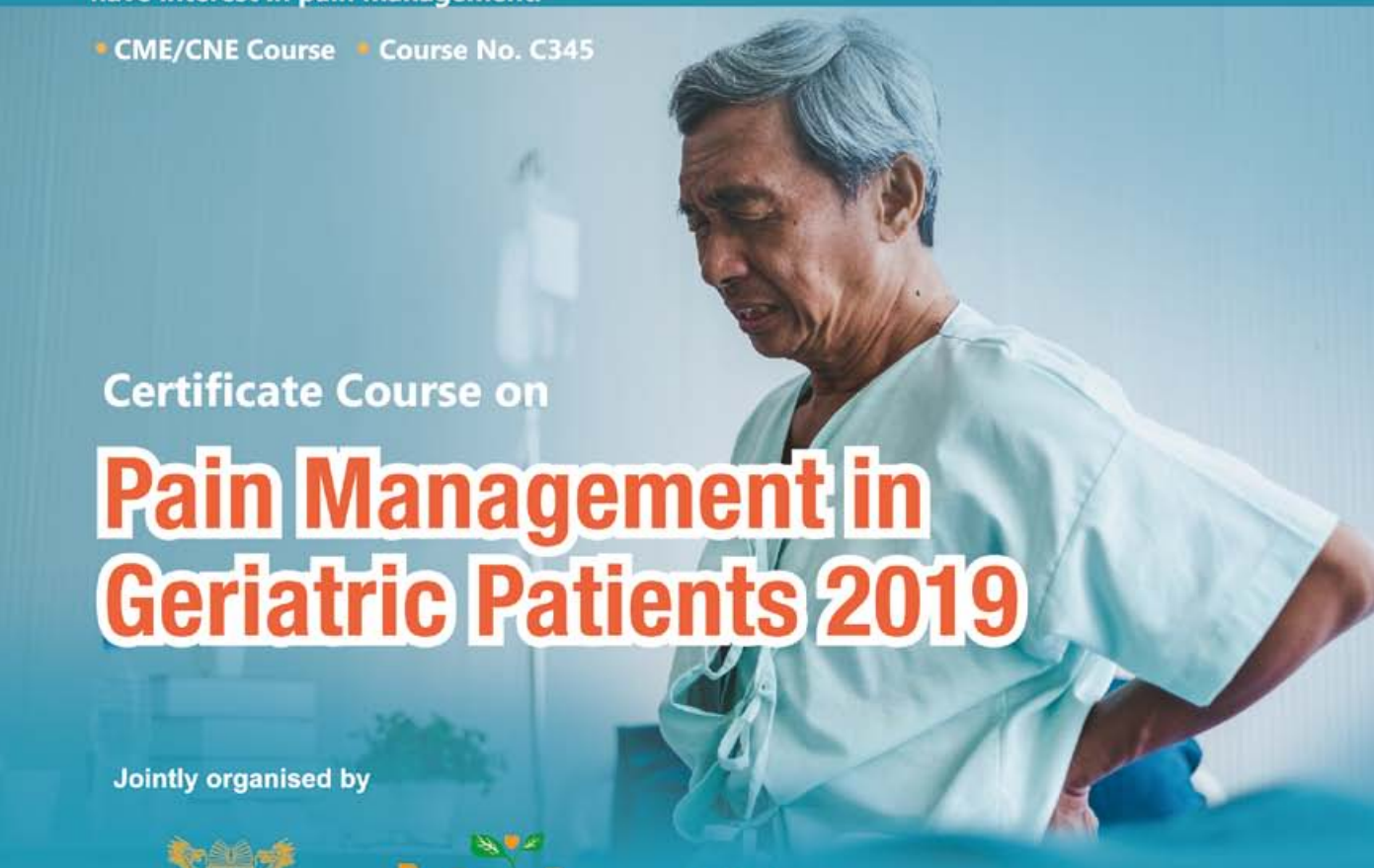
We can take photos with double exposures to create the dreaming effects. We can also use reflex lenses (mirror lenses) to take photos with donut-shaped bokeh effects.

Lotuses go through a long blossom period complete with various phases of bloom e.g. budding phase, flowering with crown-like opened petals, lotuses with falling petals, mature lotuses with seed pods, brown and dry leaves, etc. When shooting, we can take photos of lotuses during various phases. On the other hand, we can capture lotuses in various phases of bloom in one picture to enrich the composition.

In addition to the lotus itself, we can include the surrounding elements in the composition to add a sense of vitality to our photos. There are many insects and creatures in the pond, such as dragonfly, damselfly, bee, butterfly, frog, moth etc. We can take close-up shots of a lotus with an insect, a frog or even a few rain drops.

Certificate Course for Doctors, Nurses, allied health practitioner, TCM practitioners who have interest in pain management.

• CME/CNE Course • Course No. C345



Certificate Course on

Pain Management in Geriatric Patients 2019

Jointly organised by

The Federation of Medical Societies of Hong Kong

The Hong Kong Pain Society

Objectives:

To have a glance of common geriatric pain condition and the management

Date	Time	Topics	Speakers
4 Dec	7:00 pm – 7:45 pm	Common Musculoskeletal Condition in Geriatric Patients	Dr LIE Wai Hung, Chester Specialist in Orthropaedics Surgeon
	7:45 pm – 8:30 pm	Pain Management in Geriatric Patients – Physiotherapist Perspectives	Mr Jason TAI Physiotherapist, United Christian Hospital
11 Dec	7:00 pm – 7:45 pm	Neuropathic Pain and Management in Geriatric Patients	Dr. LEUNG Wing Yan, Doris Consultant, Anaes and Pain Medicine, United Christian Hospital
	7:45 pm – 8:30 pm	Pain Management in Geriatric Patients – Occupational Therapist Perspectives	To be confirmed

Date : 4 December & 11 December, 2019 (Wednesday)
Time : 7:00 p.m. – 8:30 p.m.
Venue : Lecture Hall, 4/F., Duke of Windsor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong
Language Media : Cantonese (Supplemented with English)
Course Fee : HK$500 (2 lectures)
Certificate : Awarded to participants with the completion of 2 lectures
Enquiry : The Secretariat of The Federation of Medical Societies of Hong Kong
Tel.: 2527 8898 Fax: 2865 0345 Email: vienna.lam@fmshk.org

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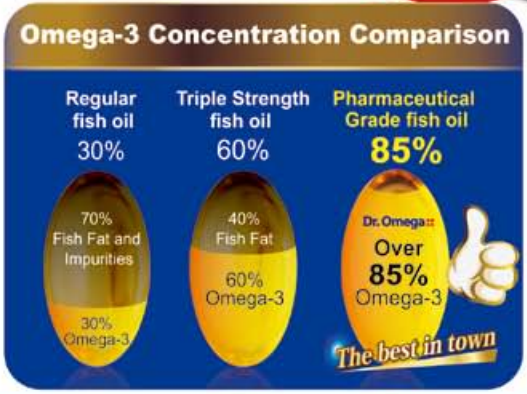

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Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	* Certificate Course on Best Practices in Quality of Life Evaluation and Assessments 2019 4	* HKMA Yau Tsim Mong Community Network - Advances in Hypertension Guideline * HKMA-HKS&H CME Programme 2019-2020 - Expanding the Frontiers of Thoracic Surgery * HKMA Council Meeting 5	* HKMA & Hong Kong Society of Biological Psychiatry - Certificate Course in Psychiatry for Community Primary Care Doctors (Session 9) - Other Therapies for Behavioral and Psychiatric Disorder * HKMA Shatin Community Network - Towards HPV Disease Elimination. Do we have the Tools, do we have the Will? * (Live) HKMA Central, Western & Southern Community Network: Certificate Course on Dermatology (Session 5) - Skin Cancer: East vs West * MPS Workshop - Building Resilience and Avoiding Burnout * Certificate Course on Difficult Communications in Healthcare 2019 6	* HKMA Hong Kong East Community Network - Update in Hypertension Management * Certificate Course on Practical Obstetric Ultrasonography 2019 7	* Certificate Course on Palliative Medicine for Health Care Workers 2019 8	* Refresher Course for Health Care Providers 2019/2020 - Hyperbaric medicine in Hong Kong - new developments 9
10	* Certificate Course on Best Practices in Quality of Life Evaluation and Assessments 2019 11	* HKMA Kowloon West Community Network - The State of Quo of Lipid Management 12	* The Hong Kong Neurosurgical Society Monthly Academic Meeting –To be confirmed * HKMA Shatin Community Network - Latest Update on CV Guidelines and Management * HKMA Central, Western & Southern Community Network - Heart Failure Made Easy * Certificate Course on Difficult Communications in Healthcare 2019 13	* HKMA Kowloon East Community Network - From Diabetes to Renal Failure * HKMA New Territories West Community Network - Hearing Loss - A Microscopic View * Certificate Course on Practical Obstetric Ultrasonography 2019 14	* HKMA Kowloon City Community Network - Structural Heart Intervention for Stroke Prevention: Role of Left Atrial Appendage Occlusion (LAAO) Patent Foramen Ovale (PFO) Closure * Certificate Course on Palliative Medicine for Health Care Workers 2019 15	16
17	* Certificate Course on Best Practices in Quality of Life Evaluation and Assessments 2019 18	19	* HKMA and Hong Kong Society of Biological Psychiatry - Certificate Course in Psychiatry for Community Primary Care Doctors (Session 10) - Difficult Cases, when to Refer, to Admit and Resource Available * HKMA Shatin Community Network - LUTS Management Update: Myth and Reality * Certificate Course on Difficult Communications in Healthcare 2019 20	* HA-United Christian Hospital, HK College of Family Physicians & HKMA Kowloon East Community Network - Certificate Course for GPs 2019 - Approach to Acute "Red Eye" * HKMA Hong Kong East Community Network - Injecting More Than Insulin * FMSHK Executive Committee Meeting * FMSHK Council Meeting * FMSHK 34th Auunal General Meeting * HKFMS Foundation 20th Auunal General Meeting 21	* HKMA Yau Tsim Mong Community Network - Grab Your AIR - New Approach to Asthma Management * Certificate Course on Palliative Medicine for Health Care Workers 2019 22	23
24	25	* HKMA Kowloon West Community Network - Update in Atopic Dermatitis and Pruritus Management 26	* HKMA and Hong Kong Society of Biological Psychiatry - Certificate Course in Psychiatry for Community Primary Care Doctors (Session 11) - Long Term Management of Behavioral / Psychiatric Cases * HKMA Shatin Community Network - Updates on Current Management of Chronic Venous Disease * Certificate Course on Difficult Communications in Healthcare 2019 27	* HKMA New Territories West Community Network – Advances in Treatments in Lung Cancer * Certificate Course on Practical Obstetric Ultrasonography 2019 28	29	30

Date / Time	Function	Enquiry / Remarks
4 MON 7:00 PM	**Certificate Course on Best Practices in Quality of Life Evaluation and Assessments 2019** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Vienna LAM Tel: 2527 8898
5 TUE 1:00 PM	**HKMA Yau Tsim Mong Community Network - Advances in Hypertension Guideline** Organiser: HKMA Yau Tsim Mong Community Network; Speaker: Dr. CHAU Chi Hong; Venue: Crystal Ballroom, 2/F, The Cityview Hong Kong, 23 Waterloo Road, Kowloon	Ms. Candice TONG Tel: 2527 8285 1 CME Point
1:00 PM	**HKMA-HKS&H CME Programme 2019-2020 - Expanding the Frontiers of Thoracic Surgery** Organiser: Hong Kong Medical Association & Hong Kong Sanatorium & Hospital; Speaker: Dr. SUEN Hon Chi; Venue: HKMA Wanchai Premises, 5/F, Duke of Windsor Social Service Building, 15 Hennessy Road, HK	HKMA CME Dept Tel: 2527 8285 1 CME Point
9:00 PM	**HKMA Council Meeting** Organiser: The Hong Kong Medical Association; Venue: HKMA Wanchai Premises, 5/F, Duke of Windsor Social Service Building, 15 Hennessy Road, HK	Ms. Christine WONG Tel: 2527 8285 CME Point
6 WED 1:00 PM	**HKMA & Hong Kong Society of Biological Psychiatry - Certificate Course in Psychiatry for Community Primary Care Doctors (Session 9) - Other Therapies for Behavioral and Psychiatric Disorder** Organiser: Hong Kong Medical Association, Hong Kong Society of Biological Psychiatry; Speaker: Dr. Bianca S K TONG, Dr. LO Tak Lam & Prof. TANG Siu Wa; Venue: Sung Room, 4/F, Sheraton Hong Kong Hotel & Towers, 20 Nathan Road, Kowloon	Ms. Candice TONG Tel: 2527 8285 2 CME Point
1:00 PM	**HKMA Shatin Community Network - Towards HPV Disease Elimination. Do we have the Tools, do we have the Will?** Organiser: HKMA Shatin Community Network; Speaker: Dr. WAN Wai Yee; Venue: Sapphire Room, 2/F, Royal Park Hotel, 8 Pak Hok Ting Street, Shatin	Ms. Candice TONG Tel: 2527 8285 1 CME Point
1:00 PM	**(Live) HKMA Central, Western & Southern Community Network: Certificate Course on Dermatology (Session 5) - Skin Cancer: East vs West** Organiser: HKMA Central, Western & Southern Community Network; Speaker: Dr. MO Wan Leong, Kevin; Venue: HKMA Wanchai Premises, 5/F, Duke of Windsor Social Service Building, 15 Hennessy Road, HK	Miss Antonia LEE Tel: 2527 8285 1 CME Point
6:30 PM	**MPS Workshop - Building Resilience and Avoiding Burnout** Organiser: Hong Kong Medical Association & Medical Protection Society; Speaker: Dr. FUNG Shu Yan, Anthony; Venue: HKMA Wanchai Premises, 5/F, Duke of Windsor Social Service Building, 15 Hennessy Road, HK	HKMA CME Dept Tel: 2527 8285 1 CME Point
7:00 PM	**Certificate Course on Difficult Communications in Healthcare 2019** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Vienna LAM Tel: 2527 8898
7 THU 1:00 PM	**HKMA Hong Kong East Community Network - Update in Hypertension Management** Organiser: HKMA Hong Kong East Community Network; Speaker: Dr. Myles CHAN; Venue: HKMA Wanchai Premises, 5/F, Duke of Windsor Social Service Building, 15 Hennessy Road, HK	Ms. Candice TONG Tel: 2527 8285 1 CME Point
7:00 PM	**Certificate Course on Practical Obstetric Ultrasonography 2019** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Vienna LAM Tel: 2527 8898
8 FRI 7:00 PM	**Certificate Course on Palliative Medicine for Health Care Workers 2019** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Vienna LAM Tel: 2527 8898
9 SAT 2:30 PM	**Refresher Course for Health Care Providers 2019/2020 - Hyperbaric medicine in Hong Kong - new developments** Organiser: The Hong Kong Medical Association; Speaker: Dr. Jeffrey CHAU; Venue: Lecture Halls A&B, 4/F, Block G, Wong Tai Sin Hospital	Ms. Clara TSANG Tel: 2354 2440 2 CME Point
11 MON 7:00 PM	**Certificate Course on Best Practices in Quality of Life Evaluation and Assessments 2019** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Vienna LAM Tel: 2527 8898
12 TUE 1:00 PM	**HKMA Kowloon West Community Network - The State of Quo of Lipid Management** Organiser: HKMA Kowloon West Community Network; Speaker: Dr. CHAN Nor, Norman; Venue: Fulum Palace, Shop C, G/F, 85 Broadway Street, Mei Foo Sun Chuen	Ms. Candice TONG Tel: 2527 8285 1 CME Point
13 WED 7:30 AM	**The Hong Kong Neurosurgical Society Monthly Academic Meeting –To be confirmed** Organizer : Hong Kong Neurosurgical Society; Speaker(s) : Dr LAU Sau Ning Sarah; Chairman : Dr LUI Wai Man; Venue : Seminar Room, G/F, Block A, Queen Elizabeth Hospital	1.5 points College of Surgeons of Hong Kong Dr. WONG Sui To Tel: 2595 6456 Fax. No.: 2965 4061
1:00 PM	**HKMA Shatin Community Network - Latest Update on CV Guidelines and Management** Organiser: HKMA Shatin Community Network; Speaker: Dr. LI Siu Lung, Steven; Venue: Diamond Room, 2/F, Royal Park Hotel, 8 Pak Hok Ting Street, Shatin	Ms. Candice TONG Tel: 2527 8285 1 CME Point
1:00 PM	**HKMA Central, Western & Southern Community Network - Heart Failure Made Easy** Organiser: HKMA Central, Western & Southern Community Network; Speaker: Dr. KWOK Chun Kit, Kevin; Venue: HKMA Wanchai Premises, 5/F, Duke of Windsor Social Service Building, 15 Hennessy Road, HK	Miss Antonia LEE Tel: 2527 8285 1 CME Point
7:00 PM	**Certificate Course on Difficult Communications in Healthcare 2019** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Vienna LAM Tel: 2527 8898
14 THU 1:00 PM	**HKMA Kowloon East Community Network - From Diabetes to Renal Failure** Organiser: HKMA Kowloon East Community Network; Speaker: Dr. TAM Chun Hay; Venue: Lei Garden Restaurant, Shop No. L5-8, apm, Kwun Tong, No. 418 Kwun Tong Road, Kwun Tong, Kowloon	Miss Antonia LEE Tel: 2527 8285 1 CME Point
1:00 PM	**HKMA New Territories West Community Network - Hearing Loss - A Microscopic View** Organiser: HKMA New Territories West Community Network; Speaker: Dr. CHOW Siu Wah, Jennifer; Venue: Pak Loh Chiu Chow Restaurant, Shop A316, 3/F, Yoho Mall II, 8 Long Yat Road, Yuen Long	Miss Antonia LEE Tel: 2527 8285 1 CME Point

Date / Time	Function	Enquiry / Remarks
14 THU 7:00 PM	**Certificate Course on Practical Obstetric Ultrasonography 2019** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Vienna LAM Tel: 2527 8898
15 FRI 1:00 PM	**HKMA Kowloon City Community Network - Structural Heart Intervention for Stroke Prevention: Role of Left Atrial Appendage Occlusion (LAAO) Patent Foramen Ovale (PFO) Closure** Organiser: HKMA Kowloon City Community Network; Speaker: Dr. CHEUNG Shing Him, Gary; Venue: President's Room, Spotlight Recreation Club, 4/F, Screen World, Site 8, Whampoa Garden, Hunghom, Kowloon	Ms. Candice TONG Tel: 2527 8285 1 CME Point
7:00 PM	**Certificate Course on Palliative Medicine for Health Care Workers 2019** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Vienna LAM Tel: 2527 8898
18 MON 7:00 PM	**Certificate Course on Best Practices in Quality of Life Evaluation and Assessments 2019** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Vienna LAM Tel: 2527 8898
20 WED 1:00 PM	**HKMA and Hong Kong Society of Biological Psychiatry - Certificate Course in Psychiatry for Community Primary Care Doctors (Session 10) - Difficult Cases, when to Refer, to Admit and Resource Available** Organiser: Hong Kong Medical Association, Hong Kong Society of Biological Psychiatry; Speaker: Dr. WONG Ming Cheuk, Dr. SHAM Kwan Ho & Prof. TANG Siu Wa; Venue: Sung Room, 4/F, Sheraton Hong Kong Hotel & Towers, 20 Nathan Road, Kowloon	Ms. Candice TONG Tel: 2527 8285 2 CME Point
1:00 PM	**HKMA Shatin Community Network - LUTS Management Update: Myth and Reality** Organiser: HKMA Shatin Community Network; Speaker: Dr. FU Kam Fung, Kenneth; Venue: Park Galleria, Level 1, Royal Park Hotel, 8 Pak Hok Ting Street, Shatin	Ms. Candice TONG Tel: 2527 8285 1 CME Point
7:00 PM	**Certificate Course on Difficult Communications in Healthcare 2019** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Vienna LAM Tel: 2527 8898
21 THU 1:00 PM	**HA-United Christian Hospital, HK College of Family Physicians & HKMA Kowloon East Community Network - Certificate Course for GPs 2019 - Approach to Acute "Red Eye"** Organiser: HA-United Christian Hospital, HK College of Family Physicians & HKMA Kowloon East Community Network; Speaker: Dr. Susanna TSANG; Venue: Lecture Theatre, G/F, Block K, United Christian Hospital	Ms. Polly TAI Tel: 3513 3430 1 CME Point
1:00 PM	**HKMA Hong Kong East Community Network - Injecting More Than Insulin** Organiser: HKMA Hong Kong East Community Network; Speaker: Dr. YUEN Mae Ann, Michele; Venue: HKMA Wanchai Premises, 5/F, Duke of Windsor Social Service Building, 15 Hennessy Road, HK	Ms. Candice TONG Tel: 2527 8285 1 CME Point
7:00 PM	**FMSHK Executive Committee Meeting** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Nancy CHAN Tel: 2527 8898
7:30 PM	**FMSHK Council Meeting** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Nancy CHAN Tel: 2527 8898
8:00 PM	**FMSHK 34th Auunal General Meeting** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Nancy CHAN Tel: 2527 8898
8:30 PM	**HKFMS Foundation 20th Auunal General Meeting** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Nancy CHAN Tel: 2527 8898
22 FRI 1:00 PM	**HKMA Yau Tsim Mong Community Network - Grab Your AIR - New Approach to Asthma Management** Organiser: HKMA Yau Tsim Mong Community Network; Speaker: Prof. WONG Wing Kin, Gary; Venue: Crystal Ballroom, 2/F, The Cityview Hong Kong, 23 Waterloo Road, Kowloon	Ms. Candice TONG Tel: 2527 8285 1 CME Point
7:00 PM	**Certificate Course on Palliative Medicine for Health Care Workers 2019** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Vienna LAM Tel: 2527 8898
26 TUE 1:00 PM	**HKMA Kowloon West Community Network - Update in Atopic Dermatitis and Pruritus Management** Organiser: HKMA Kowloon West Community Network; Speaker: Dr. HAU Kwun Cheung; Venue: Fulum Palace, Shop C, G/F, 85 Broadway Street, Mei Foo Sun Chuen	Ms. Candice TONG Tel: 2527 8285 1 CME Point
27 WED 1:00 PM	**HKMA and Hong Kong Society of Biological Psychiatry - Certificate Course in Psychiatry for Community Primary Care Doctors (Session 11) - Long Term Management of Behavioral / Psychiatric Cases** Organiser: Hong Kong Medical Association, Hong Kong Society of Biological Psychiatry; Speaker: Dr. WONG Ming Cheuk, Dr. SHAM Kwan Ho & Prof. TANG Siu Wa; Venue: Sung Room, 4/F, Sheraton Hong Kong Hotel & Towers, 20 Nathan Road, Kowloon	Ms. Candice TONG Tel: 2527 8285 2 CME Point
1:00 PM	**HKMA Shatin Community Network - Updates on Current Management of Chronic Venous Disease** Organiser: HKMA Shatin Community Network; Speaker: Dr. CHAN Chi King, Micah; Venue: Park Galleria, Level 1, Royal Park Hotel, 8 Pak Hok Ting Street, Shatin	Ms. Candice TONG Tel: 2527 8285 1 CME Point
7:00 PM	**Certificate Course on Difficult Communications in Healthcare 2019** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Vienna LAM Tel: 2527 8898
28 THU 1:00 PM	**HKMA New Territories West Community Network – Advances in Treatments in Lung Cancer** Organiser: HKMA-New Territories West Community Network; Speaker: Dr. NG Wan Ying, Alice; Venue: Atrium Function Rooms, Lobby Floor, Hong Kong Gold Coast Hotel, 1 Castle Peak Road, Gold Coast, HK	Miss Antonia LEE Tel: 2527 8285 1 CME Point
7:00 PM	**Certificate Course on Practical Obstetric Ultrasonography 2019** Organiser: The Federation of Medical Societies of Hong Kong; Venue: Council Chamber, 4/F, Duke of Windor Social Service Building, 15 Hennessy Road, Wanchai, Hong Kong	Ms. Vienna LAM Tel: 2527 8898

Answers to Dermatology Quiz

Answers:

1. Nail pitting, oil drop sign and onycholysis.

   Nail pitting refers to small depressions on the nail plate. They can be deep or shallow, varying from patient to patient. The oil drop sign is a translucent yellow discolouration in the nail plate proximal to the onycholysis. Onycholysis is separation of the nail plate starting from the distal free end and progressing proximally.

2. Psoriatic Nail

   The diagnosis is the psoriatic nail. The signs on the nails are typical for psoriasis. The main differential diagnosis is onychomycosis, i.e. fungal infection of the nail; other differentials include alopecia areata, lichen planus or trachyonychia. The increase of dandruff was silvery scales. This is compatible with psoriasis.

3. Nail psoriasis arises within the nail matrix; however the details of pathogenesis is still unknown.

4. Psoriatic nail is difficult to treat. The treatment is the same as chronic plaque psoriasis including topical corticosteroids, topical calcipotriol, intralesional corticosteroid, phototherapy and systemic treatments such as acitretin, methotrexate, cyclosporine and biologics for severe cases.

Dr Chi-keung KWAN
MBBS(HK), FRCP(Lond, Glasg), Dip Derm(Glasg), PDipID(HK), FHKCP, FHKAM(Med)
Specialist in Dermatology and Venereology

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Prolia® (Denosumab) Abbreviated Prescribing Information

Prolia® (denosumab) Solution for Injection in Pre-filled Syringe 60 mg/mL. **INDICATIONS** Prolia is indicated for: i) treatment of postmenopausal women with osteoporosis at high risk for fracture, defined as a history of osteoporotic fracture, or multiple risk factors for fracture; or patients who have failed or are intolerant to other available osteoporosis therapy; ii) treatment to increase bone mass in men with osteoporosis at high risk for fracture, defined as a history of osteoporotic fracture, or multiple risk factors for fracture; or patients who have failed or are intolerant to other available osteoporosis therapy; iii) treatment to increase bone mass in men at high risk for fracture receiving androgen deprivation therapy for nonmetastatic prostate cancer. In these patients Prolia also reduced the incidence of vertebral fractures; iv) treatment to increase bone mass in women at high risk for fracture receiving adjuvant aromatase inhibitor therapy for breast cancer. **DOSAGE AND ADMINISTRATION** The recommended dose of Prolia is 60 mg administered as a single subcutaneous injection once every 6 months. Administer Prolia via subcutaneous injection in the upper arm, the upper thigh, or the abdomen. All patients should receive calcium 1000 mg daily and at least 400 IU vitamin D daily. **CONTRAINDICATIONS** Hypocalcemia and pregnancy, as well as hypersensitivity to any component of the product. **SPECIAL WARNINGS AND PRECAUTIONS FOR USE** *Hypersensitivity:* Clinically significant hypersensitivity including anaphylaxis has been reported with Prolia. Symptoms have included hypotension, dyspnea, throat tightness, facial and upper airway edema, pruritis, and urticaria. *Hypocalcemia and Mineral Metabolism:* Hypocalcemia may be exacerbated by the use of Prolia. Pre-existing hypocalcemia must be corrected prior to initiating therapy with Prolia. Hypocalcemia following Prolia administration is a significant risk in patients with severe renal impairment [creatinine clearance < 30 mL/min] or receiving dialysis. Adequately supplement all patients with calcium and vitamin D. *Osteonecrosis of the Jaw (ONJ):* ONJ has been reported in patients receiving Prolia. The start of treatment or of a new course of treatment should be delayed in patients with unhealed open soft tissue lesions in the mouth. A dental examination with preventive dentistry and an individual benefit-risk assessment is recommended prior to treatment with Prolia in patients with concomitant risk factors. All patients should be encouraged to maintain good oral hygiene, undergo routine dental check-ups, and immediately report any oral symptoms such as dental mobility, pain or swelling, or non-healing of sores or discharge during treatment with Prolia. While on treatment, invasive dental procedures should be performed with caution and avoided in close proximity to Prolia treatment. *Atypical Subtrochanteric and Diaphyseal Femoral Fractures:* Atypical low-energy or low trauma fractures of the shaft have been reported in patients receiving Prolia. Patients should be advised to report new or unusual thigh, hip, or groin pain. *Multiple Vertebral Fractures (MVF) Following Discontinuation of Prolia Treatment:* Following discontinuation of Prolia treatment, fracture risk increases, including the risk of multiple vertebral fractures. If Prolia treatment is discontinued, consider transitioning to an alternative antiresorptive therapy. *Serious Infections:* Serious infections leading to hospitalization were reported in clinical trial. Advise patients to seek prompt medical attention if they develop signs or symptoms of severe infection, including cellulitis. *Dermatologic Adverse Reactions:* Dermatitis, eczema, and rashes. Most of these events were not specific to the injection site. Consider discontinuing Prolia if severe symptoms develop. *Musculoskeletal Pain:* Severe and occasionally incapacitating bone, joint, and/or muscle pain. Consider discontinuing use if severe symptoms develop. *Suppression of Bone Turnover:* In clinical trials treatment with Prolia resulted in significant suppression of bone remodeling as evidenced by markers of bone turnover and bone histomorphometry. *Osteonecrosis of the external auditory canal:* Osteonecrosis of the external auditory canal has been reported with denosumab. Possible risk factors include steroid use and chemotherapy and/or local risk factors such as infection or trauma. **INTERACTIONS** In subjects with postmenopausal osteoporosis, Prolia (60 mg subcutaneous injection) did not affect the pharmacokinetics of midazolam, which is metabolized by cytochrome P450 3A4 (CYP3A4), indicating that it should not affect the pharmacokinetics of drugs metabolized by this enzyme in this population. **PREGNANCY AND LACTATION** *Pregnancy:* Category X. *Breast-feeding:* It is not known whether Prolia is excreted into human milk. **PEDIATRIC, GERIATRIC AND RENAL IMPAIRMENT** *Pediatric:* Prolia is not recommended in pediatric patients. *Geriatric:* No overall differences in safety or efficacy were observed in clinical studies between elderly patients and younger patients and other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out. *Renal Impairment:* No dose adjustment is necessary in patients with renal impairment. **UNDESIRABLE EFFECTS** The most common adverse reactions reported with Prolia in patients with postmenopausal osteoporosis are back pain, pain in extremity, musculoskeletal pain, hypercholesterolemia, and cystitis. The most common adverse reactions reported with Prolia in men with osteoporosis are back pain, arthralgia, and nasopharyngitis. The most common (per patient incidence ≥ 10%) adverse reactions reported with Prolia in patients with bone loss receiving androgen deprivation therapy for prostate cancer or adjuvant aromatase inhibitor therapy for breast cancer are arthralgia and back pain. Pain in extremity and musculoskeletal pain have also been reported in clinical trials. The most common adverse reactions leading to discontinuation of Prolia in patients with postmenopausal osteoporosis are back pain and constipation. **OVERDOSE** There is no experience with overdosage with Prolia. Abbreviated Prescribing Information Version: HKPROPI01

Reference: 1. Henry G Bone, Rachel B Wagman, Maria L Brandi, et al. *The Lancet Diabetes & Endocrinology 2017;7(Vol 5):513-523.*

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HK-02045-PRO-2019-Mar

Feburic®
(febuxostat)

For Unmet Needs in Patients with Gout & CKD [1-5]

50% of Gout Patients on ULT and 69% of Gout & CKD Patients Can't Meet sUA Target Level in the U.S.[6]

Abbreviations: CKD, chronic kidney disease; ULT, urate-lowering therapy;sUA, serum uric acid.

Reference :
1. Becker MA et al. N Engl J Med 2005;353(23):2450-2641 2. Schumacher HR Jr. et al. Rheumatology 2009;48:188-194 3. FEBURIC©HK packaging Insert Oct 2015 4. Sezai A et al. Circ J 2013; 77 (8):2043-2049 5. Tanaka K et al. Clin Exp Nephrol. 2015 Dec; 19(6):1044-53 6. Juraschek SP, et al. Arthritis Care Res. 2015;67(4):588-92.

Abbreviated prescribing information of Feburic© film-coated tablets

Version: 004 PI version: Jan 2017 **Composition:** Febuxostat **Indications:** FEBURIC is indicated for the treatment of chronic hyperuricaemia in conditions where urate deposition has already occurred (including a history, or presence of, tophus and/or gouty arthritis). FEBURIC 120 mg is also indicated for the prevention and treatment of hyperuricaemia in adult patients undergoing chemotherapy for haematologic malignancies at intermediate to high risk of Tumor Lysis Syndrome (TLS). FEBURIC is indicated in adults. **Dosage: Gout** 80 mg once daily. **TLS** 120mg once daily; start 2 days before the beginning of cytotoxic therapy and continue for a minimum of 7 days. **Administration:** May be taken by mouth w/o regard to food. **Contraindications:** Hypersensitivity to the active substance or to any of the excipients. **Special warnings and precautions for use:** *Cardio-vascular disorders* Treatment of chronic hyperuricaemia Treatment with febuxostat in patients with ischaemic heart disease or congestive heart failure is not recommended. A numerical greater incidence of investigator-reported cardiovascular APTC events (defined endpoints from the Anti-Platelet Trialists' Collaboration (APTC) including cardiovascular death, non-fatal myocardial infarction, non-fatal stroke) was observed in the febuxostat total group compared to the allopurinol group in the APEX and FACT studies (1.3 vs. 0.3 events per 100 Patient Years (PYs)), but not in the CONFIRMS study. The incidence of investigator-reported cardiovascular APTC events in the combined Phase 3 studies (APEX, FACT and CONFIRMS studies) was 0.7 vs. 0.6 events per 100 PYs. In the long-term extension studies the incidences of investigator-reported APTC events were 1.2 and 0.6 events per 100 PYs for febuxostat and allopurinol, respectively. No statistically significant differences were found and no causal relationship with febuxostat was established. Identified risk factors among these patients were a medical history of atherosclerotic disease and/or myocardial infarction, or of congestive heart failure. *Prevention and treatment of hyperuricaemia in patients at risk of TLS* Patients undergoing chemotherapy for haematologic malignancies at intermediate to high risk of Tumor Lysis Syndrome treated with FEBURIC should be under cardiac monitoring as clinically appropriate. *Medicinal product allergy/hypersensitivity* Rare reports of serious allergic/hypersensitivity reactions, including life-threatening Stevens-Johnson Syndrome, Toxic epidermal necrolysis and acute anaphylactic reaction/shock, have been collected in the post-marketing experience. In most cases, these reactions occurred during the first month of therapy with febuxostat. Some, but not all of these patients reported renal impairment and/or previous hypersensitivity to allopurinol. Severe hypersensitivity reactions, including Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS) were associated with fever, haematological, renal or hepatic involvement in some cases. Patients should be advised of the signs and symptoms and monitored closely for symptoms of allergic/hypersensitivity reactions. Febuxostat treatment should be immediately stopped if serious allergic/hypersensitivity reactions, including Stevens-Johnson Syndrome, occur since early withdrawal is associated with a better prognosis. If patient has developed allergic/hypersensitivity reactions including Stevens-Johnson Syndrome and acute anaphylactic reaction/shock, febuxostat must not be re-started in this patient at any time. *Acute gouty attacks (gout flare)* Febuxostat treatment should not be started until an acute attack of gout has completely subsided. Gout flares may occur during initiation of treatment due to changing serum uric acid levels resulting in mobilization of urate from tissue deposits. At treatment initiation with febuxostat flare prophylaxis for at least 6 months with an NSAID or colchicine is recommended. If a gout flare occurs during febuxostat treatment, it should not be discontinued. The gout flare should be managed concurrently as appropriate for the individual patient. Continuous treatment with febuxostat decreases frequency and intensity of gout flares. *Xanthine deposition* In patients in whom the rate of urate formation is greatly increased (e.g. malignant disease and its treatment, Lesch-Nyhan syndrome) the absolute concentration of xanthine in urine could, in rare cases, rise sufficiently to allow deposition in the urinary tract. This has not been observed in the pivotal clinical study with FEBURIC in the Tumor Lysis Syndrome. As there has been no experience with febuxostat, its use in patients with Lesch-Nyhan Syndrome is not recommended. *Mercaptopurine/azathioprine* Febuxostat use is not recommended in patients concomitantly treated with mercaptopurine/azathioprine. Where the combination cannot be avoided patients should be closely monitored. A reduction of dosage of mercaptopurine or azathioprine is recommended in order to avoid possible haematological effects. *Organ transplant recipients* As there has been no experience in organ transplant recipients, the use of febuxostat in such patients is not recommended.*Theophylline* Co-administration of febuxostat 80 mg and theophylline 400 mg single dose in healthy subjects showed absence of any pharmacokinetic interaction. Febuxostat 80 mg can be used in patients concomitantly treated with theophylline without risk of increasing theophylline plasma levels. No data is available for febuxostat 120 mg. *Liver disorders* During the combined phase 3 clinical studies, mild liver function test abnormalities were observed in patients treated with febuxostat (5.0%). Liver function test is recommended prior to the initiation of therapy with febuxostat and periodically thereafter based on clinical judgment. *Thyroid disorders* Increased TSH values (> 5.5 µIU/mL) were observed in patients on long-term treatment with febuxostat (5.5%) in the long term open label extension studies. Caution is required when febuxostat is used in patients with alteration of thyroid function. *Lactose* Febuxostat tablets contain lactose. Patients with rare hereditary problems of galactose intolerance, the Lapp lactase deficiency or glucose-galactose malabsorption should not take this medicine. **Undesirable effects:** *Summary of the safety profile* The most commonly reported adverse reactions in clinical trials (4,072 subjects treated at least with a dose from 10 mg to 300 mg) and post-marketing experience in gout patients are gout flares, liver function abnormalities, diarrhoea, nausea, headache, rash and oedema. These adverse reactions were mostly mild or moderate in severity. Rare serious hypersensitivity reactions to febuxostat, some of which were associated to systemic symptoms, have occurred in the post-marketing experience. *List of adverse reactions* Common (≥ 1/100 to < 1/10), uncommon (≥ 1/1,000 to < 1/100) and rare (≥ 1/10,000 to < 1/1,000) adverse reactions occurring in patients treated with febuxostat are listed below. The frequencies are based on studies and post-marketing experience in gout patients. Within each frequency grouping, adverse reactions are presented in order of decreasing seriousness. Adverse reactions in combined phase 3, long-term extension studies and post-marketing experience in gout patients. **Blood and lymphatic system disorders:** Rare: Pancytopenia, thrombocytopenia. **Immune system disorders:** Rare: Anaphylactic reaction*, drug hypersensitivity*. **Endocrine disorders:** Uncommon: Blood thyroid stimulating hormone increased. **Eye disorders:** Rare: Blurred vision. **Metabolism and nutrition disorders:** Common***: Gout flares. Uncommon: Diabetes mellitus, hyperlipidemia, decrease appetite, weight increase. Rare: Weight decrease, increase appetite, anorexia. **Psychiatric disorders:** Uncommon: Libido decreased, insomnia. Rare: Nervousness. **Nervous system disorders:** Common: Headache. Uncommon: Dizziness, paraesthesia, hemiparesis, somnolence, altered taste, hypoaesthesia, hyposmia. **Ear and labyrinth disorders:** Rare: Tinnitus. **Cardiac disorders:** Uncommon: Atrial fibrillation, palpitations, ECG abnormal, left bundle branch block (see section Tumor Lysis Syndrome), sinus tachycardia (see section Tumor Lysis Syndrome). **Vascular disorders:** Uncommon: Hypertension, flushing, hot flush, haemorrhage (see section Tumor Lysis Syndrome). **Respiratory system disorders:** Uncommon: Dyspnoea, bronchitis, upper respiratory tract infection, cough. **Gastrointestinal disorders:** Common: Diarrhoea**, nausea. Uncommon: Abdominal pain, abdominal distension, gastro-oesophageal reflux disease, vomiting, dry mouth, dyspepsia, constipation, frequent stools, flatulence, gastrointestinal discomfort. Rare: Pancreatitis, mouth ulceration. **Hepato-biliary disorders:** Common: Liver function abnormalities**. Uncommon: Cholelithiasis. Rare: Hepatitis, jaundice*, liver injury*. **Skin and subcutaneous tissue disorders:** Common: Rash (including various types of rash reported with lower frequencies, see below). Uncommon: Dermatitis, urticaria, pruritus, skin discolouration, skin lesion, petechiae, rash macular, rash maculopapular, rash popular. Rare: Toxic epidermal necrolysis*, Stevens-Johnson Syndrome*, angioedema*, drug reaction with eosinophilia and systemic symptoms*, generalized rash (serious)*, erythema, exfoliative rash, rash follicular, rash vesicular, rash pustular, rash pruritic*, rash erythematous, rash morbilliform, alopecia, hyperhidrosis. **Musculoskeletal and connective tissue disorders:** Uncommon: Arthralgia, arthritis, myalgia, musculoskeletal pain, muscle weakness, muscle spasm, muscle tightness, bursitis. Rare: Rhabdomyolysis*, joint stiffness, musculoskeletal stiffness. **Renal and urinary disorders:** Uncommon: Renal failure, nephrolithiasis, haematuria, pollakiuria, proteinuria. Rare: Tubulointerstitial nephritis*, micturition urgency. **Reproductive system and breast disorder:** Uncommon: Erectile dysfunction. **General disorders and administration site conditions:** Common: Oedema. Uncommon: Fatigue, chest pain, chest discomfort. Rare: Thirst. **Investigations:** Uncommon: Blood amylase increase, platelet count decrease, WBC decrease, lymphocyte count decrease, blood creatine increase, blood creatinine increase, haemoglobin decrease, blood urea increase, blood triglycerides increase, blood cholesterol increase, haematocritic decrease, blood lactate dehydrogenase increased, blood potassium increase. Rare: Blood glucose increase, activated partial thromboplastin time prolonged, red blood cell count decrease, blood alkaline phosphatase increase, blood creatine phosphokinase increase* . * Adverse reactions coming from post-marketing experience ** Treatment-emergent non-infective diarrhoea and abnormal liver function tests in the combined Phase 3 studies are more frequent in patients concomitantly treated with colchicine. *** See full prescribing information for incidences of gout flares in the individual Phase 3 randomized controlled studies. *Description of selected adverse reactions* Rare serious hypersensitivity reactions to febuxostat, including Stevens-Johnson Syndrome, Toxic epidermal necrolysis and anaphylactic reaction/shock, have occurred in the post-marketing experience. Stevens-Johnson Syndrome and Toxic epidermal necrolysis are characterised by progressive skin rashes associated with blisters or mucosal lesions and eye irritation. Hypersensitivity reactions to febuxostat can be associated to the following symptoms: skin reactions characterised by infiltrated maculopapular eruption, generalised or exfoliative rashes, but also skin lesions, facial oedema, fever, haematologic abnormalities such as thrombocytopenia and eosinophilia, and single or multiple organ involvement (liver and kidney including tubulointerstitial nephritis). Gout flares were commonly observed soon after the start of treatment and during the first months. Thereafter, the frequency of gout flare decreases in a time-dependent manner. Gout flare prophylaxis is recommended. Tumor Lysis Syndrome *Summary of the safety profile* In the randomized, double-blind, Phase 3 pivotal FLORENCE (FLO-01) study comparing febuxostat with allopurinol (346 patients undergoing chemotherapy for haematologic malignancies and at intermediate-to-high risk of TLS), only 22 (6.4%) patients overall experienced adverse reactions, namely 11 (6.4%) patients in each treatment group. The majority of adverse reactions were either mild or moderate. Overall, the FLORENCE trial did not highlight any particular safety concern in addition to the previous experience with FEBURIC in gout, with the exception of the following three adverse reactions. Cardiac disorders: Uncommon: Left bundle branch block, sinus tachycardia. Vascular disorders: Uncommon: haemorrhage.

Full prescribing information is available upon request.

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