



Department Of Orthopaedics & Traumatology Queen Mary Hospital University Of Hong Kong Medical Centre *Newsletter*



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Professor Keith Luk has been elected as Vice President of the SICOT representing the Asia Pacific region and will be responsible for SICOT matters of the Asia Pacific region. He has also successfully secured the hosting right of the 2008 triennial SICOT congress for Hong Kong. He reported that there was overwhelming support from the National Delegates in choosing Hong Kong because of its excellent conference facilities, infrastructure and track record of hosting big international conferences.

News in Flash

Professor John Leong has officially taken up the position as the President of the SICOT which stands for "Societe Internationale de Chirurgie Orthopedique et de Traumatologie" and is perhaps the largest orthopaedic organization in the world, with members from over 100 nations. His presidency was inaugurated at the SICOT meeting at San Diego in this September.



Professor Keith DK Luk



Professor Leong giving his inaugural speech at the SICOT meeting



Professor Leong's inauguration as SICOT president

Dr Yeung Yeung, one of the three lady doctors in the Department, has recently won the Arthur Yau Award with the presented paper on "Radiological assessments of the bone quality of proximal femur" at the Hong Kong Orthopaedic Association 22nd Annual Congress 2002. The co-authors of the paper include Drs WP Yau, WM Tang, TP Ng and KY Chiu. Another significant award of the congress, the Orthopaedic Basic Science Award, which is awarded to the best local basic science paper in orthopaedics and related research, has gone to Dr William Lu and co-authors, including Professors KDK Luk and JCY Leong and Drs CT Wong, DS Lu, KMC Cheung, CKT Yeung and WK Chan, on the presented paper "Sr-HA bioactive bone cement characterization and preclinical trials".

The Risks of Diabetic Foot and Its Care

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(I) Diabetic Foot and Its Danger

Diabetes mellitus is a major health problem in Hong Kong. It is characterized by hyperglycemia resulting from absolute or relative deficiency in insulin secretion and/or insulin utilization that glucose is built up in the blood. Diabetic foot is one of the complications of diabetes mellitus. There are over 120 million diabetic patients in the world and about 4-10% suffer from foot ulcer problems. In Hong Kong, there are more than 600,000 diabetic patients, i.e. one out of ten suffers from diabetic diseases and similar to other regions, about 4-10% of the total diabetic patients have foot ulcer problems.

With reference to the data of Queen Mary Hospital in 2000, common diabetic foot problems encountered by patients include:

- Foot open lesion (35%)
- Nail problems (24%)
- Corns & callosities (17%)
- Infection & gangrene (11%)

Diabetes mellitus can cause serious complications such as foot ulcerations. If treated improperly, high blood sugar level will cause damage to the nervous system and results in the loss of sensation. Reduced sense of pain often makes patients unaware of any trauma in the foot. These

unattended wounds may frequently get infected and cause foot ulcer which may eventually lead to major lower limb amputation. According to the data of Queen Mary Hospital in 1999, 12 patients had lower limb amputation performed because of that.



Fig 1 Diabetic feet with corns and callosities.



Fig 2 Neglected ulcers with subsequent serious infection may lead to major lower limb amputation.

(II) Risk Factors of Diabetic Foot

The most common risk factors of diabetic foot includes:

(1) Neuropathy.

The ends of the nerves are damaged if the blood sugar is persistently high. There will be loss of pain sensation and the patient may not be aware of the presence of an ulcer.

(2) Poor shoe wear which cause pressure and trauma

Shoe wear is a frequent cause of shallow skin lesions. If they are not well

treated, they will get infected and the infection will progress to deeper tissue.

(3) Peripheral vascular disease

Diabetes mellitus affects big and small vessels. It is frequently associated with peripheral vascular disease. The blood supply to the most distal parts of the body especially the foot will be diminished. Poor blood supply will impair wound healing.

(4) Poor socio-economic status.

Diabetes mellitus affects all walks of life. Preventive shoes are expensive. Patients who live in apartments without lifts may overuse their feet and hence prone to injury.

(III) Management of Diabetic Foot

(1) Treatment

Acute diabetic foot ulcers have to undergo radical debridement and wound coverage procedures including skin graft, flap coverage, bony and soft tissue reconstruction if the ulcer of their foot is badly infected. The objective of treatment is to salvage the foot. If feet deformity is detected, special orthosis such as diabetic shoes, socks, special insole etc. will be provided. In the salvaged foot, reconstructive surgery may be needed to prevent recurrence. If acute treatment measure fails, patients may have to undergo lower extremity amputation. These patients will have to use a prosthesis to maintain their daily activities after the surgery. This will certainly cause great morbidity and affect patients' quality of life.



Fig 3 Diabetic foot with infected wound at the dorsum

Currently, the education program includes medical consultation by doctor, foot treatment by podiatrist, foot care education and foot wear check up by prosthetist & orthostist; lecture by diabetic nurse as well as experience sharing by patient volunteers. It is hoped that through such a programme, the Centre can achieve prevention, treatment and education and that the quality of life of diabetic foot patients can be significantly improved. The Combined Diabetic Foot Care Centre also organizes basic and clinical research projects in relation to diabetes mellitus.

Radiographic Quiz

Dr. Lisa L.S. Wong
Department of Diagnostic Radiology
Queen Mary Hospital

An 18 year-old male presented with pain at night over left leg for 1 year. He was otherwise well. Based on the radiographic findings, what is your diagnosis?



Research

NEW BIOACTIVE BONE CEMENT

新型生物活性骨水泥

A HKU Product For Patients Suffering From Osteoporotic Spine Fractures

港大骨質疏鬆專治產品

By Dr. William Lu

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A biomaterial is any material, natural or man-made, that comprises whole or part of a living structure, which performs, augments, or replaces a natural function. These characteristics of biomaterials provide the optimum conditions for fracture healing and leave the repaired bone as close as possible to its original state.

The Department of Orthopaedic Surgery at The University of Hong Kong has been developing biomaterial implants since 1997. With the support of the University Applied Research Fund and Hantak Limited, a new biomaterials laboratory was set up last year, and a new biomaterial implant — injectable bioactive bone cement consisting of strontium-containing hydroxyapatite (Sr-HA) (含鐿經基磷灰石) filler and D-GMA resin (縮水甘油樹脂) has been developed from

this laboratory. This project applies the composite materials science to the development of products with the desired mechanical and biological properties. The composite material is close to natural bone, hence the term "bioactive bone cement". Conventional bone (PMMA) cement has low adhesive properties and tends to hinder bone formation at the bone-cement interface. This can cause a mechanically weak border, and often results in loosening at the cement-bone interface. The cement developed from the HKU laboratory will encourage bone

formation at the interface, and thus effectively resolves the discussed problems. The bone cement has been manufactured at the laboratory level so far and is being applied in clinical trials in major hospitals in China with the approval of Chinese State Drug Administration (SDA) (中國藥品監督管理局). This product is being developed for use in the patients suffering from osteoporotic fractures. It can also be used in other applications such as plastic surgery and dentistry.



Fig 1 Sample of injectable bioactive bone cement consisting of strontium-containing hydroxyapatite (Sr-HA) (含鐿經基磷灰石) filler and D-GMA resin (縮水甘油樹脂) — developed from the biomaterials laboratory of the Department.



Fig 2 Radiograph showing the bioactive bone cement implanted in a rabbit.

