



Learn and Practice to Serve Better

香港中文大學
矯形外科及創傷學進修培訓中心

Orthopaedic Learning Centre
The Chinese University of Hong Kong

NEWSLETTER

Jan, 2005 Issue 6



Editor's Notes

Computer aided surgery has its special unique applications in orthopaedic surgery. Its development in past years has been exciting and stimulating to the orthopaedic professions.

In the past few months, we had organized courses to promote these latest techniques. The Workshop on Computer Assisted Orthopaedic Surgery in Total Joint Arthroplasty is the first live surgical demonstration on computer assisted total hip arthroplasty combining with two incisions minimally invasive technique in Hong Kong. The 1st Symposium on Automation and Computer Aided Orthopaedic Surgery 2004 had brought over 10 experts from biomedical, computer science, surgical navigation medical and orthopaedics all over the world to share experience on computer aided surgery. We would also like to take this opportunity to thank BrainLAB and education grant from Styrker to provide resources for us to make these workshops successful.

Happy New Year in 2005!

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Program Report

Computer Aided Orthopaedic Surgery in Total Joint Arthroplasty Workshop

Dr Kin Wing CHEUNG

The Computer Aided Orthopaedic Surgery in Total Joint Arthroplasty Workshop was held on November 15, 2004 in the Orthopaedic Learning Centre. We had invited two experienced surgeons as our speakers, Dr. Richard de STEIGER from Royal Melbourne Hospital, Australia and Prof. Mel LEE from Chang Guang Memorial Hospital, Taiwan. There were a total of 40 participants including local and international surgeons. This workshop was sponsored by BrainLAB Co.

The workshop was a whole day course with main emphasis on live surgical demonstration of computer assisted total hip and knee arthroplasties. In the morning, the computer assisted total hip arthroplasty was performed by Prof. LEE who is an expert in both the image-less total hip arthroplasty and two incisions minimally invasive technique. Prof. LEE demonstrated both techniques simultaneously as he showed the participants how to enhance the exposure in a 4cm wound for reaming and placement of the acetabular cup. Also, Prof. LEE demonstrated how to perform the reaming of femoral canal and insertion of femoral stem without computer and X-Ray guided. All the participants were amazed by his skill and experience. The live surgical demonstration was followed by lectures on principles and pitfalls in computer assisted total joint arthroplasty.

In the afternoon session, Dr. de STEIGER performed live surgical demonstration on computer assisted total knee

arthroplasty. During the operation, Dr. de STEIGER showed the participants how to register the anatomical landmarks accurately and how to analyze the computer data intra-operatively. After the operation, Dr. de STEIGER and Prof. LEE delivered lectures on the clinical results of computer assisted total knee and total hip arthroplasties respectively.

The workshop ended in the evening with applause. This workshop is a great success as this is the first live surgical demonstration on computer assisted total hip arthroplasty combining with two incisions minimally invasive technique in Hong Kong. There was good response from the participants. Finally, we would like to take this opportunity to thank all the staff of OLC and other colleagues for their kind effort to make this workshop a success.



Live Surgical Demonstration

The 1st Symposium on Automation and Computer Aided Orthopaedic Surgery 2004

Dr Pauline LUI

The advances in IT and biotechnology have revolutionized the practice of orthopaedics. In view of the needs and recent advances in this fascinating field, the Chinese University of Hong Kong organized the first symposium on “Automation and Computer-Aided Orthopaedic Surgery” in Sheraton Hotel, Hong Kong SAR, on 20th and 21st Nov, with the support of educational grant from Stryker. This symposium brought together biomedical engineers and surgical navigation medical experts all over the world, to share with all the participants about the principles, designs, current and potential applications as well as potential pitfalls of surgical navigation techniques and other advances of IT in orthopaedics. These invaluable lectures were further supported by hands-on demonstrations on the application of the surgical navigation system on different types of orthopaedic surgeries by the invited experts. The future development on surgical navigation was also addressed during the meeting. Besides surgical navigation, the development and application of computer technology for automation like robotic surgery, clinical data management and training of surgeons were also focal areas in the symposium. Live demonstrations were available for the robotic manipulator arm, scoliosis clinical management system, SmartWard point-of-care ward management system, wireless biosensor and the virtual dissection model during the meeting.

During the meeting, Dr. Dietrich SCHLENZKA discussed about the history, basic principle, design and applications of computer-aided surgical navigation system. Different orthopaedic surgeons shared their experiences of using the navigation system for trauma, spinal surgery and total joint replacement. They all confirmed the advantages of the system in pre-operative planning, reducing X-ray exposure, increasing the accuracy of positioning of implants, shortening the operation time, and supporting real time interactive quantitative assessments. While surgical navigation helps surgeons tremendously during surgery, surgeons’ knowledge about the concepts and limitation of surgical navigation are critical to exploit the technology’s full potential. Prof. David KAHLER shared with the participants on potential pitfalls of surgical navigation and possible remedial actions. During the meeting, the future direction for research and development in surgical navigation was discussed. More long-term clinical studies were required to further prove the clinical benefits of this technique to surgeons. New indications of navigation system for orthopaedics, new designs of dedicated surgical instruments, new development in computer software and hardware, tracking technology and interactivities between the system and the surgeon would be the research focuses.

Robot-Assisted Orthopaedic Surgery

Automation was another main theme of this symposium and will be a major area for future research. During the meeting, Dr. Jose-Luis MOCTEZUMA discussed about the recent development in robot-assisted orthopaedic surgeries. A surgical navigation arm which could hold the instrument trajectory was developed by the Department of Orthopaedics and Traumatology, CUHK and was demonstrated during the meeting. The surgical navigation arm supports high degree of movement and can be positioned smoothly to a specific surgical site by the surgeon’s hands. It provides enough rigidity to hold the surgical instrument during operation such as drilling, of which the precision is frequently affected by the fatigue of the surgeon to physically support the surgical instrument during the whole procedure. The surgical navigation arm, attached with the navigation tool tracker and the self-designed drill sleeve, has been tested in the laboratory for distal targeting, with accuracy of 100% of target hit.

Clinical Data Management

Besides surgical guidance, the research and application of computer technology in clinical data management and training were presented and discussed during the meeting. Dr. Tze Ping LAM presented and demonstrated the multimedia clinical management system for scoliosis patients developed in his research team. The system helps clinicians to manage out-patients’ records, including X-rays, clinical photos, clinical videos and clinical data. The system was reported to be extremely useful for delivering efficient clinical service and for conducting important researches in scoliosis. Search and audit functions as well as incorporation of the data into a mega-database were planned in the future.

SmartWard

Dr. Ning TANG presented the research and development of the SmartWard wireless ward management system in the research team. The system consists of a web-based software application running in wireless tablet PCs which communicate with the central database through the wireless LAN. The SmartWard software manages basic patient information, supports vital sign monitoring, diagnosis and treatment of patients, viewing and writing of progress reports, bed management and easy reference to treatment protocols. The SmartWard system, together with the wireless PDA-based biosensor developed by Prof. Yuan Ting ZHANG’s research team, supports fast recording and retrieval of patient information and eliminates redundant paperwork. The quality and quantity of healthcare services provided to the patients will be improved.

Virtual Anatomical Model

Prof. Peng Ann HENG presented the surgical dissection anatomical models and simulation software developed in his laboratory for cost-effective training of surgeons. The interactive photo-realistic visualization and dissection models in his laboratory were constructed from the high resolution Chinese Visible Human (CVH) datasets (resolution: 4064X2704) from Third Military Medical University. After 3-D reconstruction of the images, the human body can be manipulated and viewed at different rotation angles, planes and structures in a personal computer for orthopaedic anatomy training. A virtual anatomical model of the upper limb jointly developed by Prof. HENG’s and Prof. Kwok Sui LEUNG’s groups was demonstrated during the meeting. Visual, audio and tactile sensation can be built into the anatomical model to create an interactive virtual reality environment for surgical training.

Surgical navigation system will be an indispensable tool in orthopaedic surgery while other engineering and computer sciences advancement will be invading the territory of orthopaedics. All surgeons need to adapt to these IT waves whether they like it or not. Failure to accept the changes will lead to “Microchip Immune Deficiency Syndrome” (MIDS), a term suggested by Dr. Knute BUEHLER and obsolescence in extreme cases.



Robotic Manipulator Arm



Hands-on demonstration on the application of surgical navigation system

Program Summary July – December 2004

Course Name	Date	Invited Speakers	Participants	
			Target	Number
Advanced Trauma Course (VI) Soft Tissue Reconstruction in Orthopaedic Trauma 第六屆高級創傷進修班 – 軟組織創傷重建手術	10-11 Jul	Prof. AC MASQUELET, France	Orthopaedic Surgeons	33
1 st Asia Pacific Spine Course 第一屆亞太區脊柱課程	3-4 Aug	Dr. D Y CHO, Taiwan Dr. K KOBORI, Japan Dr. M FUJIYA, Japan Dr. M KOBORI, Japan Dr. O RICART, France Dr. Y MATSUDA, Japan Dr. S H OH, Korea Dr. J PHILIPPE, France Dr. Y SASAO, Japan Dr. H SINGH, Malaysia Prof. Y TOKUHASHI, Japan Dr. W YINGSAKMONGKOL, Thailand Dr. H YOSHIDA, Japan Dr. C C WONG, Malaysia Dr. D WONG, Singapore Local Faculty	Orthopaedic and Neuro Surgeons	35
1 st Asia Pacific Minimally Invasive Spinal Surgery Workshop 第一屆亞太區脊柱微創手術工作坊	5 Aug	Dr. HT HEE, Singapore Dr. M JEAN-BAPTISTE, Switzerland Dr. S H OH, Korea Local Faculty	Orthopaedic and Neuro Surgeons	38
Wrist Arthroscopy Symposium & Workshop 腕關節學術會議及操作班	29 Aug – 4 Sep	Dr. T NAKARMURA, Japan D. G XIONG, China Dr. X ZHAO, China Local Faculty	Orthopaedics Surgeons	43
Cast Workshop 石膏工作坊	5 Sep	Local Faculty	Orthopaedic Nurses	30
Ankle Arthroscopy Workshop 踝關節內窺鏡工作坊	18 Sep	Prof. N VAN DIJK, Netherlands Local Faculty	Orthopaedics Surgeons	25
Thoracic Scoliosis Instrumentation Workshop	15 Oct	Dr. P NEWTON, USA Local Faculty	Orthopaedics Surgeons	18
Advanced Trauma Course (VII) – Pelvi-acetabular Fracture 第七屆高級創傷進修班 – 骨盤及髖臼骨折	31 Oct	Prof. V BUHREN, Germany Prof. JM RUEGER, Germany Local Faculty	Orthopaedics Surgeons	37
AADO Nurse Workshop 護理員工作坊	31 Oct	Local Faculty	Orthopaedic Nurses	50
Computer Aided Orthopaedic Surgery in Total Joint Arthroplasty Workshop 電腦輔助全關節成形手術工作坊	15 Nov	Dr. R N De STEIGER, Australia Prof. M S LEE, Taiwan Local Faculty	Orthopaedics Surgeons	40
The 1 st Symposium on Automation and Computer- aided Orthopaedic Surgery 2004 第一屆自動化及電腦輔助骨科手術會議	20-21 Nov	Dr. K BUEHLER, USA Prof. D M KAHLER, USA Dr. G KIRSH, Australia Dr. J MOCTEZUMA, Germany Dr. J B NEUSTADT, USA Dr. D SCHLENZKA, Finland Prof. N SUGANO, Japan Prof. BK TAY, Singapore Prof. R L WIXSON, USA Local Faculty	Engineers Orthopaedic Surgeons Research Fellows	78
Workshop in Wound Management 傷口處理工作坊	28 Nov	Local Faculty	Orthopaedic Nurses	30
CUHK - AADO Comprehensive Bioskill Course in Fracture Fixation (XII) 第十二屆骨折固定技術綜合課程	11-13 Dec	Prof. M ROSENWASSER, USA Dr. QG WANG, China Local Faculty	Orthopaedic surgeons in Asia Pacific	23

Coming Programs

Trauma

8th Advanced Trauma Course : Locked Plate Workshop

Date: Jun 11 (Organized by Dept. of O&T, CUHK)

第八屆高級創傷進修班 – 固定板工作坊

9th Advanced Trauma Course: Soft Tissue Reconstruction Workshop

Date: Oct 14-19 (Organized by Dept. of O&T, CUHK)

第九屆高級創傷進修班 – 軟組織創傷重建手術工作坊

13th Comprehensive Bioskill Course in Fracture Fixation – External Fixations

Date: Apr 9-11 (Organized by AADO & Dept. of O & T, CUHK)

第十三屆骨折固定技術綜合課程 – 外固定技術

14th Comprehensive Bioskill Course in Fracture Fixation – Femoral Fractures

Date: Dec 10-12 (Organized by AADO & Dept. of O & T, CUHK)

第十四屆骨折固定技術綜合課程 – 近端股骨骨折

Navigation Workshop in Orthopaedic Trauma

Date: TBC (Organized by Dept. of O&T, CUHK)

創傷骨科導航手術工作坊

Total Joint Replacement

6th Advanced Bioskill Workshop in Total Joint Replacement

Date: TBC (Organized by Dept. of O&T, CUHK and HA)

第六屆高級全關節置換技術課程

Navigation Workshop in Total Joint Replacement

Date: TBC (Organized by Dept. of O&T, CUHK)

全關節置換導航手術工作坊

Spine

Navigation Workshop in Spine Surgery

Date: TBC (Organized by Dept. of O&T, CUHK)

脊柱導航手術工作坊

Spinal Course HKECC

Date: Aug 17-20 (Organized by Dept. of O&T, CUHK)

脊柱課程

Nurse

AADO Certificate Course in Orthopaedics & Traumatology for Nurse (Class 11)

Date: TBC (Organized by AADO Nurse Subcom.)

第十一屆矯形外科及創傷學護士證書課程

Polytrauma Workshop

Date: Mar 20 / Nov 27 (Organized by AADO Nurse Subcom.)

多發性創傷護理工作坊

Trauma Management Workshop with Cast Application

Date: Jun 12 (Organized by AADO Nurse Subcom.)

創傷處理工作坊- 石膏

Workshop in Wound Management

Date: Apr 24 (Organized by AADO Nurse Subcom.)

傷口處理工作坊

Others

Hand Summer Course

Date: TBC (Organized by Dept. of O&T, CUHK)

夏季手外科課程

Prevention of Fall and Fracture Symposium

Date: Sep 17 (Organized by Dept. of O&T, CUHK)

預防長者跌倒及骨折國際會議

Microsurgery Course

Date: TBC (Organized by Dept. of O&T, CUHK)

顯微手術課程

Research Day

Date: Mar 12 (Organized by Dept. of O&T, CUHK)

骨科科研日

AADO: Asian Association for Dynamic Osteosynthesis
亞洲創傷骨科學會

CUHK: The Chinese University of Hong Kong 香港中文大學

Dept of O & T: Department of Orthopaedics and Traumatology
矯形外科及創傷學系

HA: Hospital Authority 醫院管理局

**For updated course information please visit our web site: www.olc-cuhk.org
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