9th Chapter of Surgeons' Lecture: The Orthopaedic Surgeon: Historical Perspective, Ethical Considerations and the Future

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Abstract

From a fishing village with colonial surgeons from the East India Company, Singapore is now a medical and business hub servicing the region and beyond in trade and medical education. Orthopaedic Surgery is a young specialty and is the fastest growing sub-specialty in Surgery. Orthopaedic education in Singapore has a structured syllabus and training is coordinated with the Royal Colleges and the American Academy of Orthopaedic Surgeons. Part of the training as Fellows is in the United Kingdom and USA on an HMDP Fellowship. Ethics and Continuing Medical Education need further emphasis. Sub-specialisation in Orthopaedic Surgery is now well-established in Trauma, Adult Reconstructive Surgery, Sports Medicine, Spinal Surgery, Hand Surgery and Rehabilitation Medicine. Ageing in the next millennium with osteoporosis and hip fracture problems of gait and balance need more orthopaedic surgeons to be committed to rehabilitation medicine and voluntary service in the community. There is a needforgood role models and knowledge on Quality Assurance, Clinical Pathways and Administration. Appropriate use of high technology and care for the aged in the community with dignity is fundamental to good ethical practice. Selfish, pecuniary interests will destroy the very soul and fabric of medicine.

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Introduction

The legacy of caring and humanitarianism has been the mission of the medical profession since the founding of Singapore by Sir Stamford Raffles in 1819. To this small fishing village in the Riau Archipelago on the southern tip of the Malay Peninsula came traders and entrepreneurs from China, India and Arabia. Later, came the colonials from Holland, Portugal and Britain. Sadly, the vision for the future of medicine is now blurred because of commercial interests and the marketing of high technology.

The medical services in Singapore were staffed by medical officers from the East India Company and the senior surgeon was stationed in Penang. The practice of modern medicine in Singapore had military beginnings. In April 1867, Singapore came under the Colonial Office and Colonial surgeons were first appointed. They were not necessarily surgical specialists.

"A tiny island-state of traders, shopkeepers and backyard workshops became an industrialised economy and a regional business hub with capital and expertise to spare for export to emerging economies in Asia".

Margaret Thomas, Deputy Editor
The Business Times 1995—***SINGAPORE*** 30

It is the economic development of Singapore, including good housing, education, preventive medicine and healthy lifestyles that have contributed to the health of the nation. Without a strong economy, medical advances in Singapore would not have been possible. With 33 years of rapid economic growth, we now face much uncertainty in the next 5 years. Singapore has benefited from higher technologies from developed countries. This is so even in the practice of medicine. We, in medicine, have had the opportunity to be trained in centres of excellence in North America, the United Kingdom and Australasia. As Britain now becomes more committed to the European Union, Certification of Specialists by the Accreditation Board in Singapore will benefit by following closely the developments in the United Kingdom and the United States of America. Even in the field of medicine, we will face a more competitive environment as we move into Corporate Medicine and the Health Industry.

"In all this, we see the indications of the great mission Sir Stamford Raffles had....of the miraculous manner in which liberal economic policies would transform a small nation into a great city."

Dr Goh Keng Swee, 1968

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Similarly, we cannot remain insular if we are to make advances in medicine in Singapore.

The Orthopaedic Surgeon-Physician

In the United States of America, the number of Orthopaedic surgeons increased from 3.6 per 100,000 in 1970 to 7.1 currently. It is stated that there will be an excess of orthopaedic surgeons in the ensuing years. This, however, does not take into account the number of fellows, residents and allied health professionals who assist at various procedures. The professional type of practice varies with the different sub-specialities and in super-specialisation. In the more sophisticated and narrower specialities, there will be a greater demand for investigations and operative procedures. These procedures may also to some extent increase the cost, risk and benefits of these alternative ways of treating patients. However, with shared decision making with our patients, the demand for operative treatment may change dramatically. It is also likely that in Singapore, patients would often seek a second or third opinion before having surgery.

We are all committed to continuing medical education and to update ourselves regularly in the newer specialities. We must also emphasise on quality care and outcome studies. In Singapore, we have about 100 orthopaedic surgeons to a population of 3 million people. We also enjoy a unique position where patients from the region come for expert opinion and care in our private and restructured hospitals. It is even more important that our indications for surgery are clear and to this end, we should maintain high ethical standards. The present orthopaedic surgeon population ratio is about 3.3 per hundred thousand. We will continue to take about 4 to 6 trainees in orthopaedic surgery yearly. These advanced trainees would have already completed the Master of Medicine in General Surgery or the MRCS or AFRCS in Surgery in General. With the rapid ageing of our population, it is likely that we will need about 6 orthopaedic surgeons per 100,000 of population over the next ten to fifteen years. We should not try and create a demand for doubtful surgical procedures. Fractures, especially in children, back and neck problems can be by and large treated conservatively. Similarly, there should be better understanding of the biological "fixation" of fractures and closed nailing of fractures of long bones in adults. The methods of closed treatment of fractures should continue to be emphasised. Fractures will heal with callus formation.

Similarly, in the treatment of unstable fractures of the spine, there is an urgent need to redefine our aims with regard to expensive spinal instrumentation and its beneficial effects, if any, on the neurological complications and early rehabilitation. It is unethical to talk on management of spinal injuries without discussing neurological recovery and rehabilitation. Technical competence is essential but the indications and expectations must be fully understood. It must be cost-effective.

In Singapore, about 80% of our work is that of an orthopaedic physician and we have to work closely with the internists, the physical therapists and also the rehabilitation physician.

Orthopaedic Education in Singapore-The Past, Present and the Future

Nicholas Andry (1658-1747) first published his Treatise on the correction and prevention of deformities in children. His insignia of correcting a deformed tree by splinting, now symbolises the practice of orthopaedic surgery since its early beginnings. With modern advances in higher technology especially in the field of biomedical engineering, the use of antibiotics and vaccines, the practice of orthopaedic surgery has changed over the last 30 years. However, the problems of poliomyelitis, tuberculosis of the spine and joints, cerebral palsy and problems of malnutrition are still prevalent in many parts of the world especially in sub-Saharan Africa. We must be conscious of this, as some of the expertise that is available in the developed parts of the world could, to some extent, be helpful to the people in the poorer developing countries. The technology and expertise must be appropriate to each individual country. Experts too will be grateful for the opportunity to be of service to the impoverished handicapped. This is the hallmark of medicine and humanity.

In the field of surgery, Orthopaedic Surgery is a relatively young specialty but it is the fastest growing subspecialty of surgery in many parts of the world. Before the Second World War and in the early post-war years, orthopaedic surgery was practised by the general surgeons in Singapore. The training of physicians and surgeons was modelled on the requirements of the Royal College of Surgeons and the Royal College of Physicians of Edinburgh. Even to this day, we in Singapore, maintain close links with the Royal Colleges in the United Kingdom and Australasia. The Postgraduate School of the University of Singapore and the Royal College of Surgeons of Edinburgh hold joint examinations in Singapore leading to the M.Med Surgery and the FRCS (Edin). These close links must remain to ensure high standards that are comparable to that required for the Certificate of Completion of Specialist Training required in the United Kingdom and the European Union. We must also ensure that the basic medical degree remains registerable with the General Medical Council of the United Kingdom. There have been some misgivings about the restriction of registration of some medical schools. This is to ensure that there is no excess of doctors and it is part of the policy of maintaining "Affordable Health Care" in Singapore. We now have a doctor-

population ratio of 1:750. There is also the practice of Traditional Chinese Medicine, which is being regulated. We still continue to register doctors from the old schedule and have increased the intake of medical students to our University to meet higher expectations and the increasing number of foreign workers. About a third of our doctors will come from Universities in the United Kingdom and Australasia. This is to be encouraged.

The first hospital for the treatment of bone and joint tuberculosis in children was the St. Andrew's Orthopaedic Hospital which was founded in 1929. This was possible through a generous donation by the public and Vicount Nuffield. This hospital was modelled along the lines of the Robert Jones and Agnes Hunt Hospital in Oswestry. However, the only treatment in the past was convalescence at the seaside with improved nutrition and good nursing care. Tuberculosis of the hip was treated in abduction frames and children lay on plaster shells for the treatment of tuberculosis of the spine. They often ended up with severe deformities and psychological trauma and growth disturbances. With the advent of streptomycin and newer forms of treatment of tuberculosis, treatment became a little more aggressive and children were able to return to school and their homes very much earlier. Drug therapy is the main stay in the treatment of bone and joints tuberculosis. This hospital has now made way for the St Andrew's Community Hospital, which will soon be resited next to the Changi General Hospital.

With the founding of the University of Malaya in 1949, the Chair in Surgery occupied by the late Professor DE C Meckie and another Chair in Clinical Surgery were combined to a single Chair in Surgery and the Chair in Clinical Surgery became the Chair in Orthopaedic Surgery. Professor J A P Cameron was the first Professor of Orthopaedic Surgery in Singapore in the University of Malaya in 1952. This was also the period of the Korean War. Dr Andres Karlen, a Swedish orthopaedic surgeon experienced in the management of trauma and burns, was with the Swedish Hospital ship that went to Korea. He visited Singapore and was subsequently appointed a senior lecturer and succeeded Professor Cameron on his retirement in 1959. On his retirement in 1960, Professor Donald Gunn who was senior orthopaedic surgeon in Kuala Lumpur, was appointed to the Chair in Orthopaedic Surgery from 1960 to 1967. This was a period of great development in the department and many advances were made in teaching, research and the establishment of the Orthopaedic Slide Library. Dr Khong Ban Tze must be given the credit for organising this important documentation of clinical material in orthopaedic surgery. It was the late Professor Donald Gunn who organised the first Singapore Orthopaedic Meeting in 1964 in conjunction with the Australian Orthopaedic Association. Since then, we have had several orthopaedic meetings in Singapore and they were of a very high standard. We now combine these meetings with the Asean Orthopaedic Association and also with the Western Pacific Orthopaedic Association. Besides these orthopaedic meetings, there are special meetings in various subspecialties, like "Limb Salvage", the AO Courses, Children's Orthopaedics, Trauma, Arthroscopic Surgery, Adult Reconstructive Surgery and the management of Musculoskeletal Tumours. Because of this vast interest shown in the various sub-specialties over the years, there are now Divisions in Adult Reconstructive Surgery, Hand Surgery, Sports Medicine, Trauma, Children's Orthopaedics and Spinal Surgery. All these have taken place over a period of 46 years and this is due to the vision of the early pioneers in Orthopaedic Surgery in Singapore and to the enthusiasm and the expertise of the younger generation of orthopaedic surgeons who went for higher training, not only in the United Kingdom but also to Centres of excellence in the United States of America. All these were made possible by the Health Manpower Development Fellowship which was generously endowed by the Ministry of Health and the Government of Singapore. Besides these Fellowships, there are now the Junior and Senior Asean Travelling Fellowships and the North American and European Travelling Fellowships.

One of the saddest things that occurred in the history of Medicine in Singapore was the separation of the University Departments of the Faculty of Medicine from the main teaching hospitals like the Singapore General Hospital, the Kandang Kerbau Maternity Hospital and the Tan Tock Seng Hospital. This dichotomy resulted in much anguish and created turf issues and the camaraderie that was built over the years. The University Hospital is a relatively small hospital for teaching and research. It is not associated with bigger departments of Obstetrics and Gynaecology and the Children's Hospital at Kandang Kerbau Women and Childrens' Hospital and also many National Centres in the Medical Park in the grounds of the Singapore General Hospital. This invariably saw the departure of highly trained staff into the private sector and most of the expertise, particularly in the field of higher technology was lost for monetary gains in the private hospitals. There was a tremendous wastage of funds spent on the training of talented young doctors. This was the coming of age of the "Healthy Industry" and talented academics read the bottom line.

Orthopaedic Education in Singapore-A Structured Syllabus

The Orthopaedic Training Committee has a structured syllabus for the three years of Advanced Training and a fourth year to be spent abroad as a Fellow on a HMDP Fellowship. They enter the training programme as a Registrar after completing the M.Med in General

Surgery, the AFRCS (Edin) or the MRCS (Engl). At the end of their third or fourth year, they will be appointed as a Senior Registrar and be admitted as a Fellow of the Academy of Medicine on passing the Exit Certification Examination. They can now apply for certification as a Specialist by the Accreditation Board of Specialists and be registered in the Specialists Roll of the Singapore Medical Council.

Current Syllabus

The current syllabus is comprehensively collated from the British and American systems and modified for local implementation as the number of Advanced Trainees at any one time seldom exceeds 20. The syllabus comprises 6 modules:

a. Core Lecture Series covering Basic Science, Trauma, Adult Reconstruction, Hand, Spine, Oncology, Paediatrics, Rehabilitation.
b. Motor skills Workshops and Cadaveric Dissections.
c. Research projects and publications.
d. Attendance at approved courses.
e. Clinical performance including log book on operations.
f. Annual Examinations comprising OITE (American Board of Orthopaedic Surgeons and AAOS) and ATEX (local).

Inter-collegiate Board of Orthopaedic Surgery (UK) Examination by the year 2002. Advanced trainees are encouraged to sit for these examinations in the United Kingdom or in Hong Kong.

The Future

- The "apprenticeship type" of training forty years ago produced skilled orthopaedic surgeons. The training was long and there was much deficiency in understanding biomechanics, genetics and molecular and cell biology. Much of the training was "service" commitment with little supervision and less formality.
- There should always be a need to "generalise" the training in a "return-to-basics" syllabus.
- Sub-specialisation should commence at Senior Registrar Grade as a Fellow in Centres of excellence abroad. The HMDP Fellowship is aimed towards early sub-specialisation.
- Closer monitoring and supervision of the structured training syllabus.
- Academic Orthopaedics - early in career.
- Advances in imaging modalities, surgical techniques and instrumentation have allowed many orthopaedic problems to be identified and clinical pathways defined. Operative exposure is essential and the learning curve can be shortened with newer modalities of training.
- Joint Replacement is one of the most significant advances this century and there will be greater advances in the future on knowledge on implant designs and fixation. The problem of periprosthetic osteolysis still needs to be solved.
- Arthroscopy Surgery has advanced tremendously over the years. Surgery involving the knee joint is more conservative. The next five years will see advances in cartilage repair and transplantation.
- Minimally invasive surgery in approaches to the spine for correction of deformities and the treatment of infections and management of metastatic disease and disc lesions will reduce the morbidity and prolonged hospital stay. This will be relevant with the introduction of DRGs (Diagnosis Related Groups) in Singapore in the near future.
- The Orthopaedic Surgeon needs to keep constantly abreast with advances in radiology, instrumentation and orthopaedic oncology. Orthopaedic radiology needs to be further developed and the teaching of radiology to orthopaedic surgeons needs to be formalised.
- Research needs to be encouraged and should be part of our culture and environment. There will be slower inroads in genetic engineering and cytogenetic studies.
- Biomechanical research is of fundamental importance and there will be further sophistication in the design and implantation of prosthesis with advances in computer software.
- Ethics, and Continuing Medical Education and the Use of Information Technology and Video Conferencing need further emphasis if we are to face the next century with confidence. We must not be complacent but keep abreast with advances in the bigger economies that had endowed vast resources in R & D.

We in Singapore, had been fortunate because of a strong economy. Education, health and housing have benefited over the last 40 years. We have seen the elimination of many infectious diseases but we still face the problems of drug dependence in the young and also HIV infection. As we specialise in medicine, we must be conscious of the demands of a growing affluent population who are knowledgeable. We must try to improve on our communication skills. Medicine and education are universal and in Singapore, we will continue to share our expertise in teaching and training with those who are less endowed. To encourage talented young doctors to come and do research and training in Singapore, there are many Fellowships endowed by the Shaw and the Lee Foundation, Colombo Plan Fellowships, Fellowships from the Endowment Fund of the Singapore General Hospital and also Fellowships from the University and other hospitals. Recently, Mobil has endowed a handsome amount to encourage research through the School

of Graduate Medical Studies of the University. There are today a fair number of Fellows in various departments. Only by sharing our resources can medicine continue to remain the noblest of the professions.

Ageing in the Next Millennium

As we approach the 21st Century, Singapore will face an "old age crisis". Not long ago, the Pacific Rim was the fastest growing economy. "East Asia has rapidly ageing societies, Social changes threaten the extended family." (World Bank Report 1994).

In Singapore with increasing affluence and high expectations, there has been a falling birth rate. Life expectancy is comparable to the developed countries in Europe and America. Geriatic Medicine and Rehabilitation Medicine will become more important. Specialists and younger orthopaedic surgeons must be involved with departments and organisations that care for the elderly and the disabled. Volunteerism should be part of our culture and we owe this to the community. Osteoporosis and fractures of the proximal end of the femur and spinal fractures will demand more of our emergency facilities. A multidisciplinary approach is needed to care for the elderly who need surgery and rehabilitation. We are now more aware of the pathology and physiology of the elderly. It is much more than prescribing Viagra, hormones and alendronates. In Singapore, there will be a need for more nursing homes for the aged who are also physically disabled. Ethical issues due to limited resourceswill cause concerns in our society and we must plan ahead to meet the new challenges as we approach the 21st century.

The Fabric of Medicine

Fifty years ago when I entered the Medical School of the King Edward VII College of Medicine in Singapore, I considered this an honour and a privilege. We then had only one mission and that was to be of service to the community and to be able to become good teachers, caring doctors and advocates and counsellors to our patients and their families. The role of the physician has since changed and we need to re-examine our mission lest we cease to be a profession and end up as a trade. In many parts of the world, including Singapore, medicine is still considered the noblest of professions. We have a duty to safeguard the practice of medicine and be good teachers and caring physicians. The social standing and the integrity of doctors as a group remains high despite the powerful media and criticisms on matters of health care delivery and escalating health costs. However, we cannot remain indifferent to these observations as a profession but endeavour to work even harder to meet our patients' expectations as well as practise the art and science in medicine with humility.

The medical profession works in the interest of one's patients-not his or her own interest. We now see a group of surgeons and physicians who are somewhat dispirited, disgruntled, harassed, depressed and angry and now spend less time with patients. We have become managers and entrepreneurs. The intellectual resources of the physicians have not been fully utilised towards the care of patients and they are less willing to be involved in academic matters like teaching and research and even meet the challenges in administration. It is we, the practising physicians who must contribute to the future of medicine in Singapore as we enter the next century. Mediocrity has no place in medicine and we must have administrators of high calibre and who were practising physicians or surgeons.

Recently, there appears to be much soul searching and the only way we can transfer some of these values is being good role models. One recent editorial in the JBJS was on "A Contemporary on Healing". With advances in technology, I note even in our own department of the Singapore General Hospital, a patient is referred to many specialists. Sometimes one wonders who is in charge of the patient. It was once pointed out to me and there is often "no doctor in the house". Only the nursing staff and the medical students spend time with patients. This article on "A Contemporary on Healing" is a complaint by an otolaryngologist who felt that the orthopaedic surgeon who replaced his mother's knee joint had no time either to explain to him about his mother's condition or even to the patient. In short, surgeons are now becoming mere technicians.

Many years back, Dr John B McGinty spoke of "the winds of change". The control of clinical practice has been wrested from the hands of the physician by the managed-care administrators and their entrepreneurs of the "for-profit health care industry". This aspect of health care industry is already prevalent in Singapore and it is unfortunate that doctors sometimes are naive and are willing to give "profit guarantees" to listed companies in the stock exchange. They are highly talented doctors. Hospitals and clinics will, in the ensuing years, be business ventures with only one consideration and that is profit for its shareholders. We will slowly begin to lose the trust of our patients and we must ensure that in all these "for profit ventures", the health of our patients should be the first and only consideration. For me, the last 43 years in the practice of medicine, of which 41 years was in the field of General and Orthopaedic Surgery, have been most enriching.

Medicine has moved in the right direction and it is still the preventive aspects of medicine, good housing, nutrition, education and a sound economy that has done more for medicine than any of the newer technologies. With the rapid ageing of our population, the cost of medicine will go up from 3.5% of our GDP to as much as about 6% or 7%. It has been stated that the cost of

medicine will go up because of the ageing of the population but a number of studies have indicated that the cost goes up because of the inappropriate use of higher technology and the prolonging of the dying process. We, in the practice of medicine, have largely been instrumental in putting up the cost of medicine to patients whom we cannot cure but could easily palliate with less sophisticated technology and the use of rehabilitation facilities, homes for the aged and hospice care. We can provide help to the ageing community with dignity and care. At the same time, we must not deny them the appropriate technology like MRI, CT scan, cardiac catherisation, minimally invasive surgery and other expertise and facilities if medically indicated. Technology must be appropriate and it should not be abused for pecuniary interests. The message to the profession is very clear. As stated by the 12th Century physician, Moses Maimonides "that our attitude is the key to behaviour and must be patient-centred".

"I am still a doctor, destined for more uncertain times, unmanageable days, undeserved rewards with the inexhaustible opportunities to touch the lives of those I treat and to change their lives as they have changed mine."

Loxterkamp D-N Engl J Med, 1996

We should not trade our souls on the floor of the Singapore Stock Exchange. Our duty is to tend to the affliction and the infirmity of those who call us doctors.

On 9th August 1998, we celebrated 33 years of independence as a republic. A strong economy has provided us with good education, housing, and a healthy nation. Medicine has advanced over thkse years and the expectations of the people are greater now than ever before. Medicine must remain affordable. In a society based on meritocracy, there will always be some who fail to achieve and need help and opportunities. There will also be patients in heavily subsidized wards of hospitals who need further financial assistance for medical treatment. All these are available today and we in medicine must be conscious of their needs. As we now move towards a more civic society and a temporary period of an economic downturn, we need to be steadfast and broaden our vision towards globalization of medicine in the field of teaching, research, caring and sharing. We must create an academic environment and attract outstanding Fellows to work and train in our hospitals. Not only must we offer Fellowships, but there must be constant exchange of expertise from the best institutions abroad.

We can be proud of our achievements over the last 46 years in the field of Orthopaedic Surgery in Singapore. We are now part of a global network and have benefited from the advancements in the best centres in the United Kingdom and North America. We have improved the quality of life for the disabled and advances in the field of trauma, joint replacement, and preventive medicine have made orthopaedic surgery the outstanding specialty in the field of medicine. However, we face greater challenges in the 21st century with the ageing of our population and the need for academic research and improving facilities in the field of Rehabilitation Medicine.

Conclusion

"Success in medicine, as in life, is far more than mere efficiency and profitability. Success also depends on an intangible human element, courage, camaraderie and common courtesy. It is stated that in no other professional relationship is the requirement for the human touch and the physicians' presence that reaches beyond the body of the patients' mind and that is trust. Only then, can the physician achieve the full potential of the role of a healer. The physician's clinical skills are the tools for building such trust. The physicians' presence, his mannerism and etiquette are the only polished ornaments that adorn the medical profession."

Thomas W Furlow Jr, MD