

# The History of Surgical Teaching and the Department of Surgery

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## Abstract

Undergraduate surgical teaching in Singapore began 100 years ago, when the Medical School was founded. A significant step had been taken to enable local students to be trained in and to attain the diploma of Licentiate in Medicine and Surgery (LMS). Plans for postgraduate education were temporarily derailed when the Japanese occupied Singapore in 1942. Postgraduate surgical teaching received an official boost when the primary Australasian examinations were conducted in Singapore in 1957, providing a platform for surgical independence when the higher degree, the Master of Medicine (M Med) in Surgery, was established in 1970. Currently, the Joint Committee on Specialist Training, comprising the Division of Graduate Medical Studies, the Academy of Medicine, Singapore and the Ministry of Health, oversees the training of surgical specialists in Singapore.

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## Introduction

On 3 July 2005, the Faculty of Medicine, National University of Singapore (NUS) and NUS will be celebrating their centenaries – a hundred years since the founding of the Medical School in Singapore in 1905. What a proud moment it will be for students, teachers and graduates. It will be as memorable a moment for us as it must have been for Mr Tan Jiak Kim, a local Chinese, when he successfully rallied the community to raise \$87,077, a significant sum in 1905, to further his dream: “*Your petitioners therefore humbly pray that Your Excellency [Governor Sir John Anderson] will give this matter your earnest consideration and take steps to get a proper scheme framed for the establishment of a Medical School in Singapore*”.<sup>1</sup> A significant step had been taken.

This article attempts to portray the illustrious history of the School and the evolution of surgical education in this era. There are four prominent periods that deserve to be highlighted.

### The Early Years of Surgical Development (1905 to 1942)

Excitement surrounded the founding of the medical school in Singapore – the first time locals and students from the Malay States could be trained here – and appointments

of specialists were quickly made in the government service and medical school. The first Principal of the school, Dr Gerald Dudley Freer, was actually a Colonial Surgeon from Penang. He noted that “*twenty-three students were enrolled*” in the “*Straits and Federated Malay States Government Medical School*” that was situated, at the time, in the Female Lunatic Asylum in Sepoy Lines (the school was later relocated to the Tan Teck Guan Building in 1911).<sup>2</sup> Medical students undertook their classes in clinical medicine and surgery at the General Hospital and Tan Tock Seng Hospital (TTSH) located five miles apart. Doctors in the government service, who could also undertake private work, taught them, but the search for full-time and permanent teaching staff was made with the aim of raising the standard of teaching and the hope “*that improved results will gradually ensue*.” In 1912, the first Lecturer of Surgery was initially offered to Dr J Gray and, a year later, to Dr ED Whittle, who was also appointed surgeon to the General Hospital. The proposed salary was “*1,500 or possibly 2,000 per annum... on a three years’ agreement in the first instance*.”<sup>3</sup>

After completing the 6-year course, the graduates were conferred the diploma of Licentiate in Medicine and Surgery (LMS). The General Medical Council of the United Kingdom, while recognising the diploma in 1916, went

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further in issuing a directive to the Government to maintain the “standards of teaching and examination... or... the Council would have to re-consider the recognition of the license of the medical school.” This prompted a series of recommendations to address the problems of, “shortage of staff, space, and facilities.” The first chair of Professor of Surgery was created in 1922. By 1926, there were three surgical specialists in Singapore: Senior Surgeon (Mr CJ Smith, based at TTSH), Professor of Surgery [Professor Kenneth Black (1922 to 1936), based at the General Hospital], and Professor of Clinical Surgery (Professor Dickson Wright, based at TTSH).<sup>4</sup> A detailed account of the times is depicted in Dr YK Lee’s three-part series on the early history of surgery in Singapore.<sup>3</sup>

In the same year, a new College of Medicine Building was built (which still stands today) – a truly majestic building on College Road that housed the Medical School, which changed its name to the King Edward VII College of Medicine in 1921. The school remained there until 1985.

This early period of undergraduate medical and surgical education was significant as it was the first time the locals could obtain a recognised medical degree without having to go overseas. Prior to 1905, it had been necessary to travel to the Madras Medical College in India or to the United Kingdom (the latter with the award of the Queen’s scholarship). The building blocks of undergraduate development had been laid. The momentum of progress was palpable, urging the Director of Medical and Sanitary Services to comment in 1920, “I believe that with careful guidance and encouragement there should be a great future for the King Edward VII Medical School, and that in the course of time it may become one of the most important, if not the most important, medical institutions in the Far East.”<sup>4</sup> However, this opportunity was unexpectedly derailed in the coming years of the war.

### **The Period of the Japanese Occupation (1942 to 1945)**

At 4.15 am on 8 December 1941, Japanese bombers raided the city of Singapore, catching the civilian population unawares. The Medical College campus was bombed. Classes were stopped and medical students were quickly posted to the government hospitals to assist the doctors attending to the war casualties. The Japanese forces landed on the island on the morning of 9 February 1942 and Singapore capitulated on the evening of 15 February. Wrote Dr H Scrimgeour, the acting Chief Medical Officer then, “... the hospitals were surrounded by guns and consequently Japanese shells landed in the hospitals, causing casualties. At Tan Tock Seng Hospital, a medical student was killed by a shell and during his burial in the grounds of the General Hospital the following day a shell landed on the funeral party, killing eight other medical

students”.<sup>5</sup> [Another account stated that “ten other medical students were fatally wounded. There were others who were badly injured... within twelve hours of the same day of 14 February 1942.”]<sup>6</sup> Recalled Dato Paduka Abdul Wahab, then a third-year medical student: “In spite of the danger around them, the medical students at TTSH stood resolutely by their posts attending to the sick and dying... While a grave was being prepared at the burial ground for the burial of Yoong Tatt Sin (medical student), the Japanese artillery suddenly started shelling the burial ground. As a matter of truth, I was one of the two students present at the burial ground who had miraculously escaped death... I was in fact, in the midst of human slaughter, where ten students around me were fatally wounded one after another while taking shelter in four war trenches. Eight students were killed instantaneously... I can still remember it vividly.”<sup>6</sup>

During the Japanese occupation, the medical college was re-established by the Japanese Military Occupation. The college was called Syonan Medical College (after Singapore was renamed *Syonan*) and was housed in TTSH from 1943 to 1944, after which time it was relocated to the General Hospital Malacca.<sup>7</sup> Professor JS Cheah recounted this legacy, “A total of about 200 students... were accepted, 100 from Malaya and Singapore and 100 from Indonesia, nearly all Sumatrans... The students were taught in Japanese... *Nippon-go*”.<sup>7</sup>

This period was significant for the following reasons: In spite of the terror, grievances and suffering of the people (a shortage of food and drugs led to mounting diseases and deaths), heroic conduct emerged. Dr Scrimgeour: “A reference has been made to the fact that the Asiatic medical and nursing staffs remained at their posts during the Enemy Occupation. No praise can be too high in this connection.”<sup>5</sup> The people and doctors of Singapore, however, realised that urgent reconstruction and rehabilitation would be required after the Liberation. This, they were looking forward to achieving, on their own. A book commemorating 90 years of medical education cited, “... the Japanese Occupation was a blessing in disguise... there was a new confidence among the locals which had not been there before. There was a realization that they were perfectly capable of doing things themselves.”<sup>8</sup>

### **The Postwar Period (1945 to 1985)**

So began the process of rehabilitation. Public health services were re-established immediately to cater to the undernourished civil population. The opportunity to develop and update the services was seized; for the first time, a comprehensive 10-year medical plan for the expansion of Singapore’s medical and health services was drawn up to conduct mass immunisation, modernise hospitals, and

KING EDWARD VII COLLEGE OF MEDICINE,  
SINGAPORE.  
16th June, 1948.

PROFESSIONAL EXAMINATIONS  
JUNE 1948

FINAL PROFESSIONAL PART II  
MEDICAL

SURGERY (Paper)

WEDNESDAY, 16th June, 1948.

TIME: 1.30-4.30 p.m.

ATTEMPT EVERY QUESTION.  
OMIT OPERATIVE DETAILS.

1. Discuss the diagnosis and treatment (one method only) of dislocation of the shoulder joint. Tabulate the possible complications.
2. A man is admitted to the ward with evidence of acute intestinal obstruction. What is the pre-operative treatment?
3. Enumerate the lung complications that commonly follow an abdominal operation. Describe the prophylactic measures and the treatment in each instance.
4. A patient is brought to the hospital by the police. He was found unconscious by the road-side. Discuss the investigation of such a case, and give the differential diagnosis.
5. What veins are liable to permanent pathological dilatation? What symptoms and complications may follow?
6. Discuss the causes of delayed healing in a wound.

Fig. 1. A written examination paper in Surgery of the Final Professional MBBS examinations in 1948.

regulate nursing training, among other recommendations.<sup>9</sup>

The College of Medicine resumed classes on 17 June 1946. The Ministry of Health reported, "... 200 of the pre-war students returned to the College. The standard in the Professional Examinations held in September 1946 was remarkably high, and it is encouraging to find that students, in spite of their experiences, are serious, mature, and enthusiastic."<sup>5</sup> A sample of an examination paper is shown in Figure 1. It is to be remembered that at that time, "there were two institutions for Higher education in the Colony of Singapore – The King Edward VII College of Medicine, and the Raffles College (Arts and Science). The [former] is a Government Institution..."<sup>10</sup> This was so until 1949 when the Governments of Singapore and the Federation of Malaya, having established the University of Malaya, fused the two Colleges, and the College of Medicine became the Faculty of Medicine.

Professor JK Munro (1936 to 1950) resumed his duties as the second Professor of Surgery. He wrote in his medical report for 1950, "During the three terms, systematic lectures have been given in the faculty of Medicine to 84 students.

*Lecture-demonstrations on operative surgery have been given in the post-mortem room of the General Hospital by the Professor of Clinical Surgery [Professor DEC Mekie]."*<sup>5</sup>

There were 3 surgical units then that handled a considerable volume of work, totaling 9997 operations in 1950. Professor Mekie took over the chair of Professor of Surgery from 1950 to 1955. The ambitious Medical Plan only got into gear with regard to improving clinical facilities towards the end of 1951, and the following opening remarks by Professor Mekie, in his report of 1951, reflected this: "It is tragically true that each Annual Report is a tale of struggle against odds. What has been done has been accomplished in spite of, rather than because of, the inadequacy of staff and facilities... I should draw attention to the increasing gravity of the situation.... I have voiced these complaints and difficulties because I felt it is my duty to point out that this steady upward trend of admissions and operations cannot be continued indefinitely without increasing the number of doctors and nurses, without provision for increased facilities."<sup>5</sup> It seems that the problems faced then are not too dissimilar to what we face today.



Fig. 2. Surgical Professorial Unit, General Hospital (July 1956-January 1957).

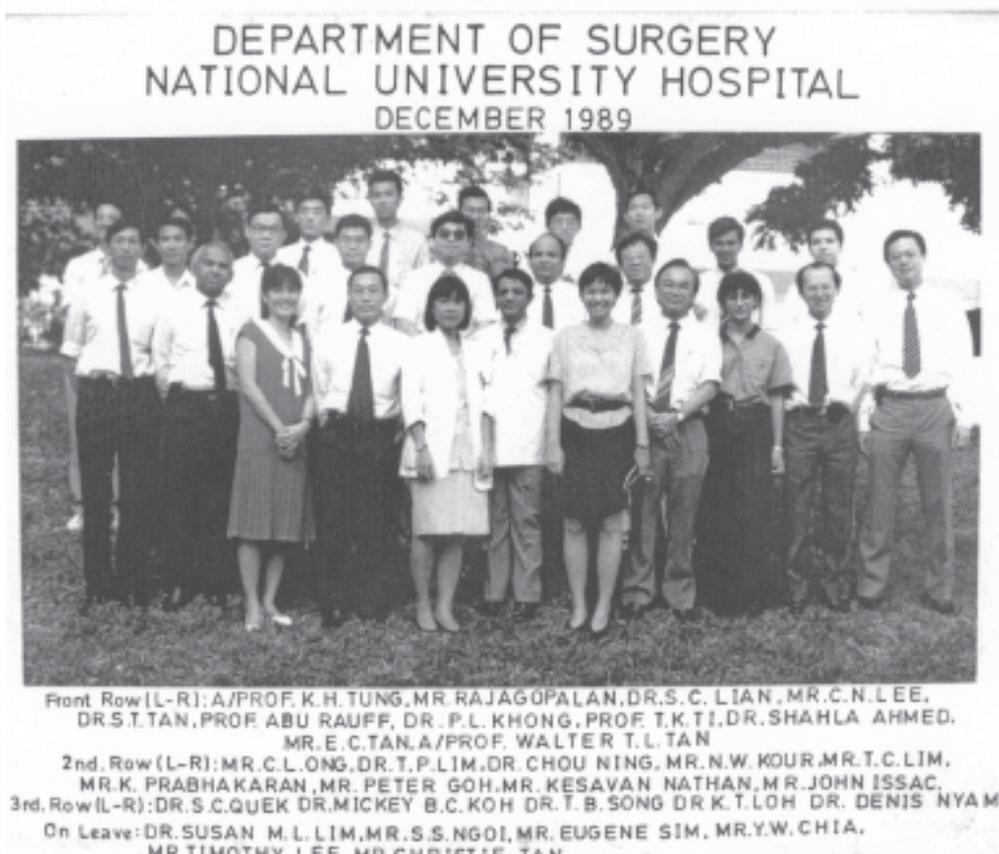


Fig. 3. Department of Surgery, National University Hospital, December 1989.

It was understood that the positions in the Colonial medical service were reserved for British doctors, and locals could only serve as their assistants even though the local qualification was recognised by the General Medical Council, UK. Many felt this was unjust. The only possibility for postgraduate education leading to attainment of higher qualification was to be trained in the UK (usually through scholarships) and to complete the Royal College examinations, e.g., FRCS for general surgery. This involved financial and time constraints, necessitating being away for an average of 1 to 2 years. There was no other alternative, so this process continued for a period of 15 years (1946 to 1960), during which 40 postgraduate doctors attained higher qualifications in internal medicine, surgery, paediatrics, and other specialties.

A breakthrough occurred in 1956 when the fourth chair of Professor of Surgery – and the first local to hold the chair (and who later became Speaker of the Parliament, from 1966 to 1984) – Professor Yeoh Ghim Seng (Fig. 2) met with Sir Douglas Miller, neurosurgeon and Vice-President of the Australasian College of Surgeons. That close collaboration resulted in the primary FRACS examinations being held in Singapore in 1957, the first time such an event was held outside Australasia.<sup>11</sup> AW Beasley wrote in his book, *The Mantle of Surgery*; “*In what was by tradition the Far East, [Douglas Miller] was influential in seeing the [Australasian] College spread a benign influence... Miller’s Colombo plan visit to Singapore in 1956 involved him in discussions with Yeoh Ghim Seng, a prominent local surgeon who was to become the College’s first Asian fellow, by election in June 1958. Out of these discussions came a decision the following year, to conduct a Primary examination in Singapore.*”<sup>12</sup> In addition, “*As the Singapore connection blossomed, the Council welcomed an invitation to hold a general [Royal Australasian] scientific meeting there; the meeting was held in 1973 and was extremely successful.*” Other parties also watched with interest and “*in 1966 the Hong Kong Government made an approach to the College... by way of the [late] professor of surgery, GB Ong.*”

Candidates who were successful at the Primaries in Singapore could be trained in Australia and complete their final FRACS exams there. By then, the Faculty of Medicine, University of Singapore, had established a Postgraduate Board, and Professor Wong Hock Boon became its chairman. Eventually, the final FRACS exams were conducted in Singapore, first by Australian examiners and later with the addition of local examiners.<sup>13</sup> This effort was recognised by the Australasian College; “*... the move towards surgical independence which would provide the final justification of the College’s involvement. In 1970 Singapore developed its own two-part higher surgical*

*degree, the MMed (Surg)...Three years later the [Australasian] College moved to exempt holders of the first part [M Med] from its own Primary...[and later] the College contemplated disengagement.*”<sup>12</sup>

By 1970, Singapore was well and truly prepared to independently train and certify postgraduate doctors, by means of a core of capable local teachers, and to conduct its own higher qualification examinations, the Master of Medicine or M Med, as a professional degree. For this purpose, the School of Postgraduate Medical Studies was established in 1969, independent of the Faculty of Medicine, and run by a Board – comprising members from the three spheres of postgraduate activity, the Faculty of Medicine, the Academy of Medicine (a specialist body founded in 1957), and the Ministry of Health – to oversee the training of specialists in Singapore. The M Med was conferred on clinician specialists whose disciplines were in greater demand – internal medicine, general surgery, paediatrics, obstetrics and gynaecology, and later, anaesthesia and psychiatry. A Committee of Surgery under the chairmanship of Dr Yahya Cohen was formed to organise postgraduate courses leading to the M Med (Surgery) examination. In the ten years from 1970 to 1979, 304 specialists (local and foreign doctors) were trained and certified by the Postgraduate School. Of these, 34 were surgeons.<sup>14</sup> Postgraduate training activities increased under the Surgical chairs of Professors LF Tinkler (1963 to 1966), Chan Kong Thoe (1967 to 1971), Ong Siew Chay (1972 to 1978), and Foong Weng Cheong (1978 to 1985).

In 1984, a joint meeting of the Royal College of Surgeons of Edinburgh with the Academy of Medicine laid the foundation for another important partnership in the annals of postgraduate qualification. A joint Examination of the Royal College and the School of Postgraduate Medical Studies was to be held annually in Singapore. The successful candidates were to be awarded both the Fellowship (FRCS) and the M Med in Surgery. “*This was no mere Scottish link, indeed it was a bond,*” cited Professor Nambiar in his Academy of Medicine, Singapore lecture in 1989.<sup>15</sup>

In 1990, the Joint Committee on Advanced Specialty Training was formed to formalise advanced specialist training in Singapore. Surgery had its own specialty board to supervise the training programmes.

This postwar era was notable for its committed development of postgraduate training, initially at the individual level, and later involving external Colleges, and finally the Academy and Ministry.

### Subspecialisation in Surgery (1985 to Today)

In 1985, the Medical Faculty relocated from the College of Medicine building, together with the preclinical and

clinical departments, to the Kent Ridge Campus. The original 'A' unit, which was the university department of surgery at Singapore General Hospital (SGH), also shifted. During the transition period from 1985 to 1988, Professor Abu Rauff took up the chair of Surgery at SGH and later, at the National University Hospital (1988 to 1992) (Fig. 3). The general surgery department at SGH was subsequently headed by Professor Rajmohan Nambiar (1988 to 1993) and Professor Soo Khee Chee (1993 to 2004). The tempo of surgical subspecialisation picked up at this time. Surgical teaching also occurred in other hospitals where departments of surgery were already established – TTSH (re-established in 1975), Toa Payoh Hospital (1960), and Alexandra Hospital (1971).

The subspecialisation of surgery had actually begun in the early part of the century. Ophthalmology (1935) and Otolaryngology (1957) were established very early, and operations in these fields were performed by general surgeons who had a special interest in the field – Professor K Black and Professor BM Johns (Professor of Clinical Surgery in 1928), respectively. Orthopaedic surgery had early origins as well; Professor JAP Cameron was appointed to the first chair of Professor of Orthopaedic Surgery in 1952. Other surgical specialties that “branched out” to form their own departments were those of cardiothoracic surgery (1966), plastic and reconstructive surgery (1971), neurosurgery (1972), paediatric surgery (1981), hand surgery (1985), and urologic surgery (1988). The last field to set up its own department in SGH was that of colorectal surgery, in 1989.<sup>11</sup> The subsequent chairs of the Department of Surgery were taken up by Professors Walter Tan (1992 to 2001), Adrian Leong (Clinical Chief; 2001 to 2004), Soo Khee Chee (Academic Chief; 2001 to 2004), and John Isaac (2004 to present).

Even within the specialties mentioned, further subspecialisation took place rapidly, and this had the greatest impact on the discipline of General Surgery. Nowadays, it is not unusual to find divisions or sections within the departments of surgery, e.g., breast and endocrine surgery, head and neck surgery, hepatobiliary surgery, upper gastrointestinal surgery, colorectal surgery, vascular surgery, trauma surgery and transplantation surgery. Minimal-access surgery proliferated in the 1990s, following the first laparoscopic cholecystectomy at SGH in 1990. Since then, laparoscopy has found its niche in almost every discipline in surgery.

There is some agreement that surgical subspecialisation is inevitable and is likely to be good for patient care and progress in surgery. However, a fragmented surgical entity will have a negative impact on surgical teaching. “*We must ensure the survival of the general surgical department for the training of broad-based surgical principles,*”

emphasised Professor CH Low in his Academy of Medicine, Singapore lecture in 1996.<sup>16</sup> He added, “*The general surgeon of the future should be a general surgeon with a specialty interest, but he must be well grounded in basic surgery first before he embarks on tertiary specialty training.*”

Undergraduate surgical education has also undergone adaptation. In 1991, the Medical Faculty accepted a major review of the medical curriculum. The traditional didactic approach has given way to a more integrated and structured programme, with an emphasis on self-learning, critical thinking, and problem-oriented learning. During the senior clerkship in the final year, students are given exposure as “Junior House Officers” and given roles in clinical teams. They also undergo a condensed version of the Advanced Trauma Life Support (ATLS) Course. Information technology has become more widely used as a tool for surgical education. The examinations are now fully computerised and students can practise on past questions, which are posted on the Department website, together with the answers.<sup>17</sup>

In 2003, Singapore was gripped by the brief and traumatic 3-month period (March to May) of severe acute respiratory syndrome (SARS) where 239 people were infected, (including 97 healthcare workers) and 33 died.<sup>18</sup> Just as the Japanese Occupation had interrupted activities, teaching classes during the SARS period were stopped and students were barred from the wards. Inter-hospital teaching ceased immediately and non-urgent personnel contact was discouraged. It was, as some put it, a different kind of “war” that was being fought.

A hundred years after the founding of the Medical School, the dreams of the founders – that of training the minds and talents of the youth – have been fulfilled. Many challenges lie ahead in shaping the future of surgery but few would be more satisfying than passing the baton to our younger colleagues who would do us proud. As President FD Roosevelt put it, “*We cannot always build the future for our youth, but we can build our youth for the future.*”<sup>19</sup>

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