4.3 Asia and the World Federation of Neurosurgical Societies

Kintomo Takakura

Introduction

Asian countries, especially China and India, enjoy a long history of neurosurgery. Chinese archaeologists have found skulls with primitive trephination performed by the ancient Dawenkon aboriginal people in Shendong province approximately five thousand years ago. The actual operative instruments have, however, not been found and the reasons for drilling a hole in the cranium have not been clarified. There is a well known legend that Hua-Tuo of three Kingdoms (222-280 AD) tried to perform craniotomy on Cao Cao, the King of the Wei Kingdom, to treat his severe headache possibly caused by a brain tumour (6). But the operation was not performed because of the King's furious refusal. The doctor was punished and put in prison where he later died. No further detailed historical record of this story has been found. In India, it was reported that a famous Indian doctor, Jivaka, performed craniotomies to remove intracerebral worms around the 5th century BC.

Neurosurgery in each Asian country has developed differently. I asked several neurosurgeons about the history of neurosurgery in their country and many of them kindly sent me summaries. I would like to thank all those who have kindly contributed to this report.

The membership of the World Federation of Neurosurgical Societies in the early stages consisted of the following societies.

- Japanese Neurosurgical Society 1957
- Neurosurgical Sub-Section of the Neurological Society of India 1959
- Middle East Neurosurgical Society 1959
- Korean Neurosurgical Society 1965
- Neurosurgical Society of Iran 1965
- Turkish Neurosurgical Society 1969
- Neurosurgical Section of the Neurological Society of Thailand 1971
- Neurosurgical Section of the Neurological Society of the R.O.C. (Taiwan) 1981

The Neurosurgical Society of Indonesia, the Pakistan Society of Neurosurgeons and the Lebanese Neurosurgical Society became affiliated members of WFNS in 1981.

The Fifth International Congress of Neurological Surgery was held in Tokyo, Japan, in October 1973 under the presidency of Keiji Sano; this was the first Congress to be held in Asia. The Ninth Congress was held in New Delhi, India in 1989 under the presidency of Brigadier Ramamurthi.

The Asian and Australasian Society of Neurological Surgeons was established in 1964 and became the sectional organization of WFNS for Asia and Australasia; its first Congress was held in Canberra, Australia under the presidency of Sir Douglas Miller.

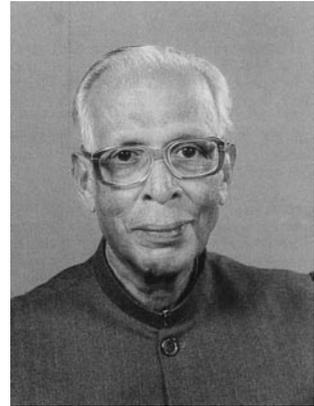*History of Neurosurgery in Asian Countries*

Hong Kong
The history of neurosurgery in Hong Kong dates back to 1956, with the arrival of the first neurosurgeon, Hsiang-Lai Wen (5). Before that time, brain operations were performed by general surgeons and the levels of morbidity and mortality were high. After graduating from the Medical College of Cheeloo University in Chengdun, the oldest medical school in China, Wen went to Toronto to study neurosurgery from 1949 to 1950 under Charles Drake. Later, he followed the neurosurgical training programme at the University of Pennsylvania headed by Francis C. Grant. Wen was invited as a neurosurgeon to take up a position at the Queen Mary Hospital in Hong Kong in 1956. This was the start of neurosurgery in Hong Kong. His contributions to neurosurgery included the ventriculo-superior-sagittal-sinus shunt and the application of acupuncture in anaesthesia, pain ablation, and drug detoxication. Wen sought to improve the standard of neurosurgery in Hong Kong and Southern China with the establishment of the Hong Kong Neurosurgical Society in 1981 and the Research Institute of Neurosciences in Guangzhou in 1988. His work paved the way for the development of modern neurosurgery in Hong Kong which has seven major neurosurgical centres. In 2003, there were forty-four board-certified neurosurgeons in Hong Kong with a population of 6.7 million, yielding a neurosurgeon to population ratio of 1:152,300.

India
Jacob Chandy set up the Department of Neurosurgery at CME Vellore in 1949. B. Ramamurthi initiated the neurosurgical department at Madras General Hospital in 1950 and R.G. Ginde at KEM Hospital in Bombay in 1951. The National Institute of Mental Health and Neurosciences was instigated in 1959 by R.M. Verma. In 1962-1963, Arjun Sehgal established the unit at G.B. Pant Hospital, Delhi. In 1962, Gulati started Neurosurgery at the Postgraduate Institute of Medicine and Research in Chandigarh. In 1963, Lucknow Medical College opened the Department of Neurosurgery with P.N. Tandon who left for Delhi in 1965. In 1965, the All India Institute of Medical Sciences established a neurosurgical unit with P.N. Tandon as the professor. Nowadays nearly one hundred centres provide neurosurgical services with nearly eight hundred neurosurgeons practising neurosurgery throughout the country.

Jacob Chandy
Recipient, Medal of Honour
1989

The Neurological Society of India was formed by J. Chandy, B. Ramamurthi, B. Singh and Narsimhrao in 1951 encompassing all branches of neurosciences. Since then the Neurosurgical section has held an annual conference with a CME programme on the first day. It has steadily gained in strength and now has over eight hundred neurosurgeons as full members. The World Congress of Neurosurgery was successfully held in Delhi in 1989 under the presidency of Ramamurthi followed soon after by the 17th Annual Conference of the International Society for Paediatric Neurosurgery in Bombay (1989).

India was one of the founding members of the Asian and Australasian Society of

Neurological Surgeons as well as being an active member of the World Federation of Neurosurgical Societies since 1959. B. Ramamurthi (1989) and M. Sambasivan (2001) were appointed Honorary Presidents of the WFNS and the Medal of Honour was bestowed on J. Chandy in 1989.

Training of neurosurgeons was initiated in various universities from 1954 onwards and now India has over fifty centres where students are trained for the Diploma of the National Board of Examination in neurosurgery. The training period lasts for five years after graduating in medicine or three years after post-graduate training in general surgery.

Indonesia

Neurosurgery service in Indonesia was started in 1948 by C.H. Lenshoek, a Dutch neurosurgeon who was born in Indonesia. He established the first neurosurgical clinic in the Princess Margriet Hospital, in Jakarta, with the help of the Dutch Red Cross.

In 1953, the first Indonesian neurosurgeon, S.K. Handoyo, started work after he had finished his training in Holland. He was soon joined by his colleagues, Soewadji Prawirohardjo and Basoeki Wirjowidjojo, who were also trained in Holland. Other pioneers of neurosurgery in Indonesia were R.M. Padmosantjoyo, who graduated from Holland in 1969, R. Iskarno, a graduate from Germany in 1971 who established neurological services in Bandung, and Satyanegara, who graduated from Japan and established a neurological service in Pertamina Hospital, Jakarta.

Currently, there are ninety neurosurgeons in Indonesia who practise in twenty-five large cities in Indonesia. Three centres have a residency programme for neurosurgical training: one in Jakarta led by R. Padmosantjoyo, one in Bandung led by K. Wiriadisastra and one in Surabaya led by U. Kasan. Most neurosurgeons in Indonesia graduated from these centres but usually also followed some study experience abroad during their residency training. From the viewpoint of international neurosurgery, Dr. Satyanegara organized the 9th Convention of the Eurasian Academy of Neurosurgery in Bali in 2000.

Iran

The history of medicine in Iran (2) goes back to the 9th century when Rhazes (865-925 AD) introduced animal gut as a material for ligature of wounds used during the so-called operations. Many other physicians, philosophers and scholars were active in the field of medicine, especially during the Islamic era.

Modern neurosurgery is dedicated to the joint efforts of the first two pioneers, N.O. Ameli and the late E. Samii (d. 2001). N.O. Ameli who was trained in England and E. Samii who was a German-trained neurosurgeon founded and further developed the three major neurosurgical departments in Tehran. Meanwhile, another centre was established in the northern part of Tehran by the late A. Jahanshahi (d. 1995) who was trained in France. Gradually thereafter, other neurosurgical departments were established in the major cities of the country such as Tabriz (S. Panahi, German-trained), Shiraz (K. Abbassioun, American-trained), Isfahan and Meshed.

The Neurosurgical Society of Iran was established in 1965 and has participated actively in the continuous education of neurosurgeons by arranging at least two major gatherings each year. Through these gatherings, CME credits are given and international teaching courses, such as the teaching programmes of the World Federation of Neurosurgical Societies, were also established. The total number of registered neurosurgeons throughout the country is a little more than two hundred, including five

female neurosurgeons (2.5%). This represents one neurosurgeon for about 350,000 individuals. Even so, it would appear that Iran is still short of manpower in the field of neurosurgery to participate more actively in research and new advances.

Japan

The first neurosurgical operation in Japan was performed by Susumu Sato, an army doctor, during the domestic South-Western War in 1877. He performed the operation on a soldier to remove bone fragments and the pus of an abscess caused by a gun-shot wound. The neurological signs and symptoms subsided soon after the operation but, unfortunately, the patient died of acute pneumonia.

The first successful neurosurgical operation was a case of trauma treated by Julius Scriba, a visiting surgeon at the University of Tokyo. In 1892 (3), he operated on a 47-year-old man with a depressed fracture in the left parietal region with monoplegia of the right leg. The postoperative course was uneventful and the monoplegia was alleviated markedly. This case was reported to a Japanese Medical Journal in 1893 by Hayari Miyake, Scriba's assistant. Miyake was later appointed Professor of Surgery at a new medical school in Fukuoka, which is now the Kyushu University. In 1905, he removed en bloc a circumscribed brain tumour in the left rolandic area, which he believed to be a glioma, from a 27-year-old man with Jacksonian seizures. The patient did well for at least several years after operation. This case was probably the first successful removal of an intracranial tumour in Japan. In retrospect it was probably a meningioma.

It is generally thought that the pioneers in Japanese neurosurgery were Makoto

Keiji Sano addressing the audience during the Opening Ceremony of the Fifth International Congress. Seated: The Crown Prince and Princess of Japan (right) and Drs. P. Röttgen, P.C. Bucy and A.E. Walker

Kentaro Shimizu
Recipient, Medal of Honour
1983

Saito (1889-1950) and Mizuho Nakata (1893-1975) (4). Saito graduated from the University of Tokyo in 1915. In 1920, he went to Europe and spent three-and-a-half years studying in Vienna, Berlin and Paris. After returning to Japan, he devoted himself mainly to treating brain tumours and cerebrovascular lesions. He was one of the founders of the Japanese Neurosurgical Society which was established in 1948. Nakata graduated from the University of Tokyo in 1917. He was appointed as Professor of Surgery at Niigata University. After three years studying in Europe, he visited the United States and observed Cushing and Dandy performing neurosurgical operations. He was so impressed by Cushing that he remarked: 'here is neurosurgery, nowhere else'. On his return to Niigata, he began to practise Cushing-style neurosurgery. He collaborated with Saito in organizing the First Congress of the Japanese Neurosurgical Society in Niigata. Shigetsugu Katsura (1889-1970), who worked at Tohoku University Hospital in Sendai, was also a pioneer of neurosurgery.

After the Second World War, the most influential men were Chisato Araki of Kyoto University and Kentaro Shimizu of Tokyo University. Araki visited the United States in 1936 to study neurosurgery under Percival Bailey and Paul C. Bucy at the University of Chicago. After returning to Japan, he was appointed as Professor of Surgery of Kyoto University. His interests covered not only brain tumours but also head trauma and cerebrovascular lesions. After his retirement, he was succeeded by Hajime Handa, and later by Haruhiko Kikuchi. Shimizu graduated from the University of Tokyo. He first studied neuropathology and then entered the Department of Surgery under the supervision of Tetsuzo Aoyama in 1932. He has performed a considerable amount of productive work in neurosurgery including the development of the technique of percutaneous carotid and vertebral

Hajime Handa
Recipient, Medal of Honour
1989

Kenichiro Sugita †
Recipient, Medal of Honour
1997

angiography. He went to Chicago to work with Bailey. Unfortunately, after the start of the Second World War, he had to return to Tokyo in 1942 where he was appointed Professor of Surgery and later, in 1951, Professor of Neurosurgery, at the first independent department of neurosurgery in Japan. Shimizu was one of the founders of the Japanese Neurosurgical Society, together with Saito, Nakata and Araki. He was also responsible for the establishment of the Japanese EEG Society. K. Shimizu was Vice-President of the World Federation of Neurosurgical Societies from 1961 to 1965 and received the Medal of Honour of the WFNS in 1983. He was succeeded by K. Sano who became the Director of the Department of Neurosurgery at the University of Tokyo in 1962. Kintomo Takakura succeeded Sano in 1981. Sano served as the President of the Asian and Australasian Society of Neurosurgical Surgeons from 1967 to 1971, as the President of the World Federation of Neurosurgical Societies from 1969 to 1973 and was the President of the Fifth International Congress of Neurological Surgery in Tokyo. He has since then been Honorary President of the WFNS. Other Honorary Presidents from Japan are S. Ishii (1993) and K. Takakura (1997). The Medal of Honour was bestowed on H. Handa in 1989 and posthumously on K. Sugita in 1997.

The Japanese Board of Neurological Surgery was established in 1966. In 2004, the population of Japan was 127 million. Eighty university hospitals and three hundred and three major hospitals have neurosurgical departments and eight hundred and fifty-four small hospitals have neurosurgical clinics. In 2003, there were 7,933 neurosurgeons of whom 5,800 were board-certified. In 2003, 161,042 operations were performed including 22,498 for cerebral tumours and 45,264 for vascular lesions. Both the Japanese Neurosurgical Society and the Japanese Congress of Neurological Surgeons hold an annual meeting.

Korea
Between the Second World War and the Korean War, several Korean general surgeons became interested in neurosurgery. Neurosurgery in Korea was not, however, organized into its modern form until after the Korean War (1950-1953).

The Korean Neurosurgical Society (KNS) was first organized officially in 1961 (1). As time passed, many changes were made in the KNS. A brief history of the different periods is given.

1. Initial period (1945-1960)
   Doctors who were interested in neurosurgery participated individually in the treatment of wounded veterans in the Korean War. This was an initial impetus to modern neurosurgery based on western medicine. After the war, many doctors went overseas, mainly to the USA, for neurosurgical training.
2. Period of settlement (1961-1969)
   On 11th March 1961, KNS was officially founded, the first president being Ju-Gul Lee. In 1963, the first board examination took place. KNS joined the World Federation of Neurosurgical Societies in 1965 and the Asian and Australasian Society of Neurological Surgeons in 1971.
3. Period of development (1970-1979)
   On 31st October 1972, the Journal of the Korean Neurosurgical Society was first published. In the early 1970s, neurosurgeons began to use the surgical microscope.
4. Period of progression (1980-1989)
   From 1983, the scientific meeting the of KNS took place twice a year. From 1986, societies of each subspecialty were established, for example, the Korean Society of Cerebrovascular Disease in 1987, the Korean Society for Paediatric

Neurosurgery in 1987, the Korean Society for Spinal Neurosurgery in 1987, etc. Since 1989, the Japanese and Korean Joint Conference on Surgery for Cerebral Stroke has been held every four years in Japan and in Korea alternately.

5. Period of maturity (1990-2004)

The Korean Society for Stereotactic and Functional Neurosurgery (1990), the Korean Brain Tumour Society (1991), the Korean Neurotraumatology Society (1993), the Korean Society of Intravascular Neurosurgery (1997) and the Korean Society of Geriatric Neurosurgery (1997) were established. Starting with the Asian-Australasian Congress of Neurological Surgery in 1991, many other international meetings were successfully held in Korea.

Southern Korea (Republic Korea) has a population of approximately 47 million. There are 1,621 certified neurosurgeons, providing a ratio of one certified neurosurgeon per 29,000 inhabitants. Specifically, 340 neurosurgeons are employed by sixty-three university hospitals, 541 work in general hospitals, and 740 work in the private sector.

In the year 1999, the number of neurosurgical operations performed annually in the eighty training institutes totalled 46,697. This included 5,400 operations for brain tumours and 5,964 procedures for cerebrovascular disease. Most neurosurgeons in Korea deal with brain, spinal and peripheral nerve surgery.

Mongolia

Neurosurgery in Mongolia was established in 1966 (2). At that time, the department at the Shastin Central Clinical Hospital in Ulaanbaatar had a capacity of forty beds with five neurosurgeons. In addition, there were five doctors working in an eighty-bed Trauma Hospital. There was only one neurosurgical department for the treatment of neurotrauma patients in Mongolia.

The neurosurgical department has been providing treatment for tumour of the brain and spinal cord, cerebrovascular diseases, congenital anomalies of the central nervous system, brain abscess, brain trauma, back and spinal cord injury.

The deficiency in modern diagnostic methods has impaired the ability to provide timely diagnosis and treatment for patients. Equipment for endovascular surgery, shunt surgery, functional neurosurgery, endoscopic surgery, and skull base surgery are not presently available.

Mongolia has a desperate need for microneurosurgical instruments, electric drills, and professional training. Research work is outdated and there is a scarcity of professional books and journals.

Nepal

Although a new specialty in Nepal, neurosurgery has broken the past taboo of considering this technology not feasible in Nepal. People have started to seek this service actively.

Dinesh Nath Gangol started neurosurgery in Nepal by performing subtemporal decompression on a head-injured male at Bir Hospital in 1961. Later, neurosurgery was carried out by his team as a part of general surgery. The first neurosurgical unit in the country was set up in the same hospital in 1981 with the help of the WHO. U.P. Devkota joined the unit in 1989. Since then, there has been a steady growth in the output and quality of work. Devkota was the first neurosurgeon who devoted his time fully to neurosurgery. Currently, there are only two fully trained neurosurgeons in the country who are working as neurosurgeons and two general

surgeons who have had one or two years' neurosurgical training and are working as neurosurgeons.

At present, there are three places where a regular neurosurgical service is being provided. Bir Hospital is the oldest institution in this field. Merwyn Began, an American neurosurgeon, started neurosurgery at Tribhuvan University Teaching Hospital in February 1995. The neurosurgical service was started in Kathmandu Model Hospital by B.K. Thapa and his colleagues at the end of 1997.

With a population of 20 million, Nepal severely lacks service in this field. Here, neurosurgery is just beginning to be recognized as a separate specialty. However, even the tertiary hospitals lack this service and no certifying mechanism of neurosurgeons exists. Due to the lack of proper working place, specialists either do not return home or go abroad after a number of frustrating years in their home country. Loss of life from brain abscess or epidural haematoma, or blindness due to hydrocephalus, paraplegia due to spinal tuberculosis are some of the readily preventable tragedies.

Due to the lack of relevant data, assessment of actual need for neurological care is difficult. But comparing the present statistics, the number of patients requiring neurological and neurosurgical care in Nepal is estimated to be about 500,000 new cases per year. At present, only about 1% of them is receiving treatment. In addition to the usual cases seen throughout the world, infectious diseases like meningitis, encephalitis, brain abscess, neurocysticercosis, cerebral hydatid disease are common in Nepal. Tuberculosis alone is seen in 1% of population. The prevalence of neurocysticercosis is endemic in the south-eastern region. An epidemic outbreak of meningitis and encephalitis occurs every year.

Due to the lack of a safe traffic system, head injury is taking on epidemic proportions. Many of the spinal injuries are due to falls from mountains or trees while collecting firewood. Cases of acute mountain sickness with cerebral oedema are occasionally seen in mountaineers visiting the country.

Nepal needs at least eighty neurosurgeons for a ratio of 1: 250,000 in ten centres scattered evenly throughout the country to cover the entire population. To manage emergency cases alone, it needs about forty neurosurgeons. It will not be able to meet this need for a few more decades to come unless it takes a major step in the right direction now. Being a new specialty, neurosurgery in Nepal must still overcome great logistical and technical challenges although it has started to attract many promising young doctors in this field.

Pakistan
At the time of independence, in August 1947, there were no neurosurgeons in the east or west wings of Pakistan. O. V. Jooma underwent training in the UK starting early in 1947. Having worked at Bristol, Oxford and Manchester with Sir Hugh Cairns, Joe Pennybacker and Sir Geoffrey Jefferson, Jooma returned to Pakistan in September 1951 on the request of Col. M. Jafar, the then Director General Health of Pakistan. He was appointed to the Jinnah Post-Graduate Medical Centre (then Jinnah Central Hospital), Karachi. Before Jooma arrived, necessary neurosurgical instruments and other equipment had already been purchased and received in the hospital. The first neurosurgical operation in the history of Pakistan was performed by Jooma in October 1951, a thoracolumbar laminectomy for a spinal cord tumour.

Brigadier G. D. Qazi, who was an experienced general surgeon, had a chance to observe the neurosurgical techniques of Jooma and developed an interest in neurosurgery. Brigadier Qazi was asked by Lieut. General Mian, the then Director of Army Medical Services to proceed to the UK for training in neurosurgery. Brigadier

Qazi spent two years at Oxford (1954-1956) with Joe Pennybacker and Walpole Lewin. On his return in 1956, he started the first neurosurgical centre at the combined military hospital in Lahore.

Bashir Ahmad returned to Pakistan in December 1963 after his training at the Regional Neurological Centre at Newcastle-upon-Tyne, England. He was the third pioneer of neurosurgery in Pakistan and started a neurosurgical unit at Nishtar Medical College and Hospital Multan. He worked at that hospital from January 1964 to March 1966 and then moved to King Edward Medical College, Lahore as the Professor of Neurosurgery. He established the first state of the art centre of neurosurgery at Lahore General Hospital, Lahore.

After following a neurosurgical training in England, Nisar Muhammad Khan in 1966 and Iftikhar Ali Raja in 1969 returned to Pakistan. General Nisar started the second unit of neurosurgery in the army at the combined military hospital in Rawalpindi. Iftikhar Ali Raja worked for seven years as associate Professor of Neurosurgery at Lahore and then moved to Nishtar Medical College and Hospital as Professor of Neurosurgery in 1976. He established the Department of Neurosurgery at Nishtar Hospital Multan with eighty beds and an intensive care unit. Raja was the first to start microsurgery and laser surgery at Multan. I.H. Bhatti returned to Pakistan in 1970. He was first appointed at Dow Medical College and Civil Hospital Karachi but later moved to Jinnah Postgraduate Medical Centre (JPMC). Bhatti was a master of tumour and vascular surgery.

The College of Physicians and Surgeons of Pakistan was established in 1962 and a training programme in neurosurgery initiated.

At present, there are forty-two neurosurgical centres in Pakistan where different levels of neurosurgery are being practised. The population of Pakistan is approximately 140 million with one hundred and fifty neurosurgeons including two female neurosurgeons. About fifteen hundred beds are reserved for neurosurgery throughout the country.

People's Republic of China

Before the founding of the People's Republic of China in 1949, the field of neurosurgery in China was almost non-existent (6). Very few surgeons had performed neurosurgical operations, including the very simple procedures. In the early 1930s, Song-Tao Guan of Beijing and Charlie Chang of Shenyang were the first doctors to perform neurosurgery in China. After Guan had finished his chief residency training in general surgery at Peking Union Medical College Hospital (PUMCH), he was sent to the USA for special training in neurosurgery under the guidance of Charles Harrison Frazier. Guan returned to Beijing in 1930 and started treating patients with head trauma, brain tumours, and spinal cord tumours.

In addition to the two above-mentioned pioneers, Tong-He Zhang of Xi'an also practised neurosurgery, especially in the area of psychosurgery by prefrontal lobotomy. Another respectable forefather of Chinese neurosurgery was Yi-Cheng Zhao. While he was at the Montreal Neurological Institute, Zhao practised neurosurgery under the guidance of Wilder Penfield. He returned to China in 1940 and subsequently worked with Guan at PUMCH until the end of 1942. Later, in 1949, Guan left for the USA, and Zhao stayed in China to train Chinese neurosurgeons and contributed significantly to the development of modern neurosurgery in China. PUMCH reopened in 1947, and the neurosurgery service there, headed by Chuan-Yi Feng, was restored in 1951.

In the early 1950s, independent neurosurgical services started, mainly in the major cities, namely Tianjin, Beijing, and Shanghai.

In 1952, Y.C. Zhao set up the first independent neurosurgical department in China, at Tianjin General Hospital. In the following year, a 1-year intensive postgraduate training programme in neurosurgery was offered at that hospital. In the 1980s, Tianjin Huanhu Hospital was built. It has become the largest neurosurgical centre in Tianjin, with twenty-five neurosurgical staff members and two hundred and fifty clinical beds. Approximately two thousand, two hundred operations are performed there every year.

In October 1954, A.I. Arutyunov, director of the Kiev Neurosurgical Institute in the former Union of Soviet Socialist Republic, was invited by the Ministry of Health in China to train neurosurgeons in a hospital affiliated with PUMCH. Meanwhile, Y.C. Zhao was also asked by the Chinese government to work with this foreign expert. Zhao then left for Beijing together with his second student, Chung-Cheng Wang, while his first student, Qing-Cheng Xue, became his successor in Tianjin.

Chung-Cheng Wang
Recipient, Medal of Honour
2001

At the suggestion of Y.C. Zhao as well as with the authorization of the Chinese government, the first neurosurgical institute in China, the Beijing Institute of Neurosurgery, was founded in 1960. Y.C. Zhao headed the institute until he died in 1974, at which time C.-C. Wang became his successor. The Department of Neurosurgery at Beijing XuanWu Hospital was then affiliated with the institute and was reorganized into different divisions for clinical practice. Substantial pioneer work was accomplished at the institute. In 1982, the institute was moved to Beijing Tian-Tan Hospital so that it could be expanded. Today, the institute comprises twelve laboratories and three hundred beds in ten clinical wards and has become one of the largest neurosurgical institutes in Asia. The Department of Neurosurgery has forty-six full-time faculty members, and more than three thousand, two hundred brain and spinal tumour operations are performed annually at the hospital.

Neurosurgery also developed in Shanghai after the founding of New China. In 1950, at Chung-Shan Hospital, James Ke-fei Shen successfully resected a frontal lobe astrocytoma. At that time, he was the director and professor of the Department of Surgery. Soon afterwards, an independent neurosurgical division was created when Yu-Quan Shi, another famous pioneer neurosurgeon, joined that hospital. In 1953, the neurosurgical division was moved to the First Red Cross Hospital, which was the predecessor of Huashan Hospital. Shanghai Huashan Hospital, headed by Y.Q. Shi, expanded steadily and later became another important neurosurgical centre in China. In the 1980s, an affiliated neurological institute, also headed by Shi, was founded in Huashan Hospital. After Shi's retirement, first Da-jie Jiang and then Liang-Fu Zhou succeeded him as the head of Huashan Hospital.

In 1955, a neurosurgical division was set up in the Medical School of Zhejiang University in Hangzhou. Another pioneer, Zheng-Qing Zhu, was invited to head the neurosurgical department at Chongqing Medical College in 1958.

Neurosurgery in north-eastern China began under the leadership of Guo-Sheng Duan in the General Army Hospital of Shenyang. During the Korean War, a large number of wounded soldiers with craniocerebral trauma were treated by a medical team that included Duan, the aforementioned C.Y. Feng from PUMCH, and Y.Q.

Shi from Shanghai. In 1969, the prestigious Duan was invited to head the neuro-surgical department of the People's Liberation Army General Hospital in Beijing.

During the 1950s, the Chinese Ministry of Health also dispatched some medical personnel to the former Union of Soviet Socialist Republics for postgraduate train-ing. Among them was Tong-Jin Tu, who was assigned to specialize in neurosurgery and was trained at the Burdenko Institute in Moscow. When Tu returned to China in 1956, he was given the task of establishing a neurosurgical department in the Fourth Military Medical University in Xi'an. By the 1960s, independent neurosur-gical departments had been established in at least one or two large hospitals in each province. This meant that Chinese neurosurgery had at least achieved a preliminary start.

Hundreds of doctors went abroad to be trained in famous neurosurgical centres in North America, Europe, and Japan. In 1982, the two major neurosurgical in-stitutes in Beijing and Shanghai were designated World Health Organization Col-laborating Centres for Research and Training in Neuroscience.

An independent Chinese Neurosurgical Society was organized in 1986. Chung-Cheng Wang was selected as the first President of the Society and has been reap-pointed to date. The Society organizes a national congress in a different city every four years.

In 1981, five neurosurgeons from China – C.-C. Wang, Q.C. Xue, G.S. Duan, Ke Qing Huang, and ShengYu Yi – participated in the Seventh International Congress of Neurosurgical Surgery in Munich, Germany. It was the first time that neurosur-geons from the People's Republic of China had attended the World Federation of Neurological Societies (WFNS) meeting. After that, the Chinese Neurosurgical Soci-ety cooperated actively with the WFNS, and later they became actively engaged with the Asian and Australasian Society of Neurological Surgeons and other societies in different continents and countries. C.-C. Wang was selected as senior delegate to WFNS and received the Medal of Honour at the Twelfth WFNS meeting in September 2001 in Sydney, Australia.

In 1953, Y.C. Zhao organized the first neurosurgical training programme in China, in Tianjin. According to Chinese Neurosurgical Society statistical data, the number of qualified neurosurgeons practising in China in 2000 was approximately four thousand, whereas the total number of doctors who had performed neurosur-gical operations was more than nine thousand. Considering that the total popula-tion of the People's Republic of China in 2000 was approximately 1.3 billion, the ratio of neurosurgeons in the Chinese population is 1:140,000. In some developed areas such as Beijing and Shanghai, the ratio is 1:30,000-40,000, but in some devel-oping areas such as Szechwan, Tibet, Inner Mongolia, and other western provinces, it is 1:300,000-400,000.

Republic of the Philippines

The earliest recorded neurosurgical procedure in the Philippines was a trephination carried out in 1878 at the University of Santo Tomas. Prior to the Second World War, the practice of neurosurgery was in the hands of general surgeons. Surgery was mostly confined to trauma cases. One of the pioneer Filipino neurosurgeons was Jose Abuel from the University of the Philippines. He studied neurosurgery at Harvard from 1923 to 1925, at the time when Harvey Cushing had already for-malized the field of neurosurgery in the USA. Abuel brought home the technique of pneumoencephalography for localizing intracranial lesions. The first craniotomy in the Philippines (for the evacuation of a subdural haematoma) performed in 1928 was attributed to him. Another general surgeon, Andres Zavalla from the

University of the Philippines, went to Johns Hopkins Hospital in Baltimore during the 1930's to train under Walter Dandy. Zavalla did the first craniotomy for the excision of a brain tumour in the country in 1941.

The post-World War II era heralded the start of the practice of neurosurgery as a fully fledged specialty. Romeo Gustilo, a reserve officer of the Philippine Army underwent a full residency training in neurosurgery at Johns Hopkins Hospital under Earl Walker from 1948 to 1950. He was certified by the American Board of Neurological Surgery prior to his return. He then established the neurosurgery service at the University of Santo Tomas in 1950.

Victor A. Reyes, a surgical resident under Zavalla, went to the United States and Canada in 1947 and underwent five years of training in neurology and neurosurgery with Gilbert Horrax in Boston, Wilder Penfield et al. He was certified by the American Board of Neurological Surgery in 1951. Upon his return to the Philippines in 1952, Reyes started the neurosurgery service at the Philippine General Hospital.

Another pioneer neurosurgeon during this time was Melchor Javier who had trained in neurosurgery at the Lahey Clinic in Boston in 1949. He then became the neurosurgeon of the Armed Forces of the Philippines at the V. Luna Hospital.

The decade of the sixties saw the return of other fully trained neurosurgeons from abroad. Mariano Torres established the neurosurgery service at the University of the East Ramon Magsaysay Medical Centre. Roger Baisas became the head of neurosurgery at the Far Eastern University. Leopoldo Pardo, who trained at Baylor University, and Dr. Faustino Domingo who trained with James Poppen at the Lahey Clinic, both returned in 1961 and joined the neurosurgery service at the Philippine General Hospital.

This small group of foreign-trained neurosurgeons at that time decided to organize and actually established the Philippine Society of Neurological Surgeons in 1961.

The first local formal Residency Training Programme in Neurosurgery was established at the Philippine General Hospital in 1976. Today there are five neurosurgery training programmes accredited by the Philippine Board of Neurological Surgery, Inc.

In 1998 the Philippine Gamma Knife Centre embarked on its operation at the Cardinal Santos Medical Centre.

1996 saw the formation of the Academy of Filipino Neurosurgeons, Inc., under the stewardship of Renato Sibayan, as the formal neurosurgical association of the country.

At present, there are seventy-six members of the Philippine Board of Neurological Surgery and of these, seventy-four are fellows of the Academy of Filipino Neurosurgeons, Inc. Only sixty-seven are currently practising, seventy-three percent of them in urban centres mostly in Metro Manila.

Taiwan

Taiwan, an island in the Western Pacific Ocean, has an area of 35,760 km². In 1977, doctors working in the field of both clinical neurology and basic neurological science came together and founded the Neurological Society of the R.O.C. (Taiwan). Chun-Jen Shih was elected to be the president for two terms (1977-1981) and within that period doctors decided to establish the neurological and neurosurgical training programmes for neurosurgeons. Fortunately, Chun-Jen Shih was also elected as President of Taiwan Surgical Association and served in that post for two terms (1980-1984). During that period, leaders in various surgical fields decided to

formalise surgical specialist boards, resident training programmes and their certification. Of course, neurosurgery was included.

After retirement from the medical school, Chun-Jen Shih was appointed as Director General of the government Department of Health. Chun-Jen Shih was, therefore, able to review the 'physicians act' and amended it to include the specialist board certification system for nineteen (currently twenty-four) medical specialties including neurology and neurosurgery. As a result, there are now three hundred and thirty-nine board-certified neurosurgeons who were trained by one of the current total of twenty-nine training programmes.

In 1993, the Taiwan Neurosurgical Society was founded. It evolved from the original Neurosurgical Section of the Neurological Society of the R.O.C. (Taiwan) as the number of neurosurgeons grew reasonably and steadily. The quality of the neurosurgical resident training programme is strictly assessed every year and accredited by the neurosurgical specialists training programme committee within the framework of the Taiwan Neurosurgical Society.

Other neuroscientific societies have also evolved from the original Neurological Society of the R.O.C. (Taiwan) since its foundation in 1977. Except for the Taiwan Neurosurgical Society, seven more neuroscience-related societies have been founded including the Taiwan Stroke Society in 1995, the Taiwan Neurospinal Society in 2001 etc.

In 1981, during the Seventh International Congress of Neurological Surgery in Munich, Germany, the Neurosurgical Section of the Neurological Society, R.O.C. (Taiwan) submitted its application for membership to WFNS and through its Executive Committee's full agreement, the society became one of the forty-nine members of WFNS. Even before this, Taiwanese neurosurgeons actively participated in the international congresses of WFNS and its related meetings and, of course, thereafter. In 1995, the Taiwan Neurosurgical Society, headed by C.C. Hung, hosted the Ninth Asian-Australasian Congress of Neurological Surgery resulting in a fairly rewarding benefit for all the participants.

The Academia Eurasiana Neurochirurgica is an esteemed academy founded by the joint effort of Hans-Werner Pia and Keiji Sano. In 1985, Chu-Jen Shih joined the group of founding members of the Eurasian Academy of Neurosurgery, invited by some distinguished international colleagues, in going to Bonn, Germany, and enjoyed participating in the academy's grand opening ceremony hosted by Pia. Chun-Jen Shih became a senior member several years ago. Currently, C.C. Hung and M.C. Kao are the members of the academy representing the country's neurosurgeons.

It is interesting to notice that the growth in number of certified neurosurgeons continued reasonably even after the introduction of National Health Insurance, probably because of the correct neurosurgical manpower planning within the Taiwan Neurosurgical Society to meet the needs of good quality neurosurgical care for Taiwan's present population of 23 million. Reasonable control of neurosurgical manpower and upgrading the quality of training programmes are very important.

Thailand

The Neurosurgical Association of Thailand (NAT) was founded in 1985. NAT is a scientific and educational association of neurosurgeons whose main objective is to improve the standard of neurosurgical education and practice. Another objective is to maintain contact between neurosurgeons themselves and with other associations. Quality control is also one of the main goals. Each year, with the help of the scientific committee and well-known neurosurgeons from all over the world,

NAT organized many local conferences and international congresses with special lectures and activities. It formed part of the Royal College of Surgeons of Thailand which was founded in 1975. Almost all the neurosurgeons in Thailand are members of the NAT. Nowadays, there are more than two hundred neurosurgeons in Thailand, 80% of whom are working in Bangkok at hospitals approved by Thai Medical Council. All neurosurgeons must pass the neurosurgical board examination in order to become a qualified neurosurgeon.

   The bulletin of the Neurosurgical Association of Thailand is published every two months. It contains articles that neurosurgeons find helpful in their education and clinical practices.

Vietnam

The Department of Neurosurgery in the Central Military Hospital was the first neurosurgery department in Vietnam (2). It was founded in 1960 by Professor Pham Gia Trieu who graduated from the Burdenko Institute, Moscow, Russia in 1959 having completed a postgraduate course in neurosurgery. In 1960, his publication 'Neurotrauma' was the first book on neurosurgery in Vietnamese. During many years of struggle for national liberation, this book helped generations of Vietnamese neurosurgeons as a neurosurgical textbook. In Vietnam, military hospitals take care of soldiers and civilian patients. During the war, the number of beds at the neurosurgical department was increased up to two hundred. Neurosurgical operations for neurotrauma, brain tumour, AVM, aneurysm, spinal diseases etc. were being carried out with great effort in poor conditions and with lack of equipment. At the time of the war, a number of studies was carried out especially focusing on war cranio-cerebral injuries. At the present time, most of the patients treated at the department are civilian. About 70% of the operations are spinal procedures for cervical degenerative disease, lumbar disk disease, spondylolisthesis, spinal fracture etc. There is a need to develop microneurosurgery, spinal surgery and in the near future, to create a gamma knife radiosurgery centre in the country.

Congresses of the Asian and Australasian Society of Neurological Surgeons

Year	Place		President
1st	1964	Canberra	J.D. Miller
2nd	1967	Sydney	J.D. Miller
3rd	1971	Tokyo	K. Sano
4th	1975	Manila	R.H.Gustilo
5th	1979	Bangkok	C. Suwanwela
6th	1983	Hong Kong	H.L. Wen
7th	1987	Brisbane	J.G. Toakley
8th	1991	Seoul	K.S. Choi
9th	1995	Taipei	C.C. Hung
10th	1999	Lahore	I.A. Raja
11th	2003	Singapore	B. Sadasivan

Sectional Organizations

Asian and Australasian Society of Neurological Surgeons
Sir Douglas Miller of Australia had endeavoured to promote the development of
the clinical standard of neurosurgery in neighbouring countries in East Asia. He
led teaching programmes in Singapore, India and Thailand with the support of the
Commonwealth. He established the Asian and Australasian Society of Neurologi-
cal Surgeons, and the first Congress was held in Canberra in 1964 under his presi-
dency. The Congress has been held once every four years.

Academia Eurasiana Neurochirurgica
At the occasion of the annual meeting of the American Academy of Neurologi-
cal Surgeons in New York in 1982, the German neurosurgeon, Hans-Werner Pia,
raised the idea of founding a more or less comparable organization in Europe and
Asia. Shortly thereafter he and Keiji Sano gradually developed plans for a Euro-
pean-Asian Academy of Neurological Surgery, also including Australasia. The con-
cept was explained by Pia in a letter of 3rd May 1983 which read as follows: 'Bet-
ter and special contacts and communication between academic neurosurgeons in
Europe and Asia, to discuss current problems of neurosurgical standard, training,
basic sciences, improving exchange between young neurosurgeons and, last but not
least, to increase our influence in the World Federation and other organizations'.
The name 'Academia Eurasiana Neurochirurgica' was unanimously approved, as
was the motto 'Humanitati et Arti'. The inauguration ceremony took place during
the first convention of the Academia in Bonn, 25th-28th September 1985. For the
first four years, the convention was held every year in Europe and Asia alternately,
later every two years. After Bonn (under presidency of H.-W. Pia), conventions
took place subsequently in Hakone (K. Sano), Brussels (J. Brihaye), Bangkok (Ch.
Suwanwela,), Budapest (E. Pásztor), Seoul (K.S. Choi), Copenhagen (F. Gjerris),
Sydney (N. Dan), Houthem-St. Gerlach (H.A. van Alphen), Bali (Satyanegara),
London (D. Thomas) and Nara (T. Kirino).

Asian-Oceanian Skull Base Society
The technique and the outcome of skull base surgery have progressed consider-
ably in the Asian and Oceanian countries during the last two decades of the 20th
Century. After the establishment of the International Society for Skull Base Surgery
by M. Samii in Germany, the first Asian-Oceanian Congress on Skull Base Surgery

The Asian-Oceanian International Congress on Skull Base Surgery

Year	Place	President	
1st	1991	Tokyo, Japan	K. Takakura
2nd	1993	Beijing, China	C.-C. Wang
3rd	1995	Seoul, Korea	K.S. Choi
4th	1997	Lahore, Pakistan	I.A. Raja
5th	1999	Mumbai, India	K.E. Turel
6th	2001	Tokyo, Japan	T. Kawase
7th	2004	Taipei, Taiwan	Y.K. Tu

was held in Tokyo in 1991, organized by K. Takakura. Thereafter, this Congress was held every two years.

Asian Conference of Neurosurgical Society
In order to improve the level of knowledge and technique of neurosurgeons in Asian countries, T. Kanno organized the first meeting of Neurosurgery Update for Young Neurosurgeons in Asia (NUYNA) in 1993, at Toyota, Japan. After the third meeting, the society was renamed Asian Conference of Neurosurgical Society (ACNS). The aim of this conference was to educate young neurosurgeons in Asia and also to promote mutual friendship among neurosurgeons in Asian countries. The second NUYNA meeting was held in Sapporo, Japan in 1995, presided over by K. Hashi. The first meeting of ACNS was held in Lahore, Pakistan in 1996 under the presidency of I.A. Raja. Subsequent meetings took place in Osaka, 1997 (T. Ohta), Nagoya, 2000 (Y. Kato), Hong Kong, 2002 (S. Leung and Y. Poon) and Indonesia, 2004 (E.J. Wahjoepramona).

Other organizations
During the last two decades of the 20th Century, an intimate atmosphere of friendship developed among neurosurgeons in Asian countries. The first China-Japan Friendship Neurosurgical Symposium was organized in Chongquing, China in 1990 with co-chairmen Chung-Cheng Wang and Kintomo Takakura. The second Symposium was held in Beijing in 1992 and was joined by members of the Italian Neurosurgical Society. The third Symposium was held in Shenyang in 1994. In 1996, a WFNS Educational Course was organized at the Hall of the China-Japan Friendship Hospital in Beijing, the banquet being held at the People's Grand Hall (Parliament Hall) in the centre of the city.

   Japan and Korea have also organized several friendship neurosurgical meetings. The first Japanese and Korean Friendship Conference on Surgery for Cerebral Stroke was held in Seoul in 1989. The president of the Conference was Jin Un Son of the Catholic University in Seoul. The Second Conference was held in Tokyo in 1992 under the presidency of Kintomo Takakura. Later conferences were held in

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World Federation of Neurosurgical Societies
Honorary Presidents from Asia and Australiasia

N. Dan	Australia	2001
S. Ishii	Japan	1993
B. Ramamurthi	India	1989
M. Sambasivan	India	2001
K. Sano	Japan	1973
K. Takakura	Japan	1997

Recipients Medal of Honour

J. Chandy	India	1989
H. Handa	Japan	1989
K. Shimizu	Japan	1983
K. Sugita †	Japan	1997
Ch.-Ch. Wang	PR China	2001

Seoul (Kyu Cheng Lee), in Sendai (Takashi Yoshimoto), in Seoul (Dae Hee Han), in Chiba (Akira Yamaura) and in Gyeongju (Dal Soo Kim).

Several friendship meetings of neurosurgical societies of Asia and other continents, such as German and Japanese, Brazilian and Japanese Neurosurgical Symposium etc., were also held and promoted the exchange of knowledge and technology of neurosurgery and also mutual understanding and friendship.

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Contributors (In alphabetical order)
K. Abbassioum (Iran), A. Amirjamshidi (Iran), L.R. Atkinson (Australia), S. Bhagwati (India), P.H. Binh (Vietnam), K.S. Choi (Korea), S. Dhital (Nepal), I.S. Hamm (Korea), D.H. Han (Korea), M.-C. Huang (Taiwan), H.-W. Jung (Korea), J.-K. Kang (Korea), T. Kanno (Japan), A.H. Kaye (Australia), A.M. Luyendijk-Elshout (The Netherlands), B. Pant (Nepal), B.K. Pradhan (Nepal), A.A. Rafael (Philippines), I.A. Raja (Pakistan), K. Sano (Japan), Satyanegara (Indonesia), C.-J. Shih (Taiwan), K. Takakura (Japan), T.-C. Tan (China), C. Thanapura (Thailand), B.K. Thapa (Nepal), W. Zhao (China), Y.-D. Zhao (China)