

## Mei-Shin Shih: a surgeon, master, and mentor

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### Studying medicine

Dr. Mei-Shin Shih (*Figure 1*) was born on January 5, 1918 to a literary family in Fuzhou City, Fujian Province. In his early years China was being plagued by years of fighting among factional warlords, and people were living in misery. He studied very hard and was determined to get enrolled into the Shanghai Medical College, now an affiliate to Fudan University. His name appeared on the school's admission list published by Shun Pao newspaper on August 18, 1936.

After the Anti-Japanese War broke out, the school had to be relocated again and again across the country and he finally graduated in 1943 and worked at the department of surgery as an assistant resident and teaching assistant. In 1946, he returned to Shanghai, and served as senior assistant resident at the Red Cross Hospital (now the Huashan Hospital), and later he went on to work at Zhongshan Hospital.

In 1947, Prof. Chia-ssu Huang established the department of cardiothoracic surgery in the Zhongshan Hospital and Shi soon became his right arm. Under Prof. Huang's instructions, Shi embarked on an extraordinary journey of medical explorations. It's worth mentioning that Prof. Huang personally performed two surgeries (appendectomy and phrenic nerve blockage) for Mei-Xin Shi. The inheritance of Prof. Huang's medical legacy to Shi was marked by the opening of the 7<sup>th</sup> annual conference of the Chinese Medical Association in 1947, when the two masters jointly published an important article—*Experience on Surgical Treatment for Pulmonary Tuberculosis: A Preliminary Report*. This article was published on the *Chinese Medical Journal* and later became normative guidelines for Chinese thoracic surgeons to treat tuberculosis. The inheritance of their medical legacies later became a much told tale.



**Figure 1** Dr. Mei-Shin Shih.

Dr. Shi helped Prof. Huang in the establishment of the department of cardiothoracic surgery in Zhongshan Hospital, and later he became director of the department and head of Shanghai Institute of Cardiovascular Diseases. Under his leadership, Zhongshan Hospital has developed into one of China's largest and most advanced diagnosis & treatment centers of thoracic and cardiac diseases.

### Innovations

Prof. Shi has been treating cardiothoracic diseases for decades and has dedicated his whole life to the development

of cardiothoracic surgery in China.

In 1945, a US surgeon Leo Eloesser, 19<sup>th</sup> President of the American Association for Thoracic Surgery [1936-1937], was invited to China and make a speech about the latest advances in the surgical treatment of cardiothoracic diseases. When talking about the surgery for tetralogy of Fallot, he joked to the audience that he would cut off his head if anyone else in the room could perform this sophisticated surgery.

In the newly founded China, the most sophisticated surgical instruments were not available from the West due to disembargoes. That made it extremely difficult to carry out this complicated surgery. In the first place, a very tiny and specially curved needle must be in place before the surgery can begin. Even such a needle could not be produced in China at that time.

Dr. Shih was determined to make this kind of needle by himself. He bought tiny crewel needles and heated them on the alcohol lamp so that the needles could bend. It's easy saying than doing, because quenched metals are prone to break up. After numerous failed attempts in more than 10 days, he finally made a batch of needles that could be used in the surgery. He then used the needles to perform surgeries on animals and gained confidence after several successful practices. Early in 1953, a patient with tetralogy of Fallot was admitted in Zhongshan Hospital. After making full preparations for the surgery, Dr. Shi adopted new procedures and used the self-made needles to perform the first Blalock-Taussig shunt in China.

After successful completion of the surgery on March 2, 1953, Dr. Shih did neither make it public nor make aggressive efforts to spread news about his successful practice, because what he did was not for personal gains. The surgery was not known by the outside world as the first Blalock-Taussig shunt for tetralogy of Fallot in China until the patient died 41 years later. When asked about this landmark operation, Shi said there was no special feeling after the surgery, but he indeed felt a sense of relief for he did what was once considered a mission impossible.

In addition to the first Blalock-Taussig shunt for tetralogy of Fallot in China, he also performed the many "firsts" in China's history of cardiothoracic surgery: resection of pulmonary metastases (January 1948); primary resection of lungs for the management of empyema, thoracoplasty after lung resection, ligation & division of the aberrant right subclavian artery, and substernal jejunal interposition [1953]; suturing and division of the patent ductus arteriosus [1954]; primary radical treatment for the congenital

esophageal atresia and esophago-tracheal fistula; and mitral commissurotomy via interatrial groove through right thoracotomy [1957]; direct closure of atrial septal defects under hypothermia (April 1958); homograft repair of aortic arch aneurysm [1959]; direct repair of ruptured sinus of Valsalva under cardiopulmonary bypass [1960]; resection of left ventricular aneurysm under deep hypothermic cardiopulmonary bypass, and mitral valve repair under direct vision [1962]; resection of manubrium chondroma and allograft transplantation for the cryopreserved manubrium and bilateral sternoclavicular joints (in cooperation with the Department of Orthopedics) [1970].

With his unique innovations, Dr. Shi completed many "impossible" missions for China.

Another extraordinary contribution by him was the development of artificial heart-lung machine. Due to political reasons, Western countries barred export of such machines into China at that time. Prof. Shi came up with a bold idea of independently developing the machine. He drew schematics of the machine and brought the drawings to machinery plants in Shanghai to consult experts. After more than 1 year of relentless efforts and 191 animal tests, China's first static vertical screen artificial heart-lung machine finally rolled off the production line. With this machine, Zhongshan Hospital had carried out a series of open heart surgeries since September 1959 and the safety of these surgeries was substantially improved. These domestically-made machines were later used in many medical institutions across the country and saved numerous lives.

Given Prof. Shi's remarkable contributions, the Chinese Medical Association's Society of Surgery decided in 1975 to dispatch him to attend the 26th conference of the International Society of Surgery at Edinburgh, UK. Only three Chinese attended this conference.

### Role model

In the 1950s, Mei-Xin Shi was the first to open training courses for thoracic surgeons in China and a large number of thoracic surgeons acquired skills and expertise from these training programs.

Prof. Shi was president of Shanghai First Medical College from 1978 to 1984. As a man of dedication, candor, integrity and simplicity, he had been making every effort to restore order at the college disrupted during the "Cultural Revolution". As a mentor of postgraduates, he had been tireless in teaching and trained roughly 300 thoracic surgeons from China as well as Indonesia, Mongolia and Vietnam.

Prof. Shi has been a rigorous scholar with many works to his credit. He has published nearly 100 scientific articles. He was chief editor of medical publications like *Practical Surgery*, *Illustrated Cardiothoracic Surgery*, *Atlas of Vascular Surgery*, and *Manual for Grassroot Doctors*.

He also participated in the compilation of professional medical textbooks including *Surgery*, *James Shen's Textbook of Surgery*, *Chia-ssu Huang's Textbook of Surgery*, *Vascular Surgery*, and *Cardiothoracic Surgery*. He was nearly 90 years old when editing *Practical Surgery*, a textbook that had been revised 7 times. He reviewed scripts of millions of characters and carefully read every sentence before making any revision. He would not miss any mistake, even a punctuation mark or a typo. He said even the slightest error was not acceptable for a reference book that every young doctor would have to use.

Prof. Shi was also deputy chief editor of major dictionaries like *Cibai*, *Da Cibai*, and *Chinese Medical Encyclopedia*, and he was in charge of reviewing the definition of medical terms.

What impressed us most is Dr. Shih's care and support to younger doctors. In January 2013 the Ministry of Health planned to publish *Color Illustrations for Cardiothoracic Surgery*, an important book under the key national publishing project [2011-2015]. The publishing house had already decided to name Dr. Shih as chief editor, but he insisted this honor should be granted to his student, Prof. Chun-sheng Wang. He wrote an ebullient preface for the book, saying "the book, with exquisite pictures, accurate descriptions and prominent practicality, will definitely play a positive role in conducive to deeper study on cardiothoracic diseases". In the preface he expressed a sincere hope that the younger generation can really excel their masters in terms of academic achievements.

### Life in the late years

Dr. Shih has also spent a colorful life in his late years. He set and repeatedly renewed his own record of being the oldest doctor joining in expert consultations. He and his beloved wife, Prof. Zhong-Nian Chen, who is also a medical professor, accompanied each other and led a peaceful life in their final years. Their residence was just a few meters away from Zhongshan Hospital, and students of the medical school had always met them on the way between the hospital and their house.

Compared with doctors "in the modern times", Prof. Shi looked more like a doctor of the past. He cares much

more about creation and giving than receiving or self-consummation. Once there was a proposal that he should apply to be an academician of either the Chinese Academy of Sciences or Chinese Academy of Engineering, and his application, if submitted, stands a good chance of being approved given his reputation and contribution. However, he flatly rejected the proposal. His rejection is apparently unimaginable in today's world. This might be what is supposed to be for a master of thoracic surgery.

Several months after his wife passed away, Prof. Shi also left the world he had loved so deeply, with his wisdom and his hands. Definitely, the legend of the master continues, as the Memorial Chia-ssu Huang Lecture will be held to pass down the story between the two giants in thoracic surgery in China, which was a deep wish from Prof. Shi. A Chinese's journal on thoracic disease would be honored to have their legend continue, and world widely spread.

### The life of Dr. Mei-Shin Shih

- January 5, 1918, born in Fuzhou, Fujian
- 1933-1936, studied in Gezhi High School, Fuzhou
- 1936-1943, studied at Shanghai School of Medicine
- 1943, assistant resident and teaching assistant at the Affiliated Hospital of Shanghai Medical College
- 1948, surgeon and lecturer at Affiliated Hospital of Shanghai Medical College
- 1950, medical officer during the Korean War
- 1951, helped Prof. Chia-ssu Huang establish the department of cardiothoracic surgery
- 1954, professor of surgery, director, Department of Cardiothoracic Surgery at Zhongshan Hospital, and head of Shanghai Institute of Cardiovascular Diseases
- 1978-1984, president of Shanghai First Medical College
- January 10, 2014, passed away

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