

# Hua Tuo, the Chinese god of surgery

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Buddhism was introduced into China from Tien Chu (India) around AD 68 by the Han dynasty Emperor Ming, who dreamed of foreigners entering his kingdom on white horses. Conditions of social upheaval and political unrest in the later Han period, around the second century, were conducive to the acceptance of this new religion by all strata of society. With religion came the Buddhist method of healing. Monks offered medical treatment as an ethical obligation as well as for its missionary value. Surviving works from this period bore the character *Po-lo-men* (Brahman), for example *Po-lo-men yao-fang* (medical prescriptions of the Brahman)<sup>1</sup>.

Only purely religious elements of Indian medicine gained a foothold in China. The Ayurvedic concept of *karma* and *dosa* did not find easy integration into the five elements and *yin-yang* theories of Chinese medicine.

## Early life

Hua Tuo (Figure 1) was born around AD 111 in eastern China in the state of Pei, part of the Kingdom of Wei (modern-day Kiangsu Province)<sup>2</sup>. China was in the period of San Kuo (Three Kingdoms), when the country was partitioned by the Kingdoms of Wei in the north, Su in the south-west, and Wu in the east. *Hua* is his family name, meaning "Chinese", and *Tuo* is his given name, meaning "a weight". His biography is documented fully in two of the four great Chinese historical classics: Chapter 29, *Wei-shu* (Record of Wei), in the *San-kuo Chi* (Record of the Three Kingdoms)<sup>3</sup>, and Chapter 82, *Hua-tuo Chuan* (Biography of Hua Tuo), in the *Hou-han Shu* (History of the Later Han Dynasty)<sup>4</sup>. Identical accounts of Hua's life are given in the two works. The *San-kuo Chi* was compiled by Chen Shou (died 297) during the Tsun (Jin) dynasty (220–419). Fan Hua (398–445) compiled the *Hou-han Shu* in the fifth century.

According to Chapter 39 of *San-kuo Chi*, *Fang-chi Chuan* (Biography of Artisans and Craftsmen):

Hua studied under various learned physicians in the neighbouring county of Hsu [modern-day Anhui Province]. The prime minister of Pei, Chen Kwei, and the war minister, Huang Yuan, both invited him to enter government service, but Hua declined. Hua was skilful in the art of preserving health and lived to the ripe old age of 100 but looked much younger. He was a master in prescriptions, using a few varieties of herbal medicine. He was not too meticulous in the exact weight and amount of each component, adjusting the dose according to individual cases. After preparing the ingredients, the concoction was taken by his patients; and recovery was rapid. In the practice of moxibustion, Hua applied the moxa to one or two sites only. In acupuncture, he applied the needles to one or two points, instructing his patients to inform him when they felt the needles. The needles



Figure 1. Hua Tuo (AD 111–207). (By the author, after a portrait in the Imperial Palace Museum in Beijing; original artist and date unknown.)

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were withdrawn once this response was elicited, and suffering was immediately relieved. When treating deep-seated diseased organs that could not be reached by drugs and acupuncture needles, Hua offered his patients a drink of a decoction of *ma-fei-sang* [literally, effervescent numbing powder]. When the person became unconscious, it was said that he cut open the abdomen and cleansed the bowels, cut away the diseased parts, then stitched the wound and applied a salve. The patient suffered no pain for four or five days, being up and about, and the wound healed within a month.<sup>3</sup> [Translations here and below are by the present author]

According to Hsu Ta-chun (1693–1771), the eminent philosopher and medical historian from the Ching (Qing) dynasty, Hua as a young man preferred a quiet life and was fond of reading the medical classics. He was not interested in fame and fortune. During one of his many excursions into the mountains, Hua was drunk and slept it off in a cave. Semiconscious, he overheard two elderly persons conversing. One lamented on people's greed and reluctance to help each other. The other commented that if Hua were there, he could be entrusted with the art of healing. Alarmed, Hua opened his eyes and saw two elderly sages dressed in bark clothing with grass caps. Hua bowed to them and apologized for his intrusion and his overhearing their conversation. He begged them to enlighten him on the art of healing. The first elder said:

This art can be passed on to you, but it may be of harm to you if not correctly applied. You must not discriminate between those in high or low social classes, the rich or poor, the aristocracy or the common people. You must not practise for riches alone, nor be afraid of hardship. You must see that your first priority is the needs of the elderly and the poor.

Hua replied:

I will never forget the words of a sage, and vow to follow your instructions.

Thereupon the second elder smilingly pointed to a cave on the east of the mountain:

On a stone bed you will find a book. After taking it leave the cave immediately and keep the matter to yourself. Do not show it to the world.

When Hua returned with the book, the two sages had disappeared. After leaving the mountain, the sky opened and the heavy rain caused a landslide, obliterating the caves<sup>5</sup>.

After studying the secret prescriptions in his treasure, Hua found the theories new and strange to him. Nonetheless, he followed the book's instructions and confirmed their efficacy. It was like a godsend to Hua. He made handwritten copies, which he took with him in his daily practice. The original volume was kept in a safe place at his home. After Hua's death, this item supposedly passed, eventually, into the hands of Sun Ssu-miao (581–682), the expert alchemist and specialist on leprosy, who made extensive annotations to the text. In the twenty-seventh year of the reign of the Emperor Chieng-nung (1762), of the Ching dynasty,

this ancient text was rediscovered by Hsu Ta-chung, who passed it on to subsequent generations<sup>5</sup>.

## Expertise in clinical diagnosis

The following successful cases in internal medicine and obstetrics treated by Hua are recorded in the *San-kuo Chi*<sup>3</sup>. In keeping with Chinese traditions, failures are never mentioned:

A provincial official complained of dryness of mouth, hotness of the extremities, scanty urine and phobia to noise. Hua recommended a hot drink, saying "If you perspire, you will get well. If not, you will die within three days." After taking some hot drink, the man did not perspire. Hua concluded, "The *ch'i* [breath or energy] of your internal organs is already exhausted. You will die." It turned out as Hua predicted.

A retired postmaster was sick. After Hua examined his pulse, he advised his patient, "Your body is still weak and not fully recovered. Do not engage in strenuous activities. Otherwise you will die with your tongue protruded." The patient died after three days.

An army officer was forced to retire because of ill health. He returned to his native village and on the way lodged with a relative, who was a friend of Hua. After examining the patient, Hua said, "If I had seen you earlier, you will not have ended up like this. Your illness is terminal. Go home quick to see your family, for you will die within five days." The patient immediately set out on his trip. Later events proved Hua right.

Another military officer, named Li Shing, developed persistent coughing of blood and inability to sleep. He consulted Hua, who diagnosed a tumour of the intestines. The source of blood was not from the lungs but from the gut. After taking two drams of medicine, this officer vomited two pints of bloody pus and felt better. Hua warned him to take good care, for the disease would relapse within 18 years. Hua also gave him a supply of medicine to be taken in the event of a relapse. Five years later, a relative of Li developed similar symptoms and begged for the medicine which Hua prescribed, promising to obtain a new supply from Hua later. Out of sympathy, Li gave the medicine to his relative. Eighteen years after the first incident, Li was ill again. By that time, the King of Wei had imprisoned Hua. Li dared not approach Hua and so he died from lack of medication.

A provincial minister was chronically sick and lethargic. Hua accepted his fees but did not give any medical advice. Hua then took leave with a note reprimanding his patient. As expected, this minister was so enraged that he sent his soldiers after Hua. Although pacified by his son, this minister was still angry. After vomiting several pints of stale blood, the minister was cured.

The military commander of Kwan-ning [modern-day Kiangsu Province], General Chen, was ill with chest discomfort, redness of face and loss of appetite. Hua examined his pulse and told him, "There are many worms in your stomach producing ulceration. This is due to eating stale food." Hua prepared two pints of herbal medicine and administered it to the patient in two doses. Shortly after, the patient vomited three pints of parasitic worms with a red head and fish-like body. Hua predicted that this disease would relapse after three seasons. Eventually the officer was ill again. As Hua was away, this officer died.

A woman suffered intermittent fever for several years. When Hua saw her in the wintry eleventh lunar month, he made her sit in a stone trough and ordered 100 buckets of cold water to be poured over her. The patient was quite sick after the eighth bucket. Her attendants were afraid but Hua ordered them to

continue. When 80 buckets of water had been poured, clouds of steam issued from the patient, rising to a height of two to three feet. Upon completion of the hundredth bucket, Hua placed the patient on a bed with a heated mattress and covered her with thick warm blankets. The patient perspired profusely and was cured when her sweat dried up.

The wife of the Mayor of Pang was bitten on her hand by a scorpion in the washroom at night. Hua immersed her hand in nearly boiling water, maintaining the water temperature by continually adding hot water. Her pain was relieved.

The wife of an ex-prime minister of Gan-nin [modern-day Shantung Province] was six months' pregnant. Hua was summoned to see her for her abdominal pain. After examining her pulse, Hua diagnosed intrauterine death, and asked her maid to palpate the position of the fetus. If it was to the left, it was a male; if it was to the right, a female. He was told the position was to the left. An abortifacient was prescribed, a male fetus was delivered, and the patient was cured.

The wife of General Li was feeling unwell after parturition. Hua examined her pulse and said, "The pregnancy is harmed but the fetus is still alive." The General replied, "The fetus has died." However, Hua insisted that the fetus was alive. One hundred days later, the lady was in pain again. Hua was summoned and he diagnosed twin pregnancy from pulse examination. Hua commented, "The first-born child caused the loss of a considerable amount of blood. Hence the second twin died of lack of blood. Neither the mother nor the midwife noticed this before. The mother developed low back pain. I shall prescribe medicine and apply acupuncture." Afterwards the patient was in intense labour pain. Hua said, "As this fetus has been dead for a long time, manual extraction is needed." A male stillborn child was delivered measuring one foot long with well formed limbs.

## Surgical exploits and the introduction of anaesthesia

According to legend, while gathering herbals in the wilderness, Hua noticed a wounded deer staggering to a pasture. After grazing on the herbs, the animal seemed relieved of its discomfort. Out of curiosity Hua tasted several plants and found a few that made his mouth numb. This was how he was reputed to have stumbled upon the properties of certain herbs which formed the basis of his famous anaesthetic agent *ma-fei-san*<sup>6</sup>. The following cases illustrate Hua's application of anaesthesia in surgery<sup>3</sup>.

A physician was suffering from abdominal pain. Hua said to him, "Your illness is serious and should be treated by opening the abdomen. However you will live for only 10 years. In the meantime the illness will not be fatal." As the pain was unbearable, the patient submitted to surgical operation. Although temporarily recovered, the patient died 10 years later.

A man suffered from pain in the flank for 10 days, with loss of hair, beard and eyebrows. Hua said, "One half of your spleen is rotten. You can be treated only by surgical operation." After drinking *ma-fei-san*, the patient was unconscious and Hua opened the abdomen. The diseased part of the spleen was removed. A salve was applied to the wound. Oral medication was prescribed and the patient recovered after 100 days.

The 20-year-old daughter of the military commander of Honei [modern-day Shantung Province], General Liu, suffered from a chronic painless but itchy ulcer over her left knee for seven to

eight years. The ulcer healed for a month then relapsed. Hua procured a yellow dog and two horses. He tied a leash to the neck of the dog and to the heels of the horses and drove the animals away. After running for 30 miles, the dog could no longer keep up with the horses. It was then dragged by people for a further 20 miles. Hua offered the girl a drink that rendered her sleepy. The groin of the exhausted dog was cut open and applied one to two inches from the knee ulcer. Attracted by the smell of blood, there emerged from the ulcer a snake-like worm. A hook was passed through its head. After the worm wriggled for a while, it was extracted. The parasite measured three feet long with an eyeless head and scaly body. A healing ointment was applied to the ulcer. Healing was complete after seven days.

A man had been suffering from headache, dizziness and blurring of vision for years. After being examined by Hua, the patient was hung upside down with his head one to two inches from the floor. He was wrapped in thick clothing. When the veins of the patient became dilated, Hua performed venesection. The patient was lowered and Hua applied an ointment. The patient was then covered with blankets until he perspired. A medicine containing canine blood was offered to the patient, who was cured afterwards.

While on a trip, Hua saw a man in a carriage by the roadside suffering from dysphagia. Before transfer to a clinic, Hua advised the family, "Go and buy some garlic from the bakery, and mix it with vinegar. Drink three pints of the mixture and you will be cured." After following Hua's advice the man vomited a bolus of worms and was relieved of his suffering. Upon visiting Hua's residence to offer thanks, Hua was not in. When Hua returned, he was invited into the house. On one wall hung more than 10 specimens of worms similar to the ones which he vomited earlier.

There was a man with paralysis of his legs. Hua marked 10 moxibustion points on his back at random intervals of one to five inches. After igniting the moxa, the patient could walk again. On looking at the back, the blisters lay symmetrically one inch from the vertebral column as if they had been aligned by string and drawn in ink.

In the last case, the points are known as "the paravertebral points of Hua Tuo" and are still in use today in acupuncture.

The most famous surgical feat of Hua was his operation on General Kuan Yu. This legendary event was described in Episode 75 of the semi-fictional *San-kuo Yen-yi* (*Romance of the Three Kingdoms*) by Lo Kuan-chung during the Ming dynasty (1368-1644):

In the siege of the city of Fen, General Kuan flooded the plains to encircle the opposing forces of Tsao Yen [younger brother of Tsao Tsao] of the Wei Kingdom. Kuan was wounded in his right arm by a poison arrow shot from the enemy. His staff were worried because of the progressive deterioration of his condition until a stranger visited the camp. This person came on a boat, introduced himself as Hua Tuo and offered to treat the general. After examining the wounded part, Hua diagnosed poisoning by *wu-tau* [root tuber of *Aconitum carmichaeli*] smeared on the tip of the arrow. He recommended a surgical operation. As Hua was concerned that his patient would be unable to withstand the pain, he suggested passing the general's arm through a ring, tying him up with ropes and covering him with a blanket. Kuan refused, saying that as he was not afraid even of death, he would be operated on without any restraint. In order to divert his attention, a game of go was arranged with his chief-of-staff, Ma Liang. A colonel was ordered to hold a bowl under the arm

to collect blood. During the operation Hua found the tissues poisoned down to the bone, which had turned green. He carefully removed the arrow and scraped away the diseased muscles and bone. After suturing the wound, he applied an ointment to it. General Kuan felt no pain at all during the operation and he offered a reward of 100 taels of gold to Hua for his remarkable service. Hua refused, saying that it was his duty to offer his service to the righteous.<sup>7</sup>

This event has since been a popular theme for paintings and sculptures (Figure 2). A similar account is given in the *San-kuo Chi Su-shu* (*Record of Su*):

Kuan Yu was hit by a stray arrow in his left arm. Although the wound had healed, the arm hurt during wet and rainy weather. His physician diagnosed poisoning of the bone and advised an operation to scrape poison from the bone in order to cure the condition. Kuan held out his arm and ordered his physician to do the job. Meanwhile, Kuan was entertaining his staff to dinner. He ate roast meat and drank wine despite blood dripping from his wound.<sup>8</sup>

The identity of the physician was not revealed here.

Historians, however, have cast doubt on Hua's involvement in this case, because the siege of Fen occurred in 209, and Tsao had had Hua executed in 207 (see below). Kuan is the symbol of loyalty and righteousness in Chinese popular culture, and Hua is regarded as a god of surgery. Both are still worshipped in temples by their respective followers. Kuan is the patron of the military, law enforcers and martial arts practitioners; the laudatory term of "Hua Tuo reborn" is still bestowed on any great physician. It is the tradition of Chinese folk culture to associate and deify popular heroes regardless of historical facts<sup>2</sup>.

The exact nature of this legendary anaesthetic agent *ma-fei-san* has been the subject of considerable investigation and interest. Most Western experts conjectured that the main components were extract of *Papava somniferum* (the opium poppy)<sup>9</sup> or *Cannabis indica* (hashish)<sup>10</sup>. A Japanese source recorded the following ingredients<sup>2</sup>:

one catty of *man-to-lo* (*Datura metel*, datura);  
four *liang* (four-tenths of a tael) each of *tang-kuei* (root of *Angelica sinensis*, Chinese angelica);  
*tsao-wu* (root tubers of *Aconitum carmichaeli*, acorite);  
*hsiang-pa-chi* (*Angelica anomala*, angelica);  
*chuan-hsiung* (rhizome of *Ligusticum wallichii*, Szechuan lovage);  
one *liang* of the stem tuber of *tien-nan-hsing* (*Arisaema consanguineum*, jack-in-the-pulpit).

From Hua Tuo's own prescription is the following recipe<sup>5</sup>:

*yang-chi-chu ken* (root of *Rhododendron molle*, yellow azalea) – three *liang*;  
root of *mu-li-hua* (*Jasmina sambac*, sambac) – one *liang*;  
*tang-kuei* (root of *Angelica sinensis*, Chinese angelica) – one *liang*;



Figure 2. Hua Tuo (standing, left) operating on General Kuan Yu (seated left at table), as described in a scene in *San-kuo Yen-yi* (*Romance of the Three Kingdoms*). (Drawing by the author.)

*chiang-pu* (*Acorus calamus*, sweetflag) – three *chin* (three-tenths of a *liang*);  
all ingredients boiled in water down to one rice bowl (Figure 3).

### Final days

Because of his fame as a physician and acupuncturist, Hua was summoned to be the personal physician of the notorious Tsao Tsao (Cao Cao), the King of Wei. Tsao had been suffering from migraine. During each attack he was cured by Hua by means of acupuncture. After some time Hua became unhappy in his incarceration. He yearned to go back to his native village. He told his master that his wife was severely ill and requested permission to take leave. As Hua failed to return upon expiry of his leave, despite repeated summons, Tsao sent his agents to investigate. He ordered a gift of 40 bushels of peas to Hua if his wife was truly ill. If Hua had lied, he would be arrested and beheaded. One of Tsao's ministers interceded on Hua's behalf, begging Tsao to show clemency in view of Hua's extraordinary skill as a physician. However, Tsao replied, "Do not worry. There are plenty of such cowardly rats in my kingdom." Before his execution, Hua offered the prison warden a copy of his medical writings, saying, "This book can save lives." The warden was afraid of repercussions and dared not accept the offer. Hua subsequently burned the book<sup>3</sup>.

After Hua's death, the ever-suspicious Tsao suffered from migraine again. He pondered, "If Hua were here, he would have cured my illness. Yet if I had not ordered his execution, he might have refused to cure my illness." Later, when Tsao's favourite son was critically ill, Tsao declared

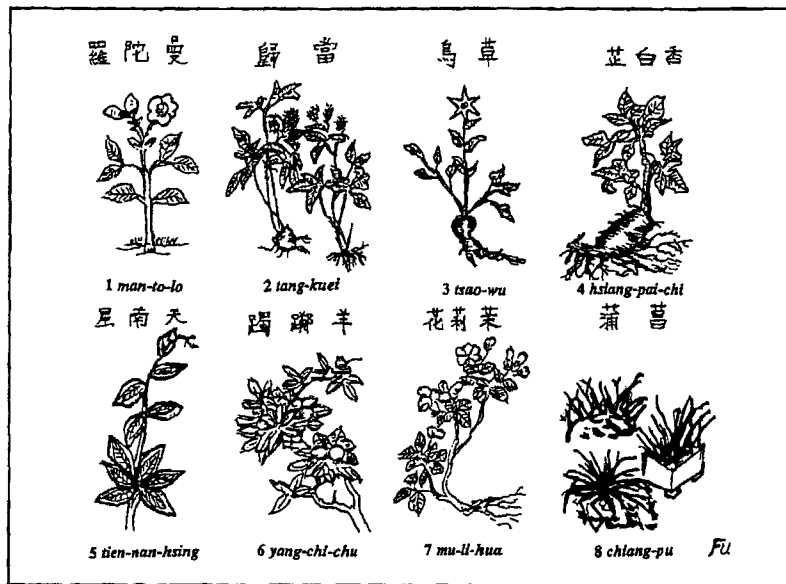


Figure 3. Illustration of the principal botanical ingredients of ma-fei-san, from the Pen-tsao Kang-mu (Compendium of Materia Medica) by Li Shih-chen (1518–1593): 1 man-to-lo, 2 tang-kuei, 3 tsao-wu, 4 hsiang-pai-chi, 5 tien-nan-hsing, 6 yang-chi-chu ken, 7 mu-li-hua, 8 chiang-pu. (Drawn by the author based on a facsimile of a seventeenth-century Kiangsi edition in the author's library.)

“My execution of Hua is responsible for my son’s death!”<sup>3</sup>

With the death of Hua, Chinese surgery died with him. Hua Tuo had two disciples, Wu Pui and Fan Ah. Wu followed his master’s principles and practice to good effect. Hua told him:

Man’s body should regularly exercise, but only in a correct manner. Exercises render the dissipation of ingested cereals and promote the flow of blood. Disease will not occur, just as the scaffolding of a building or running water remains incorruptible. The ancient sages exercised their necks and back to keep the joints mobile and to retain longevity. I have devised a system of physical exercises which I named “the Game of the Five Animals,” namely tiger, deer, bear, ape and bird [Figure 4]. These exercises will prevent disease and mobilize the limbs. After performing them, sweat will lighten the body and increase the appetite.<sup>3</sup>

By performing these gymnastic exercises, Wu lived to 90 years of age and still retained strong teeth, sharp eyesight and acute hearing.

Fan was an expert acupuncturist. The space between the chest and spine was a “no-man’s-land” for acupuncturists. Most dared to puncture to a depth of four-tenths of an inch, whereas Fan penetrated to one or two inches in the back and up to five or six inches in the chest. All his patients were cured. Hua gave Fan a formula consisting of a concoction of the leaves of the varnish tree (*Rhus vermiciflua*), *huang-chi* (root of *Astragalus membranaceus*) and *ti-huang* (rhizome of *Rehmania glutinosa*). The properties of these were to purge parasites, facilitate the five internal organs (heart, lungs, spleen, kidneys and liver), reduce body weight, and prevent greying of hair. This secret formula was revealed by sages to travellers who lost their way in the mountains<sup>3</sup>.



Figure 4. Diagram of the “Games of the Five Animals” as advocated by Hua Tuo: top, left to right, bear, deer and tiger; bottom, bird and ape. (Drawing by the author based upon a description in the San-kuo Chi.)

### Discussion

From the accounts of Hua’s life in the *San-kuo Chi* and *Hou-han Shu*, it is evident that Hua was a medical practitioner in all specialties. The account of his unique application of anaesthesia in surgery tends to overshadow his overall achievements. The title of “god of surgery” reflects but one aspect of his many contributions<sup>11</sup>. Hua’s therapeutic armamentarium consisted of drugs supplemented by

acupuncture and moxibustion. His reputation as a surgeon rests solely on two cases of laparotomy, two cases of therapeutic abortion and two cases of worm purging<sup>12</sup>.

Hua Tuo is the only surgeon of note in 5000 years of Chinese history<sup>13</sup>. Where he learned his techniques remains conjectural. That he obtained secret instructions from sages in a mountain cave belongs to the realm of mythology. A more recent suggestion was that Hua might have come from India, where there was a strong tradition of surgical practice in the works of Susruta<sup>14</sup>. At least Hua could have been influenced by Sanskrit medical writings brought into China by Buddhist monks from India.

The frequent references in Chinese and Western literature to Hua's practice as an early example of surgery probably present an exaggerated picture of the actual practices in China<sup>15</sup>. Although minor surgery and castration of eunuchs and domestic animals were common practices, the Confucian doctrine of the sacredness of the human body and the prohibition of anatomical dissection hindered the further development of the great traditions of Hua. The seeds of surgery sown by isolated individuals had fallen on sterile soil<sup>15</sup>.

Castration was first mentioned in China around 1000 BC. At first used as a punishment for serious crimes, it was later adopted for the "preparation" of male servants – eunuchs – for the imperial household. This operation was based on the observation that sexual activity and reproduction depended on the presence of the gonads<sup>16</sup>. As the eunuchs served the ladies and concubines of the emperors and princes, their lack of masculinity was essential to the "interests" of the male members of the royal family. This unethical operation – mutilating without a medical or religious indication – was abolished with the establishment of the Republic of China in 1911. These "surgeons", as shown in the following description, attained remarkable skill and speed in this procedure:

When about to be operated on, the patient is placed in a semi-supine position on a broad bench. One man squatting behind him grasps his waist, and another is told to look after each leg. Bandages are fastened tightly around the hypogastric and inguinal regions, the penis and scrotum are three times bathed in a decoction of pepper pods, and the patient, if an adult, is solemnly asked whether he repents or will ever repent his decision. If he appears doubtful he is unbound and dismissed, but if his courage has held out, as it usually does, all the parts are swept away by one stroke of a sickle-shaped knife, a pewter-plug is inserted into the urethra, and the wound is covered with paper soaked in cold water and firmly bandaged. The patient, supported by two men, is then walked about the room for two or three hours, after which he is permitted to lie down. For three days he gets nothing to drink or the plug is removed from the urethra. At the end of this period the dressings are changed, and the accumulated urine is allowed to escape. The parts generally heal in about 100 days. About 2% of all cases prove fatal, some by haemorrhage, some by extravasation, and some doubtless by sepsis. For a long time there is incontinence of urine.<sup>17</sup>

The excised parts were preserved in a porcelain container and eventually returned to the eunuch on his retirement. Upon death, the person would be buried with the specimen in accordance with the Chinese belief that the body must enter the next world intact.

## Conclusion

In Chapter 29 of the *San-kuo Chi*, apart from the biography of Hua, there are biographies of four other persons, each skilful in his own field. These include a musician, a fortune-teller, a dream-interpreter and a sorcerer<sup>3</sup>. The chapter concludes with the "mystical nature" of the technical skills of the five persons documented. That a medical practitioner is placed in the same category as a sorcerer and fortune-teller reflects the lowly status of medicine in ancient China.

In every culture there existed advanced thinkers on the threshold of important discoveries, some of whom actually practised the correct principles. Only these people or their immediate pupils took advantage of such progress, as a result of which their ideas were soon forgotten and submerged in a sea of ignorance and prejudice<sup>18</sup>.

It would be wrong to attribute the decline of surgery in China to a lack of skill in subsequent generations. Castration of animals and men had been widely practised centuries before Hua Tuo. That the great traditions of Pien Chueh and Hua Tuo were never continued was due to the low position accorded to surgeons in later centuries. The deterioration of surgery in China was chiefly due to the prohibition of anatomical dissections, which are indispensable to the progress of surgery<sup>18</sup>. Surgery has no tradition in China and thus did not displace indigenous medical practices. Shigeru Nakayama noted the lack of study of anatomy and surgery in China. He suggested that:

surgical operations were unknown in Chinese medicine, because it had no need of them; it possessed the superiority of internal therapy, making unnecessary all operations and even anatomy.<sup>15</sup>

Chinese medicine placed its emphasis upon prevention of disease and the general wellbeing of the body.

It was not entirely the superiority of Chinese internal medicine that led to the neglect of surgery: the Confucian views of the sacredness of the human body opposed any tendency towards the development of anatomy and surgery. Because of a deeply rooted aversion to the shedding of blood, together with the belief that mutilation of the body continues in life after death, surgery has never developed in China<sup>19</sup>. Because of the religious stigma attached to the practice of surgery, the social position accorded to the surgeon became increasingly lower and this made a revival of Chinese surgery impossible<sup>20</sup>.

Traditional Chinese medical practices progressed up to a certain point, only to stagnate as

time progressed. Any scientific work done consisted, with rare exceptions, mainly of subtle commentaries on old medical writings, which led nowhere. Whereas in Europe the medical profession gradually freed itself from the tethers of tradition and broke new grounds, in China a vicious cycle of circumstances obstructed the evolution of the medical sciences. Innovators in medicine were keen to guard their secrets, which were transmitted only to their heirs. Medical practitioners were looked upon as artisans or craftsmen, placed in the same category as quacks, sorcerers and fortune-tellers, to be summoned and dismissed at will<sup>18</sup>. Chinese physicians could not rise to positions of authority and power because both local and central government were tightly controlled by an imperial system of district magistrates. Furthermore, the desire to pass formal state examinations had displaced the pursuit of learning<sup>21</sup>. It came as no surprise that the medical profession failed to attract men of good character and intelligence, instead recruiting its new blood from a class unfit for literary or official positions. Although many scientific inventions and original ideas originated in China, these have been "reinvented" at a later age in the West. Ancient Chinese scientists never pursued a single subject in a way calculated to lead them to final success<sup>9</sup>. In China, the pursuit of the sciences was relegated to the periphery of intellectual endeavour.

## References

- 1 Unschuld PU. *Medicine in China: A History of Ideas*. Berkeley: University of California Press, 1985: 132-48
- 2 Chen CY. *History of Chinese Medical Science*. Hong Kong: Chinese Medical Institute, 1968: 36-9
- 3 Chen S. *San-kuo Chi [Record of the Three Kingdoms]*. Beijing: Zhong Hua Shuju (Chinese Book Company), 1959: 799-804
- 4 Fan H. *Hou-han Shu [History of the Later Han Dynasty]*. Beijing: Zhong Hua Shuju, 1965: 2724
- 5 Hua T. *Hua-tuo Shen-i Pei-fang [The Secret Prescriptions of the God of Medicine Hua Tuo]*. Kaohsiung, Taiwan: Sheung Chi Publishers, 1993: i-ii
- 6 Shih CC. *Chung-kuo I-hsueh Shih [History of Chinese Medicine]*. Taipei: Cheng Chung Book Company, 1984: 44-7
- 7 Lo KC. *San-kuo Yen-yi [Romance of the Three Kingdoms]*. Hong Kong: Commercial Press, 1995: 511-12
- 8 Chen S. *San-kuo Chi*. Beijing: Zhong Hua Shuju, 1959: 941
- 9 Guthrie D. *A History of Medicine*. London: Thomas Nelson & Sons, 1945: 344-8
- 10 Garrison FH. *An Introduction to the History of Medicine*. 4th edn. Philadelphia: WB Saunders, 1929: 73-7
- 11 Chao PS. *Zhong-kuo Gudai Yi-xue [Ancient Chinese Medicine]*. Beijing: Zhong Hua Shuju, 1997: 55-7
- 12 Yamada K. *Yoru no Tori [Nocturnal Birds]*. Tokyo: Iwanami Shoten (Rock Ball Book Company), 1997: 256-67
- 13 Wong KC, Wu LT. *History of Chinese Medicine, Being a Chronical of Medical Happenings in China from Ancient Times to the Present Period*. Shanghai: National Quarantine Services, 1936: 51-6
- 14 Ellis H. Surgery and manipulation. In: Porter R, ed. *Medicine: A History of Healing*. New York: Barnes & Noble, 1997: 120-1
- 15 Veith I. *The Yellow Emperor's Classic of Internal Medicine*. Berkeley: University of California Press, 1966: 2-4
- 16 Zimmerman LM, Veith I. *Great Ideas in the History of Surgery*. Baltimore: Williams & Wilkins, 1961: 68-73
- 17 Wong KC, Wu LT (op. cit. ref. 13): 234
- 18 Wu LT. Past and present trends in the medical history of China. *Chinese Med J* 1938;53:314-22
- 19 Ackerknecht EH. *A Short History of Medicine*. Revised edn. Baltimore: Johns Hopkins University Press, 1982: 43-6
- 20 Wong KC. China's contribution to medicine in the past. *Ann Med Hist* 1926;8:192-201
- 21 Huff TE. Science and social organization in China. In: *The Rise of Early Modern Science*. Cambridge: Cambridge University Press, 1993: 287-320