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History of Thoracic Surgery in Iran

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ABSTRACT

The field of thoracic surgery is a postgraduate sub-specialty of general surgery and has developed considerably in Iran during the recent decades. Nowadays, thoracic surgery procedures are performed by specialists who have been trained specifically in this field and the quality of care given is in line with international standards. This paper addresses the history of thoracic surgery in Iran.

Data were collected through interview of professors, review of archives and personal albums and data present in the council of medical education. Almost 80 years ago, general surgeons used to perform thoracic surgical procedures. But closed-circuit anesthesia was not prevalent in Iran until 1940 and there was no training available in the country for thoracic surgeons. Antibiotics were not available and surgeons were not acquainted with new methods to evacuate the pleural space (chest tube and under water seal drainage). The only procedures performed were limited to management of emergencies, trauma and abscess drainage. Surgical intervention for treatment of tuberculosis in some patients was one of the factors responsible for development of this field of surgery.

General surgeons trained abroad that came back to Iran were familiar with the principles of thoracic surgery and would perform it. In some army medical centers and some centers affiliated to foreign countries, thoracic surgeries were performed by Iranian or foreign physicians. Professor Yahya Adl used to perform thoracic surgeries and taught it to his residents. In 1951, Dr. Sadegh Ghazi and shortly after, Dr. Anwar Shakki started operations in Bou-Ali and Abo-Hossein Hospitals at the request of the TB charity foundation. They were the pioneers who started to perform TB, lung and thoracic surgeries. They were educated in France. The period of 1951-1961 can be considered as the initiation period of thoracic surgery as a subspecialty in Iran. Afterwards, this field was extended to the Masih Daneshvari, Sorkheh Hesar and army medical centers. In early 1950, cardiac and vascular surgeon graduates from the USA and other countries who had returned home established the field of thoracic surgery at Tehran University and other universities. Thus, official training in this field was started. In 1984, thoracic surgery became a postgraduate sub-specialty field approved by the medical education council. Thus far, over 80 physicians have graduated in this field most of which are working in academic fields throughout the country. Tehran, Shaheed Beheshti and Tabriz Universities of Medical Sciences have departments approved for training thoracic surgery fellows. In many universities and several medical centers, trained surgeons have established thoracic surgery wards and are working in this field. (Tanaffos 2007; 6(2): 80-91)

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INTRODUCTION

The history of Iranian medicine is replete with evidence which confirms that physicians paid much attention to lung diseases. Iranian Muslim physicians such as Ibn-Sina or Avicenna (980-1037 A.D.), Razi or Rhazes (865-925 A.D.) and Ahwazi paid attention to signs and symptoms of tuberculosis, pneumonia, esophageal cancer and empyema, and their signs and symptoms. They even performed surgical interventions to treat diseases and thoracic lesions (1,2). A tremendous number of manuscripts were written by Iranian Muslim physicians used for centuries as a reference and textbook in many universities throughout the world. Hippocrates was the first to propose evacuation of pus from the pleural space. Then, Galen was doing the same (3, 4) Razi was not only draining the liquids from pleura, but also used simultaneous medical interventions to accelerate recovery.

The Dar al-founon school was established in 1851 by Mirza Taghi Khan Farahani (Amir Kabir). Establishment of this school had two major impacts on development of science and technology. The first was the application of new science and technology under the supervision of European instructors.

Students trained at Dar al-founon became familiar with the European and American sciences. The first students enrolled at Dar al-founon were mostly from well-to-do families of authorities and aristocrats. Some went abroad to continue their education. After returning each became renown in their field of study and some established new fields of medicine in the country (5,6).

The second impact was separation of traditional medicine from the academic education. This had a negative effect on Iranian traditional medicine (TM). Although Iranian medicine was still taught at Dar al-founon (Ibn Sina's "Ghanoon" and "causes of the body ailments" were the main text books of medicine) however European medicine was

dominant in hospital wards. TM decline was followed by the establishment of Tehran School of Medicine in 1939. Traditional medicine superior for centuries, was gradually disregarded. The peak of feedback of Dar al-founon graduates was during 1901-1931. Several fields of medicine were established in those years. The first surgical procedure in European- style has been conducted by the Austrian, Dr. Polak in Iran. After the death of Kloke (Naseredin Shah's private physician), Dr. Polak took over and started to teach surgery at Dar al-founon. Surgical operations conducted by him were unique and their reports were published in national newspapers of that time (7). Thereafter, surgical operations were performed by other European physicians and their Iranian trainees. After establishment of Sina Hospital (governmental hospital) in 1872 proper conditions were met for performing surgical operations. In the late 19th and early 20th century, Dr. Hossein Khan Motamed performed important operations such as laparotomy and cholecystectomy routinely at Sina Hospital (8,9).

However, in early 20th century, general surgical operations were not conducted probably due to two main reasons:

Firstly, closed circuit anesthesia which had been recently introduced in Europe and America, was not known in Iran and secondly, thoracic surgery was not a separated field of surgery and even physicians who had been trained abroad and were instructors at Dar al-founon school, had not trained sufficiently and independently in this field.

The initiation of thoracic surgery in Iran was somewhere between the years 1921-1951. Two factors were responsible for development of thoracic surgery in the afore-mentioned period of time:

- 1) Efforts made for treatment of TB patients
- 2) General surgeons trying to perform thoracic surgeries.

During 1951-1961, thoracic surgeries were performed in several medical centers. Academic education in this field was first started at Tehran University and after that in other universities independently.

The Modern Era

A) *Efforts to treat TB patients:*

The status of TB and TB patients was pathetic in the early 20th century. Ibn Sina and Razi's traditional medicine had been replaced by ambiguous and superstitious opinions. Many forms of treatments were performed in each city most being useless and sometimes harmful (10).

Treatment methods such as collapse therapy which were popular in European countries were unknown in Iran and were only prescribed for some aristocrats and princes by foreign physicians. The first steps for helping TB patients were taken in the early 20th century. Dr. Masih Daneshvari (1899-1976) completed his education in the field of pulmonology and tuberculosis and returned to Iran in October 1934. His return was a turning point in initiation of modern treatments in the field of tuberculosis in Iran. Shah Abad Sanitarium was established as recommended by Dr. Daneshvari in 1937 (Figure 1) (11).



Figure 1. Dr. Masih Daneshvari is opening the Shah Abad Hospital (17 Aug. 1937).

Before Dr. Daneshvari, Dr. Siavash Shaghghi, a Switzerland University graduate had made some efforts to manage this disease. Dr. Mohammad Ali Nashroodi who had been educated in the field of pulmonology and tuberculosis in France, was selected as the instructor to teach TB therapy at Tehran University Medical School and regular university training in the field of TB and pulmonology was started according to European standards (Figure 2) (12).



Figure 2. Dr. Mohammad Ali Nashroodi.

The society for supporting TB patients was established in 1943 under the directorship of Seyed Mohammad Sadegh Tabatabaei the former parliament speaker and donations of 30 generous people including Dr. Masih Daneshvari. Establishing this association helped in collecting donations for treatment of TB patients and establishing medical centers for treatment. Considering the abundance of TB patients in Shah Abad Sanitarium, the need for establishment of other medical centers was felt. Through encouragement of Dr. Masih Daneshvari

and with the help of generous people (i.e. Seyed Firouz Abadi, Haj Asemi and some generous businessmen), another hospital was established in Shahr-e-Ray for hospitalization of TB patients (Poosti Hospital). But since the location of this hospital was unsatisfactory because of air pollution, another hospital was established in Bagh Emamieh by the Ministry of Health and the help of Dr. Masih Daneshvari in 1945 namely Bou-Ali Hospital. In 1953, the "Pulmonary Disease Center" was established in Tehran, Park Shahr Ave. with the collaboration of WHO, Ministry of health and Red Lion and Sun (Now Red Crescent Society). Dr. Khalil Falsafi was the administrator of the hospital. A French epidemiologist namely professor Shall was responsible for education and research at this center. Some of the TB control programs were implemented in this center, and portable radiology devices (minography) were used for further diagnosis. Also, BCG vaccination, tuberculin test and drug prescription were performed at this center. Of the educational activities of this center, holding 6-month courses of continuing education on TB can be named. With the help of generous people and the society for supporting TB patients another hospital (Abo-Hossein Hospital) was established next close to the Bou-Ali Hospital in 1951. Among the main goals of establishing this center was to focus on lung surgeries and tuberculosis. Therefore, Dr. Mohammad Ghazi Tehrani (Figure 3) (who was well educated regarding lung surgery and TB in France) was invited to come back to the country and work at this hospital. Also, Dr. Anwar Shakki started to work at Abo-Hossein Hospital (Figure 4) and surgical treatment of TB patients and those with other pulmonary diseases was undertaken (13,14). Most pulmonary and TB surgical operations between the years 1951-1971 were performed at these centers and

a considerable number of interested students were attracted to these centers to learn lung surgery.

University education of medical students regarding tuberculosis existed even before the modern organization of medical schools (1939) (15). Since the early 1940s, tuberculosis has been taught to medical students in their 5th year of medical training (16).



Figure 3. Dr. Mohammad Ghazi Tehrani (b. 1921).



Figure 4. Dr. Anwar Shakki (1913-2003).

Rigid bronchoscopy and biopsy were performed after 1961 by Dr. Mohammad Ibrahim Dehghan at Sina Hospital which was headed by the late Professor Yahya Adl. In early 1960s, the Armys' Sanitarium (called No. 505 Army Hospital) was renovated. This hospital had been established next to the Shah Abad Sanitarium in the 50's as the Army's TB hospital. Dr. Mohammad Goran who had been educated in England in the field of pulmonology and internal medicine and Dr. Javad Tabatabaei played a main role in renovation of this hospital. At the site of the previous Sanitarium a modern hospital with a laboratory, radiology and surgical ward was established. Dr. Karamatollah Farhoodi was the chief of the internal medicine ward. Before the establishment of the No. 505 Hospital's surgical ward, surgical procedures of pulmonary and TB patients were performed in the 502 Army Hospital which was managed by Dr. Nezam-Addin Jazairi and Dr. Hassan Rahmani whom had been trained by professor Mono (Dr. Sadegh Ghazi and Dr. Anwar Shakki had been trained by this Professor as well).

Also, Dr. Abbas Fahid performed thoracic and cardiac surgeries at this hospital (1961-1971). After the establishment of the surgical ward at the 505 Hospital, Dr. Hassan Rahmani was transferred from the 502 to 505 Army Hospital and continued his work with Dr. Manoochehr Khojasteh (who had been trained by Dr. Anwar Shakki and Dr. Hashemian) (17).

After Dr. Goran, Dr. Hassan Rahmani and then Dr. Javad Tabatabaei were the administrators of the 505 Hospital. After renovation, the bronchology ward was established in this hospital and new devices were used in Dr. Ghazi's ward. Educational activities were also performed by Dr. Ghazi, Dr. Tabatabaei and others by making movies and preparing color slides of bronchial images and publishing

manuscripts (18). They had learned it from the Laennec Hospital in Paris where they accomplished their specialty training.

B) Conducting thoracic surgical operations by general surgeons:

In 1939, Dr. Yahya Adl returned to Iran following completion of his education in France and started to work at Tehran University. He was one of the first surgeons who had come back to Iran after his specialty training in surgery in Europe (France) and he was skilled in the new surgical techniques. Dr. Hossein Motamed was the first Iranian professor of surgery. He was the instructor of surgical training at Sina Hospital in the 1920s and 1930s. He was born in 1886 and studied medicine at the Dar al-founon Medical School. He had his surgical training at Sina Hospital under the supervision of Dr. Ilberg from Germany. Dr. Ilberg was the chief of the Sina Hospital's surgical ward before World War I.

He left Iran at the onset of World War I and Dr. Motamed took over his position. Many of the pioneer surgeons in the country (i.e. Dr. Ghazi and Dr. Anwar Shakki) owe their first surgical trainings to Dr. Motamed. Although Dr. Motamed is the first Iranian surgeon who conducted a gastrectomy and lumbar sympatectomy in the country, but in contrast to Dr. Adl apparently he did not perform thoracic surgeries (19). At that time, thoracic surgery had become a distinct entity in the US by the efforts of Churchill, and Sweet and had influenced Europe (Belsi) as well (20). Professor Adl had become familiar with thoracotomy and lung resections in France. He was of the first surgeons who conducted pulmonary hydatid cyst surgery, esophageal cancer surgery and even cardiac surgery in Iran. Parts of general surgical training were thoracic surgery (21). It is interesting to note that Dr. Adl's thesis for doctoral degree in 1938 was about treatment of tuberculous adenopathy (22). Surgical treatment of lung abscess and pleural diseases were previously

taught in medical college and Dar al-founon.

The main obstacle preventing thoracotomy in that era was lack of familiarity with closed circuit anesthesia. To eliminate this obstacle, Prof. Adl employed a specialist from France who was capable of inducing closed circuit anesthesia. He performed the first surgery with this method in Sina Hospital in Tehran (23). The first group of professor Adl's students performed these procedures. But most of these surgeons were conducting operations according to the old methods and closed circuit anesthesia was not used. To prevent pneumothorax, thoracotomy was performed in two stages. First, without opening the pleural space, one rib was removed and iodine tincture was rubbed in place.

After 2-3 weeks, thoracotomy was performed. Rubbing iodine tincture would cause inflammation and adhesion at the site of surgery and prevent pneumothorax during or after the operation. Prof. Adl believed in thoracic surgery as a specialty. When Dr. Anwar Shakki started his work Prof. Adl referred cases of lung surgery to him (24). Despite Prof. Adl, there were other surgeons who performed lung surgery in that time. For example, Dr. Javad Heyat performed lung hydatid surgery on a patient in 1952 in Vijeh Hospital (located in Darvazeh Ghazvin, later renamed as Meymanat Hospital) (25). Dr. Aman Pour was the anesthesiologist in this operation and anesthetized the patient by mask using N₂O and ether. After the operation the patient developed vast subcutaneous emphysema in the chest wall and neck. Dr. Heyat spent almost a whole week in the hospital at the patient's bed side and suctioned the air collected in the pleura. The patient finally recovered. He reported and published the case in the Medical News Journal in March 1953. In spite of performing thoracic surgery operations, there was no organized plan for education in this field. Also, no surgeon would perform thoracotomy routinely or was considered a specialist in this field. This situation in

1940s was similar to the situation in Europe and the US one or two decades earlier. For example, the thoracic surgery ward of Laennec Hospital in France was established in 1935 (26). In the US, this field had been separated earlier and official training of thoracic surgery there was started in 1936 (27).

Beginning of thoracic surgery:

The decade from 1951-1961 can be considered the initiation period of thoracic surgery in Iran. With the efforts of the society for supporting TB patients and Dr. Masih Daneshvari a contract was made in the Iranian embassy in Paris so that Dr. Sadegh Ghazi would come to Iran and stay for 5 years and perform lung surgeries in Tehran Bou-Ali Hospital.

Dr. Anwar Shakki joined him later. They both had accomplished a complete course of lung surgery in France and were experts in this field of specialty. In 1940s Bou-Ali and Abo-Hossein Hospitals converted into the centers for lung surgery in Tehran. The focus was on TB surgery and its complications. Several procedures were performed in these hospitals and new methods such as bronchoscopy were employed. Pneumonectomy, lobectomy, abscess drainage, thoracoplasty, hydatid cyst evacuation and other procedures were performed daily. These hospitals were referral centers for patients requiring thoracic surgery and also a place for physicians to gain experience and train in this field. Dr. Ghazi was not only an expert in thoracic surgery but also had complete proficiency in pulmonary internal medicine and the diagnosis and treatment of TB. He also lectured in this field. Internal medicine specialists were coming to this center for lung diseases and tuberculosis training courses. Dr. Anwar Shakki was expert in thoracic surgery and spent most of his time performing these surgeries and trained many physicians. At that time, Tehran University had no academic educational program in the field of thoracic surgery and no specific ward for such cases. Although Bou-Ali and Abo-Hossein Hospitals were

not university hospitals, interns, residents and some physicians from Tehran University and other governmental and non- governmental centers were coming to this center to become familiar with lung surgery and treatment of TB. These trainees helped in development of this field in other centers. In those years, closed circuit anesthesia necessary for performing thoracic surgery became prevalent and therefore, a big obstacle preventing development of this field was removed. Dr. Far and Dr. Mortazavi who were anesthesiologists were employed by the Tehran University (late 1960s). They were familiar with closed- circuit anesthesia and went to Bou-Ali Hospital to induce anesthesia for Dr. Ghazi and Anwar Shakki's operations. This joint collaboration made the use of closed-circuit anesthesia more common in surgical operations and eliminated its related clinical problems.

Establishment of thoracic surgery as a subspecialty in universities and other centers occurred during 1961-1981:

In early 1960, a combination of factors resulted in the development of thoracic surgery.

Dr. Ghazi and Dr. Anwar Shakki's activities familiarized interested surgeons with thoracic surgery. Also, use of closed circuit anesthesia, eliminated the obstacle of anesthesia in these operations. Some general surgeons came to Bou-Ali Hospital and became familiar with methods of thoracic surgery and then went to Europe or the US to continue their education. When they came back to the country, they started to work as thoracic surgeons. Of these physicians, Dr. Manouchehr Rahbar, Dr. Abbas Fahid, Dr. Hassan Rahmani and Dr. Abdollah Taaghoul can be named. On the other hand, some cardiac, vascular and thoracic surgeons who had been educated in the US were invited to Iran by Tehran University and other governmental centers.

These surgeons were familiar with both cardiac and thoracic surgeries. Of this group, Dr. Hamid Etebar is more prominent (Figure 5).



Figure 5. Dr. Hamid Etebar.

In early 1970, he started to perform thoracic surgeries as the chief of the cardiac, vascular and thoracic ward of former Pahlavi Hospital (Now Imam Khomeini Hospital) and allocated several beds to thoracic surgery. He started to train residents in this field. Dr. Amir Mansour Roushan Zamir, Dr. Davoud Kazemi, Dr. Sarkis Sarkisian and Dr. Jahangir Mir-Ala were among this group of surgeons at the Tehran University (28).

Dr. Farrokh Saidi returned to Iran in 1961 and started to work at Nemmazee Hospital affiliated to Shiraz Medical School. Dr. Saivash Sehhat came back to Iran in 1967 and started to work at Isfahan medical college (29). Dr. Mohammad Reza Nassizadeh started to work in Tabriz in 1969 (30). Dr. Fathollah Hokmi came to Tehran in 1970 (31). These surgeons had completed a course on cardiothoracic and were experts in both fields. Surgeons who had been employed by Tehran University were inclined towards cardiac surgery, due to the suitable conditions provided for

performing cardiac surgery at Tehran University. Other surgeons who were employed by other centers (Farrokh Saidi, Mohammad Reza Nassizadeh, Siavash Sehhat) were also attracted to thoracic surgery and established thoracic surgery wards in the upcoming years. They had a main role in training residents and fellows. From Tehran University, Dr. Amir Mansour Roushan Zamir and Dr. Fathollah Hokmi were attracted to thoracic surgery.

In this decade, the first conferences, lectures and manuscripts regarding thoracic surgery were presented. Clinical and educational activities were combined (18). It was first started in Tehran University. Dr. Manouchehr Rahbar who was assistant of Dr. Hamid Etebar in early 1960 was inclined towards thoracic surgery and became an expert in this field under his supervision. After completion of residency, he was employed at the same ward as an assistant professor of thoracic surgery and proper conditions were met for establishment of thoracic surgery as an independent field at Tehran University recruiting residents. Up until 1973, there was no independent ward for thoracic surgery at Tehran University but a few beds specific for thoracic surgery were present in different wards. A few residents had been trained in this field and obtained a specialty degree. Of these specialists Dr. Abbas Ghasempour, Dr. Gholami, Dr. Moosa Zargar and Dr. Manouchehr Khojasteh can be named.

In 1973, Dr. Eghbal's Hospital (renamed as Valiasr Hospital) was established inside the former Pahlavi 1000- bed Hospital (now Imam Khomeini Hospital) and an independent thoracic surgery ward was established there and Dr. Hamid Etebar became the chief of this ward.

General physicians were introduced to this ward as thoracic surgery residents and after 5 years of training became thoracic surgeons. The entrance exam was held by Dr. Etebar. In this 5-years period, general surgery and thoracic surgery were both

taught to residents and graduates received a thoracic surgery specialty license. Among the first graduates of this course, Dr. Gharavi and Dr. Seyed Mohammad Reza Fakhraei can be named. This form of training was not suitable for residents, because they were in an odd situation. They neither had a good position in the university like those cardiac and thoracic surgeons who had been graduated abroad nor did they have independence in their field of study like general surgeons who had specialty degree in their field after 4-years of training. Most thoracic surgeries were conducted by general surgeons or cardiac surgeons who had not taken training courses in thoracic surgery and their clinical experience in this field was insufficient. Later, with the efforts of Dr. Ghasempour and Dr. Fakhraie this educational course was divided into two separate fields of general surgery (4 years period) and thoracic surgery (2 years). General physicians would apply for this 6-year course and the prerequisite for training in thoracic surgery was board certification in general surgery (32).

After the establishment of the thoracic surgery ward in Dr. Eghbal's Hospital, thoracic surgery became a separate field and a large number of patients were referred to this center from different hospitals. Large mediastinal, esophageal, pulmonary and thoracic operations were continuously performed and clinical problems in this field were manifested (33). Its positive and negative aspects as well as its attractions and distractions became apparent. But two issues were yet to be solved. The first was the fact that since both chiefs of this ward, Dr. Etebar and Dr. Rahbar were cardiac surgeons, naturally there was always a tendency towards cardiac surgery in this ward and second was the point that although graduate residents had accomplished a 2- year course in addition to 4 years of general surgery, their position in the society did not match this laborious period of hard work. People did not know much about thoracic surgery and both general and cardiac surgeons were

conducting thoracic surgeries and did not consider themselves less qualified than thoracic surgeons. Thoracic surgeons were not only separated from general surgeons' society, but also were not cardiac surgeons either.

This situation had negative impacts. Many thoracic surgeries were performed by general and cardiac surgeons while they had less expertise in this field compared to thoracic surgeons. The executive, economical and social requirements for development of thoracic surgery were not provided. Some of these graduates started to work as general surgeons and some enrolled in cardiac surgery courses. In those years, pulmonology had not been developed as a specialty field, and there was not much clinical collaboration between pulmonology and thoracic surgery as it is today. This had a negative impact on the position of thoracic surgeons as well and decreased the referral of patients to them.

At that time, thoracic surgery developed at other universities in the country but the situation at those centers was some how different from Tehran University.

In 1969, Dr. Mohammad Reza Nassizadeh returned to Tabriz following his education in the US and Canada. At that time, cardiac surgery had developed in Tabriz due to the efforts of Dr. Abbas Gholi Daneshvar. But thoracic surgery was not known. The thoracic surgery ward was officially established by the management of Dr. Nassizadeh in the mid 1970s and since then expert specialists have been trained in this field. After the beginning of Dr. Nassizadeh's activities in 1969, Tabriz University's general surgery residents were instructed in the field of thoracic surgery and therefore, most general surgeons graduated in those years were experts in performing thoracic surgeries. After 2-3 years, Tabriz became a referral center for patients requiring thoracic surgeries from west and northwest areas of the country. Also, Dr. Nassizadeh trained several fellows and started to work in this field independent

of cardiac or general surgery and helped in independence and development of this field in Tabriz (Dr. Vahid Montazeri, Dr. Abolfazl Shirin zadeh, Dr. Mohsen Sokouti, etc).

Dr. Farrokh Saidi started to work in Shiraz Nemazee Hospital in 1961 and after a few months was employed by the Shiraz Medical University (34) (Figure 6). He was a US graduate cardiothoracic surgeon, interested in training residents and was expert in this field. Although an official ward for thoracic surgery was not established at Shiraz Medical University, Dr. Saidi performed thoracic surgeries in Shiraz in 1960 and residents were trained in this field. Patients were referred to Shiraz from south and southeast areas of the country. Pulmonary hydatid cyst surgery was taught to general surgery residents. At that time, this disease was prevalent among the tribes of Fars province and Iranian surgeons were not familiar with its surgical treatment methods.

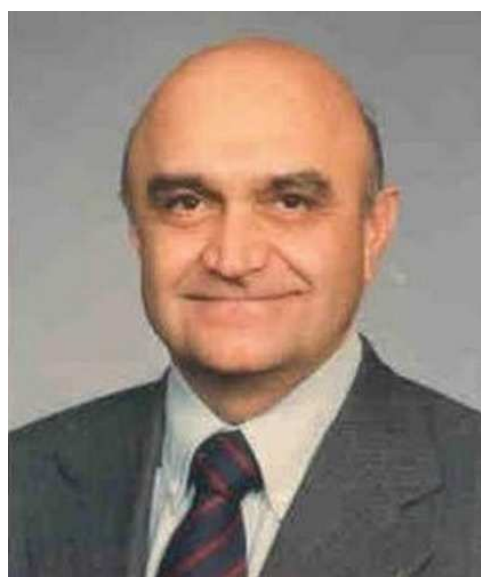


Figure 6. Dr. Farrokh Saidi, (b. 1930).

Dr. Farrokh Saidi offered valuable medical services to these patients and performed research projects in this regard. He was also appointed as the dean of Shiraz Medical School but due to some

disagreements with the university authorities, he did not remain in Shiraz and moved to Tehran. Later in 1987, he established an official thoracic surgery subspecialty ward in Tehran Shaheed Modarres Hospital (Shaheed Beheshti University of Medical Sciences). The first graduated residents in this ward were Dr. Azizollah Abbasi, Dr. Noor-e-din Pirmoazen, Dr Mehdi Fakharpour, Dr. Manouchehr Aghajanzadeh, Dr. Gholam Reza Nouri, and Dr. Mohammad Behgam Shadmmehr.

The situation of Dr. Siavash Sehat in Isfahan was similar to that of Dr. Farrokh Saidi. He started clinical activity in Isfahan in the field of thoracic surgery in 1967 (35). He was interested in training residents and general surgery residents of Isfahan medical school were trained in the field of thoracic surgery under the supervision of Dr. Sehat and thoracic surgery services were offered to patients as well. Khuzestan and the city of Ahwaz did not have any thoracic surgeon till 1983. The presence of expert general surgeons such as Dr. Manouchehr Dawaei, Dr. Kamkar Parsi and Dr. Abdol-Aziz Eftekhari in 1960s and 1970s obviated this need. Although these surgeons had not been officially trained in the cardiothoracic field, they were expert in performing thoracic surgeries and offered services to the patients of these deprived areas. They also tried to teach their skills to general surgery residents. Dr. Seyed Mohammad Reza Fakhraei graduated from Tehran University, moved to Ahwaz in 1971 and started to work in Ahwaz University and as the first thoracic surgeon in Ahwaz offered valuable services to the patients especially during the imposed war.

In Mashad, Dr. Mohsen Azimi who had accomplished his training in the field of thoracic surgery in Paris established the first thoracic surgery ward in this city at former Shahnaz-e Pahlavi (now called Ghaem Hospital) Medical Center and then Dr. Fereydoon Mahdavian and Dr. Bahman Motarjem joined him.

In Kerman, TB and pulmonary patients were admitted to Morsalin Hospital which had been established by the English Missionary in 1901. The first surgeon who had been officially trained in this field was Dr. Habib-o-llah Farrokhi who started to work at former Pahlavi Hospital (now Shaheed Bahonar Hospital) in 1956. He had been trained by Dr. Ghazi and Dr. Anwar Shakki in the field of thoracic surgery during his surgical residency and the first thoracotomy in Kerman was performed by him in 1962. In this operation, the ribs were separated by the assistant's hands (instead of rib retractor) and the lung incision was sutured by cotton suture. Since the patient's blood type matched the surgeon's (B+), the surgeon himself donated blood to the patient. After that, thoracic surgery was only performed in case of trauma and emergencies and anesthesia was mostly induced by ether. The first thoracic surgeon (Dr. Masoud Baghaie) resided in Kerman in 1995. Before him, most thoracic surgeries including hydatid cyst surgery, abscess drainage and decortication were performed by general surgeons (37).

Rigid bronchoscopy, tracheal surgeries and foreign body extractions were performed by ENT specialists (38). At Army Medical Center surgeons such as Dr. Abbas Fahid and Dr. Hassan Rahmani performed thoracic surgeries in early 1950. Another center in which thoracic surgeries were performed during those years was Sorkhe Hesar Hospital in Tehran. In the period of 1940 to 1960 this hospital (like Bou-Ali and Masih Daneshvari Hospital) was of the main referral centers for pulmonary and thoracic patients. Physicians like Dr. Ardeshtir Babak Samiei, Dr. Nezam-Addin Jazairi, Dr. Mohammad Hatami Zadeh and Dr. Colina (from Philippine) offered valuable services in the field of thoracic surgery to the patients (39-41).

Establishment of thoracic surgery subspecialty field:

The 22nd session of the Medical Education

Council of the Ministry of Health in October 1984 approved the subspecialty fields (42). These fields were cardiac, neonatal and thoracic surgery.

Therefore, thoracic surgery was officially separated from cardiac surgery which led to stabilization of both fields and their scientific development. The thoracic ward of Valiasr Hospital located at Imam Khomeini Hospital, was the first ward that was officially approved. After the approval of this field, board examination of thoracic surgery became national and the board of examiners was established.

The requirements for enrollment in thoracic surgery field were board certification in general surgery and passing the entrance exam for this field. Those who succeeded became thoracic surgery fellows and after accomplishing a 2-year course participated in the final exam. After successfully passing the exam, they were given license of thoracic surgery subspecialty. After Tehran, Shaheed Beheshti (1987) and Tabriz (1988) universities were approved for training. From 1984, every year several fellows graduated in this field and started their activity at university and non- university centers. Independence of this field and scientific and clinical activities of graduates all over the country have resulted in qualitative and quantitative improvement of this field and patients are offered services comparable to the international standards. Today, complicated thoracic surgeries are performed in the majority of major hospitals in the country and there are good opportunities in most universities for clinical, educational and research activities in this field.

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