



## EDITORIAL

# Orthopedic History in Iran: Ancient, Contemporary and Modern Times

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### Ancient Iran

Signs of pierced skulls and healed broken bones have been found in the archaeological site of “Shahr-e Sūkhté” (the Burnt City), a large Bronze Age urban habitation located in Sistan and Baluchistan Province at the southeastern part of Iran, going back to over 4000 years ago. The treatment of patients in ancient Iran was mostly carried out by the spiritualist clergymen (1).

Abu Bakr Mohammad Zakaria Razi, Razes, (854–925) has described joint sprains, fractures and bone anomalies in his “The Kitab al-HawiFi Tebb”. He was the first to use plaster casts for fracture immobilization. Later, Avicenna (980-1037) used tractions and splints for fracture management. He also used plaster casts, mummies and bitumen to support and protect fractures (1).

Rashid al-Din Fazlullah Hamedani (1247–1318), the powerful vizier of Ghazan, established and endowed “Rab-e-Rashidi”, the clinical teaching complex in Tabriz, where orthopedic training as well as the management of fractures was also carried out. However, the establishment was looted and destroyed after the execution of Rashid al-Din Fazlullah. Thereafter, medicine was long declined in Iran, and there was no other place in the name of hospital where patients could be treated (2).

### Contemporary Iran

Bonesetters have been in charge of treating the fractures and dislocations in Iran during the previous century, however, they have been unofficially trained by their predecessor therapists. After foundation of the general surgery department at Tehran Medical School in 1935, the orthopedic patients were gradually managed by the general surgeons (3). They used to perform closed reduction and cast fixation for fracture managements. Furthermore, limbs amputations in lethal bone tumors and gangrenes, limb abscess drainage, and plaster casts for limb and spine tuberculosis treatment

were also common. The medical school curriculum had no separate orthopedics subjects at that time; instead, general surgeons were teaching bone and joint related conditions such as dislocations, fractures, and infections.

Professor Yahya Adl (1909-2003) was presumably the first to manage the thigh fractures using a Küntscher’s nail [Küntscher’s nail, a long steel nail inserted down the long axis of a long bone into the marrow in order to fix a fracture (G. Küntscher, German orthopedic surgeon, 1902 – 1972)] at Sina hospital in Tehran in 1940 (4). He had brought the nails from France and used them to treat femoral fractures. Lack of facilities at the time pushed him to remove the nails from the thighs of patients after healing to re-use in the other patients. This procedure was employed by his residents and gradually turned into a standard approach in Iran.

The return of the trained Iranian orthopedic surgeons from the Western countries was a new era in orthopedic surgery in Iran. Afterward, orthopedics was known as a discipline in medical field. Dr. Khosro Samiei, Dr. Amir Kiya, Dr. Moshiri-Yazdi, Dr. Mohammad Masoud, and Dr. Shojaeddin Shaikholeslamzadeh were in the first group of orthopedic surgeons to come back to the country from the USA and Europe in 1950s (5).

The first orthopedic department which independently admitted orthopedic patients was established in “the Social Security Organization Hospital No. 2” on Old Karaj road; while patients in university hospitals were used to be admitted to the department of general surgery. Shafa Yahyaeiyan Hospital on Jaleh Street, Tehran, was the first orthopedic hospital in Iran which was established in 1970.

When Amir-Abbas Hoveyda, the prime minister, got his knee fractured in a car accident in the summer of 1964, he was operated by Dr. Masoud and Dr. Shaikholeslamzadeh in Pars hospital. This was a great opportunity to ask the prime minister to establish a center for treatment of

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the handicapped patients (which was mostly due to the increased incidence of poliomyelitis at the time). The order of prime minister and persistent efforts of both surgeons resulted in the establishment of the Iranian Society of Rehabilitation in 1967 with Dr. Shaikholeslamzadeh as the director, where ten orthopedic surgeons used to manage the referred handicapped patients (5, 6).

Management of handicapped patients in a single general hospital until the establishment of a well-equipped center was a suggestion by Dr. Weis, the eminent Polish Professor of Orthopedics and Rehabilitation, who was invited to see the handicapped patients in Iran. As so, the newly reconstructed rehabilitation hospital, Shafa Yahyaeiyan, was selected. Few other Iranian graduates from England and the United States joined the existing orthopedic surgeons in this hospital. In winter of 1969, 12 orthopedic surgeons, 3 rehabilitation specialists, 5 anesthetists, and 2 general surgeons, all graduated from well-known universities of Europe and North America, started to treat the handicapped patients in "Shafa Rehabilitation Hospital".

I (the senior author) joined this hospital a few months later, after getting my degree from the United States in early 1970. From the very beginning, the hospital was a well-organized center with regular grand rounds, weekly conferences, journal clubs, and seminars. Every month, one of the iconic professors of orthopedics from the United States was regularly being invited to attend the daily rounds, operation theater, clinics, and weekly conferences in order to guide the Iranian orthopedic surgeons. The Day-Care Rehabilitation and the Constructing Artificial Limb centers were established in this hospital after a few years. The School of Nursing and the School of Rehabilitation were also established at the same time. Considering the best facilities available in this hospital and the need for the orthopedic education, a postgraduate program was started in order to train the residents in orthopedics in this center and I (the senior author) was appointed as the chairman of the program. The center was ready to accept the orthopedic residents in 1971 through an entrance examination. Due to the fame of the hospital, many candidates enrolled in this examination; out of which only 6 residents were selected. Meanwhile, other hospitals such as Sina and Reza Pahlavi (now Shohada of Tajrish), Shiraz University, and Melli (now Shaheed Beheshti University) announced their readiness to start their postgraduate training programs in orthopedics. Gradually, different medical schools in Mashhad, Tabriz and Isfahan established independent orthopedic departments. Moreover, Farahnaz Hospital as the first orthopedic center affiliated to the Melli University (now Shaheed Beheshti) was established in Sevvom-e-Esfand Street in Tehran, which was then shifted to the American Hospital (presently named as Akhtar Hospital).

The graduating orthopedic residents gradually started to join different universities and private practice. The cooperation between the orthopedic surgeons throughout the country in postgraduate training programs since 1976 increased the number of postgraduate orthopedic residents. Then, some of these new graduates joined other medical schools in different provinces and established

independent orthopedic departments.

As a result, the orthopedic subject was thought by the orthopedic surgeons in separate orthopedic departments in all medical schools throughout the country. A one-month training course in orthopedics became mandatory for all undergraduate medical students with some of the interns choosing to undergo this training period.

After the Islamic Revolution in 1979, many of the overseas-trained orthopedic surgeons left Iran; while some others together with those who were trained in Iran preferred to stay in the country. They organized and managed all previous orthopedic training programs in such a way that the newly trained surgeons could manage very well a huge number of the limbs and spinal injuries imposed Iraq-Iran war (1980-1988).

Some of these surgeons were sent to Europe and North America in 1980s to receive sub-specialization degrees in hand, spine, knee, and shoulder surgery. They established their respective subspecialized centers after returning back to the country. By their efforts, all orthopedic subspecialty training programs were established in different universities and now even modern orthopedic surgeries can be performed in Iran.

### **Modern Iran Education**

Currently, there are orthopedic departments in almost all medical schools in Iran, and the course is taught by qualified orthopedic surgeons. The postgraduate 4-year residency training program in orthopedics is available in 18 other universities as in Tehran (including Tehran, Shaheed Beheshti, and Iran universities), Isfahan, Shiraz, Tabriz, Mashhad, Ahwaz, Kerman, etc. The selection of candidates is based on a centralized examination held by the Ministry of Health, Treatment, and Medical Education while 90 to 120 residency candidates are selected every year throughout the country.

The Board of Orthopedic Surgery was established in 1974 and currently has 19 members including professors and associated professors from different medical schools. The National Board Exam is held once a year.

Currently, orthopedic fellowship training programs in spine, knee, hand, hip, tumor, arthroplasty and pediatrics are accredited in major universities including Tehran, Iran, Shahid-Beheshti and Shiraz universities.

### **Clinical practice**

Nowadays around 3000 orthopedic surgeons are practicing in most cities even small ones throughout the country. The diagnostic and therapeutic facilities are at a satisfactory level and most modern orthopedic procedures are being performed in the country.

### **Society**

The Iranian Society of Orthopedics was established with a few members before the Islamic Revolution in 1979. The scientific conferences were used to be held monthly; however, soon after the revolution, these scientific sessions were cancelled as many of the orthopedic surgeons immigrated to the foreign countries. During this period, the medical schools throughout the country

were home to weekly and monthly sessions as well as the annual conferences. Later in 1995, the Iranian Society of Orthopedics was reestablished and restarted to hold regular monthly scientific sessions as well as the annual meetings. The society started to publish its own first

journal in Persian language. Currently, a few international English language journals are being published by the Societies and major universities. Several independent orthopedic research centers affiliated to the universities are also available.

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