

## History of Contemporary Medicine in Iran

# The Persian Legend of Ophthalmology: Ali Asghar Khodadoust and His Everlasting Lines

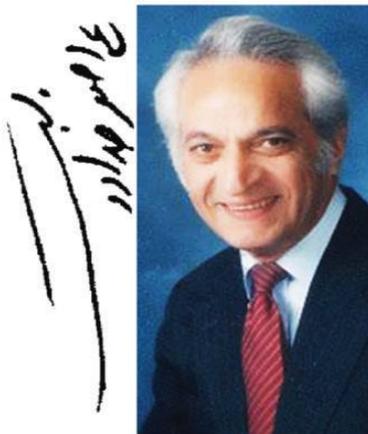
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## Abstract

This is a brief celebratory overview of the fruitful life and scientific endeavors of Professor Ali Asghar Khodadoust (b.1935), a world renowned ophthalmologist, Persian icon of modern ophthalmology and an international pioneer of eye research. The global reputation of Dr. Khodadoust is rooted in his extensive studies on corneal diseases and transplantation biology. As a result of his truly deserved world renown, several famous American ophthalmologists have recognized him as the world's best corneal graft surgeon. Due to his exceptionally impressive achievements in this field, a clinical finding has been named in his honor, the "Khodadoust rejection line", a sign indicative of a chronic focal transplant reaction.

**Keywords:** Iran, ophthalmology, cornea, Khodadoust line, History of Medicine

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**"Never tell a human being that he is blind – if a man's eye sight is dead, you should light his rays of hope and enliven his soul."**  
Professor Ali-Asghar Khodadoust (b.1935)

## Introduction

Professor Ali Asghar Khodadoust is an eye researcher and medical practitioner. This 77-year-old international ophthalmologist is, indeed, the most appreciated legendary Persian icon of ophthalmology. At the international level, his glorious

name has always shown at the top of the list of the most outstanding Iranian ophthalmologists, one of the pioneers of world eye research. This paper aims to present an abridged outlook on the fruitful life and scientific endeavors of such an exceptional physician who has dedicated his life to ophthalmology and his country, Iran.

## Life and career

Professor Khodadoust was born in 1935 in Shiraz, Southwest Iran, an old historical city.

In 1952, he passed the entrance exam with high scores at Shiraz Faculty of Medicine, the first university in Shiraz, which was inaugurated in 1952. This institution replaced the former Medical Auxiliary Training School (*Amouzeshgah-e Alee Behdari Shiraz*), which was founded in 1946. After six years of medical courses, in 1958 he began his residency at Nemazee Hospital in Shiraz to become an eye, ear, nose, and throat specialist.<sup>1-3</sup>

A government grant in 1959 sent him, along with a few other exceptional students, to the United States (US) to continue his medical education. Four years later, on June 28, 1963, he became the first foreign resident of ophthalmology at the prestigious Wilmer Eye Institute (WEI), Johns Hopkins University (JHU). Graduating in 1964, he first worked as a lecturer for one year and in 1965, he became an assistant professor of ophthalmology.<sup>2</sup>

WEI desired that he remain. However in 1968, due to his ardent patriotism he could no longer stay away from his beloved country and returned to Iran. Some years later Professor Edward A Maumenee, a former director and protagonist of the WEI, reminisced about Dr. Khodadoust in his personal notes and acknowledged that he was their best resident ever.<sup>3</sup> Within a few months after Dr. Khodadoust began his research at the University of Shiraz, the JHU ophthalmology dean visited Shiraz to sign a contract for mutual exchange of residents in clinical ophthalmology. This continued until 1979, efficiently leading to huge advances in education and research at Shiraz University. Due to the terms of this contract, Iranian residents could

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**Figure 1.** **A)** A number of Iranian ophthalmologists alongside Professor Khodadoust (center). Left to right: Drs. Fesharaki, Golshani, Riazi, unrecognized, Khodadoust, Moezzi, and Aminlari; at the American Academy Meeting in New Orleans, LA, USA, 1985. **B)** Ophthalmology residents and scientific staff of the Eye Department at the main portal of Poostchi Hospital, Shiraz University, Shiraz, Iran, 1978. Front row (left to right): Shahi, Setayesh, Franklin, Khodadoust, Ashrafzadeh, Aminlari, Farpoor, Karandish, and Helmi. Middle row (left to right): Ebizadeh, Rezvan, an eye resident from Mashhad University, Roozitalab, Hekmatian, Eshghi, Fesharaki, and an eye resident from Mashhad University. Back row (left to right): Modarres, Mughal, Kalantarinejad, Sarkisian, Razmjoo, Nejabat, Azadi, and an eye resident from Mashhad University. **C)** Professor Khodadoust (Fourth person from the right) among a number of residents and administrators of varied ophthalmology centers at the main portal of Farabi Eye Hospital, Tehran University of Medical Sciences, Tehran, Iran. **D)** Professor Khodadoust, while examining a patient in an Iranian eye center.

pass their fellowship course in the US each year; in return, American residents were able to study the science of clinical ophthalmology in Shiraz, Iran. Also in 1968, the American Academy of Ophthalmology (AAO) approved the Shiraz ophthalmology curriculum, including a residency entrance exam, Educational Commission for Foreign Medical Graduates (ECFMG), which corresponded to that in the US.<sup>2,3</sup> In this regard, Shiraz achieved a status higher than some American eye institutes.<sup>2</sup> This grand global success proudly represented the level of education at the Shiraz Department of Ophthalmology.<sup>2,3</sup> Many Shiraz ophthalmology graduates passed the US ophthalmology board exam with excellent scores. For years, the majority of graduates of Shiraz and other universities gravitated towards Shiraz University's Department of Ophthalmology, the best of who were introduced to Wilmer Institute for one year as participants in their fellowship course. Upon their return, most were employed as instructors at the University of Shiraz.<sup>2</sup>

For 12 years, 1968 to 1980, Professor Khodadoust spent half of each year performing research at WEI. Additionally, he was invited to teach at an international level from Peru, Ecuador and China to Italy, Turkey, Syria and Oman.<sup>2</sup>

In 1979, the Shiraz-Wilmer affiliation program was terminated due to some unfortunate conflicts. Professor Khodadoust immigrated to the US in 1980 where he continued his work as a Professor of Ophthalmology at WEI.<sup>2</sup> Two years later, in 1982 he became Director of Ophthalmology at the University of Cecil.

Despite his immigration, Dr. Khodadoust never missed an oppor-

tunity to return to Iran, at least twice yearly, to serve and improve the educational and therapeutic curriculums in Iran (Figures 1).<sup>3</sup>

In 1988 he realized the growing demand for a well-equipped eye hospital in the Middle East, at the national and international level to give Iran and its neighboring countries the most efficient visual healthcare. He founded one of the most reputed eye centers in Iran, the Dr. Khodadoust Eye Hospital which has remained active and had an impact since its inception. It was planned that the revenue from this non-profit foundation be spent for its upkeep and development. At present, numerous ophthalmologists have been educated and practiced at this hospital (Figure 2).



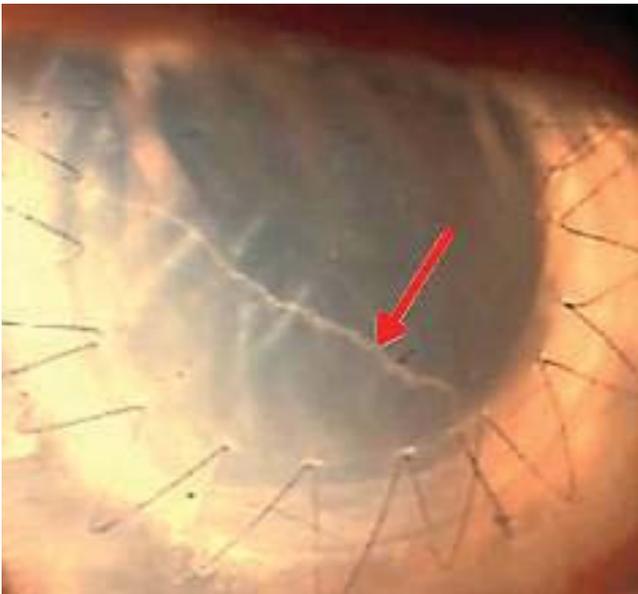
**Figure 2.** Dr. Khodadoust Eye Hospital, Shiraz, Iran.

In 1992, Dr. Khodadoust founded the Connecticut Eyecare Center of New Haven, and as Director, continued his practice and research.<sup>2,3</sup>

Dr. Khodadoust performed numerous eye surgeries in different hospitals throughout Iran such as Shahr Hospital in Shiraz, and Khatam-Al-Anbia and Mostafa Khomeini hospitals in Tehran.<sup>2,3</sup>

He has supervised varied specialty operations such as cataract, refractive, strabismus, and oculoplastic surgeries. However, as a global master of anterior segment surgery, he has performed over five thousand corneal transplants and mentored hundreds of eye surgeons worldwide. His favorite technique in these operations is a most challenging procedure (the 24 bite running suture method) which demands an extensive range of expertise and always results in outstanding outcomes.<sup>4</sup>

As a prominent researcher in the description of corneal graft rejection, in 1969 Dr. Khodadoust initially described the concept of corneal chronic focal transplant rejection reaction, the “Khodadoust rejection line”, a term now in worldwide use.<sup>5,6</sup> It is similar to organ rejection after transplantation, with the appearance of mononuclear cells at the vascularized edge of the recently transplanted cornea. If the eye remains untreated during the following cascade of reactions, a line of white blood cells will move across the cornea, eventually damaging the endothelial cells and result in graft rejection (Figure 3).<sup>6</sup>



**Figure 3.** Khodadoust rejection line.

From another prospect, as a native Persian, Khodadoust is an art-lover, considering art to be the priority for each human being, particularly those who long to be ophthalmologists. He has maintained his ardent love for art in teaching, as his keen awareness of essentials made his interpretations of the most difficult ophthalmologic concepts elegantly lucid and clear. His colleagues and followers have relished his thoroughly tangible explanations of the most complicated concepts. He lives by the motto: the graduates must be better than their educators; otherwise, there is a significant defect to be found in the process of instruction. As another significant characteristic, it should be noted that he has been an efficient administrator and effective organizer throughout his life. This has brought him success in managing various eye hospitals and institutes worldwide.<sup>2-4</sup>

The authors of this paper believe that although Professor Khodadoust has been a definite global master in ophthalmology, his

reputation among the Iranian nation is due to his patriotism, which remains deep in his heart,<sup>7,8</sup> having served his country and the world throughout his entire, fruitful life with ardent love and sacrifice. In a relatively recent editorial entitled “Ophthalmology from Ancient Persia to the Modern Era” in the JAMA Ophthalmology, he has expressed his loyalty to Persia by describing Iran’s global scientific situation and the progress of Iranian practitioners.<sup>9</sup> He has always been a dedicated patriot, with a dream and passion for Iran.

Accordingly, in 2009 and 2010, he envisioned the establishment of an excellent hospital that contained a total of 500 beds in a small tourist city, Sarein, Ardabil Province in Northwest Iran. His intent was to fulfill the needs of this area for 50 years. In his correspondence to the people and administration of Ardabil, on February 11, 2010, Dr. Khodadoust called Iran the matrix of man’s culture and a land of which the world is proud. He mandated the care of the people of Ardabil and called Ardabil the “sacred land”. On February 19, 2010 this great project was initiated under the supervision of his son, Dr. Mehran Mohammad Khodadoust. Later, on July 4, 2010, Professor Khodadoust went to Ardabil to get to know the people of Sarein and to assess the facilities of the region, unpretentiously presenting himself to be of service to Iran. He stated that these people deserve even more.

In conclusion Dr. Khodadoust is not just known as a mere physician, scientist or expert surgeon; rather, he is mostly regarded as a living Persian legend in ophthalmology. An exceptional physician and human being, he has discovered and established two eternal lines; one in ophthalmology, specializing in the cornea, and the other in his life as a guiding light for Iranians.

## Acknowledgment

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