



Review Article

The history of dental radiology in Turkey

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ABSTRACT

Reflections of the invention of W.C. Roentgen reached Turkey in a very short period of time. In the field of medicine, Captain Dr. Esat Feyzi and Captain Dr. Rifat Osman were the first who utilized X-rays in Turkey. Just after the invention of X-rays, the first intraoral radiograms were obtained by Otto Walkhoff and Wilhelm Koenig in Germany and by Frank Harrison in England. The first dental radiology department in Turkey was founded in the Istanbul Darülfünunu Dişçi Mektebi (Istanbul University Faculty of Dentistry) in 1927. Also, dental radiology education started at that time. The first book about radiology was written in 1928, which also was contained information about dental radiology. The first dentist whose profession was radiology was Galip Abdi Rona in Turkey. Rona also presented a paper and made radiology presentations in the first Turkish dental congress between 1 and 5 November 1932. In the beginning of the 1980s, radiology became an independent dental department. Today, in Turkey, there are about 45 dentistry faculties who have radiology departments. A lot of state-of-the-art devices are used not only in faculties but also in private clinics.

Key words: Dentistry, history, radiology, Turkey

INTRODUCTION

X-rays were applied in dentistry for the first time only a few months after their discovery in 1895. In this article, on the 118th anniversary of the introduction of X-rays into medicine, we give an account of the history of dental radiology in Turkey.

The discovery of X-rays is one of the most revolutionary events in the history of medicine, and the honor of this discovery belongs to Wilhelm Conrad Roentgen.^[1-3]

Two weeks after Roentgen's discovery, Otto Walkhoff obtained the first intraoral radiogram with an exposure time of 25 min. One month later, Wilhelm Koenig obtained 14 radiograms from his own teeth using an exposure time of 9 min/tooth [Figure 1a and b].^[1,2] In the United States, the

first radiograms were obtained by Edmund C. Kells in the early spring of 1896.^[1,3,4] In England, utilization of X-rays was concurrent with Germany. Frank Harrison was the first dentist who used radiology in England. Harrison published the first article about the adverse effects of radiation in July 1896. Also, William H. Rollins was among the first to warn about the adverse effects of radiation.^[1,2]

The first commercial dental radiographic apparatus was introduced in 1905 in Germany. Howard R. Raper

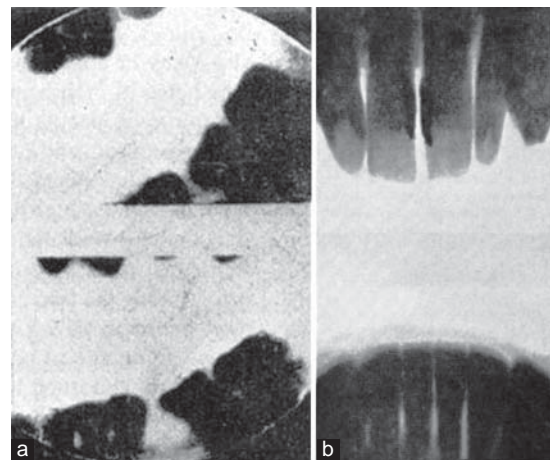


Figure 1: The first dental radiograms obtained in Germany by Otto Walkhoff (a) and Wilhelm Koenig (b)

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introduced radiology into dental training in 1909 and wrote the first text book about dentistry in 1913.^[1-4]

BEGINNING AND THE DEVELOPMENT OF DENTAL RADIOLOGY IN TURKEY

Word of Roentgen's discovery reached Turkey in a very short period, and numerous articles on X-rays were published even in daily newspapers. Physicians and photographers were among the first to be interested in X-rays and tried to produce the new rays.^[4]

In the field of medicine, Esat Feyzi and Rifat Osman were the first who utilized X-rays in Turkey [Figure 2a and b]. On 29 January 1896, they obtained the first radiogram in Turkey, a hand radiogram of one of their friends. They also used radiograms during the Ottoman–Greek war in 1897, which was declared as the first employment of radiograms during a war [Figure 3].^[4-6]

In Turkey, the first school of dentistry was founded in 1908. In January 1924, dentist Hasan Hayri Bey and his colleagues presented a report to the Ministry of Health that contained a proposal for the development of dentistry and a dental school in Turkey. One part of the proposal advocated the use of dental radiography equipment in dental schools.^[7,8]

After the approval of this plan, the first dental radiology department was founded in the Turkey Istanbul Darülfünunu Dişçi Mektebi (Istanbul University Faculty of Dentistry). For the 1927/1928 academic year, under the directive of manager Prof. Server Hilmi, Hüseyin Talat Bey (instructor of dental pharmacology, anesthesia and dental treatment) was appointed as the director of the said department, which functioned as a radiology clinic for 5 years.^[7,8]

Thus, in Turkey, radiology education started in 1927. A radiologist, Prof. Dr. Mehmet Selahattin Erk, was chosen as the first radiology professor of this medical school to teach the newly established radiology course. His first assistant was dentist Ali Fehim. Erk continued to teach radiology in both medical and dental schools until the university reform of 1933. After 1934, he was only employed in the school of dentistry. By the end of the 1930s, dental radiology became popular in private clinics in Turkey [Figure 4].^[7,8]

In 1928, a book entitled “Tababet ve Dişçilikte Ziya Tedavisi” (X-ray Therapy in Dentistry and Medicine) by Kazim Bey was published. Although this was the first book written in Turkish about radiology, it caused criticism



Figure 2: The pioneers of Turkish radiology. Dr. Esat Feyzi Bey (1874–1901) (a) and Dr. Rifat Osman Bey (1874-1933) (b)



Figure 3: The hand radiogram of a Turkish soldier obtained by Esat Feyzi Bey and Rifat Osman Bey. This was the first utilization of radiograms at war



Figure 4: A Turkish dental clinic containing radiographic equipment (indicated with black arrow). This clinic was in Afghanistan and was established by the Turkish government at the beginning of the 1930s

because it contained only a small section (10 of 214 pages) about dentistry. Also, the first article about dental radiology was written in 1928 [Figure 5].^[10]

Between 1 and 5 November 1932, the first Turkish dental congress was held in Istanbul. Among the members of the organizing committee was dentist Galip Abdi Rona, who would later play a very important role in Turkish dental radiology. This congress was a very important event in the history of Turkish dental radiology. On the third day of the congress, Galip Abdi Rona presented a paper entitled “Definition of Radiographic Plates in Dental Radiology.” He also made radiographic demonstrations on the last day of the congress. Furthermore, Sait Tevfik Bey, a dentist who joined the congress from Edirne, proposed a plan at the congress to grant private dentists’ access to radiography equipment available at government hospitals.^[8,10-12]

After the Turkish university reform, the dental school in Istanbul was divided into four departments, of which one was the Department of Physiotherapy and Radiology. The duration of training at the school was 4 years (eight semesters), and radiology was taught during the third year (semesters 5 and 6). However, the independence of this department did not last long. Alfred Kantorowicz, who was appointed as a teaching instructor during the 1933 reform, refused this situation and a radiology course was incorporated into the curriculum of the Department of Restorative Treatment.^[8,9]

In 1934, dentist Galip Abdi Rona was appointed as the assistant of Mehmet Selahattin Erk, who voluntarily departed from the school after 2 years. After Erk’s departure, Rona was appointed as chief assistant and continued to manage the clinic until his resignation in 1943. In addition to his duties at the school, Galip Abdi Rona founded a radiology unit in his own clinic in 1937 and assisted other dentists. Moreover, he worked as the general secretary of a

magazine published by the Association of Turkish Dentists and wrote numerous articles about radiology for this magazine. He also made oral presentations at conferences of the association. Rona made valuable contributions to Turkish dental radiology [Figure 6].^[13-16]

A few years later, when the radiology unit was merged with the Department of Restorative Dentistry, Galip Abdi Rona began to question the advancement of his career in radiology. Still, he continued his work at the school until 1943. Subsequently, he resigned and transferred to the State Maritime Enterprises to establish a new dental department. Later on, the clinic was run by technicians.^[8,9,17-19]

Treatment records provide an insight into the performance of a radiology clinic. The records of the winter semester of 1937-1938 revealed that a total of 3596 intraoral and extraoral radiograms had been obtained at this school. Considering the conditions of the period (technical facilities, life style, population, etc.), this number is not low.^[8] In 1937, dentists were required by law to register the radiography equipment present in their clinics to the Ministry of Health. This interesting fact shows that radiology had begun to gain popularity in dentistry.^[20]

Suat İsmail Gürkan was appointed as the director of the radiology department after its unification with the Department of Restorative Dentistry in 1934. He continued to lead the department until 1970. Besides teaching radiology, Gürkan wrote several books in dentistry. One of them, entitled “Dental Radiology,” was published in 1951 and happened to be the first book on radiology written in Latin alphabet in the Turkish language. In



Figure 5: An article about radiology published in the Magazine of Association of Dentist in 1928



Figure 6: Dr. Galip Abdi Rona during obtaining a radiogram in the radiology department of Dişçi Mektebi (School of Dentistry)

Table 1: Analysis of the education period of dental radiology in Turkey^[22-26]

Year	Education Period	Semester	Notes
1928-1930s	3 years	5-6	
1940s	4 years	5-6	
1950s and 1960s	4 years	5-6 and 7-8	Theoretical training in semesters 5-6, practical training in semesters 7-8
Middle of 1960s	4 years*	5-6	As a course, without examination
1970s and 1980s	5 years	5-6, 7-8 and 9-10	As a course, with examination [‡]
Today	5 years	5-6, 7-8 and 9-10	Theoretical training in semesters 5-8, practical training in semesters 7-8 and 9-10

*In 1966, the education period was increased to 5 years. [‡]Due to the efforts by Gündüz Bayırlı, a final examination was introduced in 1970

1970, Gürkan assigned Gündüz Bayırlı to teach radiology. Bayırlı then wrote the second scientific book about dental radiology in Turkey. This book, entitled “X- rays and its application in Dentistry,” appeared in 1977.^[8,17,21]

In 1975, as a result of the efforts by Gazanfer Zembilci, the then Dean of the department, a radiology service with the capacity to obtain panoramic radiographs was established in Turkey for the first time.^[21]

It will be informative to give information about the development of dental radiology education. The history of education is outlined in Table 1.

Today, with about 40 dentistry faculties that have a radiology department, the state of radiology at both technological and scientific levels in Turkey is contemporaneous. State-of-the-art devices (direct and indirect radiographical systems, phosphor storage plates, cone-beam tomography, etc.) are utilized not only in faculties but also in private clinics.

CONCLUSION

Exploration of X-rays is one of the greatest revolutions in medicine. Although the use of X-rays in medicine was adopted in Turkey after 1 or 2 years of their discovery, the acceptance of the value of X-rays in dentistry was considerably slower. However, after dedicated efforts by several dentists, radiology became established in dental institutions in Turkey. Today, Turkish dental radiology is concordant with international standards, and dental education is provided according to the guidelines established under the ERASMUS program.

However, to the best of our knowledge, our article is the first one in its field and includes beneficial information, which draws the attention of young dental radiologists, dentists and historians in the history of their career (not only in Turkey but also in other countries). We dedicate this article to the memory of Dr. Esat Feyzi, Dr. Rifat Osman and dentist Galip Abdi Rona.

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