

**Otto Walkhoff: Father of Dental X-Rays**

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### **Otto Walkhoff: Father of Dental X-Rays**

Otto Walkhoff was one of the most influential persons in early 20th-century dentistry. The most famous achievement of his life was taking the world's first dental radiograph. He also opened the first dental radiology laboratory in the world. In addition, he co-developed Walkhoff Paste, a medication used in root canal treatment. He worked hard to create a formal examination system for dentists and taught many students who later became top experts in the field. However, his strong personality and close relationship with the Nazi Party made him the subject of much controversy.

### **Background and Honors**

Otto Walkhoff was born on April 23, 1860, in Braunschweig, Germany, and died on June 8, 1934, in Berlin. He came from a modest family; his father was a civil auditor. He attended the elementary school in Braunschweig and the grammar school in Hoxter, although he did not complete the latter (Groß, 2022). He began his dental training in 1878 in Berlin and worked under several prominent dentists, including Carl Sauer, who later became his father-in-law. He passed the dental examination in 1881. Sixteen years later, in 1897, he earned a doctorate from the University of Erlangen with research on enamel and dentin development. In 1900, he was appointed an instructor at the University of Munich. In 1922 he became professor and director of the Wurzburg Dental Institute (Groß, 2022).

Otto Walkhoff received many honors throughout his life. In 1898, he was appointed as a court dentist. In 1907, he was given the title Hofrat, which is a type of court councilor. He was awarded an honorary doctorate by the University of Munich. He also won the Golden Medal of the Central Association of German Dentists (CVDZ) and the Herbst Award. Between 1906 and 1926, he served as president of the CVDZ for 20 years. Also, he was an honored president of the

German Society of Dental, Oral and Maxillofacial Medicine (DGZ). He held honorary memberships in many national and international dental organizations. He was also appointed as Chairman and Senator of the Odontology Section of the Leopoldina Academy. Even after his death, his legacy continued. In 2000, the DGZ created the Otto Walkhoff Award to honor his lasting impact on dentistry (Groß, 2022).

### **Career Milestones**

#### **First dental radiograph**

Among Otto Walkhoff's life achievements, the most iconic was taking the first dental radiograph when he was 36 years old. In 1896, just weeks after Wilhelm Rontgen's discovery of X-rays, Walkhoff performed an experiment that would change dental diagnostics forever. He took the world's first dental radiograph, capturing an image of his own teeth. The exposure lasted 25 minutes, and as a result, he had a headache for days (Pauwels, 2020). Although his actions were risky based on today's understanding of radiation, and the image he captured was not clear. His work laid the foundation for the use of X-rays in dental diagnosis for the next hundred years and beyond. (Riaud, 2018).

#### **First dental radiology laboratory**

Soon after this experiment, Walkhoff working with physicist Fritz Giesel, established the world's first dental radiology laboratory in Braunschweig (Groß, 2022). This facility marked the formal beginning of dental radiology as a specialized field. Today, dental X-rays are a routine part of oral health care, thanks in part to Walkhoff's early experimentation and vision.

#### **Contributions Beyond Radiology**

Beyond radiology, Walkhoff also made important contributions to endodontics, he worked with dentist Carl Scheff to develop antiseptic root canal treatments like the well-known

Walkhoff Paste and Walkhoff Aufreiber (Groß, 2022). He also published many outstanding works that helped develop future dental treatment, including *System of the medical treatments of pulp and periodontal pathologies* (Walkhoff, 1928).

In the mid-19th century, many "dentists" in Germany were not trained in medical schools. They were more like craftsmen, such as tooth pullers (Zahnbrecher) or dental artists (Zahnkünstler) (Groß, 2022). These people learned basic skills like pulling teeth, fixing and replacing them through apprenticeships or self-teaching, but they didn't have formal medical or academic training. They often worked at markets, pharmacies, or moved from place to place, doing dentistry more like a trade than a medical profession. Walkhoff was strongly against it and took the lead in calling for the regulation of the dental profession. In 1919, he helped establish the Doctor of Dental Medicine (Dr. med. dent.) degree in German universities, which helped pave the way for dentists around the world to earn the titles DMD or DDS today.

### **Personal Traits and Fun Facts**

Although Otto Walkhoff's professional achievements are unquestionable, his personality and political life were controversial. His students said he worked very hard, always the first to come to the lab and the last to leave (Groß, 2022). However, arguments with colleagues were also a common feature of his professional life. He was often seen as inflexible, argumentative, and intolerant of dissenting views. His conflicts with other leaders in the dental field also became a frequent topic of discussion within the profession. That also led to his early retirement from the University of Wurzburg (Groß, 2022).

In 1929, he joined the Nazi Party, four years before Hitler led it. He stayed loyal to it until his death and openly supported its ideas. Which has become a major source of controversy and criticism in modern evaluations of his legacy.

## **Conclusion**

Walkhoff is widely regarded as one of the founding fathers of dental radiology (Riaud, 2018). Although his personality and political views were controversial. However, his contributions to radiology and endodontics not only are undeniable, but also still influence how dentistry is practiced around the world today. Thanks to his efforts, dentistry became more widely accepted as a serious medical field, not only in Germany but elsewhere too.

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