

History of dentistry

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Introduction

The art of treating the anomalies pertaining to the teeth and jaws has a long and rich history ranging from toothache being considered as a curse from God to the progression as one of the most advanced and progressive science. Attempts were made to document the journey of this multifaceted profession by Duval, Fitch, Carabelli, Snell, Linderer, Harris, and others however, a comprehensive documentation was given by Dr. Vincenzo Guerini, of Naples, Italy, who has written a history of dentistry from the earliest times to the beginning of the nineteenth century, and that this work, translated into English and fully revised, had been placed in the hands of the committee for publication under the auspices of the National Dental Association (NDA) of the United States of America. This article is a largely inspired among others by the accomplishment of Dr Vincenzo Guerini and the NDA, USA.

Earlier Times: Period of Antiquity

During these early periods not many divisions existed in the art of healing. Ailments pertaining to teeth and jaws were treated in a general manner, not requiring the services of a specialist. Hippocrates, the Father of Medicine was the first to give a scientific basis to understanding and treating diseases, before which, anomalies were mainly treated by sacerdotal medicine. Wherein, the cause of diseases was

given a superstitious cause requiring sacrifices and rituals to please a supernatural power. One of the earliest case was found in the Summerian text which describes 'tooth worms' as the cause of tooth decay.^[1] The Indus Valley Civilization has yielded evidence of dentistry being practiced as far back as 7000 BC.^[2] A site in Mehrgarh indicates that this earliest form of dentistry involved curing tooth related disorders with bow-drills operation, perhaps, by skilled bead craftsmen.^[3] The earliest dental-filling, made of beeswax, was discovered in Slovenia and dates from 6500 years ago.^[4] It is logical that progress in dentistry would go hand in hand with a progress and stability of a particular civilization and the art of dentistry flourished in one of the oldest civilizations, the Egyptians.

Dentistry in Egyptian History

Here, as in other countries, medicine and dentistry was practiced mainly by the sacerdotal caste but not all the people in the caste were priests and doctors at the same time. There was a special class of people known as the 'Phostophori' whose mission was to cure the sick.^[2] As evidenced by the tomb of 'Hesy Re' who is often regarded as the first dentist who said "the greatest of those who deal with teeth, and of physicians." This is the first known reference of a person being identified as a dental practitioner.^[1]

The Egyptian text known as Ebers papyrus talks about various ailments of the oral cavity and the remedy for the same [Figure 1]. Including among others, treatment for dental abscess, remedies to strengthen gums for swelling, and tooth pain.

There were also attempts at replacing lost teeth, as discovered by archeologists, teeth united by a gold wire out of which, few of those were from another individual [Figure 2].^[5]

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Dentistry in the Chinese History

The Chinese called the toothache 'ya-tongy' and gave a classification of toothache according to cause. They developed around 18 decoctions for toothache in the form of pills and mouthwashes.

Along with these pills they also used acupuncture as a means to treat toothache and gum diseases with as much a 26 puncture points for toothache and six for gum problems, some of these points were located at parts of the body distant from the oral cavity. They also used aromatic powdered leaves in a process called 'moxibustion' to relieve tooth pain.^[6] [Figure 3].^[7]

The Greeks Romans and Etruscans

During the twelfth century BC, a Greek physician called Esculapius was recognized, according to Greek literature,

Figure 1: Ebers papyrus talking about oral ailments and their remedies



Source: Guerini, Vincenzo. National dental association [from old catalog]. A history of dentistry from the most ancient times until the end of the eighteenth-century. Philadelphia and New York, Lea & Febiger

Figure 3: Depiction of Moxibustion



Source: <http://cadany.org/history.html>

to be the inventor of purgatives and extraction of teeth [Figure 4]. Therefore, the first documented origin of dental surgery can be thought to be from Esculapius. Celsus Aurelianus mentioned of a leaden instrument 'plumbeumodontagagoon' used for the extraction of tooth.

During 500-300 BC, Hippocrates and Aristotle wrote about dentistry, including the eruption pattern of teeth, treating decayed teeth and gum disease, extracting teeth with forceps, and using wires to stabilize loose tooth and fractured jaws.

In 100 BC, Celsus, a Roman medical writer, wrote extensively in his important compendium of medicine on oral hygiene, stabilization of loose tooth, treatments for toothache, teething pain, and jaw fractures.

During 166-201 AD, the Etruscans practiced dental prosthetics using gold crowns and fixed bridgework^[11] [Figure 5].

Figure 2: Earliest Fixed partial Dentures



Source: <http://thelavajewel.blogspot.in>

Figure 4: Prosthetic work of Etruscans



Source: Guerini, Vincenzo [from old catalog]; National dental association [from old catalog]. A history of dentistry from the most ancient times until the end of the eighteenth-century. Philadelphia and New York, Lea & Febiger

The Beginnings of a Profession: The Middle Ages

The Arabians

The Arabians certainly had the merit of keeping alive the study of medicine in an age of decadence and barbarism.

Rhazes (or more precisely, Abu Bekr Muhammed ben Zacarjaer Rhazi) stressed upon the need to exhaust every method to cure the teeth before extracting it, hence propagating conservation of tooth structure. To prevent spread of caries; cavities were filled with a cement made of mastic and alum, which is a laudable attempt at stopping progress of tooth decay.

Against periodontitis and the pains produced by it, he recommended, besides, opium, oil of roses, pepper, and honey as well as the scarification of the gums and the application of a leech. If however, these remedies did not succeed, he applied castoreum, pepper, ginger, storax, opium, and other ingredients to the roots of the teeth. If even this method of cure failed, he touched the root of the diseased tooth with a red-hot iron, or sought to provoke its fall by the use of special medicaments such as coloquintida and arsenic.

Ali Abbas in eight century AD, a persian physician wrote about diseases of the tooth and explains the treatment of a periapical lesion by introducing hot needles into the tooth repeatedly until they become cool. He also used chemicals in the tooth like asafetida to devitalize the tooth and relieve the pain. If these methods failed, he would extract the tooth.

Figure 5: Depiction of Greek Physicians performing an extraction



Source: Guerini, Vincenzo [from old catalog]; National dental association [from old catalog]. A history of dentistry from the most ancient times until the end of the eighteenth-century. Philadelphia and New York, Lea & Febiger

Serapion (Jahiak Ebn Serapion), who lived in the tenth century, indicated with great precision, the number of dental roots. Against dental pains of phlogistic origin, he recommended bloodletting, purgatives, and many local medicaments. In cases of persistent odontalgia due to caries, he advised the application of opium in the carious cavity. To strengthen loosened teeth, he first employed astringents, and if these are of no use, he bound the loose tooth together to the neighboring healthy ones by means of gold or silver wire.

One of the greatest luminaries of medicine among the Arabs was Avicenna (Ebn Sina). He was born in 980 AD. Who recommended drilling of a tooth with constant pain to remove humors which are accumulated and filling them with medicaments.

Abulcasis (Abul Casem Chalaf Ben Abbas). (1050-1122) was one of the greatest surgeons who recommended cauterization in cases of periapical abscess and fistula as well as described the process. His book has one of the first representation of dental instruments. He also advocated ligation of teeth in cases of a blow or fall.^[4] [Figure 6].

Thirteenth to fifteenth centuries

During 1130-1163 AD, a change of guard occurred when a series of Papal edicts prohibited monks from performing any type of surgery, bloodletting, or tooth extraction. After the edicts, barbers assumed the monks' surgical duties. In 1210 AD a Guild of Barbers is established in France. Barbers eventually evolved into two groups: Surgeons who were educated and trained to perform complex surgical operations, and lay barbers or barber-surgeons, who performed more routine hygienic services including shaving, bleeding, and tooth extraction.

Figure 6: Cautery instruments, dental scapers and tooth splinting



Source: Guerini, Vincenzo National dental association [from old catalog]. A history of dentistry from the most ancient times until the end of the eighteenth-century. Philadelphia and New York, Lea & Febiger

However, this was short lived as in 1400s — a series of royal decrees in France prohibited lay barbers from practicing all surgical procedures except bleeding, cupping, leeching, and extracting teeth. In 1530, the Little Medicinal Book for All Kinds of Diseases and Infirmities of the Teeth (Artzney Buchlein), the first book devoted entirely to dentistry, was published in Germany.^[1]

The sixteenth to eighteenth centuries

In the midst of the vigorous intellectual life which characterized the sixteenth century, dentistry, too, like many other branches of science, made very notable progress.

Gian Filippo Ingrassia (1510-1580), a distinguished Sicilian anatomist, was one of the first who spoke of the dental germ. He said that the existence of the tooth in proper form depends on a soft dental substance enclosed in the bone, and which he considered almost as a secretion of the latter.

Antonie Van Leeuwenhoek (1632-1723), in the year 1683 discovered in the tartar scraped from between the teeth, a form of microorganism upon which he laid special stress.

In 1723 -Pierre Fauchard, a French surgeon published *The Surgeon Dentist, A Treatise on Teeth (Le Chirurgien Dentiste)*. Fauchard is credited as being the Father of Modern Dentistry because his book was the first to describe a comprehensive system for the practice of dentistry including basic oral anatomy and function, operative and restorative techniques, and denture construction.

In 1746, Claude Mouton described a gold crown and post to be retained in the root canal. He also recommended white enameling for gold crowns for a more esthetic appearance. In 1789, Frenchman Nicolas Dubois de Chemant received the first patent for porcelain teeth.

In the first known case of postmortem dental forensics, Paul Revere verified the death of his friend, Dr. Joseph Warren when he identified the bridge that he constructed for him.

In the year 1790, John Greenwood constructed the first known dental foot engine. In the same year Josiah Flagg, a prominent American dentist, constructed the first chair made specifically for dental patients. In 1832, James Snell invented the first reclining dental chair.

In 1833-1850, the Crawcours (two brothers from France) introduced amalgam filling material under the name *Royal Mineral Succedaneum*.

In 1839, *American Journal of Dental Science*, the world's first dental journal, began publication.

The need for a professional teaching institution now was of paramount importance, and in the year 1840, Horace Hayden and Chapin Harris founded the world's first dental school, the Baltimore College of Dental Surgery, and established the Doctor of Dental Surgery (DDS) degree.

In 1871, James B. Morrison patented the first commercially manufactured foot-treadle dental engine. Morrison's inexpensive, mechanized tool supplies dental burs with enough speed to cut enamel and dentin smoothly and quickly, revolutionizing the practice of dentistry. In the same year, an American George F Green received a patent for the first electric dental engine, a self-contained motor and hand piece.

In 1895, Wilhelm Roentgen, a German physicist, discovered the x-ray. In 1896 prominent New Orleans dentist C. Edmond Kells took the first dental x-ray of a living person in the U.S.

In 1899, Edward Hartley Angle classified the various forms of malocclusion. Credited with making orthodontics into a dental specialty, Angle also established the first school of orthodontics (Angle School of Orthodontia in St. Louis, 1900), the first orthodontic society (American Society of Orthodontia, 1901), and the first Dental specialty journal (*American Orthodontist*, 1907).^[1]

Conclusion

The progress of dentistry into an advanced science is a truly remarkable one. This article only scratches the surface of how this wonderful specialty evolved. The importance and value of dental art and science as a humane service are well recognized, but we are so accustomed to view the question from the modern standpoint that we, generally speaking, overlook the immense work done by our predecessors reaching far back in unbroken line to the mists of antiquity. It was they who laid the foundations upon which modern dentistry has been built, and no man can peruse the record of their efforts.^[5]

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