

History of Dentistry in Ancient Egypt

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Received on, 02 November 2022 - Accepted on, 19 December 2022 - Published on, 30 December 2022

Abstract:

Dental profession in ancient Egypt was highly advanced and practiced in very professional ways. Ancient Egyptians had the honor of having the earliest dentist in the world, he was Hesi-ra.

Medical papyri revealed that ancient Egyptians had some diseases such as tooth wear, dental abscess and dental caries. They had skilled dentists that managed those problems relying on actual treatment, they used natural substances extracted from vegetable, fruit and oils for making drugs.

They were pioneers in making tooth fillings, Dental restoration and performing dental surgeries. Furthermore, the idea of dental implants dated back to the ancient Egyptians.

Keywords: Ancient Egyptian diseases, Ancient Egyptian Dentistry

INTRODUCTION

The Egyptian nation was, without doubt, the one in which civilization first took its rise and had its earliest development from the time of Menes, first King of Egypt (3892 B.C). Therefore, the healing art was flourished earlier in Egypt than elsewhere.⁽¹⁾

Knowledge of medicine and dentistry as practiced among ancient Egyptians is now no longer limited; it is documented by many ways such as:

1. The study of ancient remains

Ancient remains (mandible, piece of bone, instrument) demonstrated the dental practice and dental diseases. Human remains are able to tell the story of all lifestyle⁽²⁾ (Figure 1).



Fig.1. Ancient remains

2. The study of ancient teeth

Enamel is the hardest material in the human body, and teeth are often preserved even when bones are not. Teeth are one of the most informative parts of the human body. Teeth provide information about numerous issues including health, diet, stress, occupation, and diseases in ancient humans⁽³⁾ (Figure 2).



Fig. 2. An open mouth of a mummy with complete dentition

3. Mummification

The unique mummification in ancient Egyptians resulted in survival of large numbers of well-preserved soft tissue body remains that are ideal research material.⁽⁴⁾

4. Modern medical technology

Modern medical technology such as X-Rays, CT Scans and electron microscopes helped to view the bones and organs of mummies and allowed the understanding of ancient dentistry.^(5,6)

5. Forensic techniques

Teeth are chemically stable tissues in the body. Analysis of teeth provides insight on health, disease, nutrition, and social organization within selected communities.^(7,8)

6. Translation of the Rosetta stone

This stone was written in hieroglyphic, demotic and Greek language. It was discovered in early 1800s, by Champillon, who translated it and that led to knowing of ancient Egyptian hieroglyphic inscriptions and translation of papyri⁽⁹⁾ (Figure3).



Fig. 3. The three languages of Rosetta stone

7. Ancient papyri

Several Egyptian medical papyri were discovered and translated. The most important are:

- **Ebers papyrus** ^(10, 11)
The Ebers Papyrus was discovered by Georg Ebers in 1862 at Luxor during the exploration of a mummy’s tomb. It is believed to be dated back to 3500 BC. Ebers papyrus is considered as the most important medical textbooks of ancient time. The papyrus contains over 700 medical remedies covering all aspects of medicine.

Dentistry as a profession is also included in all its aspects such as, diagnosing, prevention and treating dental diseases. There were eleven remedies contained in this papyrus that related directly to dental problems.

- **Edwin Smith Papyrus** ^(12,13)
It was written by Imhotep, the god of Healing. His statue stands today in the Hall of College of Surgeons in Chicago.

It is the world’s oldest surgical document. It is viewed as a textbook on surgery. It discussed facial trauma and fractures, stitches and cauterization, treatment of abscesses and suturing of lip wound (Figure 4).

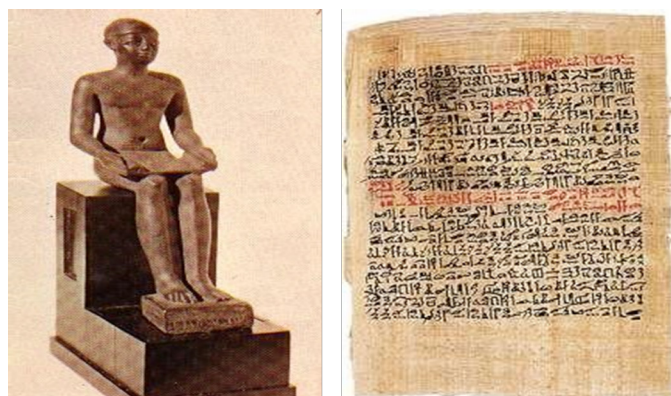


Fig. 4. Imhotep and Edwin Smith Papyrus

Dentists in Ancient Egypt

Ancient Egypt showed a high degree of medical specialization at early stage of the history. Medicine was highly specialized and there were specialists for treatment of the eyes, internal medicine, head, heart, etc. There was distinction between ‘physicians’ and ‘dentists’. Dentists were called Toother.⁽¹⁴⁾

There were skilled dentists in ancient Egypt who practiced what today is considered to be highly skilled techniques.⁽¹⁵⁾

The hieroglyphic symbols of a dentist were: Eye of Horus which denoted to a physician and tusk (elephant canine) as a symbol for a tooth⁽¹⁶⁾ (Figure 5).




	Hieroglyphic eye of Horus One who makes or handles – denoting treatment
	Tusk denote tooth ‘toother’, he who deals with teeth
	Eye and Tusk One who treats or makes teeth, ‘Tooth maker’

Fig. 5. Dentists in hieroglyphic language

The Earliest Dentist in the World (Hesi-ra)⁽¹⁷⁾

Hesi-ra or Hesi-re (hsj-r’) is the earliest recorded dentist not only in Egypt, but also he had the honor of being the first dentist in the world. His name means blessed by Ra (sun-god, Ra).⁽¹⁸⁾

Hesi-ra was a man of great distinction who carried many titles. He was called” Head of Dentists”, “Chief of the toothers,” and “Greatest of teeth”.

Hesi-ra was honored to be buried beside Djoser’s Step Pyramid at Saqqara. Hesi-Ra is also well known for his richly decorated panels found in his tomb ^(18,19) (Figure 6).

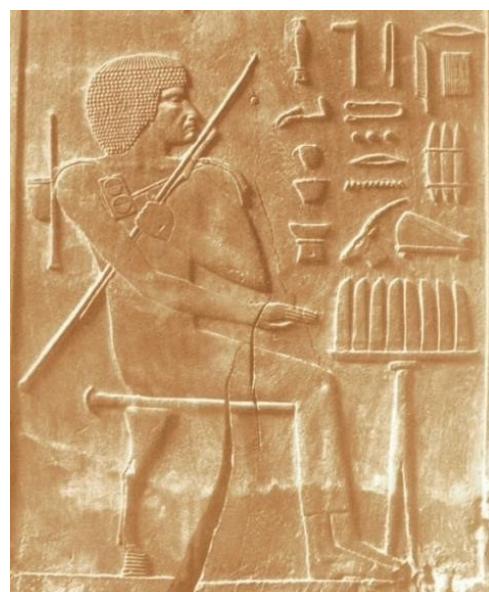


Fig. 6. Hesi-ra was on his wooden panel

Achievements of Hesi-Ra.⁽¹⁶⁾

Although dentistry at that time was crude by today's standards; yet Hesi-Ra had many achievements in dentistry:

- He drilled holes in teeth to help drain the infection.
- He performed advanced dental techniques such as root canal therapy.
- He also recognized symptom of Diabetes, and described its signs (polyuria) or "frequent urination".

Not only Hesi-ra who had this place of honor in ancient Egypt, dentists had great respect by the ancient Pharaohs. A tomb of three dentists discovered at Saqqara next to Djoser's Step Pyramid. Their tombs are made of limestone not of mud as other people.⁽²⁰⁾

Dental Diseases and Common Problems in Ancient Egyptians⁽²¹⁾

Because teeth are the best preserved parts of a body, dental diseases are evident. Surveys on mummies suggest that, far from having healthy dentitions, some of ancient Egyptians suffered from dental disease. Ebers Papyrus refers to diseases of the teeth and various toothache remedies.⁽¹¹⁾

Ancient Egyptians suffered from:

1. Tooth wear

This condition was found in most of the skulls. Teeth were extremely worn. There was loss of the crown resulting in pulp exposure and apical infection⁽²²⁾ (Figure 7). This condition was due to abrasion by inorganic particles of food.^(23, 24)

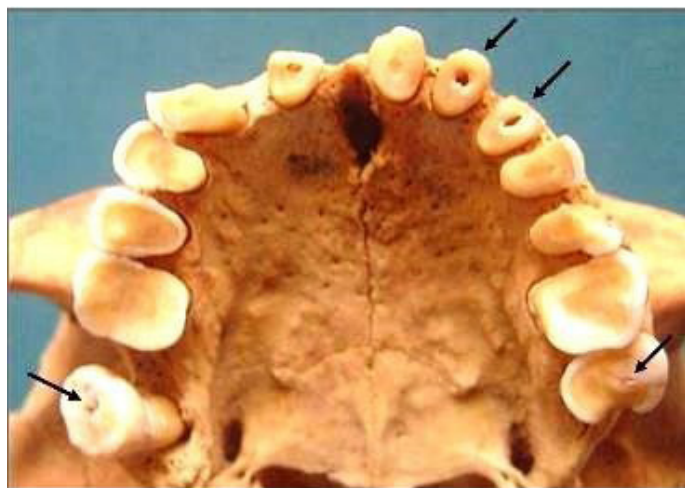


Fig. 7. Tooth wears in ancient skull

2. Dental abscesses⁽²¹⁾

Apical infection was observed in a number of skulls. This was due to extreme wear when the pulp cavity becomes exposed (Figure 8).



Fig. 8. Apical abscesses

3. Disease of the gum⁽²⁵⁾

This appears in the form of presence of calculus on the roots of the teeth and presence of pocketing (Figure 9).



Fig. 9. Calculus and pocketing on the roots of teeth in a mummy

4. Dental caries

Dental caries was not frequent due to lack of fermentable carbohydrates in diet and fibrous abrasive food, which inhibited retention of plaque on the tooth surface. "A worm that grows into the tooth" was thought to be the cause of dental caries.⁽²⁶⁾

Ancient Egyptians Managed their Diseases by Many Ways

Ancient Egyptians took great care to treat their diseases. They had skilled dentists and they were relying on actual treatment not in magic spells and prayers to the Gods. Ebers papyrus has recipes to treat many oral diseases.⁽¹¹⁾

In their treatment they did the following:

1. Utilization of drugs

Treatments consisted of natural substances that had therapeutic properties which were extracted from vegetable, fruit, mineral oils, seeds and onions in various combinations and applied to the aching tooth. Many of this ancient pharmacology are still in use, both in medicine and dentistry.⁽²⁷⁾

2. Mouth washes

Ancient Egyptians had various recipes for mouth washes; in different compositions. Some of the mouthwashes were for the specific purpose and for maintaining a healthy mouth and teeth.⁽¹¹⁾

3. Ancient Egyptian toothpaste

A formula included mint, salt, grains of pepper and the most active component was dried Iris flower. This was the world's oldest recipe for toothpaste. Effectiveness of Iris flower against gum disease had been recently discovered and used commercially now. This toothpaste was described until 1873, when Colgate released the first commercially prepared toothpaste.⁽²⁸⁾

4. Tooth whitening

Ancient Egyptians described a recipe "for white and perfect teeth". It was made of rocks and oyster shells, crushed as a tooth powder and used by rubbing directly on the teeth with a finger.⁽²⁸⁾

5. Tooth brushing

A form of a toothbrush was found within the pyramids of ancient Egyptians. It was crafted from a stick; its end was flayed so that the fibers of the wood were softer.⁽²⁹⁾

6. Management of carious teeth⁽³⁰⁾

This was performed by tooth fillings. Descriptions of how to make ancient fillings were recorded. Teeth in mummies were found with filling material which included:

- a) Filling material looks like a composite filling. It consisted of mixture of a powder (burnt ox hoof ash) added into other ingredient (Figure 10).
- b) Lenin was used for large painful cavity. Lenin was treated by substance to treat the pain.⁽³¹⁾



Fig. 10. Filling material in teeth of an ancient mummy

7. Surgical treatment

Ancient Egyptians practiced oral surgery from as early as 2,500 BC.⁽³²⁾

Evidences for practicing surgery:

a. Edwin Smith Surgical Papyrus which includes remedies for gums and swelling, treatment of loose teeth and dental abscess.

Holes drilled into the jaw bone in order to drain abscesses were found. The holes were the result of man-made drillings, in order to drain the pus from the apical abscess⁽¹⁶⁾ (Figure 11).

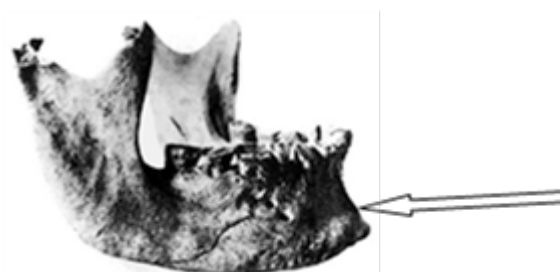


Fig.11. Holes drillings in a mandible to drain the pus

b. Dental instruments⁽³³⁾

A collection of nearly 40 surgical instruments found on the entrance of a temple of Kom Ombo beside the Nile. These surgical instruments include various medical and surgical instruments like bone saws, knives, scalpels, retractors and chisels (Figure12).

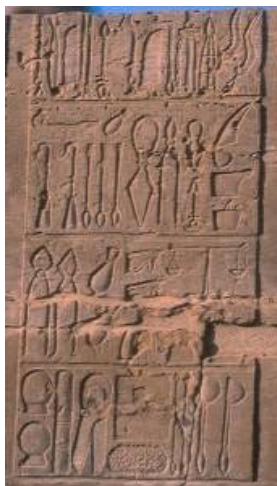


Fig. 12. Surgical instruments

8. Tooth extraction

Tooth extraction was rarely practiced, although some mummies showed sign of forced tooth removal. It is believed that dentists performed extraction for many problems of the mouth. This assumption is based on the fact that forceps are pictured numerous times in the wall carvings of the Ancient Egyptians. All of these procedures were performed without the use of modern day anesthetics.

Some drugs and hypnosis were used to cause the patient to sleep during a surgical procedure "anesthesia". Opium was well known and was given against severe pain.⁽³⁴⁾

9. Dental restoration

Early tooth replacement took place in ancient Egypt. An attempt at replacing lost teeth was discovered by archeologists.

A dental bridge was found where lost teeth substituted with natural teeth which reattached by means of a gold wire to the surrounding teeth⁽³⁵⁾ (Figure 13).

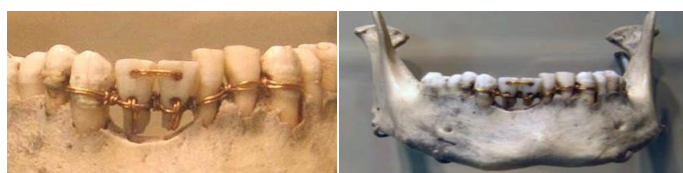


Fig. 13. A mandible of a mummy (2500 BC) with a gold wire bridge



Fig. 14. Maxillary incisors supported by golden band

In another bridge, replaced maxillary incisors was discovered and supported by golden band.⁽³⁶⁾ (Figure 14). "The maker of teeth" did this bridge. He was like dental technician in these days.⁽³⁷⁾

10. Implant⁽³⁸⁾

The idea of dental implants dated back to the ancient Egyptians. Ancient Egyptians hammered teeth-like pieces of shell, ivory, and animal bone directly into the gingiva to replace missing teeth (Figure 15).



Fig. 15. Early dental implants

Conclusion

- The dental skills of ancient Egyptians were far beyond their time with the writing of the first medical texts, performance of the first surgical techniques, use of the first splints and bandages, the first drug therapies, and the first medical dictionary.
- The ancient Egyptians made a path and framework for the advances in all fields of dentistry that exist in our world today.
- It is difficult for man to appreciate completely those people in terms of their arts, sciences, technology and their overall philosophy of life that enabled them to experience a culture that lasted for thousands of years.
- What one knows about them is just a little of what they had.
- More will be discovered through excavations, discoveries and use of technology.
- There should great appreciation to our ancestors, makers of civilization, hoping to follow their way.

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