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HISTÓRIA DA CIÊNCIA NO ENSINO:
REVISITANDO ABORDAGENS, INOVANDO SABERES

HISTORY OF SCIENCE IN SCIENCE TEACHING:
REVISITING APPROACHES, INNOVATING KNOWLEDGE

RESUMO

A história da ciência é referida por diversos autores como fundamental para o entendimento da forma como a ciência se desenvolve útil nos processos de aprendizagem e muito relevante para a promoção da humanização da ciência através das biografias. Partindo destas premissas, temas como biografias de cientistas, objectos históricos, espólios de museus, obras e teorias históricas, programas escolares e de divulgação, dialogam, nesta obra, com o ensino formal e informal, assim como o ensino não formal, através de objectos históricos, espólios de museus, obras históricas e novas abordagens educacionais

PALAVRAS-CHAVE

História da Ciência, Ensino das Ciências, Biografias de Cientistas, Museus de ciência, colecções históricas

ABSTRACT

The history of science is referred by several authors as fundamental to the understanding of how science works, useful for the learning processes, and relevant to the promotion of the humanization of science through biographies. Starting from these premises, themes such as biographies of scientists, historical objects, museum collections, historical works and theories, school and dissemination programs, in this work are involved in a dialogue with formal and informal teaching, as well as non-formal teaching, through historical objects and museum collections, historical works, and new educational approaches.

KEYWORDS

History of Science, Science Teaching, Scientists' biographies, Science Museums, historical collections

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SUMÁRIO

Reading Greek-Roman Medicine in the Light of its Medical-Surgical Instruments
Leitura da Medicina Greco-Romana à Luz de seus Instrumentos Médico-Cirúrgicos

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Abstract: Viewing the history of science through its objects provides a practical and direct comprehension of its technical--scientific level and social-historical context. This approach is particularly useful in the study of Greek-Roman surgery and tools, highlighting its unrivalled advances over previous proto-medicines. A survey of the instruments asserts the complementarity of medicine and surgery as well as their devising and preparation of medicines by physicians. The tools, the sources for their study and their context illustrate textbooks, provide data on similar medical thought and practice in the whole Roman Empire and on physician's social status. They testify the existence of funerary medical honours such as heroization, following the example of Asclepius, the patron of Greek-Roman medicine. The discovery of surgical instruments

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in female tombs also discloses the existence of female medical practitioners. The study of Greek-Roman surgical tools provides an accurate and global view on founding procedures that established Western surgery.
Keywords: Surgical instruments, Greek-Roman medicine, History of surgery, Women doctors, Roman archaeology

Resumo: Visualizar a história da ciência através de seus objetos proporciona uma compreensão prática e directa do seu nível técnico-científico e do seu contexto histórico-social. Essa abordagem é particularmente útil no estudo da cirurgia e dos seus instrumentos greco-romanos, destacando os seus avanços incomparáveis em relação às proto-medicinas anteriores. Um levantamento dos instrumentos deixa clara a complementaridade entre medicina e cirurgia, bem como sua concepção e a preparação de medicamentos por médicos. Os instrumentos, o estudo das suas fontes e o seu contexto ilustram os textos, fornecem dados sobre o pensamento e a prática médica semelhante em todo o Império Romano e sobre o estatuto social do médico. Testemunham a existência de honras médicas funerárias como a heroização, seguindo o exemplo de Asclépio, patrono da medicina greco-romana. A descoberta de instrumentos cirúrgicos em túmulos femininos também revela a existência de médicos do sexo feminino. O estudo dos instrumentos cirúrgicos greco-romanos fornece uma visão precisa e global sobre os procedimentos fundadores que estabeleceram a cirurgia ocidental.
Palavras-chave: Instrumentos cirúrgicos, Medicina greco-romana, História da cirurgia, Práticas funerárias, Médicos do sexo feminino, Arqueologia romana

1. Greek-Roman medicine

Greek-Roman medicine, extended from Hippocrates (460-370 B.C.) to Paul of Aegina (625-690 A.D.), the last Byzantine compiler, laid the foundations of rational medical thought, explaining diseases by natural causes, as opposed to a supernatural origin, characteristic of earlier magical proto-medicines. The shift from magical to rational thinking is difficult to trace, but it is already evident in the Homeric epics (Jaeger, 1993, 150-151).

An emerging difference in the concept of deities may be at the basis of rational thinking. Gods are anthropomorphic and stand very close to humans. For Homer, gods are similar to humans. Although gods are beings who live without weight, they present human traits. Trivial feelings govern them. They get angry, fight, intrigue, are sensitive to pain, have feelings of revenge; they feel and behave just like men (Barnnert, 1979, pp. 15, 88). Gods are not only close to men; they fall in love with mortals and marry them (Romilly, 2001, p. 73). In the Odyssey, men assume and accept mortal boundaries. Odysseus preferred Penelope and his human life. He refused goddess Calypso's offer to turn him into a god:

> "I offered to make him immortal and ageless."
> (Homer, Odyssey, Book 5, v. 135, Rieu, 1991, p. 74).

In Homer's epics, rational thinking goes into the myth and starts to change it. Between 650-330 B.C., the pre-Socratic philosophers formulated new theories launching the basis of modern science (On this subject, see Jaeger, 1993, pp. 150-180). New concepts provided the insights that were lacking in myth, enabling the further development of philosophical and scientific thought (Mansfeld & Primavesi, 1983, pp. 16-17). Ionic philosophy followed the epics. Between 650-330 B.C., new findings and theories formulated by the pre-Socratic

philosophers launched the basis of modern science (On this subject, see Jaeger, 1993, pp. 150-180).

Later, the belief in myth decayed. Pindar (517-438 B.C.), the great lyrical poet, commented on the myth of Pelops, son of Tantalus, the founder of the House of Atreus, constructed on the legendary origin of the equestrian events at Olympia (Swaddling, 1980, p. 66). Pindar expressed disbelief in myths (men told stories) when referring to Pelops in the first Olympian Ode.

> "Yes, wonders are many, but then too, I think men's talk
> stories are embellished beyond the true account
> and deceive by means of
> elaborate lies."
> (Pindar, Olympian 1, vv. 28b, Race, 1997, p. 49)

Rational thinking also prevailed in medicine from the pre-Socratic philosophers to the Classical. The Hippocratic writings (460-370 B.C.) came out by that time. According to Jacques Jouanna:

> "Hippocratic medicine combines observation of the sick with an over-all reflection starting from fundamental concepts of which the Greek were the inventors, in particular art and nature. Medicine from Hippocrates onwards is defined by as a technē, a Greek term which covers two inseparable notions of this period, art and science, both of which are opposed to chance. The special feature of this technē is that it is applied to man and presupposes the knowledge of man. For, to understand the man is to understand his physis (Nature), his nature a fundamental operating concept unknown to other medicines of the Mediterranean basin, such as Egyptian medicine or Mesopotamian medicine" (Jouanna, 2010, p. 5).
>
> As a result, in the Hippocratic treatise "Nature of Man", a new concept of disease was enunciated.

> "The body of men has in itself blood, phlegm, yellow bile, and black bile; these make up the nature of his body, and through these, he feels pain or enjoys health. Now he enjoys the most perfect health when these elements are duly proportioned to another in respect of compounding, power, and bulk, and when they are perfectly mingled." (Hippocrates, Jones, 1959, pp. 11).

In this text and the treatise "On the Humours", health was presented as a balance of the four humours composing the body, the disease resulting in a balance disturbance. Blood-letting would expel the excess of blood. Vomiting, purging and sneezing would derive the other humours (Hippocrates, Jones, 1959, pp. 79-95).

This new concept of health and disease shifted the previous magical paradigm into a rational basis, enhancing empirical observation and thought. Physicians also took hold of surgery. It was the great feat of Greek medicine. Asclepius, the patron of the physicians, was an eminent surgeon. In Apollodorus' Chronicle, a vital source from the second century A.D. for the Greek myths, we read that:

> "Asclepius proved to be a skilled surgeon and practised his craft so well that he not only kept some people from dying, but he even raised people who had died." (Apollodorus, Book III, 121, Smith & Trazkoma Transl. 2007, pp. 59-60).

Many surgical procedures remained the same as in Greek-Roman times, currently carried out with anaesthesia and modern tools. Some ancient instruments like scalpels, forceps, tweezers, vaginal or rectal specula are also quite similar to current devices.

2. Greek-Roman surgery

Amongst simple surgical procedures were bloodletting and cupping (Scarborough, 2010, p. 248). Their use was related to the

excretion of the excess of harmful substances believed to cause the diseases. Cupping vessels were already in use before Hippocrates. Six cupping vessels from a tomb in Ialysus, Rhodes, figure in medical relief. Two cupping vessels are hanging in the background of a tomb relief depicting a sitting doctor with a little boy standing in front of him. It is possibly from Egea and dated from about 480 BC. The cupping vessels are the only signs that identify the man as a physician. This relief states that cupping vessels were the identifying medical symbol in ancient Greece (Künzl, 2002, p. 16). Asclepius was the most outstanding healing hero in ancient Greece who became a god after his death. The serpent linked to his cult was kept as a memory of his hero status, according to the German archaeologist Ferdinand Kutsch (1889-1972) (Kutsch, 1913, p. 32).

A tombstone from Athens, second century B.C., housed in the British Museum, presents Jason, an Athenian physician examining the swollen belly of a child, is an example of an ancient medical appointment. Jason is seated on a cushioned stool, bearded and draped. He examines a patient, a child with an unnaturally distended belly. On the right side, there is an egg-shaped object resembling a cupping vessel. In translation, the inscription reads:

> 'Jason, also known as Decimus, of the Archarnian deme [an administrative division of Athens] a physician' (British Museum website). (Figure 1)

Besides simple procedures, Greek physicians started to perform more complex operations. In previous cultures, surgical procedures dealt mainly with trauma. Issues resulting from cranial trauma may have motivated Neolithic trepanations may have been carried out to resolve complications due to cranial injury (Barroso, 2010, pp. 130-141). Greek-Roman surgery largely improved trauma surgery

and launched elective procedures beyond trauma, aiming to solve specific problems, often appearing as the only possibility of saving the patients' lives. Descriptions of about one hundred twenty different operations figure in textbooks (Bliquez, 2016, p.1). Pleural-thoracic empyema was drained since Hippocrates (Hippocrates, Potter, Volume VI, p. 55). Embryotomy ranges among the most remarkable surgical achievements. It was first described in Hippocratic times in the text De excectione foetus (Schubert and Huttner, 1999, pp. 370-373). The operation was performed to remove a dead child from the living mother´s womb. The Roman encyclopedist Caius Cornelius Celsus (25 B.C.-50 A.D.) described the most relevant Greek-Roman surgical procedures performed at his time, such as eye surgery that was widely developed, including cataract couching (Celsus, Book VII, 7, Henderson, pp. 349-351). The abdominal cavity was left untouched. However, hernia repair was carried out (Celsus, Book VII, 18, Henderson, p. 399). Extraction of bladder stones by rectal incision was hazardous, but it was described by Celsus as the last resource to attempt saving the patient's life (Celsus, Book VII, 26, Henderson, pp. 431-439).

3. Tools and training

Physicians devised their instruments. A text written by Galen (130-210 A.D.), after a fire that destroyed some of his most esteemed goods, enlightens the manufacture of medical-surgical tools:

> "You were amazed that I was seen bearing without distress the destruction in the fire not so much of my silver, gold, silver plate and the many loan documents that were deposited there, as that of a further mass of stored there, namely, a huge quantity of

> drugs of all sorts, both simple and compound, and instruments of every kind. Some, valuable for medical purposes, I said I had lost but still hoped to replace, but that other instruments I had invented myself, making models out of wax before handing them over to the bronze-smiths, these I cannot replace without a great deal of time and effort; likewise books, both those copies of the writings of ancient authors corrected by my own hand and my compositions, as well as so-called antidotes (...)" (Singer, 2013, pp. 78-79)

Physicians devised wax models for the bronze-smiths to shape them, as Galen stated in this text. The instruments are similar throughout the Empire, as the doctor and surgeon, John Stuart Milne observed. They share the same "air de famille" (Milne, 1907, p. 18). This similarity leads to the assumption of a common practice throughout the Empire. Otherwise, physicians read the same books and appear to have followed identical standards. Ancient physicians, represented in reliefs with scrolls (books) and medical-surgical instruments seem to share similar collective learning, training, and practice. As in our days, they learned, trained and spoke the same language throughout the civilized world. The teachers were recognized by the Greeks, especially at a high level of education. The master's role was particularly emphasized when training a technical skill, whether for further education or to become a professional (Massar, 2010, p. 170).

In Galen's text, it is clear how relevant learning was for physicians. He states that he corrected them with his hand. Galen wrote several comments on Hippocratic texts, adding his observation, research, and experience. Like Galen, physicians followed their masters. The Byzantine compilers gathered the most important written works and added their expertise, improving techniques, devising tools, introducing new procedures.

A relief from a marble sarcophagus from Ostia, Italy, portraying a physician with his scrolls (books) and instruments illustrates the patterns followed in medical practice (Figure 2). The physician is sitting, holding a scroll, showing that he is a learned man. A case with surgical tools on the cabinet top identifies him as a physician. Scrolls and a bleeding basin are also proofs of his profession. The style of his garments and the Greek inscription identify him as a Greek physician in Rome. Strigils decorate both sides of the sarcophagus. Strigils, used by athletes to scrape away oil and dust after sportive competitions, were also used in medicine. Galen widely mentioned their use in his book "De Sanitate Tuenda" (Green, 1951).

4. Identifying medico-surgical tools

Greek-Roman medical-surgical instruments rank among archaeological objects of everyday life, and some tools, such as knives are similar to devices used for other purposes. They cannot be identified as surgical unless they come from a surgical context.

The German archaeologist Ernst Künzl has carried out significant research on instruments found in physician's tombs, providing accurate identification of different typologies (Künzl, 1982). Toilet tools also require careful attention. Instruments such as tweezers/forceps are similar to tweezers of medicinal use. These are longer and of better quality, the top being frequently decorated with balusters and beadings. Some tweezers are made up by splitting a single strip of metal. Some have serrated grips (Eckart, 2008, p. 160).

5. History and sources of Greek-Roman surgical instruments

Natural disasters have provided relevant sources for the study of the Roman instruments which began after the discovery of about forty surgical tools at the House of the Surgeon, in April 1771, in the city of Pompeii, buried by the eruption of Vesuvius in 79 A.D. (Künzl, 2002, p. 58). Tomb contents also provide valuable information. In Roman times, the deceased carried their working tools with them to their graves, showing pride in their professions. That habit was crucial for the tombs of physicians because many of the instruments buried with them were preserved (Kenrick, 1859, p. 29). Medical-surgical tools are also found in houses, shops, bathing establishments, rivers, marine shipwrecks, painting, papyri, inscriptions and coins (Bliquez, 2018, pp. 555-556).

5.1. Funerary reliefs

Funerary reliefs also provide representations of complete tools. A rectangular marble base, found in the Asclepeion of Athens, in 1877, belonging to the Hellenistic period, housed at the National Archaeological Museum, Athens, Inv. Nr. 1379, presents two cupping glasses. Between them, an open case displays the carving of various types of scalpels and a bone elevator (Kaltsas, 2002, Figure 4). This relief is particularly useful because it reveals the shape of scalpel blades. Just scalpel handles usually come to us because they are made up of copper alloy that lasts longer. Blades are made up of iron, which gets easily corroded. Milne used it to identify the missing blades of scalpels (Milne, 1907, Plate V). (Figure 3).

The Berlin doctor´s funerary relief is also particularly interesting. It does not depict a god. It portrays a physician, a heroized physician, dressed, sitting on a chair, holding a scroll in his left hand.

In front of him, a shrine with a bucranium carved on it. A young worshipper offers him another scroll, a woman with the head covered by a veil stands behind him. On the left side, a servant leads a horse. In the background, a snake approaches him, coiling from a big tree. The physician was heroized, according to Asclepius, the god, and the patron of the physicians. The relief bears the iconography of healing heroes. In the middle of the upper part, a set of surgical instruments stands out, carved in a rectangular box on the wall. In hero reliefs and funerary banquets, war heroes used to suspend their armours. Healing heroes were physicians who received hero honours after death because of their excellent medical practice. Surgical instruments replaced the armours of war heroes. The plaque dates from the second-century B.C./first century AD. It was part of the Grimani collection in Venice and is presently housed at the Staatlichen Museen Berlin (Sk. 804) (On this subject, see Krug, 2008) (Figure 4).

5.2. Surviving tools

Just a few instruments from Greek medicine have survived. Roman sets of instruments are numerous. They usually include palettes and boxes to prepare and store drugs, as seen in a set from the British Museum (Figure 4). Graeco-Roman physicians bought the ingredients from druggists and prepared their medicines. According to Pliny the Elder (23-79 AD), druggist adulterated the products very often (Pliny, Book XIX in Rackam, 1952, p. 209).

A rectangular box to store medicines is part of the so-called 'Dentistry Case' from the second/third century A.D. It belongs to Bustorff da Silva Collection, Lisbon National Museum of Archaeology (Alves et al., 1995, p. 114, Figure 201). This set also illustrates the tools used in dentistry. Scalpel handles, probes, tweezers, spoon-pro-

bes, spatula-probes, ear-probes are common findings. Instruments from the Roman city of Balsa, Torre d'Ares, in Algarve, dated from the second/third-century A.D., provide a good sample of the most common instruments (Figure 5). Spoons, spatula-probes, spoon--probes and mixing palettes were tools used in the preparation of medicines (Barroso, 2014-2015, 341-373).

The objects of this collection were found at the necropolis of Balsa by the Portuguese archaeologist Sebastião Estácio da Veiga (1828-1891). He donated the medical-surgical materials to José Leite de Vasconcellos (1858-1941), physician, ethnographer, archaeologist, philologist, and founder of the National Museum of Archaeology in Lisbon. Vasconcellos studied the objects and presented them in his book "Medicina dos Lusitanos", marking the beginning of the study of medical and surgical instruments in Portugal (Vasconcellos, 1925). He presented a set of instruments known as 'The case of the surgeon of Torre d'Ares'. Some of these instruments are made of copper alloy and silver and bear artistic decorations. Ignoring microbiology, asepsis, and antisepsis, Greek-Roman doctors decorated their tools all over the Empire. The decorations state the high social status of physicians. (Figure 6) Some instruments, such as cataract needles used for cataract couching, are rare findings because the thin metal instrument got easily corroded. (Figure 7) Cranioclasts and other tools used in embryotomy are also very rarely found (Diepgen, 1937, p.262) (Figure 8). The procedure, described in a text of the Hippocratic Corpus, was much improved by later authors (Barroso, 2013, pp. 75-88).

5.3. Textbooks

Medical-surgical textbooks clarify the use of the archaeological findings from Hippocrates to Paul of Aegina (625-60 A.D.), the

last Byzantine compiler of Greek-Roman medicine and surgery. His writings on surgery sum up the most of the outstanding data on operations and surgical instruments, published by previous authors (Adams, 1844-1847). Egina is the ultimate source of information on Greek-Roman surgery and tools. After the collapse of the Western Roman Empire, in 476 A.D., archaeological evidence of instruments virtually disappeared. Instruments supposedly continued to be used, especially for extracting embedded arrows and other weapons. From Roman times until the sixteenth century, little information on instruments structure is available from surgical authors, except for the comments by the great Arabic surgeon Albucasis (936-1013 AD) on the incomplete materials (Kirkup, 2006, p. 75). The surgical writings of Albucasis, which boosted medieval Arabic and European surgery based on Greek-Roman authors, mainly Hippocrates and Paul of Aegina (Barroso, 2017).

6. Women physicians

Evidence of the practice of medicine by women physicians is widely and continuously documented throughout the Graeco-Roman world, in literary, archaeological and anthropological sources, from the fourth century B.C. to the sixth century A.D. (Schulze 2002, 91-115). They are referred to as iatrinné in Greek, medicae in Latin, in literary sources by philosophers and poets. In medical literature, from Galen to Paul of Aegina, recipes and texts by women physicians are cited and copied. A Greek manuscript by Metrodora, a Byzantine physician from the sixth century AD, is the only surviving text written by a female physician (Del Guerra, 1953). Iatrinné and medicae also figure in funerary inscriptions. Their funerary monuments provide essential data on their age at the time of death, social status, medical learning and training, family relations, and public honours.

Tombs also provide useful data on women doctors. Just a few are extant. According to Ernst Künzl, the most outstanding researcher on this subject, archaeologists unearthed more than a hundred medical tombs between the nineteenth and twentieth century, but no one thought that the deceased could have been a woman. In some cases, they threw the ashes away, and no investigation was carried out on skeletons for sex determination (Künzl, 2002, p. 35).

Six tombs of women buried with their medical-surgical tools have been identified so far. They bear no funerary inscriptions. No name is known. Four are cinerary tombs; two are inhumation tombs. Five tombs, found in the provinces of Northern Europe, one in South Spain, date from the first century B.C. until the second century A.D. The activities range from medicine and surgery to dentistry and preparation of eye medicines. No instrument related to gynaecological or obstetric practice came out from these tombs (For further reading on this subject, see Künzl, 2013).

7. Brief description of women physician´s tombs and instruments

7.1. The surgeon from Spain

The oldest tomb, located in Hispania Baetica or Tarraconensis, is a cinerary tomb from Spain, dated from the imperial period, currently housed at the Mainz Roman-Germanic Museum. The identification of the deceased as a woman came up with the finding of three objects of feminine adornment, buried with her: a mirror, a fibula, and a silver bracelet. Four surgical tools: a scalpel handle, an ear-probe, and a marble palette identified her as a surgeon (Künzl, 2002, pp. 35-36, Fig. 91). The tools were well preserved; no anthropological remains are extant (Künzl, 2013, p. 90, fig. 35, 36).

7.2. The surgeon from Vindonissa

The results of an anthropological study of the human remains in the cinerary glass urn Nr. 98-1 found near a military camp in Vindonissa, ancient Roman Upper Germania, now housed at the Vindonissa Museum, in Switzerland, was compatible with a woman aged eighteen to twenty-three. The remains of a three-year-old child corpse, possibly of her child, were buried with her. Two scalpel handles and three tweezers, twisted by burning, identified her as a surgeon. Five glass balsamaria and a bronze pyxis testify her activity in preparing medicines. Other objects found: a glass urn, nine ceramic containers, five balsamaria, and a bronze pyxis, are related to the storing of drugs. Two coins provided the dating of the tomb: one from the time of Augustus (reigned from 27 B.C. to 14 A.D.), other from the time of Caligula (reigned from 37-41 A.D.). The reason for the finding of a woman physician´s tomb in this place is unknown since male physicians usually assisted Roman soldiers (Künzl, 2013, p. 86, Fig. 30).

7.3. The surgeon from Strée

No human remains were found in the cinerary Tomb No. 21, discovered in Strée, Hainhaut from Roman Germania Superior, dated from 100 A.D., currently housed at the Archaeological Museum of Charleroi, in Belgium. The urn contained the following surgical tools: a scalpel with a bronze handle and an iron blade (length: 15 cm) and a razor blade. It also contained a bronze fibula, an enamel fibula, five ceramic bowls, red varnish ware, a lamp, sigillata earthen dishes, fragments of a small box, a fragment of a hinge, and a bronze button completed the estate. The fibulae, characteristic of that Celtic land, used to attach feminine garments, identified the

deceased as a woman. A scalpel handle and a razing blade handle identified her profession as a surgeon (Künzl/Engelmann, 1997, 376 Fig. 2; Künzl, 2002, p. 94, Fig. 132; Künzl, 2013, pp. 95-96, Fig. 40).

7.4. The dentist from Wederath

Upon the discovery of the tomb Nr. 1539 in the Celtic necropolis of Wederath, currently, in Belgium, a study of the ashes was carried out. It was compatible with a young woman. An iron dental forceps and a razor blade found within have identified the profession of the deceased as a surgeon who also practised dentistry. The findings of the tomb, dating from 100 A.D., are housed in the Archaeological Park of Wederath, Belgium (Künzl/Engelmann, 1997, p. 376, Fig. 1; Künzl, 2013, p. 95, Fig. 41).

7.5. The physician from Heidelberg-Neunheim

The anthropological study of the human remains of an inhumation tomb, found in Heidelberg-Neuenheim, in Germany, ancient Germania Superior, identified a woman aged thirty to thirty-five. Two bronze cupping vessels, a spoon-probe, a slate palette, and two mortars identified the profession of the deceased as a physician. Bones of a dog, frequently associated with Asclepius´ cult, were also found. The findings of the tomb, dating from 100-150 A.D., are housed in the Kurpfälzig Museum Heidelberg (Hensen, 2004, pp. 76-79; Künzl, 2013, p. 87, Fig. 32).

7.6. The oculist from Saint-Médard-des Prés

Roman villa in Saint-Médard-des Prés, in France, in 1847. The anthropological study identified a female skeleton. The house and the tomb were thought to belong to a Gallic painter because of the finding of many supposedly painting materials. When the materials were studied, the identification with eye medicines came out. An alabaster mortar, a bronze rectangular box with remains of ancient collyria, spoon-probes, a slate palette, numerous glass balsamaria, and small ceramic amphorae identified the deceased with a specialist in the preparation of eye medicines, possibly a doctor of eye diseases. However, no tools like cataract needles and others used in eye surgery came out among the findings currently housed at the Vendéen Museum in Fontenay-le-Comte (Pardon-Labonnelle, 2008, pp. 157-170; Dasen, 2011; Künzl, 2013, p. 93, Fig. 39). A mortar and pestle and glass balsamaria, found in a tomb from Pombalinho, Santarém, in Portugal, dated from the end of the first century/beginning of the second century A.D., seem to point to the profession of the deceased as someone skilled in drug preparation (AA/VV, 1989, pp. 89-91). The case of the women from Saint-Médard-des-Prés might be the same.

8. Conclusion

Greek-Roman medicine, based on rational thinking and practice, was very interventional. Adopting cupping vessels as a symbol, earlier Greek physicians placed great emphasis on surgery. Although there were references to some anaesthetics, they were certainly challenging to manage because of their toxicity and, consequently, would have been seldom used. The ignorance of bacteriology, sepsis, and antisepsis, was also of no help for ancient surgeons. Wealthy

decorations state the high social status of many ancient physicians but were hazardous in the healing of wounds and in the recovery of surgical operations. Surprisingly, patients survived. Somehow doctors with so few resources were healing heroes. In many cases, texts report remarkable improvements in surgical techniques and procedures. Their instruments testify some of the most remarkable achievements of medicine and surgery in Greek-Roman time.

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References

AA.VV. Museu Nacional de Arqueologia e Etnologia (org.). 1989. Portugal. Das Origens à Época Romana, Lisboa: Museu Nacional de Arqueologia e Etnologia.

Adams, F. (1844-1847). The seven books of Paulus AEgineta: translated from the Greek: with a commentary embracing a complete view of the knowledge possessed by the Greeks, Romans, and Arabians on all subjects connected with medicine and surgery, London: The Sydenham Society.

Alves, F., Raposo, L., Santos, A. (org.). (1995). Um gosto privado/Um olhar público, Doações D. Luís Bramão, Bustorff Silva, Barros e Sá, Lisboa: Instituto Português de Museus/Museu Nacional de Arqueologia.

Apollodorus´ Library and Higgin's Fabulae. Two Handbooks of Greek Mythology (2007). Smith, R. Scott & Trazkoma, Stephen M, (transl.) 2007. Indianapolis: Hackett Publishing Company.

Bannert, B. (1979). Homer, Hamburg: Rowohlt.

Barroso, M. D. S. (2013) Post-mortem cesarean section and embryotomy – Myth, Medicine and Gender in Greek-Roman Culture in Acta Medico-Historica Adriatica 11:1-1888, pp. 75-88.

Barroso, M. D. S. (2010) Porque se começou a praticar a trepanação no Neolítico? In Medicina na Beira Interior – Cadernos de Cultura Medicina na Beira Interior, da Pré-História ao Século XXI", nº XXIV. pp. 130-141.

Barroso, M. D. S. (2014-2015), Medicine, surgery, pharmacy, toilet, and other health care tools from the Roman city f Balsa (Tavira, Portugal) from the 1st at the 3rd century AD in O Arqueólogo Português, Série V, 4/5, 2014-2015, pp. 341-373.

Barroso, M. D. S. (2017), Albucassis, a landmark for Arabic and European surgery, in Muslim Heritage – The Muslim Times. https://themuslimtimes.info/category/muslim-heritage/

Bliquez, L. J. (2016). The tools of Asclepius, Surgical Instruments in Greek and Roman Times, Leiden: Brill.

Bliquez, L. J. (2018). Greco-Roman Surgical Instruments in Keyser, P. T., and Scarborough, J. Eds. The Oxford Handbook of Science and Medicine in the Classical World, Oxford: Oxford University Press, pp 556-590.

Celsus. On Medicine. Hendersen, H. (ed.) (1938) London: Harvard University Press, III volumes.

British Museum accessed on the 4th august 2017. http://culturalinstitute.britishmuseum.org/asset-viewer/marble-relief-of-jason-the-physician-and-patient/BAFf9JfEDdzG0Q?hl=en

Dasen, V. (2011). La medicine à l'époque romaine in Archéo Thema, nº 16, septembre.

Del Guerra, G. (1953). Il libro di Metrodora: sulla malattie delle donne e il ricettario di cosmetica e terapi, testo greco e traduzione italiana, Milan: Ceschina.

Diepgen, P. (1937). Die Frauenheilkunde der Alten Welt. München: Verlag von J. F. Bergmann.

Eckart, E. Crummy, N. (2008). Styling the body in Late Iron Age and Roman Britain, a contextual approach to toilet instruments, Montagnac: Éditions Monique Mergoil.

Green, R. M. transl. (1951). A translation of Galen's Hygiene (De Sanitate Tuenda), Illinois, USA: Springfeld.

Hensen, A. (2004) "Die medica von Heidelberg" in Abenteuer Archäologie 4, 76-79.

Hippocrates (1959). Jones, W.H.S. (transl.) Volume IV, Cambridge: Harvard University Press.

Hippocrates (1988). Potter. P. (transl.) Volume VI, Cambridge: Harvard University Press.

Jaeger, W. (1993). Paideia, los ideales de la cultura grega, tradução para o castelhano do original alemão de Joaquin Xirau, Madrid: Wenceslau Roces.

Jouanna, J. (2010). Hippocrates as Galen's teacher in Hippocrates and Medical Education, Leiden: Brill.

Kaltsas, N. (2002). Sculpture in the National Archaeological Museum, Athens: Kapon Editions.

Kunter, A. 1989. Leichenbranduntersuchungen in Wederath in Spiegel des Lebens. Zum Totengebrauch der Kelten und Römer am Beispiel des Treverer-Gräberfeld des Wederath-Belgium, Schriften Reinlandisches Museum Trier 2, Mainz.

Kutsch, F. (1913). Attische Heilgötter und Heilheroen, Gießen: Verlag von Alfred Töpelmann.

Kenrick, J. (1858). Roman Sepulchral Inscriptions. Their relation to Archaeology, Language, and Religion, London: John Russell Smith.

Kirkup, J. (2006). The evolution of Surgical Instruments. An Illustrated History from Ancient Times to the Twentieth Century, Novato, CA: Nova Publishing.

Homer – The Odyssey (1991). Rieu, E.V. (transl.), Penguin Books, London.

Krug, A. (2008). Das Berliner Artzrelief, Berlin: Verlag Walter de Gruyter.

Künzl, E., Engelmann, H. (1997). "Römische Ärtzinnen und Chirurginnen. Beitrag zu einem antiken Frauenberuf". Antike Welt 28 (H.5), 375-379.

Künzl, E. (1982). Medizinische Instrumente aus Sepulchralfunden der römischen Kaiserzeit, Köln: Rheinland Verlag GmbH.

Künzl, E. (2002). Medizin in der Antike Aus einer Welt ohne Narkose und Aspirin, Stuttgart: Konrad Theiss Verlag.

Künzl, E. (2013). Die Ärtzin, Main am Rhein: Nunnerich-Asmus Verlag Media.

Kutsch, F. (1913). Attische Heilgötter und Heilheroen, Gießen: Verlag von Alfred Töpelmann.

Lavastine, L. (1936). Histoire Générale de la Médicine, de la Pharmacie, de l'Art Dentaire et de l'Art Vétérinaire, édité par Albin Michel, Paris.

Mansfeld, J., Primavesi, O. (1983). Die Vorsokratiker Grischisch/Deutsch, Stuttgart: Philipp Reclam jun. GmbH Co. KG.

Massar, N. (2010). Choose your master well in Hippocrates and Medical Education, Leiden, Boston, Brill, pp. 169--18.

Milne, J. S. (1907). Surgical Instruments in Greek and Roman Times, Oxford; Massachusetts; London: Clarendon.

Meyer-Steineg, T. & Sudhoff, K. (1921). *Geschichte der Medizin im Überblick mit Abbildungen*, Jena: Verlag von Gustav Fischer, Jena.

Pardon-Labonnelle, M. (2008). Medica Ocularia?, in V. Boudon-Millot, V. Dasen B. Maire (ed.) Femmes en Medicine, De Boccard Edition Diffusion, 157-170.

Pindar-Olympian Pythian Odes (1997). Race, W. H. (ed., transl.), Cambridge: Harvard University Press.

Pliny Natural History (1952). Rackam, H. transl., Cambridge: Harvard University Press.

Romilly, J.D. (2001). Homero, Introdução aos Poemas Homéricos, Edições 70, Lisboa.

Scarborough, J. (2010). Teaching surgery in Late Byzantine Alexandria in Hippocrates and Medical Education, Leiden: Brill.

Singer, P. N. (ed.) (2013). Galen: Psychological Writings, Cambridge; Cambridge University Press.

Schubert, C. and Huttner, U. (ed. transl.) (1999). Frauenmedizin in der Antike, Düsseldorf: Artemis & Winkler Verlag.

Schulze, C. (2002). Christliche Ärtztinnen in der Antike, Spudasmata Band 86, Zürich: Olms Hildesheim.

Swaddling, J. (1980). The ancient Olympic Games, London: British Museum Press.

Vasconcellos, J. L. (1925). Medicina dos Lusitanos, Lisboa: Faculdade de Medicina.

Figure 1 – Jason palpating the liver of a child. Reproduced from LAVASTINE, L. (1936). Histoire Générale de la Médicine, de la Pharmacie, de l'Art Dentaire et de l'Art Vétérinaire, édité par Albin Michel, Paris, p. 275.

Figure 2 – Sarcophagus with a Greek Physician. Provenance: Ostia, Rome. Date: Fourth century A.D. Inv. Nº 48.76.1. Courtesy of the Metropolitan Museum of Art New York.

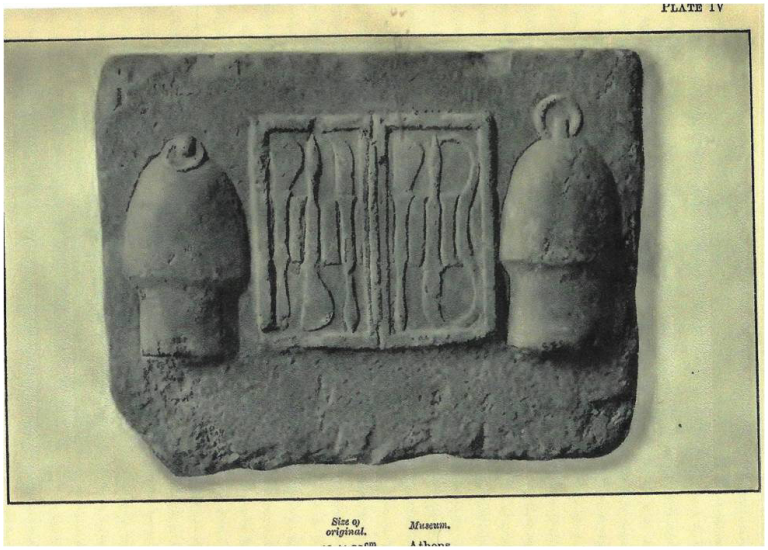

Figure 3 – Marble relief from the Athens Asklepeion, second century A.D. (Reproduced from Milne, 1907, Plate V).

Figure 4 – The Berlin doctor's funerary relief. Reproduced from LAVASTINE, L. (1936). Histoire Générale de la Médicine, de la Pharmacie, de l'Art Dentaire et de l'Art Vétérinaire, édité par Albin Michel, Paris, p. 203.

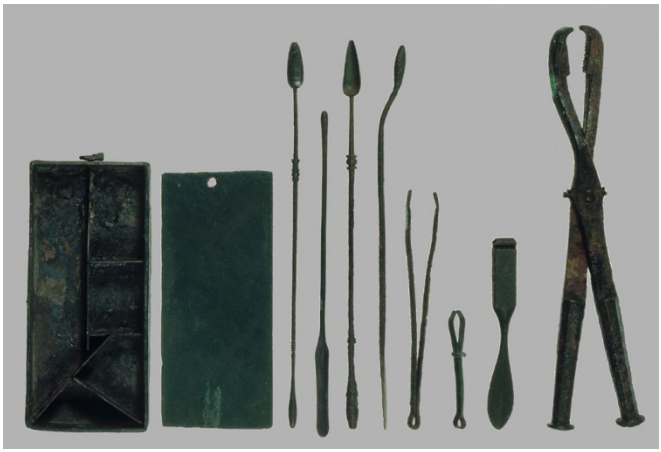

Figure 5 – 'Dentistry Case' from Bustorff da Silva Collection. From left to right: rectangular box to store medicines and lid, spoon-probe, spatula-probe, triangular spoon-probe, periosteal elevator, tweezers, small tweezers with a sliding ring, scalpel handle, dental forceps. Photo credit: João Pessoa. Courtesy of the National Museum of Archaeology Lisbon.

Figure 6 – Set of instruments from Torre d'Ares. On the right corner – Slate palette. From right to left: a copper needle for bandage sewing, copper alloy perforated fish spatula-probe, spatula-probe, two copper alloy probes, copper alloy ear-probe, two copper alloy spatula-probes, copper alloy/silver spoon, two copper alloy (needle?) fragments, copper alloy/silver scalpel handle, four copper alloy tweezers. Photo credit: João Pessoa and Luísa Oliveira. Courtesy of the National Museum of Archaeology Lisbon.

Figure 7 – Oftalmological instruments from the Hellenistic period. Above: Eyelid holder; cautery, Couching cataract needle, Cataract knife, eyelid holder, cilia forceps. Bellow: Box to store medicines, spatula, sharp spoon, scraper. Reproduced from Meyer-Steineg, T. & Sudhoff, K. (1921). *Geschichte der Medizin im Überblick mit Abbildungen*, Jena: Verlag von Gustav Fischer, Jena, p. 93.

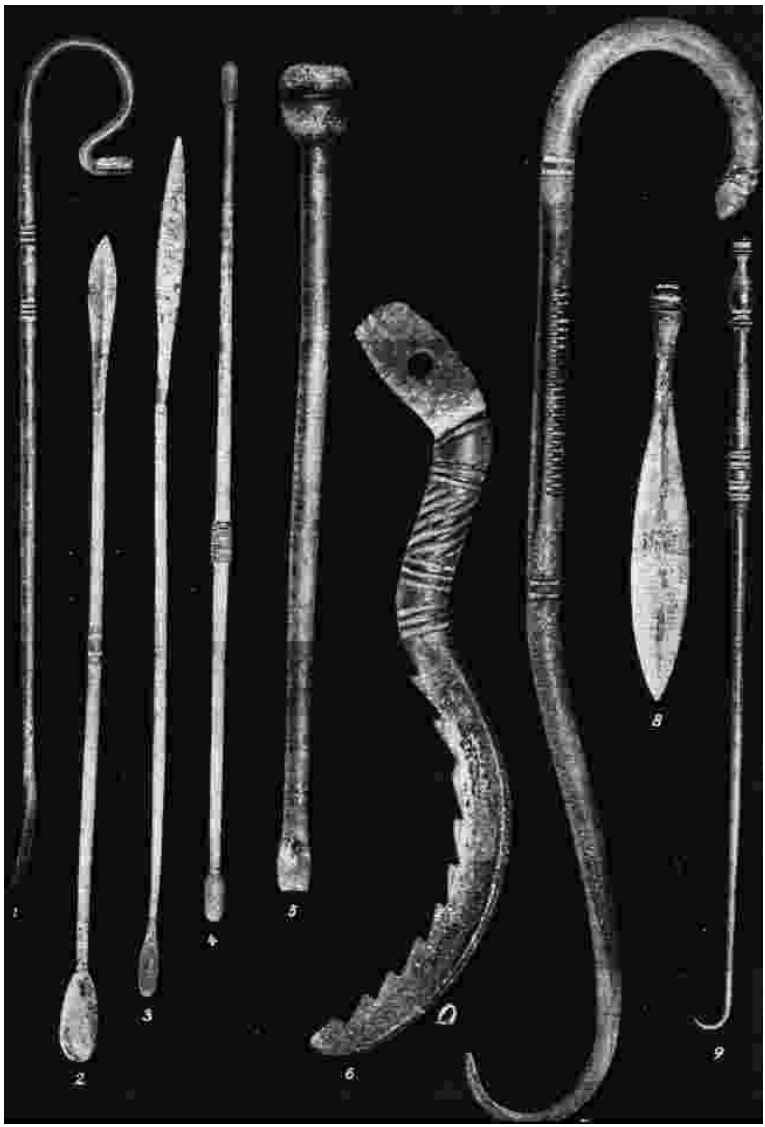

Figure 8 – Roman gynecological and obstetric instruments. 1 and 2 Curettes, 3 and 4 Uterine probes, 5 Bronze probe, 6 Fragment of a cranioclast, 7 Embryotomy hook, 8 Embryotome, 9-Small embryotome hook (Reproduced from Diepgen 1937, p. 262).

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