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ORIGINAL PAPER

SARANTIS ARCHIGENES (1809-1873), A PILLAR OF THE OTTOMAN IMPERIAL SCHOOL OF MEDICINE. HIS MEDICAL PRACTICE AND SKILLS IN SURGERY IN 19TH CENTURY CONSTANTINOPLE

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Abstract

In 1843, Hellenic origin physician and philanthropist Sarantis Archigenes joined the Imperial Medical School of Constantinople as professor, serving Ottoman education for a period of 30 years. After receiving the patronage of the Turkish origin Mustafa Reşid Paşa, statesman and leader of the Tanzimat/Reform Movement, he succeeded a paramount education in medicine in Paris and other European Universities, transferring this knowledge to the Ottomans. Materia Medica, pharmacy, internal pathology and external pathology, were some courses he taught, while his work on political economy and health and his contribution on public hygiene made him famous among the researchers of the future. This narrative review, by conducting a survey in various libraries, published studies and Ottoman Archives, unveils some unknown aspects of Archigenes contribution, like his medical practice and surgical skills. Cholera epidemics,

Résumé

Sarantis Archigenes (1809-1873), figure emblématique de l'école Impériale de Médecine Ottomane. Sa pratique médicale et son talent en chirurgie à Constantinople au XIXe siècle

En 1843, le médecin et philanthrope d'origine Grecque Sarantis Archigenes, intègre l'École Impériale de Médecine de Constantinople en tant que professeur, où il œuvrera pendant trente ans au sein de l'enseignement ottoman. Bénéficiant du patronage de Mustafa Reşid Paşa, homme d'État d'origine Turque et chef du Tanzimat (mouvement de réforme), il poursuit une formation médicale de haut niveau à Paris et dans d'autres universités Européennes, qu'il transmet ensuite aux Ottomans. Il enseigne notamment la matière médicale, la pharmacie, la pathologie interne et la chirurgie, tandis que ses travaux sur l'économie politique et la santé, ainsi que sa contribution à l'hygiène

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bladder stones, ocular cancer, breast malignancy, abdominal inflammation were some cases treated or consulted by him. Surgical tool modifications, innovative thinking, care for the poor, home-based treatment, teamwork, all characterized him. He became a palace physician and enjoyed various ranks of honor and medals, treating Mustafa Reshid Pasha the Great in his last, Patriarch Anthimus the VI and Patriarch Cyril II of Jerusalem. However, since his medical actions remain unexplored, studies related to this concept attract interest and build a forgotten and lost past, affixing two different cultures with the same goal… moving towards the modernization of the practice of medicine. Arghigenes played a paramount role in the modernization of the Imperial Medical School's curriculum and education of future physicians.

Keywords: surgical tools modifications, home-based surgical procedures, Saranti Bey, 19th-century modernizations of the Turkish medical education.

publique, lui valent une grande renommée auprès des chercheurs futurs. Cette étude narrative, fondée sur une recherche menée dans diverses bibliothèques, publications et archives ottomanes, révèle des aspects méconnus de la carrière d'Archigenes, tels que sa pratique médicale et ses compétences chirurgicales. Il traite ou conseille des cas d'épidémies de choléra, de calculs vésicaux, de cancers de l'œil et du sein, ainsi que d'inflammations abdominales. Innovation dans le domaine chirurgical, dévouement aux plus démunis et esprit d'équipe caractérisent sa personnalité. Il devint médecin du palais et reçut de nombreux titres honorifiques et decorations, traitant Mustafa Reshid Pacha le Grand dans sa dernière, le patriarche Anthimus VI et le patriarche Cyrille II de Jérusalem. Cependant, ses actions médicales demeurant méconnues, les études qui s'y rapportent suscitent un vif intérêt et permettent de reconstituer un passé oublié, unissant deux cultures différentes autour d'un même objectif… la modernisation de la pratique médicale. Arghigenes joua un rôle primordial dans la modernisation du programme de l'École Impériale de Médecine et dans la formation des futurs médecins.

Mots-clés: modifications des instruments chirurgicaux, interventions chirurgicales à domicile, Saranti Bey, modernisation de l'enseignement médical Turc au XIXe siècle.

Introduction

The thirty-year scientific activity of Sarantis Archigenes (Sarandi Bey, 1843-1873) (Figure 1) in the Ottoman Empire falls into the first phase of operation of the Imperial (Military) Medical School[1-3]. Mid-19th century Europe was marked as the era when surgeons shifted their practice from quickly completing the surgical procedure to a more meticulous operation due to the advances in the fields of medicine and medical technology[4]. Austrian and German surgeons, based on anaesthesia, antisepsis and asepsis revolutionized surgery to an unprecedented extent, gaining for Austrian-German School of Surgery the leading position for the evolution to come[5]. Meanwhile, in the Hellenic peninsula and the newly formed Greek State, the influence of the School was strong, based on the origin of the new King, Otto of the Greek Friedrich Ludwig von Wittelsbach (1815-1867) from Bavaria. Many textbooks were translated from German to Greek for the education of the surgeons[6]. Although the unification process of Germans under Prussia, their hunger for political and economic infiltration in the European theater, as well as social and cultural reasons secured rapidly their predominance. In another part of Europe, in France, French surgeons with an inclination towards surgery formed a significant epicenter for education in surgery. The newly formed Medical School of Paris was based on the old School of Surgery which gave the world the most prominent anatomist-surgeons. French and Austrian-German schools shaped the surgical procedures of the surgeons in Europe[7]. Archigenes, with studies all around Europe, is considered as one of the pillars of the Imperial Medical School of Constantinople participating in various surgical procedures[1-3,8-9]. The Medical School of Medicine and Surgery, as it was initially named in Constantinople, had been founded in 1827[10], while during 1838 was moved to its novel premises in Galatasaray[11] being reorganized according to the distinguished Vienna Military Medical-Surgical Academy (Austrian: Josephinische Medizinisch-Chirurgische Akademie). Its two faculties, Medicine and Surgery, were merged in one, receiving the name Imperial School (Turkish: Mekteb-Tibbiye-i Adliye-i Sahane). In 1841 long-awaited permission was granted and the use of cadavers in anatomy classes began[12].

As for the Ottoman surgical science in particular, it was the year 1827 when a School for Surgeons



Figure 1. Sarantis Archigenes, portrait from Archigeneion Primary School of Neoi Epivates, Thessaloniki, Greece (left side), degree of Sarantis Archigenes, Paris, 1842 from Archeologia Thrace Journal 1955;20:190 (right side).

"Cerrahhane-i Mamure" (English: Surgical House) was established to train surgeons for the army along with the School of Medicine (in Tulumbacıbaşı Mansion near Tulumbacıbaşı Barracks and then in Otlukçu Barracks)[11]. Another School for Surgeons was established to serve the multiple needs of the army in Topkapı Palace in 1831, without being known when exactly the two surgical schools were integrated[13]. The name of the French surgeon Sade de Calliére, surgeon from Damien Medical School, is referred as organizer of the surgery class and lecturer on surgery[14-15] as well as that of Constantinos Caratéodory (nephew of the physician and professor at the Medical School Stephanos Caratéodory), a surgeon and obstetrician, who lectured, among others, in surgery[10]. During the reorganization of the School in 1836, School of Medicine and Surgery were united (while distinction between physicians and surgeons ended in Turkey during 1892)[14-16]. Dr. Charles Ambroise Bernard (1808-1844), who came from Austria in 1838 upon the invitation of the Ottoman Empire, started the education activities in the faculty of medicine, with the goal to ensure modern medicine. It was then that the autopsy of the human body was allowed for educational purposes. Specifically, in 1841 permission was given by the Sultan for the use of cadavers in anatomy lessons. Until then the lesson was done using skeletal models and drawings from Europe. For the anatomy course, the Austrian Sigmund Spitzer (1813-1894) was hired, but there was a constant problem of finding bodies. Corpses of captured and later unclaimed bodies were used, but not of homeless people, indicating a fear, even though the practice is not against the Muslim faith. Meanwhile, Bernard had established the initiation of surgical procedures, performing around 130 per year for the students to observe and learn Western European surgery[12,14,17]. Moreover, chloroform anesthesia started to be used at the Medical School in 1848 shortly after its first successful applications in Europe[18]. Decades later, Cemil Topuzlu Pasha (1866-1958) with financial support from Cemalettin Effendi, Seyhulislam (Chief Islamic Leader) of the Ottoman Empire, studied under Jules-Émile Péan (1830-1898), one of the most famous surgeons of the 19th century, in order to return in 1890 and bring pioneering procedures and reform surgery in Turkey[14]. Archigenes, two decades after Bernard's work, before the era of Topuzlu significant contribution, started to teach external pathology (surgery), performing a series of surgical operations[19]. In 1867, the Civil Medical School (Mekteb-i Tibbiye-i Mulkiye-i Sahane) was established and the introduction of Ottoman Turkish language. In 1870 Ottoman Turkish were introduced in the Military Medical School too[14,20], an effort which is wrongly considered to have started by Sultan Mahmut in 1839[21]. In the 19th century, as the medical landscape experienced transformative leaps, the role of medical schools and their curricula became pivotal in shaping the surge of surgical advancements. This period, characterized by burgeoning knowledge and evolving practices, necessitated a structured and comprehensive approach to educating the physicians and surgeons of tomorrow. Medical schools, previously few and distant between each other, began to proliferate, each vying to impart the most contemporary and applicable teachings to their students. The

Ottomans understood that swift changes in medical education shall lead to modernization of the practice of the era. Drawing inspiration from European models of medical instruction, the Ottoman government sought to harmonize local traditions with innovative scientific methodologies. This synthesis did not happen overnight but was the result of deliberate strategic planning influenced by foreign experts and local intellectuals. Among those, Sarandis Archigenes stood as a majestic figure of the era.

The scientific activity and medical practice of Archigenes occurred in a period of particular historical interest, that of the Ottoman political reform (1839-1876), during which there was the largest admission of physicians from different ethno-religious communities of the Ottoman empire in the Imperial Medical School, mainly the Greek Orthodox and Armenian communities, while Bulgarian and those of European origin followed[22-23]. In 1870 by introducing the Turkish language in the Imperial Medical School the creation of an elite-education of Turkish physicians was launched[24]. Apart from internal politics, Archigenes career almost coincided with a period of epidemic diseases (1838-1876)[25], such as cholera (1847, 1865, 1871-76), plague (1838, 1843)[26] and typhus[3], during which he offered his services in areas far from Constantinople. Moreover, this period was characterized as dark, due to the destruction of the emblematic Medical School in Galatasaray by fire in 1848 and the subsequent relocations of the Medical School, two facts during which several documents about the functioning of the School were destroyed[11]. Archigenes is regarded as one out of four professors of Hellenic Orthodox origin, with Stefanos Caratheodory 1789-1867, Constantinos Caratheodory 1802-1879 and Spyridon Mavrogenis 1816-1902 being the other three, with the greatest contributions to the Imperial Medical School[3,27]. Archigenes' medical skills and knowledge in surgery are some of the aspects which need more study to comprehend such an esteemed figure in the history of Ottoman medicine. This historical review aims to utilize its findings to unveil some neglected aspects of Archigenes biography with emphasis on his medical and surgical skills. With the scope to present this majestic figure of the Imperial Medical School of Constantinople during 19th century, this review depicts also the era of his professorship and presents a glance of the School.

Material and methods

For this original paper in the field of the History of Medicine, a documentary archival and literature research, with the aim to analyze and interpret 19th century medical phenomena and Archigenes' impact in surgery, was conducted in (a) Digital and conventional libraries and archives and (b) Online databases of articles, journals and books. The key words used were Archigenes, Imperial Medical School, Ottoman Constantinople, Ottomanism and relevant derivatives in various languages (Hellenic-Greek, English, French, Ottoman, Turkish, German, Italian, Bulgarian). Criteria for paper, archival and literature data inclusion in the study were full availability, peer reviewed articles, historical papers and treatises and official archival material. For the discussion section of this paper, references related to the era in research were also included. The material was studied from both a historical and a medical point of view, for the discussion to stage the scientific atmosphere of the era and narrate the contribution, the innovations and the legacy of Sarantis Archigenes, the figure in survey.

Life, studies and medical background

Sarantis Archigenes was born in 1809 in Epivates (Greek: Επιβάτες) of the Eastern Thrace being educated in Epivates School (semi-high school). Soon after, he moved to study at the Patriarchal Academy in Constantinople, before travelling in 1836 to the city of Paris, the Mecca of medical science in the early 19th century. In Paris however, his need of money led him to flee to the Ottoman embassy, where he met Ottoman statesman and diplomat Koca Mustafa Reşid Paşa (1800-1858), later known as the "architect" of the Ottoman reforms, who secured him accommodation and a sufficient scholarship, on the condition that, after the end of his studies, he would offer his services to the Ottoman state. Under the support of his new patron, Archigenes was able to study in Pisa and Florence (practical training) and to visit medical schools and hospitals in London, Brussels, Hague, Halle, Pisa and Vienna[18-19,28-36]. In Paris during 1844 he specialized in surgery[37]. On his return, he was appointed professor at the Imperial Medical School in Constantinople, teaching a variety of courses, focused more on internal pathology, materia medica, political economy and the field of external pathology (surgery), participating in hundreds of surgical operations. Archigenes practiced medicine both as a private and as a palace physician[38-44]. Among his duties was the offer of medical services to the Theological School of Halki Princes' Island (Turkish: Ortodoks Ruhban Okulu, Heybeli Ada) from 1856 to 1862[45-46].

His scientific work, in Greek and French with translations into Ottoman Turkish and Bulgarian, is considered as the "starting point" of the scientific activity of the Greek Orthodox community in the 19th century[47]. Despite being a prolific writer on medical issues, such as Υγειονομία, *(Hygiene in Greek)*[48], and *Hygionomie (Hygiene in French)*, both editions in 1841[49],

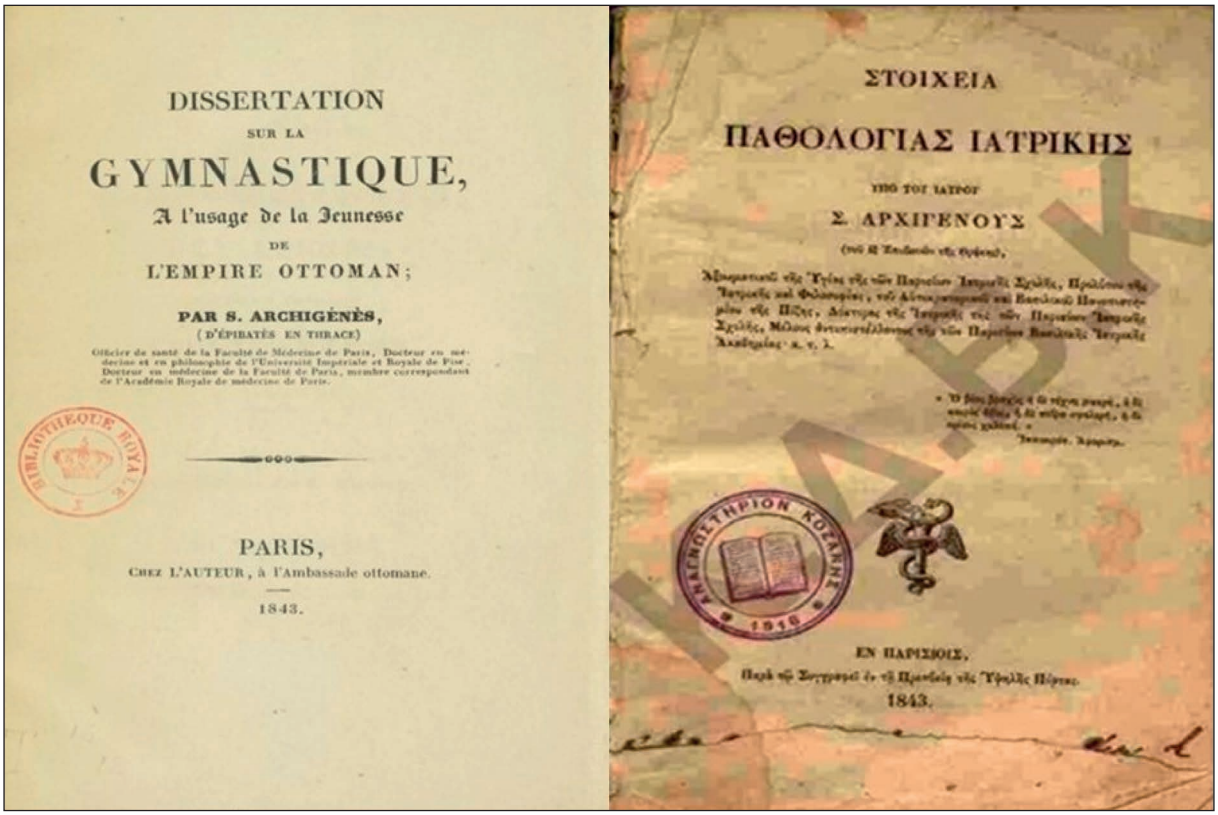


Figure 2. Cover of Archigenes' treatise, *Dissertation sur la gymnastics, à l'usage de la jeunesse de l'Empire Ottoman* by Sarantis Archigenis (dissertation on gymnastics for the use of the youth of the Ottoman Empire). Paris, 1843 (Bibliothèque Nationale de France, left side), cover of Archigenes' book *Elements on Medical Pathology* of 1841 (Coventareios Municipal Library of Kozani, right side).

Questions sur les diverses branches des Sciences Médicales (*Questions in various branches of the Medical Sciences, in French)* in 1842[50], *Dissertation sur la Gymnastique (Dissertation on Gymnastics, in French)* in 1843[51] and *Elements of Medical Pathology* (Στοιχεία Παθολογίας Ιατρικής, *in Greek)* in 1843 (Figure 2)[52], his work was not limited to medicine, being extended to political economy with his treatise *Economie Politique (Political Economy, Tasarrufat-Mulkiye, in French)*[53]. He died in September 1873 in Constantinople and buried in Epivates, in the north side of Archigenia Schools, a foundation established by him and his wife Eleni Fenerli (Figures 3 and 4)[54].

Medical practice and surgical operations

During 1842, Archigenes in the Parisian clinic of Professor in Ophthalmology Alphonse Desmarres operated two cases of ocular cancer, the first related to a 2-year-old child and the second to a 45-year-old male patient. Child's eye was enlarged, displaying exophthalmos and a central yellowish point in the bottom of the eye (probably macula). Adult's eye presented the shame yellowish or copper-like colored point, with no vision and strong chronic pain, while near iris a tumor like a nut existed. Archigenes chose Dypuitren's method (modified) with an incision between the upper sclera and the margo supraorbitalis, using an elongated sharp scalpel. This kind of cutaneous opening permitted him to firstly cut the superior rectus before the total enucleation of the eye. In both cases optic nerve was swelled, in need to be cutoff until the optic foramen of the skull. This operation was known for its limited hemorrhage, while the local cleansing with total enucleation and removal of the extracranial optic nerve was considered saver. However, the child died one year later by brain metastasis (named by Archigenes as degeneration)[55]. Archigenes had participated in various operations, even in out of the clinic's save environment, like in the case of 1849, when he removed a bladder stone by using the lateral athwart incision. Massive hemorrhage was encountered, which was later treated with a tampon drumming method and hemostatic drugs. Instead of a silver tube to press the wound, a cloth was put in as a catheter to easily permit possible pus to exit the area. Although the operation took place in the house of the young male patient, in an aseptic environment with no antiseptic protocol, it was a success[56]. His fame for successful operations quickly reached high ranking officials, until when, in 1850 the Kehagias of the High Gate



Figure 3. The couple Sarantis and Eleni Archigenes (Athinagenis Nikolaos, 1897, Th. Kyrkoudis, 2005, left side), the signature of Sarantis Archigenes on an invoice endorsement of the pharmacy Oribasius of Solona Theodoride in Constantinople 1869, (Akylas Millas Archive, right side).

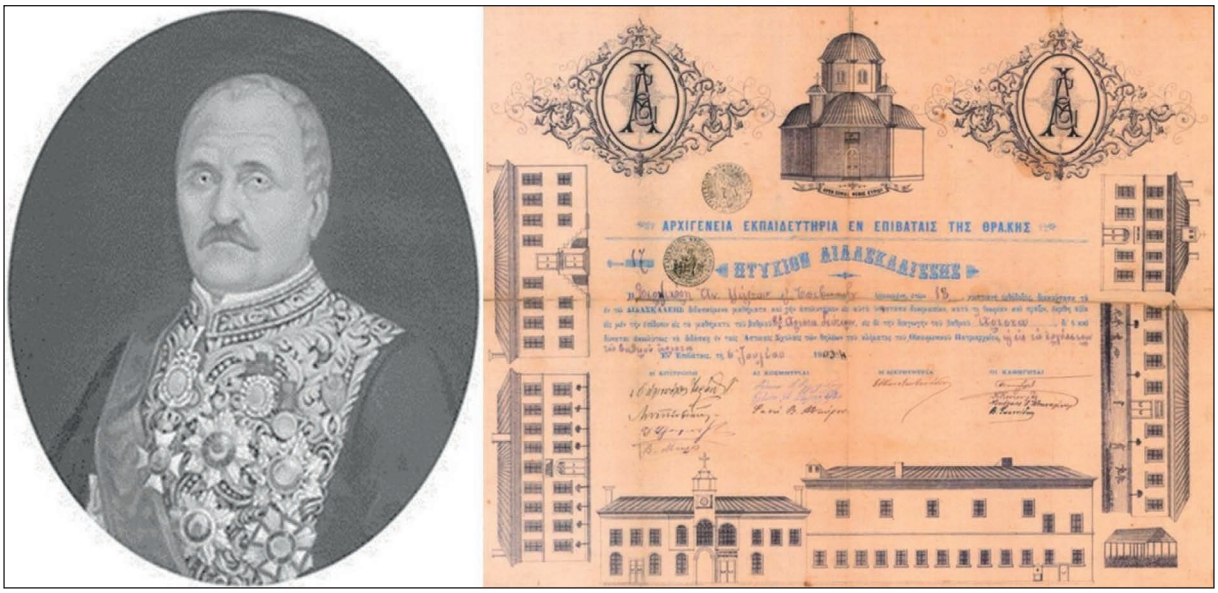


Figure 4. Sarantis Archigenes in his official uniform of the military physician (left side), Archigeneia Schools diploma from inside trilingual publication for Archigeneia Schools from Selyvria Municipality, Serbay Kocoglu, Mariathi F Papazi, Karterina Dalakoura, 2015 (right side).

(Ottoman rank of a guardian) send a plea to grand vizier for Archigenes to come and visit him as his family suffered from cholera. His body was weakened from the widely used then as a therapeutic approach cauterizations and a different medical path could help him recover from the persistent symptoms[57]. Some years later, during 1854, famous physician Constantinos Carathéodory (1873-1950) had a case with a bladder stone in which intra-urethral approach did not permit the removal of the stone with a litholavos (lithos

receiver, surgical tool). The patient, Christos-Athanasis from Nasilitza, 26 years of age, presented the stone attached in the wall of the bladder and Carathéodory asked for Archigenes' advise. Archigenes proposed a vertical incision in the zenith of prostate, alongside with a caesura of the rectum sphincter under opium effect. Thus, adhesions were dissolved in such a way to permit a 67-gram stone to be removed[58]. The same year, Archigenes reported the case of Ferhat Bey who suffered from a two-month abdominal wall cutaneous inflammation. Archigenes executed some surgical incisions to vacate pus collections and reduce or alleviate pain[59]. The extra-clinic practice continued, and in 1857 Archigenes alongside urologist and surgeon Pavlaki Fénerly visited at home a 70-year-old male patient who had presented an urethral stenosis due to gonorrhea. In this case, although many attempts had been made for a mechanical dilation, an intra-urethral catheter was used, but unfortunately, the catheter had fallen in to the bladder blockading urine within its walls. Archigenes and Fénerly managed to obtain the catheter with a modified stonecutter (removal of the one cutting part, turning scissors to a hook), alleviating the elder[60]. Although an already prestigious physician, Archigenes had no egoistical issues to call in August 1857 English physician Julius Michael Millingen (1800-1878). Millingen was a specialist in typhoid fever and physician of Lord Byron (1788-1824) and Archigenes wished to consult him on a case of a Greek 38-year-old merchant suffering from high icteric fever. Differential diagnosis included malaria, endemic fever and typhus icteroides. However, failure of quinine to control the disease excluded malaria. Acute gastral pain, melanocenosis (melena) and intermittent high fever made professor Kallias, the third physician to check upon the patient, suggest that this was a case of intestine-hepatitis [61]. Archigenes, in December 1857, was called to attend the house of Mustafa Reshid Pasha the Great (1800-1858) alongside physicians and professors Ioannis Palaiologos and Constantinos Caratheodory to help in an acute transformation of simple bronchitis into chest pain. "The great man of the Ottoman state" breathed his last and died unexpectedly[62]. Archigenes continued giving advises and in 1861, confirmed the complete inversion of the uterus of a 22-year-old female patient, another case of Constantinos Carathéodory[63]. In December the 6t^{h} of 1861, Archigenes operated the Abbess-Director of Constantinople's Girls' School of the Patriarchate, the Holy Sepulchre (Greek: Παρθεναγωγείο), to confront breast cancer, as drugs resulted to nothing[64]. The fact that a second operation took place "in the same area" as the malignancy demonstrated local expansion, most probably signifying not for a radical mastectomy during the first surgical intervention. The second operation was performed with the help of physician Anastasios Goudas (1816-1882)[65]. In October 1862, Archbishop Kaisarios died by a heart attack. Archigenes, who was his physician, had already instructed him to move to a country house, this of Tselepi Georgaki, before going to Neochorion or to the island of Chalki to experience a better rural environment, close to nature away from urban areas. Archigenes diagnosed him having neuralgias due to cardiac hypertrophy[66]. In 1869 Archigenes treated he Abbess-Director of Constantinople's Girls' School of the Patriarchate whom he had operated on years ago[67].

In May 1870, he participated in a surgical council alongside professors Caratheodory, Marroin, Vuccino, Kallias and Fenerly for a male case from the island of Chios named Yani Retto, aged 25, worker of construction plastering (souvadji) who presented an enlarged hematoma after a knife wound. The tumorous formation exhibited arterial pulses synchronous with the heartbeat, while on auscultation a whispering sound [sussurus], confirming the diagnosis. Strong bandages, cold water compresses and ointments failed and a surgery with apolinosis of the axillary artery was performed without the participation of Archigenes though[68]. During 1870, in early October, he had again operated the Abees-Director, who died in October the 29th, suffering from acute pain in the umbilical area and gradual deterioration of strength[69]. In 1871, he surgically treats Patriarch of Jerusalem Cyril II (born Konstantinos Kritikos 1792-1877) with a recurring ulcer. The report about "dynamiting evil", may suggest malignancy. The disease remains unknown though[70]. To treat once more an important figure, in 1873, Archigenes was called to examine and treat Patriarch Anthimus VI (Greek: Ἄνθιμος; born Ioannides; ca 1782-1877) who was sick. The epistle noted that Patriarch "needs both moral and physical rest". The disease was again unknown[71].

Discussion

It seems that since the early 1830's Austrian influence in hygiene and medical education in Ottoman Empire had a "civilizing" mission according to the opinions of the historians of the era. This effort though, due to its character, based on political and economic considerations and ambitions, suddenly ended in less than 15 years[72]. Austrians Sigmund Spitzer (1813-1894) and Lorenz Rigler (1815-1862) lectured courses, but there is no evidence that Austrian professors came to contribute to education in the Imperial School, while some existed in military units[73].

French was the official language in the Medical School. From the example of anatomist and naturalist

Louis Thomas Jérôme Auzoux (1797-1880) and his manufactured detachable models of the human body, to Director of Anatomy A.H. Sat-Deygallière (?-1833) who taught through anatomical plates[74] and the lectures given by him[14], the fundamentals of surgery reminded only France[74]. Archigenes thrived in the Tanzimat period, when the Ottoman elites focused on modifying and modernizing the education system, with medicine being the cradle among the state priorities. Men of caliber in the field achieved their social ascension through the specific education they had received. Professionalism promoted status, and status promoted interactions between men of power[75]. Archigenes in the epicenter of a French influence in medicine, having studied in Paris, established for him a secured position among the most significant professors of medicine in Constantinople, letting aside somehow his small practice in Vienna[18]. The fact that Archigenes was attached in the French School of Surgery may explained by the longer period of studies in Paris, the withdrawal of the representatives of the Austrian (Austrian-German) School from the Ottoman medicine and his decision to follow the political current towards France, performing surgical operations by following the methods of Louis-Auguste Desmarres, Guillaume Dupuytren and Louis Joseph Sanson, all French.

Archigenes stands as a pivotal figure in the evolution of 19th century surgery, embodying the relentless pursuit of medical advancement during a period marked by profound transformations. His contributions emerged amidst the backdrop of a rapidly progressing medical landscape where scientific inquiry began to dismantle long-held superstitions and unfounded practices. Born into a period of significant upheaval and discovery, he had harnessed the collective momentum of the era's scientific breakthroughs while navigating the constraints and challenges inherent in Western European medicine. His approach was characterized by a meticulous dedication to refining surgical techniques. Archigenes had the opportunity to operate under Louis-Auguste Desmarres (1810-1882), the great instructor of eye surgery in Charité and Hôtel-Dieu in Paris[76], using techniques performed by French anatomist and military surgeon Guillaume Dupuytren (1777-1835). This is at least contradictory with the evolution of surgery in ophthalmology which was a neglected branch in France during that era, with the underachievement of French surgeons being notorious[77]. Nevertheless, Desmarres' school seems to have been, as an exception, globally in the spotlight, organizing during 1861 the preparations for the next year's international congress of the "Universal Society of Ophthalmology" in Paris. Surprises the fact of two Greeks being present among the committee members. Andreas Anagnostakis (1826-1897) represented Greece and Archigenes represented Turkey. This may imply that Archigenes was among the expert oculists at an international level[78-79]. For the extraction of stones from the bladder, he had used Louis Joseph Sanson's (1790-1841) recto-vesical operation, a newly introduced method. Sanson was one of the most significant of Dupuytren's pupils, succeeding him after his death[80]. Archigenes practiced breast operations, mastectomies or lumpectomies, procedures known from the past. He had been trained in surgery in Paris for years under the license of the French Ministry of Internal Affairs and protection of the Ottoman embassy[37]. As the standard manuals of the era reported that recurrence was influenced by the radical character of the operation itself, recurrence in some cases, may imply a less offensive approach by Archigenes. Nevertheless, nothing is certain due to absence of details regarding the method used[81]. Moreover, he had produced some surgical tools modifications, like this of the 1857 case alongside Pavlaki (Paul-C.) Fénerly, following the example of a series of French surgeons like Jean-Louis Petit (1674-1750), George de la Faye (1699-1781), Pierre-Joseph Desault (1738-1795), Alexis Boyer (1760-1833), Guillaume Dupuytren and Jean-Baptiste-Henri Savigny (1793-1843), who presented surgical instrument redesigning, pioneering thinking and alterations in established methods to achieve an easier and better outcome[82]. In 1842, he had proposed to the French Academy an improvement of the instrument/forceps used in vesico-sinus fistula surgeries[83]. Ligatures, pressure and hemostatic drugs which were used by Archigenes, were all methods in vogue in mid-19th century[84].

Archigenes performed, at least twice, surgical operations in an environment outside hospital surroundings, removing a bladder stone[56] and executing a mastectomy[69]. The first was performed in the house of the patient, while the latter in the Holy Sepulchre, after all students had abandoned the premises. The patient was morally protected by the presence of others, while remaining unprotected towards strong antiseptic conditions[69]. The practice to operate in patient's home was a common routine for surgeons of the era[85], while specific antiseptic methods and surgery protocols seem to have been in place. Among numerous challenges that impeded progress and threatened patient safety, surgeons faced formidable obstacles, many of which stemmed from a limited understanding of germ theory and inadequate sterilization techniques. Infection was an omnipresent threat, turning even minor procedures into potentially life-threatening situations. Nevertheless, in both Archigenes' cases nothing was mentioned

related to antiseptics or sepsis, meaning that either he had operated under extreme caution, or he used them as a routine, with no need to record them[86-87]. This kind of European and American confrontation of surgical issues, a home-based surgical treatment, in cases when patient was hard to be moved, or when severe post-surgical complications were not expected, was adopted by the professors at the Imperial Medical School, testifying the progress being made during this era in modernization of the Ottoman medicine. Nevertheless, no case of a mastectomy performed in patient's home was recorded during this era, while this operation as a gold standard had been being performed in hospital operating theaters only. This fact demonstrated Archigenes' audacity, an act immerging through his passionate desire to help those in need[8]. The concept of an out of the clinic operation was a standard procedure among the surgeons of the Hellenic Kingdom. Various reports on encephaloceles and caesarian sections exist, noting the routine of such a practice, a fact which seems to have been adopted in areas around and related to the Ottoman Empire[89-90]. Although some references exist that Archigenes taught courses on external pathology in the School[91], most researchers note no such condition[92-95]. Archigenes taught external pathology, which was then related to surgery (in most cases had the same meaning), since it concerns diseases that require surgical intervention, he participated in councils related to surgical diagnoses and attended and practiced surgeries[96].

Archigenes, with his works *Dissertation sur la gymnastique, à l'usage de la jeunesse de l' Empire Ottoman* and *Hygionomie, ou Règles pour se conserver en bonne santé, à l'usage des habitants de l'Empire Ottoman*, did not only exhibited his affection towards public health and his caring feelings for the Ottomans but also gained an international recognition for his noble cause. French language helped the treatise to gain prestige and soon was mended to be translated in Turkish[49,51,97]. Additionally, his work on hygiene in Greek promoted public health among the Greeks, resulting Archigenes to be considered the pioneer in the field[98]. This work had a wider impact and was translated, published and republished in Bulgarian[99].

When reconstructing the life of a historical figure, some material or data may be found in total disagreement with the way this figure lived. The Karahisar-ı Sahip issue somehow added a difficult professional period in Archigenes' career. The area was roughly struck by a malaria epidemic and a 750 grosha fee was offered as an additional salary for Archigenes to care for the diseased and the poor[100]. Archigenes had already practiced medicine in the area, sometime during an earlier cholera epidemic[101]. However, during his second time in the area, due to other appointments, the salary could not be paid and an entreaty το grand vizier was sent[100]. Archigenes was dispatched to Karahisar-ı Sahip, however his official assignation was delayed[102]. The issue was never solved; the payment was not given and a report that Archigenes was removed from this position due to negligence could have stigmatized his perfect fame[103]. Nevertheless, this is rather contradictory considering his affection towards the people, known to have been a great philanthropist. Archigenes offered his services to Karahisar-ı Sahip for 20 years, with no additional remuneration, being emotionally connected to the people and the place. His actions and/or the report were most probably just the only way for the issue to be solved, taking into consideration Ottoman bureaucracy, so that another physician to be sent in his place after his resignation or exemption or burnout.

Although a profound teacher, a prolific writer and polymath, it seems that his surgical skills were somehow limited or most probably intentionally simple. He had performed simple and by the book operations, by using his innovative thinking and meticulous education. Early 19th-century medical training was often rudimentary, with schools focusing primarily on lectures devoid of clinical relevance. Over time, however, the curricula evolved to encompass a blend of theoretical knowledge and practical instruction, emphasizing not just rote memorization of medical facts, but also critical thinking and application of knowledge in clinical settings. Disciplines such as surgery, pharmacology, ethics, economy, previously sidelined, gained prominence, reflecting a shift toward an integrated and complete understanding of the human body and the art of medicine. The stark realities of early 19th-century surgery, often conducted with rudimentary tools and limited understanding of infection control, led many to perceive the surgeon less as a beacon of hope and more as a harbinger of torment. Archigenes with empathy realized this onerous role and tried to cope through his practice or by interacting with other physicians. Archigenes was instrumental in fostering a culture of continuous learning and adaptation within the medical fraternity. He championed interdisciplinary collaborations, believing deeply in the synergy of disparate scientific disciplines to yield holistic insights into human physiology, surgical anatomy and disease. Thus, in many operations participated with a group of surgeons, while in many cases his role was advisory, like he was a coordinator, or his opinion mattered due to his status. Pre-surgery medical councils at the era reported to have sessions as an almost necessary procedure aimed at achieving the best possible outcome of a surgical procedure[90-91].

Nevertheless, Archigenes' unparalleled skills in medicine were celebrated by grand vizier Mustafa Reșid Pasha who noted "The distinguished subject of my High State and professor of the Imperial Medical School, Monsieur Sarantis Archigenes, is, by the glorious imperial decree, a prudent, thoughtful, artisan and scientist, while every aspect of him seems to be worthy and noteworthy of my supreme sultanic favor and performance"[104]. The societal expectations and ethical challenges also shaped the landscape of 19th century surgery in Constantinople. Surgeons were often thrust into ethical quandaries as they navigated consent, balancing their burgeoning authority with patient autonomy. As medical procedures grew more complex, the need for informed consent became paramount, presenting surgeons with dilemmas that demanded sensitivity and foresight. Archigenes consulted with patients learning their medical history and their desires towards the therapeutic approach, leaving aside his own figure, emphasizing additionally through letters to a more diffusional updating of his practice. For the Greeks he is considered as "a typical example of a national benefactor, who distributed his wealth through other benevolences, but mainly to educational institutions, for the enlightenment of the Hellenic Nation"[105], one among the greatest who demonstrated his enthusiasm for the ill and poor[106].

Sarandis Archigenes, as one of the most influential professors at the Imperial Medical School, though often underappreciated figure in the annals of 19th century medical history, played a pivotal role in transforming surgical practices of his time. His contributions can be understood not only by analyzing some of his innovative techniques and principles, but through the comprehension of the simplicity he championed, a fact which significantly impacted the evolution of surgical methods in Constantinople's surgery society. By insisting on sharp, efficient instruments and advocating for the development of specialized novel surgical tools, Archigenes paved the way to a more efficient and humane surgical practice. His doctrines influenced not only his contemporaries but also set a foundation for future innovations in surgical techniques, as his steady approach and good results enabled a progression towards more complex operations with higher success rates. The influence of Sarandis Archigenes extended beyond the realm of technical skills, permeating the educational landscape of medical institutions. By inspiring curricula reforms that focused on experiential learning and practical knowledge, Archigenes fostered a generation of surgeons who were not only technically proficient but also holistic thinkers equipped to embrace vogue and imminent methodologies.

Epilogue

Sarantis Archigenes, a prominent figure of the Ottoman medicine, a physician, a multidimensional personality of Hellenic origin, a great benefactor for the Greeks, a beloved friend of Koca Mustafa Reșid Paşa, an iconized professor at the Imperial Medical School, a devoted Ottoman, is a person celebrated among the studies of a series of researchers. This narrative review presents some unknown aspects related to his medical practice and surgical skills during the founding period of modern medicine in the Ottoman Empire. His teaching, his books, his ability to co-operate and interact, made him a paramount figure in the Greek and Ottoman medicine of the 19th century. Sarantis Archigenes' life was like a canvas full of handout and benefaction, an illustrative personage who was honored for his work with medals, positions and ranks, gaining his place in eternity. The conclusion encapsulates the pivotal contributions and enduring influence of Archigenes within the broader tapestry of surgical advancements during the 19th century. His work epitomized the dynamic interface between tradition and innovative approach, as he deftly balanced classical surgical wisdom with emerging scientific discoveries. This delicate balance, this demonstration of simplicity, is not only reflective of his genius but also underscores the evolutionary nature of surgery as a discipline during this era. Surveys for Archigenes' life are always productive, demonstrating the ability of a single person to unite and care for all by solely executing the role he was mended to follow as a professor, scientist and humanist, ensuring his place as a luminary in the annals of medical history.

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