

HISTORICAL REVIEW

JOSEPH-PIERRE ÉLÉONORD PÉTREQUIN (1809-1876), THE MAJESTIC FRENCH SURGEON WHO INTRODUCED THE CONCEPT OF SURGICAL ANATOMY

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ABSTRACT

Pétrequin was a French surgeon born in the town of Villeurbanne, near the city of Lyon. He lived in an era when surgery was evolving towards a more complex and modern specialty. His magnificent career was shared between surgical pathology and history of surgery. His two most significant works were „Traité d'anatomie médico-chirurgicale et topographique“ (An Assay of Medical and Surgical Anatomy and Topography) and „La chirurgie d'Hippocrate“ (The Surgery of Hippocrates). Having realized the need for surgery to be combined with anatomy, he was the scholar who introduced the concept of surgical anatomy. His innovations, travels and publications won him

RÉSUMÉ

Joseph-Pierre Éléonord Pétrequin (1809-1876), le majestueux chirurgien Français qui a introduit le concept d'Anatomie Chirurgicale

Joseph-Pierre Éléonord Pétrequin était un chirurgien Français né à Villeurbanne, près la ville de Lyon. Il a vécu dans une époque où la chirurgie évoluait vers une spécialité plus complexe et moderne. Sa carrière magnifique a été partagée entre la pathologie chirurgicale et l'histoire de la chirurgie. Ses deux travaux les plus significatifs sont intitulés «Traité d'anatomie médico-chirurgicale et topographique» et «La chirurgie d'Hippocrate». Ayant compris la nécessité de combiner

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a series of nominations and a place among the greatest European surgeons and philosophers of all times.

Keywords: Joseph-Pierre Éléonord Pétrequin, French surgery, surgical pathology, surgical anatomy, history of surgery, Lyon.

la chirurgie avec l'anatomie, il fut l'érudit qui introduisit le concept d'anatomie chirurgicale. Ses innovations, voyages et publications lui ont valu une série de nominations et une place parmi les plus grands chirurgiens et philosophes Européens de tous les temps.

Mots-clés: Joseph-Pierre Éléonord Pétrequin, chirurgie Française, pathologie chirurgicale, anatomie chirurgicale, histoire de la chirurgie, Lyon.

INTRODUCTION

When someone describes an important medical figure, he is usually narrating his significant contributions. However, in the case of our man, innovation became synonym with Joseph-Pierre Éléonord Pétrequin (Figure 1), the pioneering surgeon from Lyon. Pétrequin lived in the 19th century when advances in science marked the beginning of modern surgery.

In the 19th century, surgery was blooming, witnessing a complete transformation in surgical techniques, finding its path to a modern era with the help of an improved anesthesia, antiseptic protocols, and new apparatus and equipment in medicine's service¹. Surgery was defined since its birth as a branch for physicians to cure by means of bodily invasion. Pétrequin recognized the brutality and risks of opening a living person's body and dedicated his whole life to studying and exploring methods to minimize the invasiveness of surgical procedures, to alleviate pain and shorten the time in operating rooms².

Our study endeavors to bring in light an unappreciated surgeon, a neglected physician, who managed with his work to set the foundations of modern surgery and to permanently unite it with anatomy under the term „Surgical Anatomy“. A thorough search was conducted in the Google Books database, with his name as a key term (in French- Pétrequin and in English- Petrequin). Moreover, a series of obituaries and treatises from the Library of the Medical School of Lyon were used for his biography to be composed.

PÉTREQUIN'S BIOGRAPHY AND PUBLICATIONS

Pétrequin was born in 26th of June 1809 (or 5th of June 1810) in the town of Villeurbanne near the French city of Lyon, a city with one of the most distinguished medical schools in Europe. His secondary studies were mostly based on the literature and ancient languages. After obtaining his bachelor of arts, literature and sciences, he began his medical studies in Lyon. He was admitted to an internship in Paris in 1829, commissioned to it though two years later, in

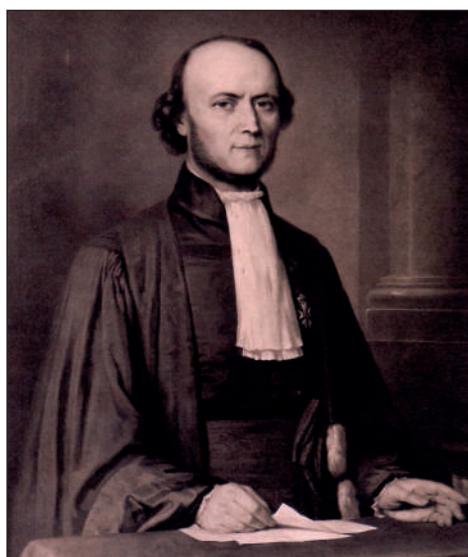


Figure 1. Joseph-Pierre-Éléonor Pétrequin (1809-1876), portrait from the «Académie des Sciences, Belles-lettres et Arts» of Lyon.



Figure 2. Hôtel-Dieu de Lyon Hospital, engraving, 19th century, artist unknown.

1831. He received his diploma in medicine in August 1835 in Paris, where he stayed to improve his skills in the service of the great medical masters and in particular in the service of Alfred Velpeau at the Pitié. In April 1837 he achieved to finish his doctorship in the Hôtel-Dieu de Lyon Hospital (Figure 2), becoming a surgeon-major in January 1844. At the same period, from November 1843, he was appointed as an assistant professor of the surgical clinic. Practicing more than 2000 surgical operations and introducing new techniques he had received the gold medal of the Society of Medicine of Bordeaux in 1844. In 1854, he was appointed as a Professor of Surgical Pathology and Operative Medicine, a position he held until 1873. Due to his academic career, he raised to the rank of Knight of the Legion of Honour in August 1855. He was the one who started a noble cause to transform the preclinical school of Lyon into a separate medical faculty of full potential²⁻⁵.

In 1852, Pétrequin had been elected as a member of both the Academy of Sciences, Literature and

Arts of Lyon, of which he became a president in 1859, and of Savoy. In 1862, he had been elected president of the National Society of Medicine and Medical Sciences of Lyon and an honorary member of the Belgian Royal Academy of Medicine of Belgium, a member of the National Academy of Surgery²⁻⁴.

Pétrequin was married in 1849 to Adélaïde Sargnon, having two children, Louis-Éléonor (1810-1877) and Jeanne (1851-1877). He died in June the 2nd 1876 in his property of Fontaines-sur-Saône, being buried in Lyon's cemetery. After his death, he was highly celebrated among Lyon's medical societies, a tribute to his achievements³⁻⁴.

A plethora of works, treatises and paper publications were published by Pétrequin. A series of scientific manuscripts were composed during his career, focused on public health and hygiene and mainly on surgery (Table 1). Those concerning surgical procedures or case reports stigmatized the nomenclature among surgeons as they contained detailed anatomic descriptions even in their titles, with an emphasis in

Table 1. Medical publications, treatises, works and lectures during Pétrequin's career.

No	Title	Publisher	Year
1	Recherche sur le traitement qui convient à la galactirrhée. Bulletin de thérapeutique (Research on the treatment that is suitable for galactirrhoea)	Bulletin de Thérapeutique	1836
2	Expériences comparatives sur l'emploi thérapeutique de la kréosote et de l'eau de goudron dans le catarrhe pulmonaire chronique et dans la phthisie à divers degrés (Comparative Experiments on the Therapeutic Use of Creosote and Tar Water in Chronic Pulmonary Catarrh and Phthisis to varying degrees)	Gazette Médicale de Paris	1836
3	Recherches sur un nouveau procédé pour obtenir la cure médicale de la fistule lacrymale (Research on a new process to obtain a medical cure for lacrimal fistula)	Bulletin de Thérapeutique	1836
4	Etudes sur les luxations scapulo-humérales (Studies on scapulohumeral dislocations)	Gazette Médicale de Paris	1837
5	Considérations pratiques sur les doctrines des écoles de France et d'Italie, sur le réunion des plaies (Practical considerations on the doctrines of the schools of France and Italy, on the meeting of wounds)	Bulletin Général de Thérapeutique	1837
6	Mémoire pour servir à l'histoire des résections du membre inférieur, ou Considérations chirurgicales sur quelques nouveaux cas de résections pratiquées, soit dans la contiguïté, soit dans la continuité des os (Memory for use in the history of resections of the lower limb, or Surgical considerations on some new cases of resections practiced, either in the contiguity or in the continuity of the bones)	Gazette Médicale de Paris	1837
7	Mémoire sur quelques cas remarquables d'anomalies organiques, pour servir à l'histoire de l'organo-génésie chez l'homme, avec des applications à la pathologie (Memory on some remarkable cases of organic abnormalities, to serve the history of organo-genesis in humans, with applications to pathology)	Gazette Médicale de Paris	1837
8	Sur quelques points de la physiologie du cervelet et de la moëlle épinière (On some points of the physiology of the cerebellum and the spinal cord)	Mémoires de la Société de Médecine de Gand	1837
9	Comentarii di medicina; opera periodica (Medical commentaries)	Tipographia della Minerva	1837
10	Les avantages de l'opium dans les perforation spontanées de l'appendiciceiléo-coecale (Advantages of opium in the spontaneous perforation of the appendiciceileo-coecale)	Gazette Médicale de Paris	1837
*	Those are his first 10 works. For further information until 1875 please see References 6-96		

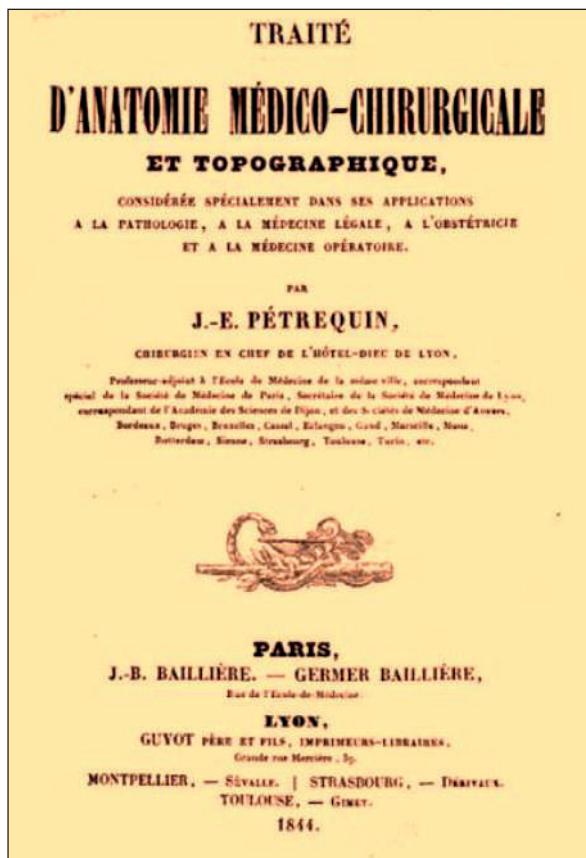


Figure 3. Pétrequin's work «Traité d'anatomie médico-chirurgicale et topographique», 1844, Paris.

topographic anatomy. Among his work stands his masterpiece „Traité d'anatomie médico-chirurgicale et topographique“ (An Assay of Medical and Surgical Anatomy and Topography) (Figure 3), which was published soon after his doctorship in 1844 by Baillière in Paris, followed by several translated editions all over Europe⁴⁻⁵. Despite his youth, Pétrequin, succeeded in composing a significant surgical and anatomical textbook for all surgeons of the era. His magnitude was recognized and testified by the plethora of his treatises and re-publications which followed in France and abroad for more than 40 years⁶⁻⁹.

Apart from Pétrequin's pure interest towards surgery, he managed through the years to establish a strong connection with the history of medicine both French and ancient Greek. A succession of historical papers (Table 2), concerning again mainly surgery⁹⁷⁻¹¹⁵, placed him among the most important French historians of his time¹¹⁶. With his steady outflow of serious investigation in the Hippocratic history of medicine, Pétrequin, became one of the most able writers on the surgery of the Hippocratic period¹¹⁷. In his monumental work „La chirurgie d'Hippocrate“ (The Surgery of Hippocrates) (Figure 4), a 2 volumes, 1200 pages book, Pétrequin

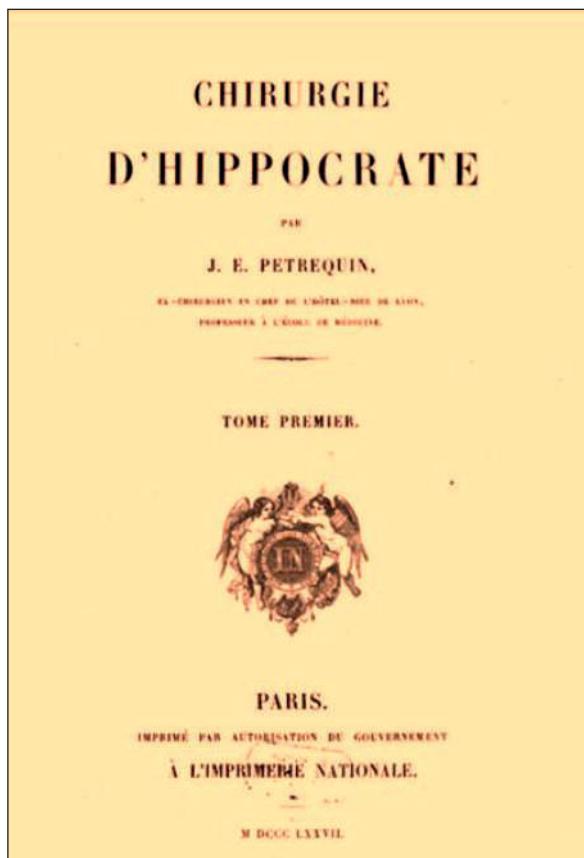


Figure 4. Pétrequin's work «La chirurgie d'Hippocrate», 1877, Paris.

demonstrated that Hippocrates was not only a great symptomatologist, but also a momentous surgeon whose observations and surgical techniques had been unjustly neglected^{4,6,115}.

From the early 15th century, physicians abandoned the Hippocratic medicine believing that although it was progressive in its era, it was actually a result based upon medico-philosophical concepts. Pétrequin was one of the most scholarly physicians of his time with a huge scientific work principally in surgery and topographic anatomy. His esteemed personality made easier for the medical community to accept the re-introducing of the Hippocratic views. The idea was first introduced by the great medico-philologists Emile Littré (1801-1881) and Charles Daremberg (1817-1872), so that the opposition of the medical societies to have been smoothed greatly¹¹⁸. Around 1870 Pétrequin, with his French translation of the surgical writings of Hippocrates, stated that he considered „Hippocrates, as far as fractures and dislocations of the lower arm are concerned, to be more complete than Alexis Boyer (1757-1833), and as far as congenital dislocations are concerned, richer than Guillaume Dupuytren (1777-1835)“. Hippocratic surgery, revealed, explained and compared with modern

Table 2. Historical and philological publications, treatises, works and lectures during Pétrequin's career

No	Title	Publisher	Year
1	Découverte d'un manuscrit de Pétrone à Trau, en 1663 (Discovery of a manuscript of Petronius in Trau, in 1663)	L Boitel	1835
2	Histoire d'un voyage médico-chirurgical en Italie (History of a medical-surgical trip to Italy)	Gazette Médicale de Paris	1837-1838
3	Recherches pour servir à l'histoire générale de la grippe de 1837 en France et en Italie (Research to serve the general history of the 1837 flu in France and Italy)	Gazette Médicale de Paris	1838
4	Mélanges de chirurgie, ou Histoire médico-chirurgicale de l'Hôtel-Dieu de Lyon, depuis sa fondation jusqu'à nos jours, avec l'histoire spéciale de la syphilis dans cet hospice (Blend stories of surgery, or Medico-surgical history of the Hôtel-Dieu de Lyon, from its founding to the present day, with the special history of syphilis in this hospice)	J-B Baillière	1845
5	Chirurgie d'Hippocrate. Recherches historiques sur l'origine du Traité du médecin (Hippocratic Surgery. Historical research on the origin of the Treatise of the physician)	H-V de Sercy	1847
6	Clinique chirurgicale de l'Hôtel-Dieu de Lyon, ou compte rendu de la pratique chirurgicale de cet hôpital pendant six années (Surgical clinic of the Hôtel-Dieu of Lyon, or report of the surgical practice of this hospital during a six year period)	J-B Baillière & Germer Baillière	1850
7	Essai sur l'histoire de la chirurgie à Lyon (Essay on the history of surgery in Lyon)	Séance publique	1856
8	Fragment sur l'histoire de la littérature médicale au moyen âge, Poema medicum (Fragment on the history of medieval medical literature, Poema medicum)	Aimé Vingtrinie	1857
9	Etudes médicales, historiques et critiques sur les médecins de l'Antiquité (Medical, Historical and Critical Studies of Ancient Physicians)	Aimé Vingtrinie	1858
10	Aperçu historique sur l'enseignement médical à Lyon: depuis la restauration des lettres par Charlemagne (Historical overview of medical education in Lyon: since the restoration of letters by Charlemagne)	Adrien Delahaye	1864
*	Those are his first 10 works. For further information until 1877 please see References 97-115		

techniques, re-emerged and re-entered into the daily surgical practice of the 19th century in France¹¹⁹.

However, his greatest contribution was to be understood eons later. Besides his great innovations in surgery, his advancements in anesthesia, his fruitful proposals concerning public health, his thought which stigmatized science was his prelude in surgical anatomy. An ancient concept of a necessary practical reconciliation between surgery and anatomy, brought in vogue to revolutionize education and determine skillful surgeons¹²⁰.

ACHIEVEMENTS TOWARDS A NEW ERA OF SURGERY

Pétrequin with continuous waves of important publications accomplished to register a steady stream of seminal breakthroughs in surgery (Figure 5). Hardly a tranquil person, he visited Italy, not as a tourist, but visiting with great interest universities, and hospitals to acquire knowledge and skills from the peninsula which gave birth to modern anatomy. His frequent travels around France were also for him a routine. During his career, he did not escape one

day from his scrupulous regularity in making the current, due to his feverish eagerness to seek the new⁴.

Pétrequin composed a series of treatises on the foreign bodies introduced into the digestive tract, on a process for amputation of the penis, on ways for ligation of the axillary and ischiatic arteries, on glossotomy, on resection of the lower extremity, on the cerebellum and the spinal cord, on the restoration of the rectovaginal septum, on the perineal cystotomy to extract voluminous calculi and on lithotripsy^{4,12,29,32}. Apart from his announcements, he had introduced a plethora of surgical innovations⁴. His work on the restoration of the face tissues after traumas or tumors was of great importance. Pétrequin visited Joseph Gensoul's (1797-1868) surgical clinic to learn from the best and to operate with him^{4,121-122}. A new process of cirsocele, a new lithotome and a new apparatus for metacarpal fractures were initiated in surgical practice due to his efforts^{4,40,45}. Due to his affection towards ancient Greek nomenclature, when all anatomic terms should have been accurate, and the 14th century trend of term combination with Latin and ancient Greek words, he had introduced a

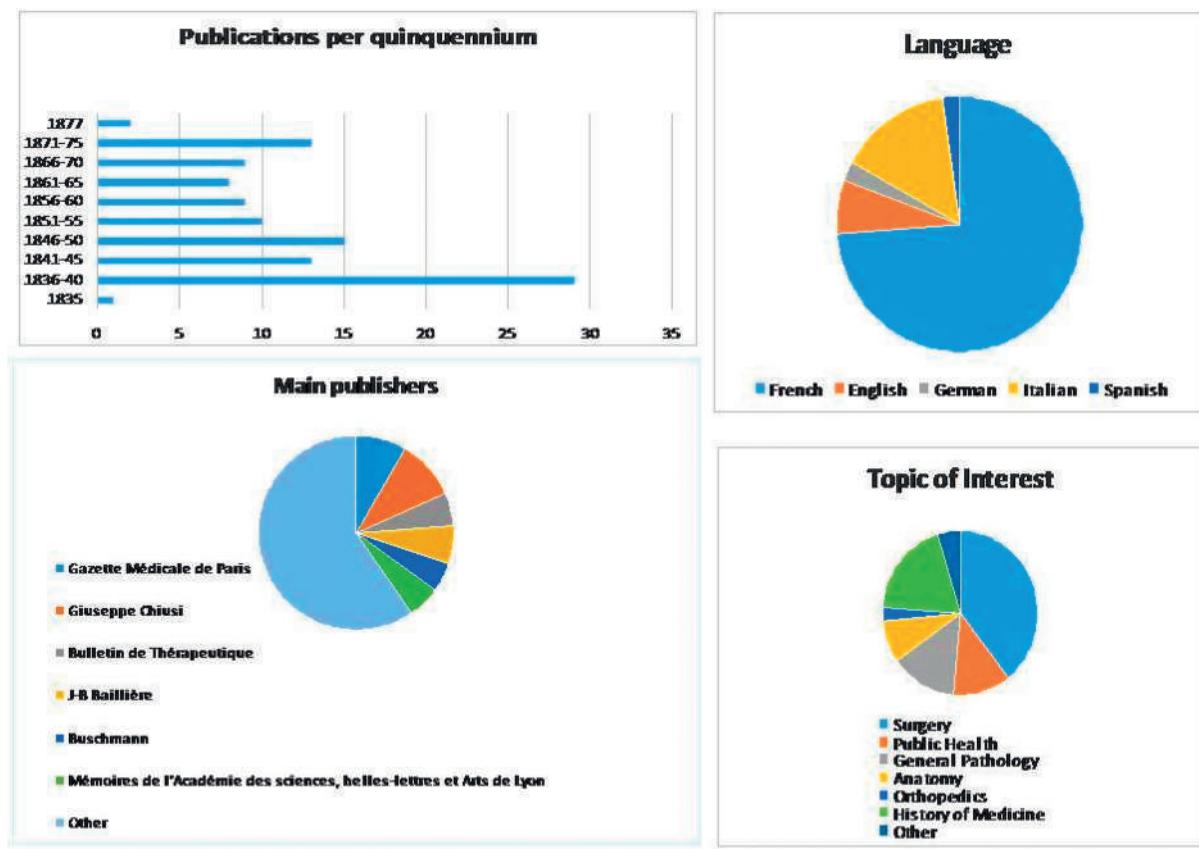


Figure 5. Pétrequin's statistics concerning his work in total.

new terminology¹²³⁻¹²⁴. Thus, for strabismus, he had proposed the term „ophthalmokopie“, from the Greek word for the eye (Greek: οφθαλμός, ophthalmos) and the word for fatigue and toil (Greek: κόπος, kopos)²². In his essay for a new operation for the restoration of the perineum, he suggested the term perinorrhaphy from the Latin word perineum and the Greek word for sewing „rhaphia“ (Greek: ράφη, raphe)⁴³.

Another field where the pioneer French surgeon contributed greatly was the eye surgery. Pétrequin realized that ophthalmology was at his era included, even lost, in the teaching of general surgery. This meant that in general diagnosis and treatment of eye diseases were somewhat neglected. Thus, he suggested the use of thorough ophthalmoscopy, he had studied methods of treatment on the adhesions of the palpebral conjunctiva of the eyelid to the bulbar conjunctiva of the eyeball and proposed a new surgical technique for the eye tumors and ophthalmic dyscrasias (Greek: δυσκρασία, the state of abnormal condition). He annotated in the term of amauroses (mauro, Greek: μαύρο, the word for the black colour in Greek), the partial or total loss of sight without pathology of the eye, being the first to propose that it was not the powerless state of the sub-inflammatory irritated optic nerve which was to be treated, but the

sanguine-congested condition of the optic apparatus in some cases, or its anaemic state in others. He was also the first to introduce a classification for eye tumours and tumour-like bodies, dividing these bodies into three categories, those which were arrested on the surface of the eye, those which became embedded in the cornea, and those which perforating the cornea, penetrated more or less deeply into the chambers of the eye^{22,125}.

Aneurysms presented in Pétrequin's era a fatal condition. Surgical intervention was usually an unsuccessful effort to save the patient. He had however proposed an innovative method to treat this entity, a direct application of galvano-puncture for the concentrated blood to be coagulated so that a massive hemorrhage to be avoided. This was not always a successful attempt, but he had mentioned some cases of adequate and promising results^{46-48, 53, 67-68}.

In the 19th century both chloroform and ether were in use for anesthesia in the operating theatres all around Europe and America. However, during the eighteen-fifties and sixties, there was a strong belief that chloroform was the most important anesthetic agent yet to be discovered. Nevertheless, in France, Pétrequin as the senior surgeon of the Hôtel-Dieu de Lyon Hospital, and a few of his colleagues and pupils

were the first to dissociate themselves from this opinion. He himself returned to the exclusive use of sulphuric ether in 1849, but it was 1855 before the majority of surgeons in Lyon's area to likewise return to its use, leading globally the way of the international surgical societies^{82,126}.

FROM SURGICAL PATHOLOGY TO SURGICAL ANATOMY

The work of Pétrequin was characterized by the use of anatomic terms to describe every area and substance of the human body, every physiological procedure, and every surgical intervention. On one hand, in every treatise he gave a thorough analysis of diseased which was to be confronted, a full cluster of its symptoms, he introduced new classifications and engraved new innovative paths of surgical operations, combining surgery with pathology. On the other hand, anatomy was for him the essential ingredient for a felicitous surgeon. Being a votarist of the Hippocratic School on the matter of a detailed anatomic description, he had always tried to give the most possible accurate delineation, combining surgery with anatomy and more precisely with topographic anatomy (Greek: τοπογραφική from the words „topos“-τόπος meaning a specific place and „grafe“-γράφω meaning to write). His „anatomism“ was destined to change surgery as it was. The crucial spark of transformation, the moment that changed not just the future of surgery but of medicine as a whole, was the publication of his masterpiece „Traité d'anatomie médico-chirurgicale et topographique“, which was translated in three languages and became classical in Italy, Spain and Germany^{42,120}.

Pétrequin was a member of the Medical School of Lyon from the beginning of its reformation in 1842, having thus a key role for the designing of the school's curriculum. Being firstly professor of the clinical surgery. In 1854 he was nominated as a professor of surgical pathology and operative medicine connecting in a way pathology with surgery. But this was not enough in his thoughts. According to his opinion, anatomy should have been emerged from preclinical studies and transformed in a precise topographic description with a higher impact in surgery to exalt every surgical operation. The era of the „Surgical anatomy“ began in Lyon, by Pétrequin, to alter all known until then approaches¹²⁰.

EPILOGUE

An artist, a philosopher, a scholar, a hygienist, a pathologist, a surgeon, an anatomist, Pétrequin had just triumphed and was highly celebrated, gaining a series of scientific titles. Almost all major

international journals of his era had tributes for each one of his publications¹²⁷⁻¹³¹, while researchers two centuries after his death continue to cite his work¹³²⁻¹³⁴. His actions and reactions, his travels, his concern about the public health, his surgical skill, his love for the history of surgery won him more admiration than sympathy. With his ethos of radical action and perfectionist refinement, he defined much of the medical culture in the eve of modern surgery, and anatomy shone once more among surgeons¹³⁵.

Compliance with Ethics Requirements:

„The authors declare no conflict of interest regarding this article“

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