

## Review Article

# The Anatomical Enlightenment

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## Abstract

Wide ranging circumstances influenced the revival and unfolding of human anatomy. Human anatomical dissection became the cutting edge of medical investigation and the essence of a doctor's training. This anatomical revolution brought about a paradigm shift in the traditional thinking about the body together with its relationship to the mind and soul which had so dominated medieval thinking.

In this period a gulf evolved in the medical world separating physicians from surgeons and, in some ways, the study of the human body.

In more recent times the study and teaching of anatomy by dissection has declined.

**Keywords:** Human anatomical dissection; Renaissance; Anatomy teaching

## Introduction

Rembrandt's painting "The Anatomy Lesson of Doctor Nicolaes Tulp" in 1632 makes it clear that human anatomical dissection had become one of the spectacles and symbols of the age and that anatomy had become accepted as a portal into the human condition [1]. In many ways it can be viewed as part of the cultural movement of the Renaissance although, primarily, human dissection was a procedure of medicine [2].

Following the rise of Christianity medicine and surgery were practiced largely in monasteries having small charity hospitals. It was here that a small number of medical texts of antiquity had been preserved. The outside clientele of the monastic medical practitioners increased considerably with the economic improvement and rapid population growth beginning in the 10<sup>th</sup> century. These practitioners were now spending long periods outside the monastery and having a more secular life similar to medical practitioners of the sixth and seventh centuries that monastic medicine had eclipsed [3].

This situation became increasingly unacceptable to the church leading to the Gregorian Reforms of the 11<sup>th</sup> century. Religious values dominated the teaching and practice of medicine to an extraordinary degree and the Council of Clermont (1130) declared that monks were forbidden to practice medicine (and law) because this fostered "avarice and greed". The decree of the Fourth Lateran Council by Innocent the Third (1215) forbade higher clergy from engaging in any activities likely to cause bloodshed [4].

### The renaissance milieu

The beginning of the new millennium was a time of great social change. The end of the early Middle Ages in European culture was marked by a reawakening of city life and the appearance of the burgher class of merchants. The rise of city states was characterised by burgeoning bureaucracies with increased literacy and numeracy. This led the 12<sup>th</sup> century renaissance with the recovery of Greek science and the development of the "new sciences".

This enlightenment was associated with the development of the scientific method and advances in mathematics, astronomy and

industrialization. Inventions such as windmills, the spinning wheel, paper, the magnetic compass and Arabic numerology were catalysts for economic growth. There was a revival of Greek culture with a focus on understanding the natural world and on the logical thinking championed by Aristotle.

An increasingly humanistic approach to learning and medicine developed and a revival of neo-Platonism occurred with emphasis on the "soul". Original ancient texts were studied and appraised through reasoning and empiric evidence [5]. This was all aided by the migration of Greek scholars, particularly after the fall of Constantinople in 1453.

### Salerno and the early medical schools

Together with the rise of medieval communes were the beginnings of vernacular literature and the founding of the first universities. Salerno had existed since Roman times becoming famous as a health centre in the new millennium, with increasing numbers studying medicine there under renowned scholars. It developed an orientation around Greek medicine when the Archbishop of Salerno, Alphanus (d 1085), following travel to Constantinople in 1063, introduced Byzantine and Islamic medicine which had preserved the Galenic humoral tradition [6]. This allowed the medical practitioner a more intellectual and physiological approach compared to the common healer [2].

Constantine's Africans (1020-1087) was a native of Carthage who became a monk in the Benedictine Monastery of Monte Cassino just south of Salerno. His translation of Arabic medicine into Latin was crucial in allowing Latin speakers to share medical thinking and debate Greek medicine and philosophy. A specialised vocabulary was generated and this provided a framework for medical teaching as well as a basis for the creation of a medical text, the "Articella".

The Articella consisted of four parts (Galen, Hippocratic aphorisms, Theophilus on urine, Philaretus on the pulse) conveying theoretical knowledge and linking medicine with philosophy [2]. The Articella became the foundation text of medical authority in the newly established medical schools of Europe by the middle of the 12<sup>th</sup> century and married the scholastic Aristotelian approach of function and purpose to medicine with contemporary Galenic views [7].

Salerno was the first to set a precedent in university scholasticism and professionalism that saw medicine, as a system of knowledge demonstrating truth, being taught in a university [5]. It produced a formal investment in learning and established medicine as a means for debating philosophical issues of the time.

The medical school at Salerno also fostered a translation movement lasting hundreds of years with over 50 Galenic texts discovered and translated largely by Nicola da Reggio (d 1348) in Naples. This re-discovery of Galen's writings mainly defined early Renaissance medicine [2]. Other universities with medical faculties soon followed, initially in Italy (Bologna 1088, Padua 1222), then in France (Paris 1150) and England (Oxford 1167).

### Early human dissection

From the early 12<sup>th</sup> century opening the body was a common funerary practice as was embalming [8]. The first recorded case in Italy of a body being opened for inspection was in 1286 [9]. Courts in France and Italy ordered post mortems in cases of violent or suspicious deaths, often to explain the spiritual as well as the physical state of an individual. Most of these early autopsies probably took place in private houses [9]. Autopsy became an integral part of legal practice and the techniques of embalming and autopsy were quite similar.

Systematic dissection of the human body began in Bologna with Mondino de Luzzi (1275-1326). He documented the first public record of a dissection in 1315 on a condemned criminal at the Bologna Medical School [3]. Mondino subsequently wrote the "Anatomia Mundini", completed in 1316, and it became the standard anatomy text of the time. This was a brief, practical introductory anatomy manual for the developing university based education but, as it relied on Galenic and Arabic medicine, it perpetuated the old errors derived from animal dissection [5]. Dissection based on the model of Mondino became very popular in Europe spreading to Padua in 1341 and Venice, Florence and Vienna later in the century.

Mondino's dissection practice was guided by his adherence to a tripartite division of the body and he utilised the difference to classify distinct aspects of physiological function. His book was therefore based on the three compartments of the body and their organs. These compartments were dissected in order, not only because of the practical issue of putrefaction, but also because of the traditional philosophical sequence. The inferior compartment, the abdomen, was to be dissected first because it contained "natural" members with the most disarrayed and least noble organs. In contrast the head contained "animal" members with higher and better organised anatomy, whereas the thorax, to be dissected second, contained "spiritual" or "vital" members [2]. Mondino suggested that the muscles of the limbs be studied in a sun dried body rather than a rapidly decaying cadaver. However the anatomy of the limbs received scant attention in his book.

It was not until 1376 that Louis of Anjou ordered the body of an executed criminal to be delivered each year to the faculty of medicine at the University of Montpellier [9]. The first official dissection recorded in Paris was in 1478 [3]. In Bologna the authorities supplied condemned criminals to the medical faculty following Mondino's description of four day exhibitions of dissection.

The practice of dissection became codified in the form of regular, university sponsored anatomy and over the 14<sup>th</sup> century dissection spread rapidly in northern Italian cities [9]. Initially, however, human anatomy had very little role in medical education. In fact in the medical school in Salerno anatomy was taught by dissection of pigs and never progressed to human dissection. By 1315 it was a requirement to attend, and later partake, in an animal dissection [5].

Padua and Florence required attendance at dissections for a medical degree and a statute in 1388 at the University of Florence stated: "a fully trained physician must be familiar with the anatomy of the human body" [9]. Initially only one or two criminal cadavers were delivered each year but this number gradually increased as links developed between anatomists and administrators of criminal justice. In some places, England in particular, the practice of dissection was punitive and functioned to prolong the sufferings of condemned criminals beyond execution and into death [10].

The ecclesiastical authorities initially attempted to check the growing practice of autopsy and dissection. The Papal Bull of 1299, "Detestande Feritatis", was declared to prevent dismemberment of corpses and boiling down of bodies for transport prior to burial [4]. In Park's view this edict was to prevent division of the corpse in kings and nobles who wanted parts of their body buried in different churches so more prayers could be said for their soul [9].

By the middle of the 14<sup>th</sup> century Guy de Chauliac was writing about different ways of preparing subjects for anatomists. Dissection soon became part of medical education and was conducted in universities across Europe with the full consent and active encouragement of the local ruler or civic authority [10]. In 1308 the Venetian senate gave permission for annual dissection and by 1482 medical students at Tubingen attended them with the blessing of the Pope [4].

### Medical practice in the middle ages

In the 13<sup>th</sup> and early 14<sup>th</sup> centuries medicine was partly of Hippocratic, Byzantine and Arabic origin. The re-discovery of Galen's texts, following their translation into Latin, allowed the identification of Galenic medical function with Aristotelian teleology and an emphasis on "natural philosophy" [5]. Galen's writings were much more rational and sophisticated in their philosophical and anatomical detail [6]. The 14<sup>th</sup> century saw a confrontation, and sometimes interpenetration, of two main kinds of medical knowledge: that of the empiric, relying on personal experience, and that of the professional doctor who tended to rationalism based on tradition.

At the beginning of the 13<sup>th</sup> century the nascent University of Paris designated medical practitioners as "physici". These were usually clerics, often with ecclesiastical benefits, who claimed their art was "liberal" and that they were able to indulge in abstract reasoning and speculation [3]. Physiology was part of theology and the medieval body more part of theological discourse as an echo of the macrocosm. The "physicians" were in part philosophers with medicine, at this academic level, aligned with metaphysics. The body was believed to be integrated with the general motion of the universe and, in particular, with the moon's influence.

The College of Physicians formed in London in 1518 as did a similar organisation in Paris. These academic doctors became the top of the "professional pyramid" of medical hierarchy followed in turn

by the skilled medical practitioner, educated surgeon, barber surgeon and finally, at the base, the herbalist, apothecary and shaman.

### Medieval surgery

The cutting open of bodies in this era, other than for bloodletting, superficial procedures or wound repair, was only permissible for religious reasons or for punishment but not for penetration of its secrets – “the innermost secrets of creation” [3].

The declaration of Innocent the Third in 1215 meant that surgery must be left to the layman practitioner [1] opening up a gulf between physicians and surgeons. The latter were mostly uneducated manual workers degraded by their contact with blood. This reflected the religious values of the times and the shedding of blood was incompatible with ecclesiastical status because of the risk of causing death involuntarily. An ambivalent attitude consequently developed towards surgeons in the medieval world.

In the early 14<sup>th</sup> century the faculty of medicine in Paris was basically an ecclesiastical institution under the control of the Pope. In 1350 it imposed on its graduates an oath not to engage in surgical practice. However prior to this in Paris, Henri de Mondeville (1260-1320) urged surgeons to become as learned as physicians. He had studied at Montpellier, with further training in Bologna and Paris, and was the first surgeon to write a treatise on surgery. He sought to liberate the body from its metaphysical associations and place its study in the realm of science [3].

De Mondeville included a systemised “Anatomy” in his surgical treatise and, uniquely, used illustrated plates in his teaching [5]. He was anxious to free his art and science from all religious control. His stress on the solely secular value of the body was linked to the rehabilitation of the flesh emerging in medieval society. The taboos on anatomical knowledge had a religious influence and were rooted in the mentality of the time. The body was looked upon as a microcosm which housed a soul and to shed blood was to make dangerous contact with the life force itself [3].

Medieval surgeons probably had significant opportunities to examine human cadavers since they performed the autopsies and embalming procedures common among the upper classes [10]. Guy de Chauliac (1300-1368), a lesser order clergy who succeeded de Mondeville in Paris, developed surgical expertise through five to six years of tutelage in an apprenticeship system which required a working knowledge of anatomy. He placed great emphasis on this aspect of a surgeon’s craft, as had Mondeville, and wrote his own treatise on surgery in 1363 [10].

Operating on or penetrating the body meant “interfering in a transcendent interplay of forces” [3]. Surgeons were not able to proceed beyond the membranous linings of the body cavities which became the theoretical domain of physicians. This only accentuated the increasing divide between university doctors and practical surgeons that characterised this period. Subsequently the creation of the Company of Physicians in Paris and the College of Physicians of London consolidated the separation of medicine and surgery [11].

Continued surgical tutelage by apprenticeship led to the organisation of guilds and a Master Surgeons Guild formed in London in 1368. The Barbers of London received a charter in 1462 from Edward the Fourth and by 1540 the Guild of Surgeons had

merged with the Barbers Guild by an act of parliament [2]. Finally this newly formed Company of Barber-Surgeons of London obtained a formal allocation of four criminal cadavers each year for the purpose of dissection [10].

### Medieval human dissection

The rationality of medicine began to be seen to lie in its anatomical basis and dissection of the human body was now looked upon as a dignified and worthwhile scientific undertaking. Beginning around 1490 there was increasing interest in anatomy although the idea that dissection might be used to verify or even correct established medicine was quite alien [9]. The superiority of learned physicians in universities was demonstrated by public displays of human dissection in much the same manner as Galen achieved with pig dissections in Rome where he prided himself on his dissecting ability [7].

Academic physicians revelled in these public displays and anatomy theatres were built partly for the purpose of raising their public image. The social role for dissection was justified in terms of natural philosophy and piety. The dissections were not for medical purposes but for “education”, to exemplify the text and “for satisfying friends, for intellectual exercise and to overcome the forgetfulness of age”. Surgical benefits were rarely mentioned [5].

A typical dissection scene, as depicted in medieval illustrations, would consist of the physician in academic robes sitting high on a throne reading from a text, usually Galenic [1]. A surgeon is seen opening the cadaver and dissecting while a teaching assistant points out features to the audience [10]. The statutes at the University of Bologna in 1405 stated that no more than 20 students could attend a male cadaver and no more than 30 for a female body [9]. The first dissections were not open to the public but reserved for professional medical practitioners, students, barber-surgeons and some artists [2]. Prominent citizens and interested layman soon also began attending university anatomy dissections. As the size of the audience increased permanent anatomy theatres were built beginning in the middle of the 16th century. Dissections became somewhat theatrical events attracting enthusiastic crowds in an almost carnival atmosphere, becoming ceremonies of sorts.

Dissections would last three or four days and were celebrated by banquets. They were divided into several sessions depending on decay and the teaching practices of the ancients, particularly Galen. Theologians were always present and the dissected body was usually buried in consecrated ground under the direction of a priest [3].

After Bologna the greatest centre of human dissection was Padua. It became popular with foreign students and this added considerable commercial benefit to the city. The city of Padua passed two statutes allowing public dissections but no unlicensed practice of anatomy. This resulted in the monopoly of anatomical practice being at the university and therefore political power residing with the physicians in line with their presumed increased learning and rationality.

Some anatomy teaching was carried out without dissection but was closely based on natural philosophy of elements, qualities and humours. The religious, philosophical and professional reasons for the study of anatomy were explained but this synthetic and theoretical teaching was of little use to surgeons or artists [5]. Surgeons still learned their anatomy by practical apprenticeship.

## The influence of renaissance art

The rise of anatomy was helped considerably by renaissance artists who were now fascinated by bodily form and the development of more realistic techniques of representation [2]. The enthusiasm for anatomy involved artists attending dissections and even performing their own studies. This resulted in a revival of naturalistic art. The first iconic reproduction of a dissection in a printed book was in 1482 with the engraving suggesting a magical rite showing a background of the Garden of Eden [12].

The humanist Leon Battista Alberti (1404-1472) stated that the knowledge of body parts was vital to the artist “providing him with insight into human proportion echoing the harmonies of nature and art”. Art theory and practice emphasized the value of anatomical knowledge and painters soon pursued detailed anatomy through dissection as a matter of course. Humanist anatomy was further boosted by the discovery of Galen’s “On Anatomical procedures” (a treatise on how to carry out dissection) and on his “On the Use of the Parts”, both translated into Latin [2].

Leonardo da Vinci (1452-1519) was a perceptive investigator of human body mechanics and a brilliant anatomical illustrator, yet his thinking was traditional and he continued to accept Galenic doctrine. Nevertheless his anatomical drawings are scientifically sound as well as being beautiful illustrations [13]. Leonardo combined his artistic genius with sharp observational skill and was a forerunner of the new anatomical paradigm. He reflected the new involvement of artists with anatomy and more realistic medical illustration. Apart from the growing enthusiasm of humanistic scholars and doctors, the increasing availability of printed and illustrated works of anatomy added to community interest [9].

This era saw the development of new ideas in natural philosophy that was part of the renaissance and advancement of anatomy [5]. The interaction and relationship with anatomical dissection was far reaching from artistic realism to the concepts and beliefs of philosophers Francis Bacon (1561-1626) and Rene Descartes (1596-1650). Descartes performed human dissection during the time he lived in Amsterdam [14]. The new discoveries in anatomy coincided with these new natural philosophies to help break the old link between structure and function in the generation of knowledge [5].

## Vesalius

Andreas Vesalius (1514-1564) moved to Padua in 1537 from Brussels having studied in Paris under Jacobus Sylvius (1478-1555). Sylvius was a humanist but an avowed Galenic anatomist and so the initial drawings of Vesalius followed Galen’s precepts and anatomical vision. He retained a number of Galen’s ideas, particularly in terms of function. In 1539, under decree from a Paduan judge, Vesalius acquired a larger supply of cadavers from executed criminals and realised that Galen had never in fact fully dissected a human body [5]. He then began to criticise Galenic anatomy methodically and systematically. Galen himself had said: “if anyone wishes to observe the works of Nature, he should put trust not in books on anatomy, but in his own eyes” (Galen. On the usefulness of the parts of the body). Ironically this is exactly the dictum that Vesalius followed.

Vesalius rapidly exposed Galen’s anatomical errors (such as the vena cava commencing in the liver) but did not engage with

physiology or function. He was able to publish his seven volume book “De Humani Corporis Fabrica” in 1543 marking a turning point in the understanding of the human body [2]. Its core ideas became the essence of the new anatomy. It laid the groundwork for further accurate dissection and observation of human cadavers by other anatomists because Vesalius based his research and teaching of anatomy primarily on dissection of human cadavers which, in contrast to his contemporaries, he carried out himself [15].

Further strong critique of Galen also came from Berengaria da Carpi (1460-1530) who denied the existence in humans of Galen’s “rete mirabile”, a network of blood vessels at the base of the brain found in some animals, but as Carpi’s human dissection clearly showed, not in humans [2]. However Galen continued to be defended. Vesalius was berated for his impiety, lack of faith and damage to the medical tradition, particularly by his old teacher Sylvius in Paris. Other criticisms of Vesalius came from Eustachio in Rome and Laurens in Montpellier [5].

Prior to Vesalius humanist anatomy was conservative in theory and no anatomist opposed the traditional Galenic tripartite division of physiological function even when anatomical facts discredited them [2]. It was as if further addition to the priceless teachings bequeathed to posterity by the ancient authorities, particularly Galen, suggested arrogance and blasphemy [3]. Vesalius was offering knowledge outside traditional boundaries.

The “Fabrica” was prepared by printing press and beautifully illustrated by the artist Jan Stephan van Calcar (1499-1546) who displayed the accurately dissected body in natural, graceful poses [2]. This graphical method used by Vesalius to explain anatomy set a new standard. Prior to this anatomical illustrations were not based on direct observation of individual dissections but were usually copied from existing manuscripts and were highly schematic [10]. Vesalius did not only transform the research in human anatomy but, equally profoundly, the teaching of anatomy [15].

A precedent had now been set for using realistic anatomical figures and diagrams to teach and research anatomy [3]. Previously the status of anatomy was somewhat low, stigmatised by its surgical connection, but the appointment of Vesalius to teach medicine and surgery, and the publication of the “Fabrica”, intimated that anatomy (and surgery) were to be incorporated into the wider humanist medical movement [2].

## Harvey

Further significant critiques of Vesalius, in one form or another, were all given by Columbo, Fabricius, and Fallopi. However these anatomists made discoveries that were all crucial to William Harvey’s (1578-1657) subsequent landmark description of the blood circulation, “De Motu Cordis”, a century later in 1628 [16].

Realdo Colombo (1516-1559) was an apothecary’s son who studied surgery in Padua. He succeeded Vesalius in 1544 and, via vivisection in animals, discovered the pulmonary transit of blood and the correct elucidation of the heartbeat, with the heart beating more forcefully in systole rather than diastole.

Hieronymus Fabricius (1533-1619) succeeded to the chair in Padua in 1565 and published “De Venarum Ostioliis” in 1603 discussing at length the valves in the venous circulation [2]. He was

a student of Gabriele Falloppia (1523-1563) and both were important in the development of specialised comparative anatomy, emphasising not only descriptive anatomy, but also the action and function of body parts.

Curiously Renaissance respect for the ancients was maintained by none other than William Harvey. His explanation was that the human body had changed over the centuries between Galen and the 16<sup>th</sup> century. Nevertheless a large part of Harvey's natural philosophy was gleaned from the work of Fabricius and Falloppia with further representation of a revival of Aristotelian ideas of function and purpose [5]. Harvey's description of the circulation represented a fundamental change in understanding the vascular anatomy (and physiology) of the human body.

### The demise of public dissection

Paracelsus (1494-1541) had a completely different view of human dissection and opposed corporal anatomy, rejecting its rationality. He advocated "celestial anatomy" in which parts of the body corresponded with parts of the macrocosm [5]. Over the next century followers of Paracelsus brought pressure to bear on public dissections.

Leonardo da Vinci worked with cadavers obtained from hospitals which became an increasing source of bodies for dissection. These were usually charitable institutions but the increasing demand for cadavers was becoming more difficult to accommodate and clandestine sources, including grave robbing, increased in the 16<sup>th</sup> century [9].

Vesalius and his students rifled tombs and stole from ossuaries in their quest for cadavers. This type of activity prompted a Venetian law in 1550 punishing grave robbing. Various false rumours circulated about famous anatomists related to the speed with which fresh cadavers were appropriated for dissection.

A fear in regard to human vivisection began to develop in the community. Eventually, in the latter part of the 16<sup>th</sup> century, increasing signs of public disquiet regarding anatomical practice developed [9]. Human public dissection ceased in Padua because of this as well as increasing cost [5]. Further political, religious and economic changes in Europe led to a gradual decline in public dissection. The dubious morality surrounding the obtainment of cadavers plagued anatomical dissection well into the modern era.

### Anatomy teaching into the modern era

In recent times the teaching of anatomy by dissection has gradually declined in the modern medical curriculum [17]. The importance of gross topographical anatomy in medical education is not in dispute [18] but opinion varies as to whether sophisticated virtual technology can adequately replace classical dissection teaching [19]. Also mired in controversy is how much anatomical instruction is necessary for safe medical practice.

For Vesalius anatomy was essential for rational surgery [20], a point few would argue. Many would reason that a clarity of understanding of regional relation anatomy, and construction of a three dimensional representation of the human body in a student's mind, cannot occur without anatomical dissection [21].

In this year, commemorating 500 years since the birth of Vesalius,

it is worth remembering that he insisted anatomy could be studied only by human dissection: "The negligence of those who stupidly transcribe from the books of others things which they themselves have never seen for themselves" (Fabrica, 1 18:191).

## Discussion

The anatomical enlightenment began during significant changes occurring in European society with the new millennium. Urbanisation reflected an increasing merchant class and the first merchant guild were formed in 1193. Increasing population size and economic growth, with more sophisticated secular administration as well as the cultivation of professional occupations, required increased learning and literacy. It was a period of invention, cultural flowering and the beginnings of vernacular literature.

University centres grew out of scholastic philosophy aided by the recovery of Greek science, philosophy and medicine with Arabic additions and systemisation. The human body, being part of the universe, became the perfect instructional tool although there was little distinction between anatomical and religious knowledge. The medieval body was more a part of theological discourse and viewed as a masterpiece of beauty and design of divine origin [14].

The teaching of anatomy by human dissection became an increasingly important aspect of medical education. Initially the church determined that anatomical knowledge, as a part of natural philosophy, was by its nature, a religious enterprise [5]. This, in part, led to an artificial separation, and degrading, of surgical anatomical teaching and surgery, as opposed to academic medicine [14].

Two movements in the early Renaissance were of major importance in anatomy development [5]. Firstly, the recovery of Galen's ancient texts, and secondly, the preparation of digests from classical sources. These were short, abridged teaching texts. Renaissance anatomists shored up ancient medicine and philosophy, even as they exposed factual error [2].

Anatomical knowledge progressed by a complex dialectic of visual perception and mental images [3]. Human dissection became a focal meeting point between doctors and the community with development of a close interaction between philosophy, medicine and artistic imagery. This symbiosis by anatomists, artists and philosophers, helped create a new mind/body dualism [14].

Anatomy teaching in the modern medical curriculum, with much less emphasis on dissection, is the cause of some concern, particularly in the surgical community. The lack of anatomical knowledge in students reaching the clinical years, and by extension surgical trainees, led to review of the University of Sydney Medical Program and reintroduction of a whole body dissection course [8].

Vesalius used the technological advancements of his time, such as the printing press, but he was also cautious of their limits in the teaching of anatomy. Some have argued that the so called modern methods of teaching and learning have caused, somewhat paradoxically, a decline in anatomical knowledge [22]. Despite the passage of five centuries since the birth of Vesalius, Gogalniceanu and his colleagues would agree with him that "Anatomy should remain a principal component of medical education, with dissection as its core teaching method" [23].

## Conclusion

Human anatomical dissection became a significant part of university medicine with the development of increasing scholasticism and professionalism in medicine. This coincided with the beginnings of science that was to become increasingly integrated into the medical syllabus in the future. The anatomy enlightenment was based on classical sources but was part of the cultural movement of the Renaissance associated with the development of humanist linear perspective in painting and educational reform.

Renaissance dissectors significantly increased knowledge of the structure of mankind forging a pathway for its continuation into the modern era [2]. They also introduced new methods of teaching anatomy. Vesalius was a pioneer of medical illustration in medical teaching but he saw this only as an aid to learning. It was not meant to substitute the chief mode of instruction – inspection of the human body through dissection [15]. Recent technological advances in virtual imaging should not alter this balanced approach.

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