Mini Review

Mundinus de Luzzi the restorer of anatomy in the Italian peninsula

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Abstract

Mondino de Luzzi was born and studied medicine in Bologna. He became a professor of surgery, introducing in the medical curriculum anatomy course including human dissections. He was the first to perform public dissection following Galen’s instructions. His work “Anathomia” became the most illustrious anatomy textbook for almost two centuries. Mondino influenced the evolution of anatomy in such a degree that he is considered the man who restored the glory of anatomy in the western world.

Keywords: anatomy, Bologna, human dissection

Introduction

Ancient Greeks prohibited human dissection, believing that the integrity of the corpse was paramount. However, it was authorized in the Alexandrian School of Medicine in ancient Egypt since the first half of the third century BC. This parenthesis ended due to religious barriers, as Christianity opposed the handling of human corpses [1]. In early medieval Europe medical knowledge derived from Galen’s work and the Arab medical texts. Human dissection and pictorial representations were also prohibited by Islam law. Thus, anatomy in early medical schools was mainly constricted to the writings of Galenic-Arabic canon [2]. Human body dissections finally became possible during the early 14th century. The leading figure of the era in the field of anatomy was Mondino de Luzzi (ca 1270-1326) [3]. Mondino thrived in an era when several universities were established, such as those in Padua, Montpellier, Oxford and Bologna, where he had obtained his medical degree and lived his academic career [4].

If someone wishes to unveil the history of anatomy in the modern world he should start by mentioning Mondino de Luzzi, also known as Mundini or Mundinus, Luzzi, Lucci, Liucius, or even Lentiis and Leutiis. This vignette aims to narrate his life and contribution.

Mondinus de Luzzi

Mondino was born around 1270 in Florence. His family had a good reputation in the field of pharmacology. He grew thus in a rich bourgeois family. His father, Nerino Fronzoli, was a famous pharmacist and in his early years Mondino worked with his in his apothecary. His uncle
Liuccio di Luzzi, was a professor of physics, philosophy and medicine at the University of Bologna. He was probably the main reason for Mondino to follow the field of medicine. Mondino studied at the University of Bologna under the Italian medical professor and expert in anatomy Taddeo Alderotti (1206/1215-1295) and later on as a pupil of the French surgeon Henri de Mondeville (ca. 1260-1320). His academic career was remarkable and he was soon elected as Professor of Surgery at the University of Bologna. Since 1306, Mondino kept his chair of professor until his death in his birthplace in 1326 [5].

Mondino introduced in the medical curriculum of the University of Bologna anatomy, practicing human dissections as a part of the course. He was the first to perform such an act after Herophilus (325-255 BC) and Erasistratus (ca 304-250). This first public dissection took place in 1315 on an executed criminal, most likely a woman and was also observed by medical students. It seems that the dissection was performed by Mondino's assistants, while the professor leads the dissection from a chair situated on a podium, reading Galen's work [5]. Some historians believe that his practice was limited. However, French surgeon Guy de Chauliac (1300-1368), who was one of his pupils, claimed that Mondino dissected multiple cadavers [6].

Almost one year later Mondino finished his book "Anathomia", the first textbook for detailed learning of anatomy techniques and practice. It was considered the most popular anatomy treatise in the medical literature of the time with 40 different editions, printings, and

![Figure 1. Portrait of Mondino created by Giovanni Alessandro Brambilla (1728-1800) printed by Ambrogio Maggiore in Milan.](image1)

![Figure 2. Colored lithography, title page of Mondino de Luzzi (Mundinus) "Anathomia", published by Martin Pollick van Mellerstadt, Leipzig, 1493 (right side). Colored lithography, title page of Mundinus's Anathomia included in Fasciculo di Medicina by John of Kentham, published in Venice by Gregorio de Gregoriis in 1493 (left side).](image2)
translations in several languages. "Anathomia" described the segmental dissection of the abdomen, the thorax, the cranium, and the extremities, as the dissection demonstrator described the examination of human cadavers [7,8].

Figure 3. German anatomist Johannes Dryander’s illustrations. The female reproductive system (left side). Inevitable Fatum (Inevitable Fate) depicting the dissection of the torso (central). A human body opening up like a book (right side).

Anathomia

Much of the medical information included in "Anathomia" was derived from the influential commentaries of Hippocrates (ca 460-370 BC), Aristotle (384-322 BC), Galen (ca 129-210) and Avicenna (980-1037), leading to the repetition of numerous fallacies of the past. Thus, the notion that a rete mirabile of blood vessels exists at the base of the human brain, or the belief that the heart had three-chamber with the middle one to control the "vital spirit", (Greek: πνεύμα), were included in the book [9].

Mondino’s book is a treatise on human anatomy and constitutes a practical manual of dissection, including also some physiological information and the surgical treatment of a hernia and description of cataract surgery. The book also contains a description of the cranial nerves and the brain, greatly contributing to neuroanatomy [10]. Book’s innovations were firstly the specification of the topographic anatomy documenting relationships with the surrounding structures, shape, size, texture, parts, physiology, and pathology of the visceral organs. Moreover, the nomenclature of various anatomical features was both in Latin and Arabic [4].

The original first edition of "Anathomia" published in Padua in 1478, carried no illustrations, but was later visually updated by Mondino’s followers including the Italian anatomist Jacopo Berengario da Carpi (1466-1530) and the German anatomist Johannes Dryander (1500-1560). In Dryander’s edition of "Anathomia", most illustrations showed human bodies opening up like books to reveal their inner secrets [7].

Mondino in lithography depictions of his book various front pages had been usually presented seated in a podium, away from the anatomical table, which symbolized the distance between practical application and theoretical knowledge. Although the first public dissection was quite a scientific spectacle, the attention of the reader was directed more towards him rather than to dissection. The engravers in late editions created vivid anatomical figures, creating a dualism between text and iconography, a competing relationship reflected in a teaching tool that had further highlighted the great Medical School of the University of Bologna on the Italian peninsula [11].

Conclusion

Anatomy had always been an essential tool, the core of medical training for both physicians and surgeons [12]. Mondino de Luzzi was the most successful teacher of the anatomy of his era. His work "Anathomia" remained for more than 2 centuries the gold standard textbook of anatomic knowledge. His work surely marked the beginning of a new era as human dissections were incorporated in the medical curriculum since the early 14th century.

Conflict of interest

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References