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Review Article

The Medical-Surgical Lexicon in the Middle English Version of Lanfranc's *Chirurgia Magna*

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Premise

This article aims to examine the surgical in two great treatises written down in late Middle Ages by one of the most important European physicians: Lanfranc of Milan. A particular attention has been paid to the lexicon regarding the surgical instruments and care of diseases.

The Author

Hugh Lanfranc of Milan (1245 about – 1315 about), native from a family of Pisa, accomplished his studies at the medical school of Bologna. In this school other famous medieval physicians, as Guy de Chauliac an Henry of Mandeville attended their studies). We have almost no information about his life; however, we can infer this news from his works. In fact, we know that he was a pupil of William of Saliceto (who died between 1276 and 1285), during the period William taught in Bologna. In this town Hugh Lanfranc accomplished his scientific l training and began to exercise his profession as a physician. Later he carried on his profession in Milan, where he became also a surgeon, as he informs us in his *Chirurgia Magna*. His patients were members belonging to ecclesiastical and secular nobility and, among them, Matteo Visconti, who exiled Lanfranc from Milan in 1290, because he became the chief of the Torriani party. For this reason, Lanfranc left Milan and moved to France and lived in a few cities, as Lyon and Paris (about 1295). Lanfranc considered Paris as a heaven on the earth, particularly adapt for studying and a city respectful of its citizens. In Paris he was received by Jean Passavant, the deacon of Medicine Faculty who encouraged him to write the *Chirurgia Magna*.

Moreover, Lanfranc had William Corvi support (who was known as William of Brescia, as well), although we are doubtful about the veracity of this news, because William Corvi lived in Paris probably after 1316, when Lanfranc was already dead. However, Lanfranc started his practice of surgery in Lyon and got famous, because at this time surgery was practiced by artisans and barbers only. Lanfranc belonged to the Surgeon Confraternity, but not to the Faculty of Medicine. In 1290 during his staying in Lyon, he wrote his Chirurgia Parva, divided into two parts: the first one concerning traumatology, ear-diseases and abscesses; the second one related to surgical pharmacology) and probably in 1296 his *Chirurgia Magna* (dedicated to the king France Philip the Handsome and the young physician Bernard of Gordon). These two works represent the first treatises written down in France. In both of them the author quotes the knowledge of his time together with his personal considerations on the medical topics. For this reason, Lanfranc is considered the founder of the Parisian surgical school and inventor of the surgical node, which is still used to suture the tissues. Furthermore, Lanfranc was the first physician to think that scab was contagious (before it was considered a humoral disorder) and consider the inguinal lymphadenopathy as a symptom of syphilis. However, Sergio Alleori affirmed that Lanfranc works "reflect the knowledge of his time, tending to follow the traditional way and ignoring the revolutionary techniques". In spite of this, his theories had a modernizing influence onto the French surgery, because it was inferior to Italian one. In fact, in France the surgeons were not considered as the same level of physicians. However, Lanfranc was already famous before his arrival in Paris and this contributed to the redemption of the French surgery. Lanfranc had several pupils, like Henry of Mondeville and John Ypermann, who became founders of the surgical schools in their countries.

We do not know if Lanfranc was a cleric or a layman. Probably, he was against the practice of surgery by laymen, as he thought they had not the necessary skills (this would induce to think about his cleric conditions). At the same time, it is quite improbable he was a cleric, since the Church forbade the ecclesiastical members to practice surgery, because they were not allowed to shed blood, even if they did it for healing purposes (however this prohibition was not always respected). However, it is more probable that Lanfranc was a layman, because he had a couple of children who followed him to Paris after his exile. His date of death is also uncertain; as he died between 1306 and 1315.

Lanfranc's woks

Probably Lanfranc wrote down his *Chirurgia Magna* (*Practica que dicitur ars completa totius chirurgie*) during his exile in Paris.

This work is composed by a prologue, five books (divided into a few chapters) and an epilogue. The first book is divided into three chapters and concerns the general principles of surgery, together with surgical deontology, anatomy, embryology, the wounds ulcer and care. The second book includes ten chapters and regards the parts of the body and the care of wounds, too. The third book is composed of ten chapters and contains a few specific topics. In the first chapter we can find the illustrations about the skin diseases (as alopecia, dandruff, itching, impedigo and leprosy).

In the second chapter we have the treatment of the abscesses relating to the humoral theory. In the third chapter we can read about the diseases and the surgical operations regarding nose, ears, breast, stones gangrene and phlebotomy. The fourth book is divided into two chapters: the first one regards the algebra or fractures, instead the second one concerns the dislocations. The last book is related to antidotes in which the medical remedies are analyzed. Lanfranc divides the remedies into seven groups, i.e. repercussive, resolutive, maturative, regenerative, consolidative, softening and cauterizing. In fact, Lanfranc explains the classification of remedies not on the base of their typology but based on their function. This feature is considered an innovative aspect of medicine; in fact it was taken as a model by other surgeons like Henry of Mondeville, John Ypermann, Guy of Chauliac and Willian Sedacer (who was the author of *Ars cyrurgie* based on Lanfranc's *Chirurgia Magna*). Finally, in his epilogue, he informs us about his life and professional training. His *Chirurgia Magna* knew a great success, in fact it was translated from Latin into Spanish, English, Dutch and Hebraic. Furthermore, we can find some glosses to both Lanfranc's works in a few manuscripts attesting the testament of the Oxford physician Simon Bredon (died in 1372) [1-4]. Finally, two treatises entitled *Cura oculorum* and *De doloribus iuncturarum* were utilized as a source for *Chirurgia Magna* ; although we cannot be certain, since they circulated separately from it.

The Manuscript Tradition

Lanfranc's *Chirurgia Magna* came to us in the following manuscripts: ms. Danzica, Stadt Bibliothek, St. Mary F. 200 (in Latin); ms. Firenze, Biblioteca Laurenziana, Ash. 1101 (in French, with figures in the text); ms. Milano, Biblioteca Ambrosiana, Y 179 sup. (in Italian, with figures illustrating various kind of drills); ms. Perugia, Biblioteca Comunale Augusta, 316 E 64 (in Italian); ms. Parigi, Bibliothèque de l'Arsenal 2895 (in French, with some figures of surgical instruments. In addition, we can find some figures relating to the parts of the body, even if they are quite unreal) and ms. Metz, Bibliothèque Municipale 176 (in which we can find the figures of few drills and cauteries). All these manuscripts are dated in the 15th century.

The Surgical Instruments

First of all, the surgical instruments are grouped depending on the uses they were employed. In fact, we can find sharp and cutting instruments for bone surgery, radiological, gynecologic and urological tools. However, it is quite difficult to classify the, because several tools could be used for different purposes, like cauteries, pliers and scalpels. In fact, depending on their sizes, they could be employed for different aims, as mentioned below.

The Sharp Instruments

The *scalpellus*

Among the sharp tools, we can find the *scalpellus* (cfr. Greek *anchiloton*; Latin *scalpellus lunatus*), which indicates any surgical tool, according to what Celsus tells us. The *scalpellus* consisted of a handle which could be square, round or trapezoidal. At its end, it had a deep hollow (1-2 cm.) where a blade was fixed; instead the lower part ended in the shape of a *spatula* (*manubriolo*). As Celsus tells us, we know that the *scalpellus* was used to enucleate small cysts, isolate varicose veins and separate the casing of testicles. The Arabian surgery reduced a lot the employment of the *scalpellus*, substituting it by cautery. However, when the sharp tools were used, we can find *spatumil, spatumine* or *spatomele*. As the Arabian surgeon Albucasis (912 o 986-1013) tells us, there were different kinds of spatumine, depending on the various types of the blades. For instance, those having a chamfered and round blade were used to make incisions on the heads of children in cases of hydrocephalus. On the contrary, to care the tears in the eyes were utilized two kinds of *spatomele*: he first type having a sharp blade on one side and a chamfered on the second side.

In addition, it is attested the use of a subtle and light *spatomele* to remove some little parts in the ears. On the contrary, to incise the pterigion, two kinds of *spatumil* were recommended: a pointed sharp *spatumil* in the first case and a light chamfered pointed, but not very sharp *spatumil*, in the second one. To remove tonsils, it was used a *spatumil* having a sharp blade on one side and a chamfered blade on the other. Finally, the thorny *spatumil* was used to engrave fistulas: it had a curved sharper blade on one side and another chamfered blade on the other, in order to avoid to cut what was not necessary. We do not know if it was the same tool used to care the tears in the eyes, even if their features were quite similar. The Italian surgeon Gerard of Cremona (1150) informs us that several knifes were used, as well. In fact, we find the *spatula tenue subtile; spatula subtile, lene, debilis, acuitatis* and *spatumilla habens duas extremitates*. The last one was also adopted by Andrew Dalla Croce who mentioned it in his *Chirurgia universale*, (1573); in fact, thought it was useful to engrave the tonsils. Even the Italian surgeon Bruno of Longobucco (1250) quoted several kinds of surgical knifes: "*spatumineda taiare carne che se rifa nella piaga*".

Furthermore, the denominations and peculiarities of surgical tools in Arabian context are different from Greek and Roman ones. In fact, the *spatumile* (or spatumine) is not mentioned in Latin surgical lexicon and, in Greek environment, it has not to be confused with the surgical knife, which denomination comes from Arabian. In fact, the Arabian word *spatumil* (or *spatomele*) indicated the 'scalpel'; on the contrary, the Greek term; *spatomele* represented the 'probe'. However, this can be confusing, because the scalpel is often connected to the *spatomele*. We can infer that, in Antiquity and High Middle Ages, a surgical tool existed (having a dual use, both probe and scalpel) and it was precisely the *spatomele*, indicating both probe and scalpel. It is only from the late Middle Ages that Romans begin to call *spatum ricurvo*, a special kind of scalpel. In addition, in both schools of Salerno and Bologna it was brought back the employment of the surgical knife which will be often used.

Some tools having a heart-shape (11-12 cm. long) are preserved at Lateranense Museum in Rome, at Roman-German Museum in in Mains and Koln (where there are two bronze copies), instead a silver one (having a probe) is preserved at Enns Museum. Finally, Andrew Dalla Croce (1573) considered some among them quite similar to cauteries, although we can just conjecture it.

Il rasorius

Generally, it is a scalpel with a short and pointed lancet to affect the bones, as Albucasis tells us. Instead *rasorius* with a curved and sharp blade was used to cut the varicose veins. Albucasis wrote that a kind of *rasorius* was used to scrap wide bones. It was fitted with a nail-shaped head similar to a tool called *alesckifegi*, which was a type of scalpel. Beside this, the *rasorius* could be employed to file the teeth; in fact, it was largely used in dentistry. Its shapes were different, in fact we have round or square *rasorii*, like blades and the surgeon held it in his fingers, making it rotate.

The phlebotome (or bloodletting knife)

The bloodletting was a frequent both in Antiquity and Middle Ages. As Hippocrates and Galen tell us, the phlebotome consisted of a small, pointed and a double edged-blade knife. However, it could be employed for other purposes, as the excision of lacrimal fistulas, removal of warts and sebaceous cysts, together with opening of abscesses. The phlebotome was particularly used in the Middle Ages and several denominations of it are attested, as *flebotomo cultellaris* (cfr. Greek *alnessil*) and *lebotomo mirtino* (maybe it was used to open big veins containing turbid blood); *flebotomo olivaris* smaller than the *flebotomo mirtino*; in fact, it was smaller at its ends. The last one was called *scissorium* and was employed for veterinary use (for horses in particular). Instead the sagitella was used to pen abscesses. In addition, in 1220, for the first time the term lancetta is mentioned. Other Latin denominations of phlebotome are the following *gladiolo, scalpro, scalpellus*, *lanceola* or *sagitello*. Finally, another tool, quoted by Albucasis, was called *fossorium* or flame-scalpel. He was equipped with a curved blade and used for bloodletting, together with another instrument called *alnessil*.

Other Surgical Instruments

Le vulsellae

They corresponded to pliers, which were used both for surgical and personal toilet uses. The bigger *vulsellae* were employed to remove parts from ears or eyes and could be 13-14 cm. long and 10 mm. width. Some of them ended with *spatulae* or spoons. It is quite difficult to classify them, due to their sizes and quantities. They were widely employed in the Middle Ages as Andrew Dalla Croce tells us; in fact he affirms" it is an indispensable tool for surgical use and is suitable for many things, it cuts part of bones and removes small parts of them. In the same time, it comfortably spreads the medicines with the opposite side". In Venetian dialect it was called *pinceta* or *mollettina*; and in Arabian *gesti*. As Albucasis tells us some *vulsellae* were used to extract the roots off the teeth; in fact, they were bigger enough to allow tightening the bone without breaking it and let the tooth out. Last, but not least the *askolopadj* was like the pliers and had the file-shaped end and Albucasis still informs us that it was used for the treatment of lacrimal fistulas.

The anesthetics substances

The only testimony of anesthetics substances came to us in Guy of Chauliac's *Chirurgia Magna*. The most widespread substances were opium, morella juice, giusquiamo, madragora and arborea ivy. These anesthetics substances were prepared soaking a sponge in the juice of the above-mentioned plants mixed to water and letting it dry in the sun. When the surgeon needed to employ it, he dipped the sponge in hot water and made the patient breathe it. Instead to awaken the patient the surgeon used to make him smell a sponge soaked in vinegar.

References

1. The Surgeon Confraternity was a lay Confraternity, it appeared in Paris in 1271 and later became a College. It was also known as Confrérie de Saint-Côme. It was separated from the Faculty of Medicine, even if it still depended on it.
2. (2004) Bernardo di Gordon a physician and the author of two medicine treatises. He probably studied at the medical School of Salerno and practiced his profession in Montpellier. Plinio Prioreschi, "A History of Medicine", in *Medieval Medicine*, Omaha, New England pp. 382-386.
3. (1965) Sergio Alleori, *Lanfranco da Milano: vita ed opere*, Roma p. 9.
4. (2014) Roman Sosnowski, *Volgarizzamento della Chirurgia parva di Lanfranco da Milano nel manoscritto Ital. quart. 67 della collezione berlinese, conservato nella biblioteca Jagellonica di Cracovia*. Jagiellonian University, Krakow.