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**SALERNO, THE MOTHER OF EUROPEAN MEDICAL SCHOOLS AND FATHER
OF CONSTANTINE THE AFRICAN, TROTULA AND ROGER OF SALERNO**

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Abstract

Salerno, a seaport of southern Italy, was famous as a spa and health resort. It had a medical school founded in 8th or 9th century and was known to very many people during the Middle Ages. “The Schola Medica Salernitana” (the Medical School of Salerno) became the most prominent feature in the first decade of 11th century. As the earliest school of medicine in Europe, it attracted medical students from Europe, Asia, and Africa and became the parent school of those founded at Montpellier and Paris in France, and Bologna and Padua in Italy. The school was also open to female students, practitioners, and instructors. The legendary Trotula, the presumed author of a treatise on medicine and hygiene was one of them. The Medical School of Salerno which was the principal institution for the study of medicine, reaching its most extreme splendor during the medieval period remained active until 1811, when it was closed by royal decree under the Napoleonic government of Murat. In 1944 it was reopened by King Vittorio Emanuel II, and became the state controlled in 1968 as Facoltà di Magistero of the University of Salerno. In 1988, the University of Salerno moved to the village of Fisciano in the Imo valley a few miles from salerno. Constantine The African (Constantinus Africanus), a Tunisian in origin, who had studied medicine in the Muslims schools of Africa and Baghdad brought with him an exciting cargo of Islamic knowledge and traditions about medicine, of which the subsequent translations contributed to the revival of science in Italy, and making the Medical School of Salerno the leading Source of medical knowledge in Europe¹. Roger of Salerno was another medical personality of the Medical School of Salerno. He wrote the important treatise, “Practica Chirurgiae” (Practical Surgery), in which the general surgery is described from head to toe with unexpected originality, and it maintained the strong tradition of the Medical School of Salerno. Roger of Salerno remains, therefore, the first modern western writer on surgery. He and his fellows carried out the first science- based surgery on the scene of the discredited medieval practice in Salerno. In all, the fame of the Medical School of Salerno’s man and women medical practitioners and their works spread across Europe by the 11th century, when it was surpassed by the distinction of its teachers and eclipsed by the bookish legacy of its writers and translators. Trotula of Salerno probably a medical practitioner, obstetrician, and gynecologist who lived in the 11th century Salerno, is held to have authored the most important and influential texts in women’s medicine and hygiene. She is also alleged to have been the first female instructor at the Medical School of Salerno.

Key Words: Medicine, The Medical School of Salerno, Constantine The African, Trotula, and Roger of Salerno.

Introduction

According to the story handed from the past, four Greek, Latin, Hebrew, and Islamic independent thinkers and physicians founded the Medical School of Salerno. This legend is certainly apocryphal, but it conveys much of the innovative spirit of the new school. Salerno by the second century B.C., was already a popular health spa and remained so during the Roman Empire (27 BC- 476 AD). After the fall of Rome to the Goths in 476, southern Italy and Sicily were initially part of Eastern Empire, and for a time Sicily was even under Arab rule. In the 8th century as Islam spread westwards, Christian descendents of the Hellenistic world of Egypt and Syria, especially the intellectuals and many close to emigrate to the Greek West of southern Italy and Sicily. Upon this palimpsest of Greek, Latin, and Islamic civilizations the Medical School of Salerno had its beginning. The School of Salerno although was near to Benedictine monastery of Monte Cassino, an abbey built by St. Benedict (Figure 1) on the mount that dominates the town of Cassino, Italy, Salernitan physicians remained free of clerical remarkably. The school was open to female practitioners, and the most famous was Trotula, presumed author of a treatise on obstetrics. Throughout the early medieval period in Europe, midwifery was generally the province of women.

By 904, the School of Salerno was so highly regarded that a Salernitan physician was welcomed at the royal court of France, and in 984, Alberone, bishop of Verdun, a city of northeastern France, went to Salerno seeking medical advice². As Michelet said, “emperors, kings, popes and rich barons all had their own doctor.” Previously, the town of Vella, a little south of Salerno had a medical college with a school of medicine, which was established in Greek and Roman’s time. Many important and influential men such as Paulus Emilius, Marcus Tullius Cicero (106-43 BC) Roman Orator, author, and statesman, Marcus Junius Brutus (c.5-42 BC), chief conspirator with Cassius in the assassination of Julius Caesar (102-44 BC) one of the greatest figures of antiquity, and perhaps Horace (65-8 BC), Rome’s greatest lyric poet and satirist, and Augustus (63 BC- 14 AD) first Roman Emperor (reigned 27 BC- 14 AD) had villas built while staying in Vella for therapeutic reasons. The Barbarian invasions following the fall of Roman Empire caused the last doctors to move to the neighbouring city of Salerno.



Figure 1. Portrait of St. Benedict, whose order not only provided medical care for 500 years but copied and preserved Latin texts, including medical tracts.

The scientific and philosophical tradition of medical studies carried on there in the form of a free and autonomous guild of erudite men, a college of masters, which became the first nucleus of the Salernitan Studium and later the origin of the European medical schools³.

The Salerno School of Medicine which was approximately founded in the 8th century as a principal institution in Europe for study of medicine, reached its utmost splendour during the Middle Ages. The school marked an immense step forward in the revolution of medical sciences and easily fitted into the city of Salerno, which had been thriving economically and culturally since it had been part of Magna Graecia.

Salerno remained active until 1811, when it was closed by royal decree under the Napoleonic government of Joachim Murat (1767-1815) marshal of France and King of Naples. In 1816 it was reopened by King Vittorio Emmanuel II, and the Instituto Universitario di Magistero "Giovanni Gurno" was founded, which became state-controlled in 1968 as the Facoltà di Magistero of the University of Salerno. In 1988, the university which now had approximately more than 43000 students moved to the village of Fisciano in the Imo valley, a few miles from Salerno. The University of Salerno, one of the largest universities in the southern Italy, is still growing.

Practicing Medicine with Passing Examination

Kingdom of Naples, southern Italian Kingdom, maintained an independent existence under various dynasties from 11th century to 1860. Norman knights won control of southern Italy early in the 11th century, and in 1130 the Norman King of Naples, Roger II (reigned 1101-1154) added Sicily to his domain⁴. Roger II in 1140 forbade anyone from practicing medicine without passing an examination. In 1224, his grandson the Hohenstaufen Emperor Frederick II specified that all candidates for medical licensure be publicly examined by the masters at Salerno after studying logic for three years, medicine and surgery for five years, and after one year practicing under the direction of an experienced physician.

Faculties

The University of Salerno with 10 faculties offers a wide range of degrees:

- Faculty of Arts and Philosophy
- Faculty of Economics
- Faculty of Education
- Faculty of Engineering
- Faculty of Foreign language and literature
- Faculty of Law
- Faculty of Medicine
- Faculty of Mathematics, Physics and Natural Sciences
- Faculty of Pharmacy
- Faculty of Political Science⁵

Three Celebrities

The medical School of Salerno is celebrated for its three celebrated physicians, translator, and writer, Constantine The African, Roger of Salerno, and Trotula.

1- Constantine The African

The par excellence physician, teacher and translator Constantine The African was crucial to the establishment of the spirit of Hippocrates and Galen, and like Cassidorus and St. Isidore of Seville before him, maintained a continuity with the ancient world⁶. Bishop Isidore of Seville (570?-637), was the most learned man of his time who compiled an enormous “Etymologies”, an encyclopedia of origins, the 4th volume of which contains a survey of medical terms, with many false and farfetched derivations. He described the dentition, using the term *praecisors* (precutters) for the incisors, since this was the designated term of St. Augustine⁷.



Figure 2. An illustration depicting the Schola Medica Salernitana from a copy of Avicenna’s Canon.

Constantine Possessed an Excellent Knowledge

Of Greek, Arabic, and many other languages acquired during his four decades travels in Syria, India, Ethiopia, Egypt, and Persia. By accumulating medical manuscripts and knowing Greek, Arabic and Latin, Constantine was uniquely qualified to study and translate the medicine of Islamic (Eastern) world. Accused of practicing magic upon his return to Carthage he fled to Salerno and then to Monte Cassino in 1076. He studied at the Medical School of Salerno, Europe’s first organized medical school, and entered Monte Cassino, the monastery founded by St. Benedict in 529.



Figure 3. Constantine The African and patients showing their urine flasks for medical diagnosis.

At the monastery he translated 37 books from Arabic into Latin. The first Arabic medical treatise to be translated into Latin was the large encyclopedia by ‘Alī ibn al-‘Abbās al-Maūsī (c.930-994) Iranian famous physician whom European called Haly Abbas. He practiced medicine in Persia and Baghdad in the mid-tenth century and served as a physician to the founder of a famous hospital A‘ḍadad-dowla Dailami whom he dedicated his only composition, Kamil al-Şinā‘a al-ṭibbiya (The Complete Book of Medical Art), also known as “The Royal Book”. In Europe this comprehensive and well organized medical compendium was first known as the Pantegni, in a Latin paraphrase made by Constantine The African, who did not credit Haly Abbas as the author. It also circulated in a collection of translations of medical texts of Ishāq ibn Sulaymān al- Isrā’īlī (d.955). Thus Europeans initially associated the compendium either with Constantine The African himself or with Issac Judaeus, as Egyptian-born Jewish physician Ishāq ibn Sulaymān al- Isrā’īlī was known in Europe. (Figures 2 and 3) It was not until a new Latin translation titled “Liber rogius” was made by Stephen of Antioch in 1127 that European knew the encyclopedia Kamil al- Şinā‘a al- ṭibbiya (the complete Book of Medical Art) as a genuine work of ‘Alī ibn al- ‘Abbās al- Majūsi (Haly Abbas)⁸. (Figure 4)



Figure 4. Haly Abbas (930-994), Iranian outstanding physician whose principal work, “The Complete Book of Medical Art” was divided into sections on theoretical and tracts on specialized topics, and was translated into Latin.

He also translated Arabic editions of works by the Greek physicians Hippocrates and Galen. The translations were the first works that gave the West a view of Greek medicine as a whole. (Figure 3 and)

Constantine’s translation spread throughout Europe with extraordinary rapidity, and they had an immense influence on the ages that followed. Although more accurate, polished translations were available after Constantine died, his work was studied by European scholars until the 16th century. (Figure 5)

Constantine The African (Latin: Constantinus Africanus), born c.1015, died c.1087, Monte Cassino was a Berber Zirid era doctor. His name African (Africanus) comes from the place of his nativity, Carthage in Africa. The first part of his life was spent in North Africa and the rest in Italy.

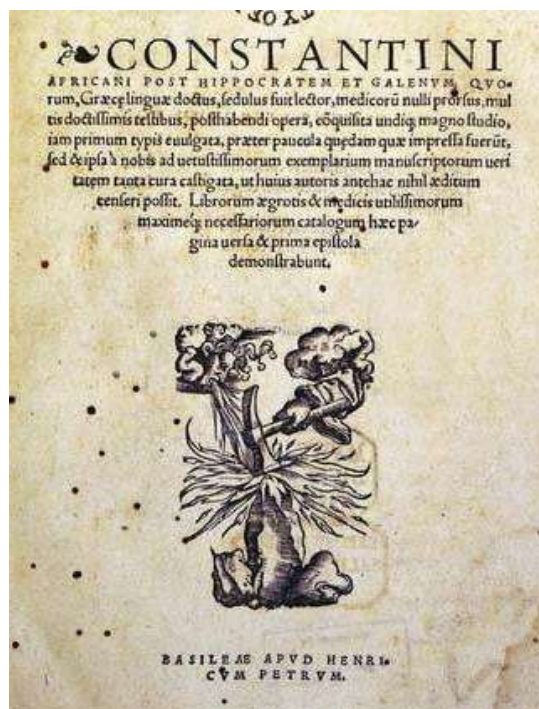


Figure 5. Title page from a collection of the works of Constantine The African, 1536. Constantine's Works:

Nearly twenty years of Constantine's life was spent at Monte Cassino where he occupied himself with writing and translating of book, being stimulated here to by Abbot Desiderius, one of the most learned men of the time who afterwards became Pope Victor III. His best know book is "Liber Pantegni", which is actually a translation of Kitāb al-Malakī or Kāmil al-Şina'a al-ṭibbiya (The Complete Book of Art) of Haly Abbas ('Alī ibn al-'Abbas) (born 930), Persian famous physician, which he dedicated to Desiderius. Constantine also wrote some original works, but there is no certainly as to his genuine contribution to medicine.

He was most important for his translation into Latin of ancient Greek medical texts, often done from their Arabic renderings. He was also very serious and significant to translate Arabic work such as the "Liber Regalis of Haly Abbas"⁹. Of the many editions of his works, the leading is that of Basle (in fol., 1536). Many distinguished professors of the 12th century at Salerno were proud to proclaim Constantine The African as their master. Today, his translations are housed in libraries in Germany, France, Belgium, and England, and were used as Textbooks from Middle Ages to the 17th century.

The Historians' Writing about Constantine: Peter the Deacon, 12th century monk was the first historian who wrote Constantine's biography. He noted that Constantine was a "Saracen" (a Muslim from North Africa). Later historians such as De Renzi, Daremberg curator of the National Library in Paris, and Leclerc, author of the "History of Arab Medicine" relied on this account. Steinscheider, the German author wrote a book dedicated to Constantine The African which was published in Berlin, in 1865, Karl Sudhoff, an orientalist, made his Berber-Islamic thesis when he discovered new and important documents regarding Constantine's life and religion in the village of trinity Della Cave, in northern Italy; these documents were published in the Journal Arkioun, in 1922.

2- Roger of Salerno

Roger of Salerno (c.1140- c.1190), also called Rugger Frugardo, Italian surgeon and the founder and leader of the surgical school of the Medical School of Salerno¹⁰.

Roger of Salerno and Ronald of Parma (Rolandus Parmensis) were the earliest surgeons to gain prominence in their field. They authored extensively of their works, and the treatise of them served as guides for the successive generations of physicians. Roger of Salerno, and Ronald of Parma who lived in the late 12th century and early 13th century respectively, their works were copied repeatedly in succeeding in years, and glosses and commentaries on them demonstrated an interesting picture of medicine and dentistry. In dentistry, they advised against tooth extraction except as a last resort because of its danger, recommending instead fumigation and cautery. In their book, there are discussion of the treatment of mandibular fractures and dislocations, letting blood from a vein under the tongue, and also the all- too-familiar remedies for toothache including insertion of raven manure into a carious tooth¹¹. (Figure 6)



Figure 6. This illustration from a 13th century French gloss on Roger of Salerno's Practica Chirurgiae shows a physician handling his patient's sore mouth.

In fact, Roger of Salerno was the first writer on surgery in Italy and his Practica Chirurgiae was an incredible work for the time. His method of examination for leaks of CSF in a patient with skull fracture was to have the patient hold his breath (Valsava manoeuvre), the surgeon watched for CSF leak (or air bubbles). Roger of Salerno also wrote about anastomoses of nerves and the treatment of goiter¹³.

Roger of Salerno's Works. He wrote Practica Chirurgiae, the first European surgical treatise, and described treatment of his work maintained the strong tradition of Medical School of Salerno in existence, and pioneered the study of anatomy and surgery. (Figure 7)



Figure 7. Eleventh-century manuscript illustration of Roger of Salerno showing surgery for haemorrhoids, nose polyps and the technique for cataract couching.

3- Trotula of Salerno

Trotula of Salerno (also known Trotula of Ruggerio, Trota, Trotta, Trocuta, Truta, Trutella)¹⁵ was most probably a female physician, obstetrician and gynecologist who lived in 11th or 12th century Salerno. She is frequently regarded as the world's first gynecologist. Her many achievements in the men-dominated speciality of gynecology both educated her contemporaries and advanced progressive ideas about women's health care. She served as a medical practitioner and professor at the Medical School of Salerno. She may have been a member of the noble di Rugiero family, and scholars identify her as the wife of Johannes Platearius and mother of Mathias and Johannes the Younger, both medical authors. All four of them, father, mother, and two sons may have been members of the Medical School of Salerno. Trotula became very skilled in diagnosing uniquely female medical issues ranging from pregnancy complications to those related to female health. Trotula advocated for the use of opiates during labor, opposing the Christian belief of the time, that women should experience a maximum of suffering during child birth as punishment for Eve's sin. She also suggested that men could also be infertile¹⁶.

Trotula's Works

"Trotula," while not the name of a woman, is the documented of a group of texts on women's medicine and hygiene that came out of 12th-century southern Italy, most probably Salerno:

- 1- Liber de sinthomatibus mulierum ("Book on the Conditions of Women").
- 2- De curis mulierum ("On Treatment for Women").
- 3- De ornatu mulierum ("On the Cosmetics").

The texts were written in the southern Italian port town of Salerno in 12th century. Trotula, derives from a historic female personality, "Trota of Salerno," a practitioner and medical author. "Trotula" came to be understood as a genuine person in the Middle Ages and because of the so-called Trotula texts circulated widely throughout medieval Europe, from Spain to Poland, and Sicily to Ireland. Trotula has historic importance in her own right. (Figure 8)



Figure 8. Trotula transitional ensemble, Paris, Bibliothèque nationale de France, MS lat. 7056, mid-13th century, ff. 84v-85r, opening of the “De ornatu mulierum.”

“Liber de sintomatibus mulierum”, “De curis mulierum,” and “De ornatu Mulierum” are usually referred to collectively as The Trotula. They cover topics from childbirth to cosmetics, relying on varying sources from Galen (129-200) famous Greek physician to oral traditions, providing practical instructions. (Figure 9)

Conditions of women and their cosmetic circulated anonymously until they were combined with the “De curis mulierum” (On the Treatment for Women) sometime in the late 12th century. For the next centuries, the Trotula ensemble circulated throughout Europe, reaching its greatest popularity in the 14th century. More than 150 copies of Trotula exist today of Latin texts, and over 60 copies of the many medieval vernacular translation¹⁷. (Figures 10 and 11)



Figure 9. Trotula, Clothed in red and green with a white headdress, holding an orb. (London, Wellcome Library, MS 544, early 14th century, France, a copy of the intermediate “Trotula” ensemble, p.45.)

A Discussion Regarding Legendary Trotula

“Trotula was one of the most outstanding medical practitioner and writer of the time. Trotula was considered the world’s first gynecologist. She wrote many medical works.” “The Medical School of Salerno was also open to female practitioners, and the most famous was the legendary Trotula, presumed author of a treatise on obstetrics.”

Virtually, we know nothing regarding Trotula, her husband and sons, and her works. We can only infer that she lived sometime in the 12th century was presumed writer of a treatise on medicine and hygiene. A side from surgery, she seems to have been a general practitioner and was not confined to gynecology or obstetrics.

Salerno’s Works

Leading works attributed to the practitioners, teachers, writers, and researchers of The Medical School of Salerno are as follow:

1- Antrorarium and Antidotarium

Antrorarium and Antidotarium, 12th- and 13th- Century manuscript copies of much earlier texts used in the School of Salerno

2- Passionarius

Garipontus of Salerno composed his “Passionarius” in the 11th century. This work which drew heavily on ancient medical writers especially Galen (129-200), remained extremely popular throughout the medieval period.

3- Practica of Petroncellus

The ancient text Practica of Petroncellus, a compilation from school of Salerno was also an influential work in reestablishing a practical bent to the study of medicine.

4- Liber Regalis

Constantine The African was most important for his translation into Latin of ancient Greek medical works (often done from their Arabic renderings), but also of Arabic texts such as the “Liber Regalis” of Haly Abbas.

5- De aegritudiorum curatione

The most famous work, “De aegritudiorum curatione” has two parts:

The first part, probably the work of a single writer deals with the fevers.

The second part deals with all diseases “ab capite ad calcem.”

6- Trotula

Trotula, while not the name of a woman, is the documented name of a group of texts on women’s medicine and hygiene that refers to the three texts:

- I. “Liber de sinthomatibus mulierum” (“Book on the Conditions of Women”).
- II. “De curis mulierum” (“Treatment for Women”).
- III. “De ornatu mulierum” (“Women’s Cosmetics”).



Figure 10. Trotula's another illustration.

7- **Practica**

Trotula while a name, besides her association with the “De curis mulierum” (“Treatment for Women”) also wrote a “Practica” (“Book of Practical Medicine”) that collects her cures on a whole host of medical problems.

8- **Practica Chirurgia**

Roger of Salerno, Italian physician and surgeon wrote Practica chirurgiae, the first European surgical text.

9- **A manuscript of 35 Treatises**

A manuscript found in Breslu (Warsaw) contains thirty five treatises from Salerno written in the 11th and 12th centuries. In contrast to the mystical medicine being taught throughout Europe at the time, in Salerno even epilepsy and psychoses were given somatic causes and treatments. However, Salernitan anatomy derived almost exclusively from Galen. Physician dissected animals especially pigs whose internal anatomy was thought most to resemble human's anatomy

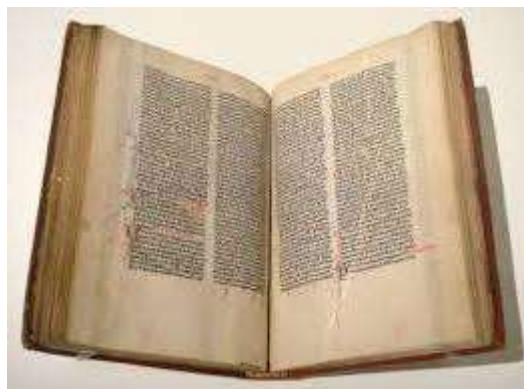


Figure 11. Trotula's work, On the Cosmetics.

10- **Regimen Sanitatis Salerniton**

The most famous work of Salernitan School, a Latin poem of rational dietetic and hygienic precepts called Regimen Sanitatis Salernitanum derives from the last half of the 13th century. (Figure 12)

The following poems from an early printed edition of the Regimen Sanitatis Salernitanum, printed in Low Countries must have an English owner. The marginal notes translates in English doggeral verse the text of the Regimen Sanitatis Salernitan that is printed in bold above it.

Sheeps flesh if eaten without wine
Is better meate then flesh of swine
If with your meate you use some wine
Hogges flesh is meate and medicine

11- **Rosa Anglica**

Gilbertus Anglicus (1180-1250), British physician and medical writer who taught at Salerno and wrote “Rosa Anglica”, his famous compendium of medicine, in which he suggested a “safe” treatment for goiter and described leprosy and smallpox, recognizing the contagious nature of the latter. He also claimed that sexual excess weakened joints and could lead to arthritis.

Conclusion and Impact

With fall of Roman Empire, Europe gradually sank into a swampy ground of ignorance, mysterious, and intellectual passivity. The gradual transfer of learning to clergymen (priests or ministers of the Christian Church) had been accomplished by the 6th century. All progress in scientific medicine came to a halt, and the sciences disappeared as schools of secular learning crumbled, and the vacuum was occupied by religious dogma. Some scientific compendium were authored, but were merely a hotch potch of excerpts from Greek and Roman scholars whose authorship was not acknowledged. In addition, several new works were produced and falsely attributed to earlier authorities. Some original writings were done, but were of doubtful merit.

Upon this hotch potch of Greek, Latin, and Islamic traditions the Medical School of Salerno the origin of the European medical universities had its beginnings. Although the Benedictine monastery of Monte Cassino was nearby Salernitan physicians and instructors remained remarkably free of clerical control. It was even open to female medical practitioners and teachers. By the first decade of 10th century the Medical School of Salerno was so highly regarded that Salernitan medical practitioners were welcomed at the royal courts, and bishops went to the school seeking medical advice.



Figure 12. Manuscript page (a hand writing by Roger of Salerno).

In the 11th century the school became prominent and attracted students and instructor from Europe, Asia, and Africa, and became the parent of those medical schools founded in the Christian West.

Constantine The African, African physician and translator, was one of the most important figures that attracted to Salerno. He played a vital part in introducing the Graeco- Arabic medical learning in medieval Italy and subsequently in Latin- speaking countries. His translation of Arabic texts influenced European medical teaching for centuries. In fact, there were two paths of translation from Arabic into Latin- that through Italy started by Constantine The African, and that through Spain, where Gerard of Cremona (d.1187) was the most prolific translator with sixty- eight works to his credit. Some translators worked in Syria, but their output was considerably less than those in Italy by Constantine The African, and in Spain by Gerard of cremona¹⁸. These translations had immense impact on the outstanding European surgeons including Bruno Longoburgo, Hugh of Lucca and his son Theodoric, and Guilielmo Salicetti (c.1210-1277) Italian surgeon who wrote “Chirurgia”, and Lanfranc (Lanfranco) of Milan; then, in 1300, Lanfranco as a political exile transferred it to France. Roger of Salerno who lived in 12th century, wrote *Practica Chirurgiae*, the first European surgical text. This treatise, became the standard textbook at the Medical School of Salerno and dominated the European surgical thought to the time of Renaissance. Surgery which had a lower status than medicine, beginning as a craft tradition until Roger of Salerno wrote his treatise which laid the foundation of modern surgery.

Trotula of Salerno, a female practitioner (possibly she never existed), the presumed author of a treatise on obstetrics, occupied the chair of medicine at the Medical School of Salerno. Physicians and Scholars accepted Trotula’s scientific and experimental reputation as the most medical practitioner and gynecologist of the medieval period. As a female doctor and specialist in women’s diseases, she was never questioned during the 15th and 16th centuries. Her work was continuously copied as late 16th century.

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