

Gabriele Fallopio (1523–1562) and the Fallopian tube

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The name of this 16th-century Italian anatomist remains eponymously associated with a number of body organs [1]. This name association with the Fallopian tubes did make its way into the vernacular, with the result that the capital letter F was discarded and the French and English, respectively, would make reference to “*trompes de fallope*” and “*fallopian tubes*”.

Not much is known about the life of Gabriele Fallopio [2, 3] (Fig. 1). He was of noble descent, born around 1523 in Modena. But the date of his death, possibly due to tuberculosis, has been established with certainty: 9 October 1562. His mortal remains, first interred in the Sint Antonius church in Padua, were subsequently transferred to a neighboring monastery because of reconstruction works to the church.

Initially, Fallopio studied religion and, for a brief time span, occupied a position in the Episcopal church in his native city. Later on, he left for Ferrara to study medicine and eventually was there appointed instructor of anatomy. His talents for dissection were recognized early on in his career and, on the recommendation of his illustrious patient Cosimo I de Medici, Grand-Duke of Tuscany, he was in 1548 given the chair of Anatomy in Pisa. Three years later, he accepted the offer from the Venetian Senate to become professor of anatomy, surgery, and botany in Padua, thus

holding the prestigious chair that, following the departure of Vesalius and the resignation of the latter's successor (and plagiarist), Realdus Columbus (1494–1559), had remained vacant until that time. Fallopio remained in Padua as an instructor until his death. It is in that city that he made his best known discoveries and also wrote his two medical textbooks.

The man who entered medical history with the reputation as anatomist was a multi-faceted scientist and a capable physician/surgeon.

He acquired the reputation of being an excellent instructor and lecturer who carried on the Paduan tradition and attracted throngs of both Italian and foreign students to the Faculty of Medicine at the Padua University. He was likewise an expert in botanical studies and *materia medica* and notably contributed to the enrichment of the *Hortus Botanicus*, the Botanical Garden, of the University. In later years, his name was given to a botanical genus: *Fallopia*.

As a physician, he conducted a thorough study of the clinical aspects and treatment for the prevention of the “*Morbus Gallicus*”, the French disease, or, syphilis, the disease which at that time commanded centre stage in medical attention and to the subject of which he devoted a book [4].

Fallopio clarified the distinction between luetic (syphilitic) and non-luetic condylomata (wartlike growths) and pointed out to his colleagues the risks and dangers of mercury therapy. He became the father of the “condom”, in casu a small linen cap drenched in a salty and herbal solution, to be pulled over the penis, which, made to measure, was supposed to protect the wearer against syphilis. Fallopio must have had great faith in the effectiveness of his device, for in his textbook he confided that he had provided more than 1,000 soldiers with the condom and that not one single user (sic) had contracted the disease. It is only one century later that penis sheaths

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Fig. 1 Gabriele Fallopio

fashioned of sheep intestines made their first appearance as protection against venereal diseases *and* as a device to avoid pregnancy.

As surgeon, Fallopio expertly conducted stereotomy operations and taught his students to safely use the trocar for ascites puncture: that is, in the vicinity of the *fossa iliaca*, the iliac fossa, instead of in the peri-umbilical region as was commonly practiced at that time.

As mentioned above, Fallopio became primarily known as an expert anatomist and, aside from “grumpy” Bartolomeo Eustachi (circa 1510–1574), was the leading figure in the field of human anatomy in Italy, as is well attested by the many eponyms that are associated with his name.

The names of the *“cavum tympani”*, the tympanic cavity, the three ossicles, as well as the oval and circular window in the ear. Likewise, he rediscovered the *“canalis facialis”*, the facial canal, while he also provided an accurate description of the inner ear, introducing the names “labyrinth” and “cochlea”. His name was also associated with the *“hiatus canalis nervi petrosi maioris”*, the opening of the major petrosal nerve canal, and the *“ligamentum inguinale”*, the inguinal ligament [1]. His anatomical discoveries, including the description of the sex organs, have been described in his textbook (unfortunately not illustrated) titled *Gabrielis Fallopii medici Mutinensis Observationes Anatomicae*, that is his *“Anatomical Observations of the Modena Physician Gabriele Fallopio”* [5]. In his textbook, Fallopio also corrected a number of faulty observations by Vesalius. Contrary to what is claimed by many of his biographers, Fallopio never studied under Vesalius and, in fact, both these famous anatomists never even met each other. Vesalius, quite upset at Fallopio’s rash presumption to

criticize him, wrote the latter a long letter in which he rather clumsily and unsuccessfully tried to rebut the Italian’s arguments [6].

In Fallopio’s *“Observationes”*, one finds the first, albeit summarily treated, description of the Fallopian tube. Vesalius, who believed in Galen’s pronouncement, his *“Diktat”*, on sexual isomorphism, the analogous construction of the female and male genitalia, considered the Fallopian tube as the replica of the male’s epididymis and *“vas deferens”*, the sperm duct, and described the tube as the *“vas semen a teste (=ovary) in uterum deferens”*, the conductor of the semen from the testes into the uterus.

Fallopio corrected this misconception: females have no epididymis and the Fallopian tube is a separate little organ that “connects” the uterine cornu to the ovary. Because of its similarity to the classic music instrument the trumpet, Fallopio called it *“tuba uteri”* (Fig. 2). Freely translated, the description reads as follows: this slender and narrow seminal tube (*“ductus seminarius”*) is of a firm consistency and of a light color. It originates near the uterine cornu,

Meatus uerò iste seminarius gracilis & angustus admodum oritur nerucus ac candidus à cornu ipsius uteri, cumque parum recesserit ab eo latior sensim redditur, & capreoli modo crispas se doncc ueniat prope finem, tunc dimissis capreolaribus rugis, acque ualde latus reditus finit in extremum quodam, quod membranosum carneumque ob colorem rubrum videtur, extremumque lacerum ualde & attritum est, ueluti sunt pannorum attritorum fimbriae, & foramen amplum habet, quod semper clausum iacet conciditibus fimbriis illis extremis, quae tamen si diligenter aperiantur, ac dilatentur tubae cuiusdam aeneae extremum orificium expriment. Quatecum huius classici organi demptis capreolis, uel etiam iisdem additis meatus seminarius à principio usque ad extremum speciem gerat, ideò à me uteri tuba uocatus est. Ita se hæc habent in omnibus non solum humanis, sed etiam ouinis, ac uaciniis cadaueribus, reliquisque brutorum omnium, quæ ego secui.

Fig. 2 Fallopio’s description of the fallopian tube (*Observationes Anatomicae*, 1561)

widens considerably all along its length, and ends up as a bent branch. At its terminal point, it is fibroid-fleshy and red. It is unraveling like the seam of a worn piece of garment. It displays a wide opening that is closed off as the “*fimbriae*”, fringes converge. When these fringes are carefully separated, this part does indeed resemble the mouthpiece of a (Theban) trumpet. Since the parts of the female’s seminal tube do resemble the shape of this classical music instrument, I have named it “*tuba uteri*”. The text reads: “...*ideo me uteri tuba vocatus est*”. This small organ is not only found in females. I have also observed it with sheep and cows and with all animal species I have dissected [5].

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