“Some of the Uses of Electricity in Gynecology,” (1901) by William Henry Walling [1]


In 1901, physician William Henry Walling published the article, “Some of The Uses of Electricity in Gynecology,” in the January issue of the American Gynecological and Obstetrical Journal Walling was a practicing gynecologist who studied electro-therapeutics, or the use of electricity in medicine for the treatment of disease, which was an emerging topic during the late 1800s. Walling stated that proper administration of electrical current to a woman's vagina [5], uterus [6], bladder, or rectum could be therapeutic for gynecological diseases. He supplies scientific explanations for some of his claims, but not for all. The article provides readers of the twenty-first century with context and historical examples of electrotherapy in women’s health, of what physicians understood about female reproductive anatomy, and of the standard of care in gynecology during the turn of the twentieth century.

At the end of the 1800s, the increasing availability of electricity changed the way people lived and received medical care in the US. At that time, practical uses of electricity in appliances and machines became more popular, and many physicians began using electricity in their medical practices. Before, throughout the nineteenth century, physicians utilized hand cranked electrotherapy machines to treat numerous ailments, though it is unknown how effective they were. In the 1880s, New York City began installing electrical systems for homes and, by 1925, over half of the people in the US had electricity access in their homes.

Walling was born in Smithville, New York, in 1836. He served for the Union hospital service in the US Civil War during the 1860s and received a Congressional Medal of Honor for his service. Walling received his medical degree from Medico-Chirurgical College in Philadelphia, Pennsylvania, in 1889. He later worked as a physician and professor of gynecology at Eastern College in Philadelphia, Pennsylvania, as well as a professor of electrotherapeutics at his alma mater, Medico-Chirurgical College. While living in Philadelphia, Walling also served as the editor for the Philadelphia Medical Times and Register, a bi-weekly medical journal. According to his obituary in the Journal of The Medical Society of New Jersey Walling was a prominent figure in medicine at the time and was a member of the American Medical Association [7], the Atlantic County Medical Society, and the Medical Society of New Jersey. Walling studied a variety of medical issues that he considered progressive, including sexual health and wellness, electrotherapy, obstetrics and gynecology, urology, and malignant diseases of the rectum. He also believed that over-excitation and stimulation of all kinds, including masturbation, could cause insanity, memory loss, and loss of intelligence.

Walling's article in the American Gynecological and Obstetrical Journal in 1901 discusses uses of electrical current for treating gynecological issues, a subject he studied and published literature on. Walling’s article features detailed gynecological treatments, including electrical current and electrodes, or a conductor through which electrical current flows. He never mentions the shape or appearance of the electrodes, but mentions that when used internally, the physician must keep them in constant motion to prevent adhering to the reproductive tract. Walling opens with a brief introduction, and then specifically addresses the use of electricity in gynecology. He included multiple subsections, which he titled as Amenorrhea, or absence of menstrual period, Dysmenorrhea, or menstrual cramping and pain, Ovarian Neuralgia, Delayed Menstruation, Erosions, Metritis and Endometritis, Pyosalpinx, or fluid inside the fallopian tubes [8] where the egg [9] travels from the ovary [10] to the uterus [8], Subinvolution with Hemorrhage, or failure for the uterus [8] to return to its original size prior to pregnancy [11], and Fibroid Tumors.

In the introduction, Walling asserts that electricity has more practical uses in gynecology than in some other areas of medicine. That is because the tissue surfaces within the female reproductive tract have less resistance than human skin, according to Walling. He explains how using different metal wires could cause more or less intense effects. Walling warns that if too strong of a current is used or applied for too long, an eschar, or burn-like wound will form, which Walling states could prove to be troublesome. Walling states that for a physician to stop any bleeding, or cauterize, a woman's uterine canal, 25 mA of current must be used for every square millimeter of electrode surface. Cauterizing produces a burn that stops bleeding. However, Walling’s distinction between a problematic treatment-caused wound and a safe cauterization is unclear.

Throughout the article, Walling refers to faradic and galvanic currents in referencing his approach to electrical treatment of gynecological concerns. A faradic current is an alternating, asymmetric current that stimulates muscles. A galvanic current is a direct current of steady flow that can be used to stimulate muscles. At no point does Walling justify why certain currents are used in certain circumstances, but he presents the information as medical fact. Additionally, Walling also never mention how the patient reacts to or perceives the treatments.

Walling begins the section on how electricity can be used to treat Amenorrhea, or the absence of a woman's menstrual period.
Walling claims that sometimes physicians only need to apply a small electrical treatment to the woman’s tissues without any electrical shock. In worse cases, Walling suggests that a shock method provides good results if the patient is slowly weaned onto the higher shock dosage with the goal of trying to re-establish menstrual flow. He discusses treatment schedules and frequency, stating that a woman may need to receive treatment multiple times a week and even multiple times throughout the day until her menstrual flow is reestablished. Additionally, Walling states that the possibility of pregnancy is excluded before beginning treatment.

Next, Walling details the usage of electricity to treat Dysmenorrhea, or painful menstrual cramping. He suggests techniques like using static spark, applying galvanic current to the lower part of the abdomen, as well as applying faradic current to the abdomen to prevent monthly pain. In cases of dysmenorrhea, Walling states that some form of intrauterine electrical treatment is necessary for treatment and would require healing. He recommends the use of electrodes inside the woman’s vaginal canal to remedy cramping and claims that the opening of the uterus can be enlarged by negative charge and constricted by positive charge, but does not mention how that relates to treating cramping.

In the following section, titled Ovarian Neuralgia, Walling describes the usage of electrodes in treating nerve pain adjacent to the ovaries. In the twenty-first century, that diagnosis was discredited and is no longer commonly used. Instead, many women are diagnosed with ovarian cysts that can cause stabbing pain. Walling recommends placing a vaginal electrode up against the painful ovary and gradually increasing the electrical current until the woman’s pain subsides. Walling also claims that for the treatment to be successful, it requires many additional treatments.

For treating Delayed Menstruation, Walling guarantees that electrical current can help jumpstart cycles in those young people who have not started menstruating. Walling also assures readers that electrical current will not create sexual excitation and provides evidence from an all-male study from 1890 to support that claim. He then provides specific examples of conditions for which physicians can use a faradic current to treat, including abnormally heavy or prolonged menstrual periods, and fibroids, which are non-cancerous tumors.

Walling then details the usage of electrical current to treat Metritis and Endometritis, or inflammation of the uterine lining. He attests that other physicians specializing in electrotherapeutics and gynecology would testify to the success of using electrical current to treat inflammation of the uterus, and implies that those physicians find the procedures to be safe for women. According to Walling, using a positive electrode in a woman’s uterus acts as an anti-congestive and hemostatic, meaning it can help stop bleeding. He claims that it prevents excessive vascularity, or the overgrowth of blood vessels, in the female reproductive tract. Negative electrodes, according to Walling, can be used to improve circulation. When treating the uterine endometrium, or the lining of a woman’s uterus, with electrical current, Walling recommends using an electrical current intensity from 10 to 100 mA as a range, depending on the needs of the patient, and also recommends sitting with the internal electrodes in place for five to ten minutes. Walling warns that, in some cases, physicians have found hyperesthesia in women, or increased sensitivity to pain, when electrical current is applied to certain regions of a woman’s uterine tract, especially the cervix. To alleviate sensitivity, Walling recommends covering the electrode with cotton soaked in cocaine before applying the electrical current.

Walling next provides instructions for physicians to help them determine if their female patients have Pyosalpinx, or pus in the fallopian tubes, using faradic current. If a woman feels lingering pain after being treated for endometritis, or inflammation of the uterine walls, with a strong galvanic current, physicians must apply a secondary positive faradic current in the vagina at the highest intensity possible and let it run until the woman’s pain subsides. If her pain subsides, Walling states, there is no pus in the fallopian tubes. If pain is still present, he states that pus is undoubtedly present in the woman’s fallopian tubes.

Walling continues by detailing the usage of electricity to treat Subinvolution with Hemorrhage. Subinvolution is when the uterus fails to return to its original state prior to pregnancy, and hemorrhage is profuse bleeding typically originating from a blood vessel. Walling claims that using electrical current can create strong uterine contractions to remedy the over-relaxation of muscle fibers in the uterus. He later mentions that physicians can stop a woman from hemorrhaging by applying a galvanic electrical current directly into her uterus via her cervix to stop the source of the bleeding.

Lastly, Walling discusses electro-therapeutics for treating uterine Fibroid Tumors. He claims that fibroids which bleed are easier to treat than those fibroids which do not bleed. Physicians can apply electrical current to a woman’s fibroid to stop the bleeding and reduce its size in the same way physicians apply electrical current to a woman’s uterus to stop a hemorrhage. However, physicians are unable to remove fibroids which do not bleed with electrical current, because those fibroids tend to be hard and bulky.

Though the study of electrotherapeutics was popular in many fields of medicine during the 1800s and early 1900s, the fad of electrotherapeutics dissipated and Walling’s practices were never adopted into lasting, standard gynecological practice. In the twenty-first century, gynecological practices and standard of care are very different than those at the time of Walling’s procedures, and consider factors like patient comfort and safety. Informed consent and techniques used by Walling might now be considered questionable.
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Subject

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