

# “Female Ejaculation: A Case Study” (1981), by Frank Addiego, Edwin G. Belzer Jr., Jill Comolli, William Moger, John D. Perry, and Beverly Whipple

In 1981, Frank Addiego and colleagues published “Female Ejaculation: A Case Study” in *The Journal of Sex Research*. In the article, the authors find that female ejaculation, or the expulsion of fluid from a female’s urethra during or before orgasm, is a legitimate phenomenon that can occur when one stimulates an area in the vaginal wall that the team names the Gräfenberg-spot. According to the authors, at the time of publication, many individuals believed that if a female expelled fluid during orgasm, the fluid was urine and, thus, improper bladder control caused the expulsions. However, in “Female Ejaculation: A Case Study,” the researchers explain that they collected samples of one woman’s orgasmic fluid and compared its chemical composition to that of her urine, and they found that the two fluids were different. In their case study, Addiego and colleagues not only provide evidence that female ejaculation is a legitimate physiological response, but they also support the idea that females who experience it are not defective, which helped to shape social views and future research on the female orgasm.

At the time of writing “Female Ejaculation: A Case Study,” all six authors held various positions related to health, medicine, or physiology in the United States or Canada. The first author, Addiego worked at a private medical practice in Westmont, New Jersey. Edwin G. Belzer, Jr. and Jill Comolli were professors in the Health Education Division of the School of Physical Education in Halifax, Canada, and William Moger was a professor in the Department of Physiology and Biophysics at the same university. John D. Perry was working as a psychologist in Burlington, Vermont, and, lastly, Beverly Whipple was an assistant professor in the Division of Nursing at Gloucester County College in Sewell, New Jersey. Most of the authors also contributed to other publications related to female ejaculation, either just prior to or soon after writing “Female Ejaculation: A Case Study.”

Before the publication of “Female Ejaculation: A Case Study,” many researchers, doctors, and members of the public did not think that females could ejaculate. Researchers J. Lowndes Sevely and J. W. Bennett wrote in 1978 that confusion about female ejaculation likely came about due to semantic confusion about whether ejaculatory fluids from females had to contribute to reproduction like they typically do in males. Though they accepted male ejaculation, Addiego and colleagues explain that most people believed that any liquid females expelled liquid from their urethras during sexual intercourse or stimulation was urine, and they assumed the expulsion was a result of urinary incontinence, or the loss of bladder control. People may have thought that made sense anatomically because the urethra is the canal from which urine exits the body. However, the urethra also allows other fluids to exit the body. For example, in males, it acts as a passageway for semen, or male reproductive fluid. Until the 1980s, most researchers did not recognize that the urethra is multifaceted in both males and females. They acknowledged that the urethra could act as a passageway for semen in males, but most did not believe that it could do the same for ejaculatory or orgasmic fluid in females.

As of 2022, many researchers claim that in females, the urethra can also carry orgasmic fluids from the Skene’s gland, previously known as the female prostate, which is the system of glands and ducts that surround the urethra and produce fluids during sexual stimulation, out of the body in the process of female ejaculation. But, in 1981, when Addiego and colleagues wrote “Female Ejaculation: A Case Study,” most medical professionals and members of the public viewed a female’s orgasmic expulsions as a sign of defect or disease related to bladder control. Because people asso-

ciated the expulsions with socially unacceptable practices such as bedwetting, many females were embarrassed about and shamed for their orgasmic expulsions during that period.

In the mid- to late-1900s, researchers began studying female ejaculation in a more scientific manner, and according to Addiego and colleagues, two specific articles examining female ejaculation in such a manner contributed to their motivation for writing "Female Ejaculation: A Case Study." First, in 1978, J. Lowndes Sevely and J. W. Bennett, a graduate student and professor, respectively, at Tulane University in New Orleans, Louisiana, published the article "Concerning Female Ejaculation and the Female Prostate." In it, they claim that females can ejaculate, and that the fluid expelled during the process is a fluid discharged from the female prostate in response to sexual pleasure. Then, in his 1981 literature review "Orgasmic Expulsions of Women: A Review and Heuristic Inquiry," Belzer, one of the coauthors of "Female Ejaculation: A Case Study," posits that according to existing research, after ejaculation, females may have a refractory period, or a recovery phase after orgasm during which it is physiologically impossible to experience additional orgasms. The authors of both studies called for further research to determine whether their hypotheses about female ejaculation were correct.

According to Addiego and colleagues, they conducted their study and wrote "Female Ejaculation: A Case Study" in response to Sevely's, Bennett's, and Belzer's call for future research on their hypotheses about female ejaculation. Though various researchers had begun proposing that female ejaculation was a legitimate physiological response, Addiego and colleagues were one of the first groups to report on a specific instance of a woman experiencing female ejaculation, which helped to provide evidence for the phenomenon's existence.

Addiego and colleagues organize "Female Ejaculation: A Case Study" into seven sections, including an untitled introduction and six additional sections. In the untitled introduction, they explain that they conducted the case study on one woman to explore whether females can ejaculate. Next, in "Background Information About the Subject," the authors describe that the woman they selected to study frequently expelled large amounts of fluid from her urethra during orgasm. In "The Grafenberg Spot," the authors explain that the woman had an especially sensitive area on the front wall of her vagina that they decided to name the Gräfenberg Spot. Then, in "Orgasmic Expulsion by the Subject," they highlight that the woman only experienced orgasmic expulsions when she climaxed as her husband stimulated her Gräfenberg spot.

After highlighting the relationship between the woman's Gräfenberg spot and her orgasmic expulsions, the authors discuss their analysis of her orgasmic fluids. In "Collection and Analysis of Orgasmic Expulsion," the Addiego and colleagues explain that, to determine what the woman's orgasmic fluid was, they collected samples of the fluid, as well as urine for comparison, and chemically analyzed them. Next, in "Comparison of Orgasmic Expulsion and Urine," they demonstrate that when they analyzed all the samples, they found that the female's orgasmic fluid was not urine. Finally, in "Discussion," the authors describe that their work is impactful not only because it shows that females can ejaculate, but also because it disproves the social and medical ideas that female ejaculation is an inappropriate loss of bladder control and, thus, could help women have more enjoyable sex lives.

In the untitled introduction section, Addiego and colleagues state that they conducted the case study because of Sevely's, Bennett's, and Belzer's call for further research on whether females can ejaculate. After briefly describing the three researchers' work, the authors write that their findings from the case study align with the researchers' hypothesis that at least some females can and do ejaculate. Addiego and colleagues then discuss their participant selection process, and they explain that to conduct their research, they considered a series of female candidates who claimed to have experienced female ejaculation. They describe that they decided to study a particular woman, whom they do not name, because she and her husband were both willing to comply with and provide informed consent to all proposed phases of the project.

Next, in "Background Information About the Subject," the authors explain that a doctor had previously diagnosed their selected participant with urinary incontinence, and she had assumed that her orgasmic expulsions were a symptom of said incontinence. According to the authors, the woman occasionally expelled large amounts of fluid from her urethra during orgasm, and since she knew

that her incontinence caused her to involuntarily urinate when she sneezed, jumped, or coughed, she assumed the condition caused her orgasmic expulsions as well. The researchers explain that because she thought the orgasmic fluid was urine, she learned to inhibit the orgasmic response altogether.

The researchers then discuss that the woman was able to overcome her urinary incontinence, but she still expelled liquid from her urethra during sexual stimulation. They explain that throughout the decade in which she suffered from urinary incontinence, the woman tried and failed to overcome the condition by doing Kegel exercises, or exercises in which a female attempts to strengthen the pelvic muscles that control their flow of urination by repetitively contracting them. Then, the authors discuss that during one of their first testing sessions, they observed the woman as she did her Kegel exercises, and they found that she had been doing them incorrectly. Thus, in another testing session a few months later, the team taught the woman how to do the Kegel exercises properly, and they detail that after she practiced the exercises properly for a month, she no longer experienced urinary stress incontinence. However, they state that she still expelled liquid from her urethra during sexual stimulation.

In the section "The Grafenberg Spot," the authors explain that during one of their first testing sessions, the woman mentioned that she had an erotically sensitive spot on the anterior wall of her vagina. According to the researchers, the woman wanted to know more about the spot and asked if the team's physician would conduct a vaginal examination on her. They state that the results of her physical examination were normal, but she did have increased sensitivity in a particularly firm area of the front of her vagina approximately two centimeters by 1.5 centimeters in size. Then, the authors detail that when the physician touched that portion of her vagina, the woman reported that she first felt the need to urinate but then felt pleasure after he continued stimulating it. They report that the area grew up to fifty percent larger when the physician stimulated it, but they note that the woman could not contract that portion of her vaginal wall, either voluntarily or involuntarily. Addiego and his team then write that after researching the spot, they named it the Gräfenberg spot, hereafter referred to as the G-spot, after Ernst Gräfenberg, the researcher who first wrote about the area and its connection to female ejaculation. In a concluding thought, they warn that researchers had not determined the exact anatomical nature of the G-spot yet.

Then, in "Orgasmic Expulsion by the Subject," the authors state that the woman claimed she had previously experienced orgasms when her husband stimulated her clitoris, a highly sensitive genital organ that plays a key role in female sexual arousal but only experienced orgasmic expulsions when her husband stimulated her G-spot. Thus, they explain that to conduct the study, alternating members of the researcher team observed and collected samples of orgasmic fluid as the woman's husband stimulated her G-spot. The researchers then detail that when the woman's husband was stimulating her G-spot, they ensured he did not stimulate her clitoris at all, and they shone a bright light on her external genitalia as she climaxed to ensure that the liquid expulsions were coming from her urethra and not from other body parts such as the vagina. According to the team, the orgasmic expulsions happened after less than a minute of stimulation and occurred in quick succession with about a minute between each expulsion. They explain that sometimes the expulsions remained localized when the liquid left the urethra, and other times the liquid expelled as far as a meter away.

In the same section, the researchers describe that they recorded the woman's orgasms to further investigate what happened when the woman's husband stimulated her G-spot, and they found that her G-spot changed in many ways when he stimulated it. According to the authors, when the woman's husband stimulated her G-spot, the area around the opening of the urethra pushed outwards, changed colors from pink to burgundy, and became clearly prominent a few seconds before orgasm. They note that the change occurred whether fluid expulsion accompanied the orgasm or not. The researchers then point out that during their first three filming sessions, the woman experienced orgasmic expulsions when her husband caused her to climax by stimulating her G-spot, but later, as he stimulated the same area, the woman orgasmed many more times without expelling fluid from her urethra. They explain that the woman was surprised to hear that she did not expel fluids during the later orgasms, and from her surprise, the authors conclude that female orgasms that result from stimulating the G-spot must feel the same regardless of if fluid expulsions accompany

the climax.

In the next section, "Collection and Analysis of Orgasmic Expulsion," the researchers explain that they collected four samples of orgasmic fluid for the case study. According to the team, they collected samples forty-eight hours after the woman had sexual intercourse so that residues of her husband's semen would not contaminate their samples. Then, the researchers explain that they collected each of the four samples in one of two ways. They either had the woman hold an empty glass at the base of her body as her husband stimulated her G-spot until she ejaculated into it, or they used a vaginal speculum, a medical device physicians can insert into a female's vagina to separate the walls and improve their vision of the area. The vaginal speculum contained both a concave portion that caught the liquid expulsions as they flowed out of the urethra and a light that allowed the researchers to more easily record what happened to the woman's G-spot as her husband stimulated it. The authors clarify that in addition to the orgasmic expulsion samples, they also collected three urine samples from the participant for comparison.

In "Comparison of Orgasmic Expulsion and Urine," the researchers explain that upon analyzing the samples, they concluded that the orgasmic expulsions were at least mostly something other than urine and, thus, did not result from urinary incontinence. First, they explain that when they chemically analyzed the samples, they found that there were much higher concentrations of prostatic acid phosphatase, or PAP, an enzyme in prostatic fluid, and lower levels of urea and creatinine, chemicals the body excretes in urine, in the samples of orgasmic expulsion than in the samples of urine. They include a table showing the amount of all chemicals present in each of the seven samples. The researchers argue that the large differences in chemical concentrations between sample types indicated that the subject's orgasmic expulsions were at least mostly not urine.

Then, to further support that conclusion, the authors explain that various individuals who were not on the research team who characterized the orgasmic fluid samples concluded that the fluid did not seem to be urine. The researchers report that when they asked individuals outside of the research team to characterize the samples, the individuals argued the orgasmic fluid did not look, smell, or taste like urine, but rather looked like watered down milk or prostatic fluid because of its whitish, non-viscous, or thin, nature. Additionally, the authors claim that they could see whitish particles in the orgasmic fluid with the naked eye, and they explain that they examined the particles and found that they were partially comprised of epithelial cells, a known component of male ejaculate.

The research team then hypothesizes that because of its chemical composition and physical characteristics, the fluid the woman produced was mostly comprised of prostatic fluids, or secretions from the prostate. However, they point out that when they were analyzing the samples, they could not determine why the orgasmic fluid contained urea and creatinine. Though the levels of both chemicals were low compared to the levels present in urine, the authors express that they did not know why the chemicals were present at all. They explain that, to assess whether it was normal for low levels of urea and creatinine to be present in orgasmic fluids, they compared the levels of urea and creatinine in the woman's orgasmic fluid to those typically found in male ejaculate. Though male ejaculate does contain low levels of both chemicals as well, the authors show that the woman's orgasmic fluid contained higher proportions of both chemicals than the average levels present in male ejaculate. The team explores why that may have been the case, and they speculate that there could have been residual urine in the urethra that escaped with the woman's orgasmic expulsion, or, alternatively, the woman may have released small amounts of urine from her bladder at the same time as the expulsion. However, the researchers do not draw a definitive conclusion about the cause of the chemicals' presence.

Lastly, in "Discussion," the authors describe that their work is impactful because their results support Sevely's and Bennett's conclusion that females can ejaculate. They write that even though their study looks at just one case, the fact that they found that female ejaculation occurs in one woman disproves the theory that it does not happen at all. They state that their case does not support Belzer's idea that female ejaculation is followed by a refractory period during which one cannot orgasm again, but they also claim that researchers should conduct further studies to evaluate the hypothesis more thoroughly.

To conclude "Female Ejaculation: A Case Study," the authors explain that their work also disproves

the social idea that orgasmic expulsions in females are a sign of defect or disease. They point out that, at the time, most people believed that only males could ejaculate and therefore, if a female experienced orgasmic expulsion, they did not consider ejaculation a possible explanation. Thus, the researchers state that it was not necessarily surprising that most professionals and members of the public had assumed that orgasmic expulsion from a woman's urethra was due to loss of bladder control. However, they claim that their case study implies those assumptions are wrong. The authors reiterate that the woman who they studied had previously felt so embarrassed by her fluid expulsions that she learned to inhibit the sexual orgasmic response that caused them. Then, they contrast that inhibition to the woman's reaction after learning the results of the study, and they explain that after they told her that her expulsions were not urine, she reported that the news freed her and allowed her to enjoy sex and orgasm much more than she could before.

As of 2022, over 200 publications have referenced "Female Ejaculation: A Case Study." After Addiego and colleagues published the article, other researchers began replicating the study and conducting similar studies on larger scales in attempts to prove whether females could ejaculate and if female ejaculate was indeed something other than urine. For example, in 1982, two researchers collected and analyzed four samples of orgasmic fluid and found that, as suggested by "Female Ejaculation: A Case Study," subjects' orgasmic expulsions did chemically differ from their urine samples. However, in 1983, another team of researchers analyzed orgasmic expulsions from six more women and found that the samples did not contain PAP and were similar to urine samples in both appearance and chemical composition, which conflicted with Addiego and colleagues' findings.

After the variations of "Female Ejaculation: A Case Study" that researchers conducted in the 1980s, other research teams continued to investigate female ejaculation. In 2011, a team of researchers conducted another case study in female ejaculation and published "New Insights from One Case of Female Ejaculation," in which they show that there are really two different types of orgasmic expulsions, female ejaculation and squirting. The authors claim that even though both processes result in urethral expulsions, the liquids the urethra expels in both processes are different. They pose that in female ejaculation, the Skene's gland produces white, thick liquid that the urethra then expels, whereas in squirting, the urethra expels large amounts of thin, clear fluid that is chemically similar to urine. In 2021, another team of authors wrote in their review article "Female Ejaculation: An Update on Anatomy, History, and Controversies" that, although researchers still debate about female ejaculation, it seems there is enough evidence to show that females can ejaculate, their orgasmic fluid is chemically different than urine, and the fluid comes from the Skene's gland.

Also, in "Female Ejaculation: A Case Study," the authors coined the term Gräfenberg Spot, or G-spot, for the area in the anterior wall of the vagina that previous researchers had discussed but left unnamed, and their doing so initiated a debate about whether the G-spot is a discrete anatomical structure. Researchers who argue that the G-spot is a discrete anatomical structure often claim that it is a discrete area of the body that is entirely separate from other pleasure-inducing sex organs. Researchers who do not think the G-spot is a discrete structure often claim that, rather than being its own distinct body part, it is simply an area where the internal structures of the clitoris and urethra come in close contact with the vaginal wall. Though researchers have acknowledged that the area of the vagina referred to as the G-spot is highly sensitive, as of 2022, they have not proven that it is a discrete anatomical structure, and they continue to debate about its existence and characteristics.

Though previous researchers had begun investigating whether females could ejaculate, Addiego and colleagues were one of the first teams to research and write about a specific case of someone who experienced female ejaculation. The case study helped to show that females could ejaculate, and that the fluid females expel during ejaculation is not urine. Thus, the study helped to debunk the social idea that females who expel liquid during orgasm are defective or unable to control their bladders. As the authors point out, the conclusions they made helped people to better understand females' responses to sexual pleasure and, therefore, allowed females to enjoy their sex lives more.

## Sources

1. Addiego, Frank, Edwin G. Belzer, Jill Comolli, William Moger, John D. Perry, and Beverly Whipple. "Female Ejaculation: A Case Study." *The Journal of Sex Research* 17 (1981): 13-21.
2. Belzer, Edwin G. "Orgasmic Expulsions of Women: A Review and Heuristic Inquiry." *The Journal of Sex Research* 17 (1981): 1-12.
3. Belzer, Edwin G., Beverly Whipple, and William Moger. "On Female Ejaculation." *The Journal of Sex Research* 20 (1984): 403-6.
4. Goldberg, Daniel C., Beverly Whipple, Ralph E. Fishkin, Howard Waxman, Paul J. Fink, and Martin Weisberg. "The Grafenberg Spot and Female Ejaculation: A Review of Initial Hypotheses." *Journal of Sex & Marital Therapy* 9 (1983): 27-37.
5. Perry, John Delbert, and Beverly Whipple. "Pelvic Muscle Strength of Female Ejaculators: Evidence in Support of a New Theory of Orgasm." *The Journal of Sex Research* 17 (1981): 22-39.
6. Rodriguez, Felix D., Amarilis Camacho, Stephen J. Bordes, Brady Gardner, Roy J. Levin, and R. Shane Tubbs. "Female Ejaculation: An Update on Anatomy, History, and Controversies." *Clinical Anatomy* 34 (2021): 103-7.
7. Rubio-Casillas, Alberto, and Emmanuele A. Jannini. "New Insights from One Case of Female Ejaculation." *The Journal of Sexual Medicine* 8 (2011): 3500-4.
8. Sevely, J. Lowndes, and J. W. Bennett. "Concerning Female Ejaculation and the Female Prostate." *The Journal of Sex Research* 14 (1978): 1-20.