

[“The Stein-Leventhal Syndrome: A Curable Form of Sterility” \(1958\), by Irving Freiler Stein Sr.](#) ^[1]

By: Darby, Lexi

In 1958, Irving Freiler Stein Sr. published “The Stein-Leventhal Syndrome: A Curable Form of Sterility” documenting his findings on the diagnosis and surgical treatment of Stein-Leventhal syndrome. Stein-Leventhal syndrome, later called polycystic ovarian syndrome (PCOS), affects the reproductive health of women. Common symptoms include excess body hair, a lack of menstrual cycle or amenorrhea, and [infertility](#) ^[2]. As of 2017, polycystic ovarian syndrome is considered the most common reproductive health disorder among women in the United States. In his article, Stein argued that the means of treating [infertility](#) ^[2] and [menstruation](#) ^[3] issues in women with Stein-Leventhal syndrome prior to the 1950s were inferior to surgical removal of ovarian tissue. “The Stein-Leventhal Syndrome: A Curable Form of Sterility” offered a brief view of Stein’s findings over his three decades of research on the syndrome and his hypothesis on why surgery was the only means of treating the syndrome. The paper’s conclusions allowed later physicians to further their research on the uses of other surgical techniques and medicine to aid in treating the symptoms of the syndrome.

Throughout the mid-1900s, Stein and his colleague Michael Leventhal worked at Michael Reese Hospital in Chicago, Illinois, researching the causes of sterility in women. Stein and Leventhal found that women who suffered from sterility, synonymous with [infertility](#) ^[2] at the time, also often had excess body hair and irregular or absent menstrual cycles. After three decades of research together, Stein and Leventhal coined the term Stein-Leventhal syndrome. Stein published “The Stein-Leventhal Syndrome: A Curable Form of Sterility” as a short summation of the research he had conducted along with Leventhal. In his article, Stein clarifies the proper diagnosis of the syndrome and describes the treatment to restore menstrual cycles and fertility in women with Stein-Leventhal syndrome.

Stein organized “The Stein-Leventhal Syndrome: A Curable Form of Sterility” into four sections, an introduction of Stein’s findings on Stein-Leventhal syndrome, his methods used for diagnosing the syndrome, his recommended treatments, and a short conclusion. In the introduction, Stein states that in the 1920s he had observed a small group of women who all exhibited similar symptoms of excess of body hair, lack of [menstruation](#) ^[3] and, in many cases, [infertility](#) ^[2]. Stein notes that those symptoms were correlated with high incidences of physiological abnormalities including enlarged ovaries. Through his research, Stein began to correlate the symptoms together to form the syndrome.

In the introduction, Stein continues to highlight a technology that he relied on for his research, called gynecography. At the time, gynecography was an early form of [x-ray](#) ^[4] technology. Stein considers the technology an important factor in understanding Stein-Leventhal Syndrome because it offers a clear view of the enlarged ovaries common to the syndrome. Prior to the invention of gynecography, the common way of viewing the anatomy of the reproductive structures involved invasive surgical procedures. With the new technology, physicians were able to view internal anatomy without cutting open the body. Stein iterates the benefits of the non-invasive procedure being able to rapidly produce an image and the ability to share the image with other professionals.

As the introduction continues, Stein discusses his unintentional discovery of how to treat patients with Stein-Leventhal syndrome by obtaining ovarian tissue samples. Stein explains that while treating his cohort of women with similar symptoms, he took samples of ovarian tissue from each. Stein states that his original purpose for obtaining ovarian tissue samples from infertile women was to study them under a [microscope](#) ^[5] to find a pathological cause of the symptoms. However, upon surgically removing a piece of ovarian tissue to study, Stein was surprised that [menstruation](#) ^[3] returned to the patients following the procedure. The procedure, called a bilateral ovarian wedge resection, unintentionally initiated [menstruation](#) ^[3] and fertility for over ninety-five percent of Stein’s patients. While Stein had originally intended the resection as a means of biopsy, he then adopted it as a therapeutic means of restoring reproductive function in women. Stein documented that data in his 1935 study, “Amenorrhea Associated with Bilateral Polycystic Ovaries.”

In the following section of the article, titled “Diagnosis,” Stein details his recommended diagnostic techniques for Stein-Leventhal syndrome. He states that a proper patient history and pelvic findings must be corroborated through visual confirmation of abnormal enlargement of the ovaries via gynecography. According to Stein, the abnormal enlargement of the ovaries is a key symptom in the diagnosis of Stein-Leventhal syndrome, without which no women should be diagnosed with the syndrome. Stein does not specify what a proper history entails or which pelvic symptoms are necessary to warrant a diagnosis in his article.

In the next section, “Treatment,” Stein discusses treatment of the syndrome and emphasizes that the only cure is surgical. Stein argues that treatments involving hormonal therapy, [radiation](#) ^[6], or no therapy at all fail to permanently treat women with Stein-Leventhal syndrome. Though he acknowledges that some treatments could restore [menstruation](#) ^[3] and fertility, he claims that

any benefits was only temporary. Stein states that his surgical bilateral ovarian wedge resection technique restored [menstruation](#)^[3] in over ninety-five percent of his patients. In addition, many were able to conceive as a result.

Stein continues by documenting the aim of a bilateral ovarian wedge resection. According to Stein, the surgery decompressed the [ovary](#)^[7], but did not noticeably change the size of the [ovary](#)^[7]. Therefore, he claims that the amount of the tissue excised does not matter. Stein explains that during a bilateral ovarian wedge resection a physician removes a certain amount of tissue according to his discretion. Despite the absence of a specific size recommendation, Stein notes that he prefers that the physician remove what he considers a moderate size in proportion to the enlarged [ovary](#)^[7]. He also states that the ovarian tissue removed should be large enough to study under a [microscope](#)^[5] and should puncture some of the ovarian cysts, if present. Stein explains that ovarian cysts are large, clear fluid-filled sacs commonly found on many of his patient's ovaries. Stein claims that no other surgeries should be performed at the same time as the ovarian wedge resection, including appendectomies and uterine surgeries, to prevent adhesions, or scar tissue, from forming. Adhesions could potentially limit the restoration of [menstruation](#)^[3] and fertility of the patient due to their proximity to the reproductive structures.

Stein concludes his paper with an overview of the main points he covered throughout the article. He highlights that physicians should diagnose the symptoms of Stein-Leventhal syndrome visually using gynecography. He then reiterates that after a clear diagnosis has been made, bilateral ovarian wedge resection surgery yields the highest success rates in returning [menstruation](#)^[3] and fertility to the patient.

Sources

1. Dastur, Adi, and P.D. Tank. "Irving Stein, Michael Leventhal and a Slice of Endocrine History" *Journal of Obstetrics and Gynecology of India* 60 (2010): 121-2.
2. Stein, Irving F., and Michael L. Leventhal. "Amenorrhoea Associated with Bi-Lateral Polycystic Ovaries" *American Journal of Obstetrics and Gynecology* 29 (1935): 181-91.
3. Stein, Irving F., Sr. "The Stein-Leventhal Syndrome: A Curable Form of Sterility." *New England Journal of Medicine* 259 (1958): 420-3.
4. Teede, H., A. Deeks, and L. Moran. "Polycystic Ovary Syndrome: A Complex Condition with Psychological, Reproductive and Metabolic Manifestations That Impacts on Health across the Lifespan." *BMC Medicine* 8 (2010): 1-10. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2909929/>^[8] (Accessed 6 April 2016).

In 1958, Irving Freiler Stein Sr. published "The Stein-Leventhal Syndrome: A Curable Form of Sterility" documenting his findings on the diagnosis and surgical treatment of Stein-Leventhal syndrome. Stein-Leventhal syndrome, later called polycystic ovarian syndrome (PCOS), affects the reproductive health of women. Common symptoms include excess body hair, a lack of menstrual cycle or amenorrhea, and infertility. As of 2017, polycystic ovarian syndrome is considered the most common reproductive health disorder among women in the United States. In his article, Stein argued that the means of treating infertility and menstruation issues in women with Stein-Leventhal syndrome prior to the 1950s were inferior to surgical removal of ovarian tissue. "The Stein-Leventhal Syndrome: A Curable Form of Sterility" offered a brief view of Stein's findings over his three decades of research on the syndrome and his opinion on why surgery was the only means of treating the syndrome. The paper's conclusions allowed later physicians to further their research on the uses of other surgical techniques and medicine to aid in treating the symptoms of the syndrome.

Subject

[Polycystic ovary syndrome](#)^[9] [PCOS \(Gynecology\)](#)^[10] [PCOD \(Gynecology\)](#)^[11] [Polyfollicular ovarian disease](#)^[12] [Sclerocystic ovarian degeneration](#)^[13] [Polycystic ovarian disease](#)^[14] [Gynecology](#)^[15] [Infertility](#)^[16] [Sclerocystic ovaries](#)^[17] [Sclerocystic ovary syndrome](#)^[18] [Ovaries--Cysts](#)^[19] [Hyperandrogenism](#)^[20] [Stein-Leventhal Syndrome](#)^[21] [HIRSUTISM](#)^[22] [AMENORRHEA](#)^[23]

Topic

[Publications](#)^[24]

Publisher

Arizona State University. School of Life Sciences. Center for Biology and Society. Embryo Project Encyclopedia.

Rights

Copyright Arizona Board of Regents Licensed as Creative Commons Attribution-NonCommercial-Share Alike 3.0 Unported (CC BY-NC-SA 3.0) <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Format

[Articles](#)^[25]

Last Modified

Wednesday, July 4, 2018 - 04:40

DC Date

2017-06-28

DC Date Accessioned

Thursday, June 29, 2017 - 01:28

DC Date Available

Thursday, June 29, 2017 - 01:28

DC Date Created

2017-06-28

DC Date Created Standard

Wednesday, June 28, 2017 - 07:00

- [Contact Us](#)

© 2019 Arizona Board of Regents

- The Embryo Project at Arizona State University, 1711 South Rural Road, Tempe Arizona 85287, United States

Source URL: <https://embryo.asu.edu/pages/stein-leventhal-syndrome-curable-form-sterility-1958-irving-freiler-stein-sr>

Links

- [1] <https://embryo.asu.edu/pages/stein-leventhal-syndrome-curable-form-sterility-1958-irving-freiler-stein-sr>
- [2] <https://embryo.asu.edu/search?text=infertility>
- [3] <https://embryo.asu.edu/search?text=menstruation>
- [4] <https://embryo.asu.edu/search?text=x-ray>
- [5] <https://embryo.asu.edu/search?text=microscope>
- [6] <https://embryo.asu.edu/search?text=radiation>
- [7] <https://embryo.asu.edu/search?text=ovary>
- [8] <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2909929/>
- [9] <https://embryo.asu.edu/library-congress-subject-headings/polycystic-ovary-syndrome>
- [10] <https://embryo.asu.edu/library-congress-subject-headings/pcos-gynecology>
- [11] <https://embryo.asu.edu/library-congress-subject-headings/pcod-gynecology>
- [12] <https://embryo.asu.edu/library-congress-subject-headings/polyfollicular-ovarian-disease>
- [13] <https://embryo.asu.edu/library-congress-subject-headings/sclerocystic-ovarian-degeneration>
- [14] <https://embryo.asu.edu/library-congress-subject-headings/polycystic-ovarian-disease>
- [15] <https://embryo.asu.edu/library-congress-subject-headings/gynecology>
- [16] <https://embryo.asu.edu/library-congress-subject-headings/infertility>
- [17] <https://embryo.asu.edu/library-congress-subject-headings/sclerocystic-ovaries>
- [18] <https://embryo.asu.edu/library-congress-subject-headings/sclerocystic-ovary-syndrome>
- [19] <https://embryo.asu.edu/library-congress-subject-headings/ovaries-cysts>
- [20] <https://embryo.asu.edu/library-congress-subject-headings/hyperandrogenism>
- [21] <https://embryo.asu.edu/medical-subject-headings/stein-leventhal-syndrome>
- [22] <https://embryo.asu.edu/medical-subject-headings/hirsutism>
- [23] <https://embryo.asu.edu/medical-subject-headings/amenorrhea>
- [24] <https://embryo.asu.edu/topics/publications>
- [25] <https://embryo.asu.edu/formats/articles>