The first mastectomy for breast cancer in America: Aguascalientes, México, 1777

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Abstract

In this work, we describe the first testimony of a mastectomy for breast cancer performed in America, concretely in Aguascalientes (Mexico), in the 18th Century. This intervention has been captured in an anonymous ex-voto (Latin, short for ex voto suscepto, 'from the vow made') where Doña Josefa Peres Maldonado expresses her gratitude to the Black Christ of Encino and the Immaculate Conception or Virgin of El Pueblito for the good result obtained. The operation was performed by French physician and surgeon Pedro Maillé assisted by friars from the convent-hospital of St. John of God. We review the history of surgical treatment for breast cancer, the pictorial structure of the document, the surgical technique proposed by the Royal College of Surgery (New Spain) in those times and the association between this event and its time, as an example of the impact the Age of Enlightenment had in New Spain. (Gac Med Mex. 2014;150:466-73)
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Brief history of the treatment of breast cancer

Since remote times, cancer, understood as a disease, was causally associated with the response of different unknown forces to a determined act (conscious or unconscious), considered to transgress a behavior or social rule. Then, disease generally represented a punishment detemined by these forces, and therefore, the cause was established under the "magic-religious" theory that wizards-healers-priests treated with diverse natural products, together with ceremonies, rites and offerings of diverse nature.

In Mesopotamia (Umm Dabagiyah culture, 6000 B.C.), disease, sin, punishment and moral disarray were considered under the same term: *Shertu.* Each person was thus hostage and toy of countless religious and moral duties that had to be fulfilled before deities and priests in order to be able to get rid of them. For diagnosis, after inquiring for possible social or moral disarrays, fortune-telling was resorted to by means of fire, dust or dreams, or by looking into the liver of a sheep or at the position of the stars. Finally, the cure arrived after offering "something" to the deity, eating or drinking something specific and participating in some ceremony or exorcism, or both[1].

In the Edwin Smith Egyptian papyrus, from years 3000-2500 B.C., the first description of breast cancer is made, emphasizing on its hard consistency and the infiltrating pattern of its growth, and its treatment with cauterization is suggested. Later, the Ebers papyrus, of the year 1500 B.C., points out that cancer can spread to the axilla and treating it with cauterization or excision with a knife is indicated.

Subsequently, in Greece, Hippocrates of Cos, according to his humoral theory, considers that its cause lies in an imbalance between yellow bile, black bile and phlegm and also associates it with menopause. Galen, who follows the humoral theory, prescribes local treatments with zinc oxide, blue vitriol and belladonna, and in cases of large tumors, surgery with concomitant cauterization.

Thereafter, almost nothing changed until the Renaissance, where, with the drive of Andreas Vesalius'

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anatomical knowledge, surgical skills became preeminent and breast cancer started being resected with more technique and amplitude, until Aurelius Severino performed a mastectomy that included the axillary nodes.

In 1680, the ideas of Franciscus Sylvius were published in the work *Opera medica,* where the cancer dissemination lymphogenic pathway is suggested.

Already in the 18th Century, the French surgeon Françoise LeDran refers to the distant reproduction of the initial tumor as metastasis and the also French surgeon Jean-Louis Petit[2] states that this type of cancer starts in the axillary nodes and that, therefore, the entire breast, together with the underlying breast muscle and the axillary nodes, must be completely removed. Thereafter, surgical approach became increasingly agressive[3].

During all that time, women with breast cancer lived and suffered the condition with horror and surely most of the times they preferred letting the disease taking its natural course rather than facing the atrocious suffering they would have to undergo with both cautery and scalpel.

In 1882, in the U.S.A., with the use of anesthetics in surgery, William S. Halsted[4] promoted "radical mastectomy"[5], although he did not make his experience public until 1891, and his model was followed for decades in the entire world, even reaching to extremes such as the surgical procedure proposed by the Brasilian Prudente in 1949 with interscapular-thoracic amputation of the breast[6], or the radical mastectomy proposed by Dahl-Iversen and Tobiassen in 1969[7].

Today, since the last quarter of last century, with the aid of radiotherapy, hormone therapy and chemotherapy, the surgical approach of treatment has become more conservative and selective, and at the same time less mutilating and more effective[8].

Breast cancer in Aguascalientes

The document that registers this event is expressed in an ex-voto of Aguascalientes (Mexico) from the 18th Century. An ex-voto is an offering made to a deity as a sign of garatitude for some received benefit, with its origins going back to the ancient Mesopotamic and Egyptian civilizations. These objects were manufactured as wood or clay figurines representing people, animals or something else, and were placed in temples or worship centers. Over time, and according to the offeror's resources, they were manufactured in bronze, iron, ivory, silver, gold and other materials. In Chatolicism, ex-votos became popular as symbols of gratitude and evidence of cure or benefits received by intercession of a numen of the cult, and such offering used to contain a graphic depiction of the received benefit and of the deity or saint that was thanked to.

In Mexico, one of the first famous ex-votos is the one that the captain and conqueror of Mexico, Hernán Cortes, had made as gratitude and recognition offering to Our Lady of Guadalupe (the one from Spain) for having survived after being stung by a scorpion at his estate in Yautepec, currently in the State of Morelos[9].

The Aguascalientes ex-voto

This unique 18th Century anonymous oil painting, best known as *Ex-voto Josefa Peres Maldonado* (Fig. 1), is the most ancient graphic document known in Mexico and America, accounting for the gratitude to the Most Holy Black Christ of Encino and the Most Holy Virgin Mary of El Pueblo, both from Villa de Aguascalientes in Mexico, due to the success achieved in a mastectomy for breast cancer performed by the surgeon Pedro Maillé on the referred lady in 1777.

This ex-voto was part of the collection of objects property of Mexican artists Diego Rivera and Frida Kahlo and later, in 1938, it was acquired by the French surrealistic poet André Breton. Currently, it is property of the Davis Museum and Cultural Center, Wellesley College, Wellesley (Massachusetts, U.S.A.).

The ex-voto, which is well preserved, was painted on a 0.69 x 0.97 m canvas and has been studied by different researchers from various angles. The U.S. National Library of Medicine adds the following description to the displayed image of it on its website:

"The Peres Maldonado ex-voto shows a woman undergoing breast cancer surgery. Surrounded by her surgeon, religious leaders, female family members, and attendants, Doña Josefa calmly and serenely lies in bed as the surgeon performs a mastectomy using only a scalpel and scissors. Her calm expression reflects her transcendence of pain and suffering through her faith and devotion. This depiction is unusual both in its frank illustration of cancer treatment and its depiction of multiple religious icons rather than the usual single religious figure"[10].

Certainly, this description is extemely plain and reflects a quite probably non-existing reality, since such surgical procedure would have raised responses of great fear and anxiety considering the terrible pain and suffering it caused. Nevertheless, it is valid, since the anonymous author of the ex-voto was indeed a painter

Figure 1. Ex-voto Josefa Peres Maldonado. *Oil on Canvas from 1777, property of Davis Museum and Cultural Center, Wellesley College, Wellesley, Massachusetts (USA) (www.wellesley.edu/davismuseum).*

who knew how to capture the bloody surgical procedure in his work, but with innocence, delicateness, modesty and decorum, according to the high social position of the patient and her family. He created his painting some time after the surgery, thanks to the information and details that the family, and maybe the surgeon himself, had offered on the facts and its circumstance.

Two elements stand out in the painting: in the upper part, the painting itself and, in the bottom, the dedication that Doña Josefa Peres Maldonado offers as a token of her gratitude, which reads:

"Doña Josefa Peres Maldonado offers this monument of her gratitude to the Most Holy Christ of Encino, venerated in the Church of Triana, and to the Most Holy Virgin Mary of El Pueblo, in perpetual memory of the benefit, due to her piety, that resulted from an operation that took place on 29th of April 1777, when the surgeon Don Pedro Maillé removed six cancerous tumors from her breast, in the presence of the gentlemen and ladies depicted on this canvas. Although the wound closed perfectly on the 25th of July 1777, other accidents befell her from which she died on Friday, the 5th of September, at 3 p.m., with clear signs of the patronage of this Holy Image and of her salvation"[10].

The scenario depicted in the painting is that of a bedroom, probably belonging to the patient, and it is divided in two parts: at the left, the patient is shown sitting on the bed, leaning her back against a monk and undergoing the mastectomy (left), which is performed by the surgeon Pedro Maillé, aided by an assistant; surrounding the bed, other two friars and four women are depicted. In the right middle of the painting there is a table with several religious images and figurines (a total of 10, including three paintings hanging on the wall), among which, in the central position, stands out the statue of the Black Christ of Encino. The combination symbolically represents mundane and sacred dimensions, respectively.

It is probable that the two friars depicted at the front would have been some Friars Hospitallers (physicians and practical surgeons) from the convent-hospital of St. John of God that in 1777 were practicing, among them Friar Bernardino Juan de Dios Cabrera, Friar Miguel Moscoso and Friar Toribio Pérez, whereas the third, behind the surgeon, could be Friar Lorenzo de Rueda, at that time abbot of the San Diego convent, as it has been suggested[11].

Surgeon Pedro Maillé's assistant could be a personal helper of his own, or any of the surgeons that in those times used to practice in Villa de Aguascalientes, namely: José Alejandro Ballín (surgeon), Juan Ponce de León (physician and surgeon) or José Ruiz (surgeon)[12].

The three women appearing in the ex-voto, who probably were somehow assisting in the intervention, could be some of the patient's daughters or other women of the household: Josefa, María Dolores, Rosalía, Gertrudis, Lorenza, Manuela, María Manuela or Juana[13].

Both the bed clothes and the adorned and rich clothings worn by the characters, except for the habits of the three friars, and the covers decorating the table in the painting give proof of the high economic and social status of such distinguished patient and her family, which has been described with more details and comments somewhere else[14].

Characters

The main character is the patient, Doña Josefa Peres Maldonado y González de Hermosillo, who was born in 1736 in Cuquío, in Jalisco (New Spain). Her parents were Domingo Peres Maldonado and Juana González de Hermosillo y Flores Alatorre. She got married in Villa de Aguascalientes on April 23rd 1751 with Nicolás Fernando Flores de la Torre González de Hermosillo, and six children were born to this marriage: María Josefa (1756), Cosme Damián (1758), María Josefa (1761), Juan José (1766-1854), who came to be a knight of the order of Guadalupe, representative of Mexico in Spanish Courts, governor, president of the Supreme Court of Justice and the Royal College of Lawyers, and plenipotentiary minister of justice[15], José Félix (1766-1854) and Nicolás Fernando[16]. They were a renowned family in society of their time, with important family roots in the vicinity of Los Altos de Jalisco[17].

Josefa Peres Maldonado and her husband, as inhabitants of Villa de Aguascalientes, are registered in the Aguascalientes parochial census established on July 30th 1770 by the ecclesiastical judge of the village, Don Vicente Antonio Flores Alatorre, by request of the bishop of Guadalajara City; both spouses are registered as Spaniards[18].

Josefa Peres Maldonado was 41 years old when she underwent the operation.

The surgeon

The surgeon, Pedro Maillé, as referred to in the ex-voto, was actually a French-origin physician and surgeon who obtained his PhD in Montpellier (France) in 1750[19], and made some communications about his surgical experiences at the Royal Academy of Science[20,21], where he identified himself as master surgeon of Aix-en-Provence, also in the south of France.

His presence in Mexico was recorded in the following document dated in 1771, which describes a litigation raised by this physician against a person he treated and cured in the State of Guanajuato, claiming for the payment of his fees:

"Your Excellency sends the City Mayor of Guanajuato, to whom the judicial decree is returned in twelve exhibited pages…

"Honorable Don Juan Sánchez Casahonda, on behalf of Pedro Maillé, physician and surgeon approved by the Medicine Tribunal and Academy of Sciences of Paris, and by the Royal Protomedicato Tribunal of this Court, at thy feet I state: That residing my party in Guanajuato, by request of Don Ramón de Lizaga, went to assist him at Monte San Nicolás, three leagues away from said city, where he remained more than forty continuous days assisting him in an illness that was so severe, that when his presence was requested the patient had been declared terminally ill by other physicians…"[22].

Thus, it is possible that the referred surgeon was living in Guanajuato and, due to his wisdom and skills in both medical and surgical fields, was called to take care of Mrs. Peres Maldonado at her house in Villa de Aguascalientes.

It is important highlighting that doctor Maillé, as stated above, was a physician and surgeon approved both by the Medicine Tribunal and Academy of Sciences of Paris and the Royal Protomedicato of New Spain. Surprisingly, however, no other record of this distinguished physician and surgeon is available in Mexico to date, not even in the work by John Jay Tepaske "The Royal Protomedicato. The Regulation of the Medical Professions in the Spanish Empire", where chapter VI is dedicated to foreign physicians (in this case French) in Mexico[23].

This French surgeon surely knew and learned at his homeland the advanced surgical techniques that later he would practice in Mexico; therefore, we have to take a quick look at 18th Century France and New Spain, with a particular focus on surgery.

Surgery of those times in Europe and the New Spain

In the 18th Century took place the period known as the Age of Enlightenment or simply the Enlightenment or the Age of Reason, developed in Europe and characterized for being a humanistic movement, which, from England and Holland by the end of the 17th Century, spread to Germany and France, where it possibly reached its peak. This movement, based on the use of reason, aspired to give the human being an organization and a happy way of life through knowledge and mastery over nature. It was based on "empirism", which was promoted by English philosopher John Locke in the previous century and ideas from the Scotsman David Hume.

The large amount of contributions of new knowledge in the fields of anatomy, physiology, pathology, therapeutics and surgery, gradually eliminated empirism and, with the complete differentiation between barbers and surgeons, social and scientific level of surgery rose. In fact, topographic anatomy allowed for health problems to be surgically addressed by using a system of surgical techniques. Technical capability and social prestige of surgeons increased, and they became physically separated from barbers.

In 1645, in France, surgeons and barbers had joined together in a college, until surgeons George Marechal and François de la Peyronie separated from barbers and founded the Academy of Surgery in 1731, which finally was transformed into the Royal Academy of Surgery by royal decree of the year 1748. This academy gave surgery a boost, and in there stood out the surgeons Jean-Louis Petit (he was its first president), Pierre-Joseph Desault and Antoine Louis, among others. The academy was abolished in 1793 by decree of the Revolution[21] and gave way to the creation, in 1794, of the School of Health of Paris, Montpellier and Strasbourg, where the Practical School was opened on August 7th 1797[25]. Together with English, German and other contributions, surgery reached then the degree of a truly professional technique.

We should remember also that the first hospital specifically dedicated to treat patients with cancer was opened in Reims (France) under the auspices of Jean Godinet, canon of the cathedral of Our Lady of Reims, a pious man who devoted his life to the service of the defenseless. The hospital had 12 beds and was runned by personnel from the Hotel-Dieu[26].

In New Spain, this European movement fortunately found its way from 1700 on with the arrival of Charles V to the throne of Spain, as the first king of Spain belonging to the Bourbon dynasty; gradually, the channels for the arrival of ideas, texts, books, instruments and several pieces of equipment started to relax, and all these things were eagerly acquired, discussed and advantageously used by many intellectuals of New Spain, such as José Antonio Alzate, Ignacio Bartolache and Luis Montaña, among others.

In the second half of the century (1768) the Royal Academy of Anatomy, also known as Royal College or School of Surgery and Practical Anatomy Teaching, was established in Mexico at the Hospital of Natives; it was presided over by the Spaniard and first surgeon of the Royal Army Andrés Montaner y Virgili[27]. New anatomical, technical-surgical and methodological concepts were introduced, refreshing the practice and teaching of medicine, serving at the same time as a preamble to the death by starvation of secular hippocratism in early 19th Century. This same year, a surgery course was also mandated to be established in the Royal and Pontifical University of Mexico[28].

Breast cancer surgery

We have practical information on the care offered to breast cancer in New Spain; for example, the German missionary and Jesuit Johannes Steyneffer, in the book "Medicinal anthology of all diseases", published in Mexico in 1712, says: "Cancer that attacks (…) the breasts. Also, not finishing soon with the patient, it spreads and consumes throughout. In this disease there are bad prognoses; since all cancers, are very serious and dangerous abscesses, and it is more judicious not giving it a cure than curing it"[29].

Certainly, the opinion of the referred author, though well intentioned, was not that of a physician or a surgeon; in contrast, the textbook used by the Royal College or School of Surgery of the New Spain with the title "Theoretical-practical course of surgical operations: where the most notorious modern discoveries are contained", written by the surgeons Diego Velasco and Francisco Villaverde and published in 1763, indicates a surgical approach to this condition, if necessary.

Due to its importance in relation with the subject we are addressing, we offer some parts of it:

In the book, cancer (or *cancro*) is defined as "a hard and treatment-refractory tumor, with or without ulceration, and with color mutation in the integuments that cover it, surrounded by varicose veins, etc." We also can read that "every cancer starts usually with obstruction of one or many glands that become hardened and scirrhous and later, carcinomatous". Thus, "glands are most exposed to scirrhi, and consequently to cancers, and since glands are all over the body, scirrhi can occur everywhere and degenerate into cancer; (…) its cause can be due to retention of both recremental and excremental humors or lymph induration due to either internal or external causes. External causes can be blunt traumas or contusions, to which an abuse of gross, thick, acid and hard-to-digest food can be added; as well as a lazy and sedentary life; excessive sleep, sorrows and continuous melancholy and excessive cold; and finally, everything that can slow down the movement of humors". Also: "women are more exposed than men to suffer scirrhi and, consequently, cancers, especially in the breasts (…) due to their abundant loose and spongy tissue, where there are no muscle contractions accelerating the flow of humors (…). Add to this the large number of glands comprising this part and the continuous compressions they suffer, either with too tightly adjusted corsets or frequent and inconsiderate touching [and] (…) of all cancers growing in the breasts, it is very uncommon seeing two perfectly similar (…) sometimes the cancer occupies only the breast, and others, the swelling invades all the fat below the tail of the pectoralis major muscle, becoming harder than usual: when separating this fat in the operation, it has been found to be crowded by scirrhous glands, sometimes reaching the armpit and, over time, these can become cancerous".

"When the scirrhus has reached certain degree of growth and hardness (…) if it grows day after day, to achieve a good success, Surgery has no other remedy to propose but extirpation, if practicable."

Later, the text describes how the operation would have to be performed:

"Assuming the tumor is in the breast and that it is not a more or less thick and movable gland, without adherences to the pectoralis major muscle, or swelling of glands distributed in the fat surrounding its circumference, in this case it is sufficient extirpating it preserving the rest of the breast, which will be done as follows:

"[Once the patient has been prepared,] she will be seated on a chair with backrest and her hands will be held [from behind] by two assistants: then, a rather long incision will be made with a scalpel. Once the gland is uncovered, it will be seized with a double dissecting hook, held by other assistant, and attempts will be made to detach as much as possible of the surrounding fat with the fingers; afterwards, the fat that could not be removed with the fingers, and the rest suspected to be affected by the proximity of the tumor, will be cut with the scalpel. Usually, in this operation there are no concerns about hemorrhage; therefore, it is enough curing the wound with dry lint held by compresses and a body bandage, not too tight to avoid making the patient uncomfortable with a strong compression that would be useless: some hours later, it is advisable lifting the compresses to moisten the lint with some oil: v.gr., hypericum oil†, so that its dryness and roughness do not make the pain subsist and cause some soreness. This first dressing must not be removed until after three or four days, and, being moistened with the transuding serosities, becomes easily detached without discomfort to the patient; thereafter, the ulcer will be regarded as being simple and will be cured according to its different states.

"On breast amputation:

"If the tumor occupies the entire breast, it becomes necessary removing it completely: for this, after having prepared and placed the patient in the aforementioned way, the arm of the diseased side will be slightly moved away from the body in order to extend the pectoralis major muscle. If the tumor is too thick, an assistant will hold it with his hands, and if there is not where to get a hold of it, it will be seized with the tongs known as "hervecianas", which will also be held by an assistant. These tongs are almost never required, but always too cruel. Then, with a convexe-blade, rather long scalpel, an incision of three to four inches above the tumor will be made, in the healthy part, involving up to the pectoralis major muscle inclusively. Once the incision is made, three or four fingers will be immediately introduced through it, scrolling them between the tumor and the muscle, which is not difficult, since they are easily separated, and then, all the surrounding integuments will be cut with the same scalpel (…) Sometimes, near the axillary vessels, some swollen glands are found, and it is advisable to remove them in order for them no to serve as the source of another new cancer; for this purpose, the integuments will be dilated and then seized with the dissecting hook or fingers and then tied together with the cellular tissue

†It refers to Hypericum perforatum, hypericum or St. Johns wort, a medicinal plant with multiple uses; for example, topically applied, it accelerates the healing of wounds.

holding them by passing a waxed double thread from behind in order to make them suppurate; it is not advisable to cut them because at the moment of separating them, some of the vessels originating in the axillary artery could be opened, causing a very difficult to control hemorrhage, but if the case requires using a cutting instrument, it will be done very delicately, being careful to turn the back of the scalpel towards these vessels; the resulting wound will be cured the same way and at the same time than that of the breast. If during the operation there is an important vessel that bleeds, an assistant will put a finger on top of it until the end of the operation and then, attempts will be made to stop the effusion, which sometimes drips from many arteries; other times, the patient faints and the bleeding stops by itself; in this case, the patient will be laid down alongside, until she recovers conciousness and then, if the bleeding continues, it will be tried to be stopped by applying small gauzes, dry or soaked with stiptic water [water with astringent properties, such as tannic acid and zinc chloride, among others] or by means of the agaric fungus‡ and a mediocre compression; if it is absolutely impossible stopping the hemorrhage, ligation of the artery will be performed, which is almost never necessary. Once the operation has concluded, the integuments are moved as close as possible to the center of the division, and the wound will be cured with lints held by compresses and a slightly tight body bandage, in order for not making the patient uncomfortable and being able to remove it promptly in case a new unexpected hemorrhage occurs. If none of this occurs, after a few hours, the dressing starts moistening with a slightly red serosity; once the compresses are quite wet, they will be replaced without touching the lints that cover the wound; there is no need to lift the first dressing until after four or five days; in order for it to be easily detached and to accelerate its complete detachment, from the third day on, pieces of fabric soaked with molten poultry fat, which serves as a digestant until the lints become detached by themselves, will be applied on the lints. The ulcer will then regarded as simple and will be healed acording to its different states. Some practitioners propose, whenever there are concerns for the disease to return, opening one or two sources to preserve a regular evacuation, through which nature can clear the cancerous virus that oppresses her and has spread to the entire mass"[30].

‡The Agaricus officinalis mushroom is said to be useful to reduce excessive secretions, such as night sweats, bronchorrhea and diarrhea.

This procedure gathers the best knowledge of its time regarding the treatment of breast cancer and is similar to the proposal of the famous German anatomist and surgeon Laurence Heister, described in a book also published in 1763[31], to that of the surgeon Henry Fearon in 1790[32], and to practice that, although without further details, is reported in multiple cases attended by renowned surgeons of that time[33-36].

Conclusions

This ex-voto depicts the first mastectomy for breast cancer performed in America, concretely in Aguascalientes (Mexico), in the 18th Century. Standing out is the decision of the patient, Doña Josefina Peres Maldonado, to face the terrible pain and suffering the surgery would cause, surely understood as the last available resource that would alleviate and probably cure the cancer she suffered, trusting on the skills of the surely well recommended surgeon and entrusting her fate to the divine help she would receive and that was supported by her extraordinary faith and religious devotion. Certainly, also her comfortable social position allowed for her to have access to such an infrequent surgical resource.

The French physician and surgeon Pedro Maillé surely performed the mastectomy on Mrs. Josefa Peres Maldonado following to a greater or lesser extent the technique learned in France and proposed by Jean-Louis Petit, and influenced by the work by the surgeons Diego Velasco and Francisco Villaverde that we have transcribed, evidencing two aspects of major importance: first, the capability and skills acquired in France by this surgeon, since the patient survived the bloody intervention and came to heal competely three months later, although little more than a month later she died because "other accidents befell her" – as stated in the ex-voto –, which probably also were related to the same disease. Second, this demonstrates the existing openness in New Spain to the arrival of people and ideas with the clearest vision, driven by the European movement of the Age of Enlightenment.

Finally, with the advance achieved by 18th Century surgeons and with the advent of anesthesia, antisepsis and antimicrobials in the following centuries, breast cancer surgery went from being a terrifying and frequently useless treatment to a practically painless, selective and less mutilating procedure with an acceptable percentage of cures, thanks too to other factors such as radiotherapy, hormone therapy and social awareness on measures for the prevention, detection and early treatment of such an ill-fated disease.

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