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# The First Cataract Surgeons in Anglo-America

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# Abstract

We tried to identify the earliest cataract surgeons in the English-speaking areas of America. In 1751, couching was performed on the Caribbean island of Montserrat by John Morphy. William Stork of England, who couched cataracts, practiced in Jamaica in 1760 and then in cities from Annapolis to Boston between 1761 and 1764. Frederick William Jericho of Germany, upon completion of his training at Utrecht, published his 1767 treatise on his preferred surgical technique of extracapsular cataract extraction. Jericho had practiced in the Leeward Islands by 1776 and then in cities from Charleston to Boston between 1783 and 1785. The French surgeon Lewis Leprilete was the first to advertise cataract extraction in the United States in 1782 and probably passed on the skill to his protégé, Nathaniel Miller of Massachusetts. Leprilete was also the first to publicize Benjamin Franklin's invention of bifocals.. These pioneers exposed American doctors and the public to cataract surgery. Shortly after their arrival, evidence emerges of other surgeons performing these procedures in America.

## Keywords

Cataract surgery; Couching; Cataract extraction

# I. Introduction

The technique of cataract couching was already performed in England by the time of the first permanent English settlement in America at Jamestown in 1607.e1<sup>\*</sup> Cataract extraction

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became popular after Jacques Daviel, MD (1696-1762) presented his extracapsular technique in Paris in 1752.<sup>e2</sup> New World settlers initially had to return to Europe for eye treatment. For instance, Dawbigney Turberville, MD (1612-1696) of England treated the eye condition of a patient who travelled from Jamaica.<sup>e3</sup> When did cataract surgery come to the English-speaking areas of America?

Strikingly, it appears to have taken over 150 years (from 1607 until 1761) for couching to arrive in mainland North America. Of course, the first settlers were in a battle for survival. They were beset by disease, famine, and conflict with indigenous peoples. Nonetheless, some technologies arrived quite quickly. For instance, a printing press was established in Cambridge, Massachusetts, in 1638.<sup>e4</sup>

In principle, the first intraocular surgery could have been performed by settlers who merely read about the procedures. We did not find evidence for its introduction in this manner. Alternatively, the surgeries could have been introduced much earlier by settlers who returned to Europe for training. For instance, Thomas Bulfinch of Boston (1694-1757), the first American known to travel to Europe for medical training (according to his biographer), trained in 1718 under William Cheselden (1688-1752) of London.<sup>e5</sup> Cheselden was skilled in ophthalmic surgery and in lithotomy. Likewise, Sylvester Gardiner, of Rhode Island, trained under Cheselden in 1727, returned to Boston in 1734, and publicly demonstrated lithotomy in 1741.<sup>e5</sup> Perhaps the painful crisis created by kidney stones compelled surgeons to import lithotomy before couching for cataracts.

Ultimately, it seems that both couching and cataract extraction were introduced to North America by surgeons born and trained in Europe. Surgeons arrived on the first Jamestown expedition of 1607,<sup>e6,e7</sup> but it was some time before ophthalmic surgeons journeyed to North America.

Before delving into the specifics of early eye surgeries in Anglo-America, we might provide context by mentioning in general terms what is known about the arrival of cataract surgery in Latin America.<sup>e8</sup> Allusions to cataract surgery in New Spain (modern-day Mexico) suggest that couching might have occurred quite early in its colonial history.<sup>14</sup> Nonetheless, we cannot be sure without first-hand accounts from medically-trained observers. Neither the names of cataract surgeons, nor specific documented instances of cataract surgery, have surfaced from New Spain before their arrival in Anglo-America (1751 for couching and 1776 for extraction).

# II. Couching by Morphy in 1751

The following case from the Caribbean island of Montserrat may be the earliest documented cataract surgery in the Western hemisphere: <sup>8, 21,e8-e18</sup>

"A Negroe Man, named Johnny Mingo, aged 60, who, from two Cataracts, had been almost blind of both Eyes for about 6 Years; but Stone blind, as they call it, for two Years and seven Months, was, on the 24th of August, 1751, couched in the

<sup>\*</sup>References numbered e1, e2, etc. are in an online supplement.

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Right Eye (that of the Left so firmly adhering to the Iris and Circumference of the Papil [sic] as to baffle all Attempts) which being several Times dislodged before it remained depressed, at length subsided for some Time, till the Patient through the Excess of Anguish, throwing off his Dressings, and running about like mad, roaring through the Streets, occasioned the remounting the Cataract, covering the whole Pupil as before, and so remained till about the 20th of October, 1752, when it insensibly fell down, discovering two Thirds of the Papil, and proportionally restoring the visive Faculty, so as to distinguish Objects as plain as could be expected from an Eye of 61... The Surgeon Operator, Mr. John Morphy, ...says, the Patient being addicted several Years to drinking new Rum to Excess, was subject to Headachs, and nervous Disorders..."<sup>A</sup>

We know little about John Morphy. By 1752, he had probably reached his mid-forties.<sup>e19</sup> In 1767, the Irish parliament permitted one John Murphy or Morphy to serve as attending surgeon to the local infirmary because "John Murphy of the town of Tralee in the County of Kerry surgeon, served several years on board his majesty's fleet, and is from long experience and practice the fittest and most able..."<sup>e20</sup>

# III. Couching by Stork in 1761

The first known coucher on the American mainland was William Stork, MD (d. 1768). Because he advertised simply as "Dr. Stork" in America, historians have been uncertain about his first name.<sup>8</sup> After information from American and English databases is combined, however, a fuller picture emerges. In 1751, he was appointed oculist to the Princess of Wales while practicing in London.<sup>B,e21</sup> *Oculist* was the contemporary term for a medical or surgical ophthalmic healer.<sup>11</sup>

A 1759 letter indicated that Stork may have served at a British field hospital in Germany during the Seven Years War (1756-1763).<sup>15</sup> After practicing in Jamaica in 1760,<sup>e22</sup> Stork travelled to Philadelphia in 1761, and advertised his expertise in "the Art of restoring to Sight, and curing the different Diseases of the Eye."<sup>C</sup>

In 1762, Stork offered the testimonials of seven patients who enjoyed "the Recovery of our Sights from Blindness".<sup>D</sup> An 18-year-old man "born blind" was "brought to Sight" on December 15, 1761. An 11-year-old girl with congenital blindness was also "restored to Sight by Dr. Stork."<sup>D</sup> These are probably the earliest identified congenital cataract surgeries in the Western hemisphere. Such procedures were still becoming established in Europe.<sup>10</sup>

Stork travelled to Annapolis<sup>e23</sup> and New York, where he advertised that in Philadelphia he had "restored sight to several hundred persons."<sup>8</sup> In 1763 and 1764, he practiced in Connecticut,<sup>8</sup> Rhode Island,<sup>8</sup> and Massachusetts.<sup>4</sup>

Although his advertisements did not specify his method of treatment, the diary of Dedham, Massachusetts physician Nathaniel Ames recorded that "Dr. Stork famous oculist" couched three patients in June 1764. Stork had to repeat one couching bilaterally in in July, presumably because the lenses had moved to again obstruct the visual axis.<sup>4</sup>

Britain acquired Florida from Spain in 1763 by treaty. Dr. Stork was in Florida in 1765,<sup>19,e24</sup> but had returned to London by June of 1766.<sup>e25</sup> A Philadelphian named Joseph Stout conducted an apprenticeship under Dr. Stork, and was with him in London.<sup>20</sup> Stork published a journal promoting Florida.<sup>19</sup> In his glowing descriptions he appeared willing to bend the truth. One member of the House of Commons, wrote that "Doctor Stork's Pamphlet has sett us all Florida Mad."<sup>15</sup>The second edition<sup>18</sup> incorporated botanist John Bartram's Florida journal. Stork was accused of including Bartram's journal without his consent,<sup>13</sup> and of modifying it to reflect more positivel on the colony.<sup>5, 13</sup>

Stork returned to Florida in late 1767 and "died with the fright" during an insurrection of indentured servants in August of 1768.<sup>16</sup> Although Stork was accused of ethical lapses in his Florida dealings, there is no reason to question his technique or skill as an oculist.

# IV. Other cataract couchers

In the decade after Stork arrived in the colonies, one begins to see evidence of interest in cataract surgery. Couching instruments were advertised for sale by 1764.<sup>e26</sup> Couching was advertised by one Dr. De Lacoudre in Norfolk in 1768,<sup>e27</sup> and by John Bartlett in Rhode Island in 1769.<sup>e28</sup> In Philadelphia, couching was advertised by John Flemor in 1768,<sup>e29</sup> by Anthony Yeldall in 1770,<sup>e30,e31</sup> and by James Graham (1745-1794) in 1771.<sup>e32,e33</sup> Hall Jackson, MD (1739-1797) in New Hampshire described his cases of cataract couching beginning in 1770.<sup>7</sup>

# V. Extraction by Jericho before 1776

Frederick William Jericho, MD (flourished 1766-1796) an itinerant oculist, was born in Eisenach, Germany, and trained in the Netherlands.<sup>9</sup> His wife was from Groningen. Jericho was a surgeon in the Dutch army.

His medical school thesis from the University of Utrecht describing cataract extraction was published in 1767 (Figure 1).<sup>9</sup> This treatise is possibly the earliest published description of cataract extraction by a surgeon who practiced in America.

Jericho wrote that Petrus Camper, MD (1722-1789) of Groningen taught him cataract extraction.<sup>9</sup> Camper wrote a thesis on vision, and an unpublished ophthalmic treatise, and influenced the field through his students. Camper had observed the German oculist known as Baron Wenzel (1724-1790) performing cataract extractions in Amsterdam in 1761.<sup>24</sup> Camper subsequently became one of the first in the Netherlands to perform extractions and expressed a preference forcataract extraction over couching.<sup>24</sup>

Jericho's thesis presented couching complications, a short history of cataract extraction that cited Daviel, and a description of extracapsular cataract extraction. Of course, surgeons did not have the benefit of sutures, anesthesia, or an understanding of antisepsis. First, an assistant elevated the upper eyelid. Jericho, like Daviel, incised the inferior half of the cornea at the limbus (6 clock-hours). Daviel entered inferiorly with a keratome and extended the incision with right- and left-curved scissors. However, like Wenzel<sup>22</sup> (Figure 2) and early eighteenth century surgeons who extracted lenses that had subluxed into the anterior

chamber,<sup>17, 23</sup> Jericho used a knife to create limbal entry and exit incisions 6 clock-hours apart and then moved the knife inferiorly to connect these incisions:

"It is agreed that the cornea...ends in a circle: ...parallel to the horizon, the diameter...defines the route for the knife that is to cut the eye. A skilled surgeon confirmed by frequent successes holds the knife with a free but not shaky hand, as much as possible in his first fingers, with the edge directed downwards,...waiting for the moment at which the eye is sufficiently still and moved into the most convenient position, and seems to be able to endure the infliction of a wound from the point of a knife.... The incision is made at the extremity of the diameter, which we drew across the middle of the eye, since the point of the knife, fixed into the cornea by an approximate half line above the sclerotic, follows this carefully, lest it harm the uvea ... and when the cornea is pierced by this at the other extremity of the diameter by the internal canthus of the eye, the lower part of the semi-circular cornea is cut obliquely by the very edge of the knife, after which all the aqueous humor at once flows forth from the eye, and often the crystalline lens, with convulsive motion from the irritation of the muscles serving the eye, is already moved from its anterior position with all the resistance, is disturbed from its position, its capsule is burst, it is pushed forward through the pupil, and it falls at once from the eye."9

Jericho compared the expulsion of the lens to childbirth.<sup>9</sup> In Jericho's technique, if spontaneous delivery of the lens does not occur, a needle can be used to cut the capsule, and then the lens is evacuated.<sup>9</sup>

According to Jericho, relative and absolute contraindications to surgery include systemic cachexia, eye inflammation, corneal or vitreous opacity, "shaking eyes" (nystagmus), and poor pupillary responses. He wrote that if the unaffected eye sees well after cataract extraction, the patient may be dissatisfied because of "unequal functioning of both eyes" which "can easily be confirmed by optical methods". Similarly, he wrote that deep orbits can present problems during surgery. Pressing on the eye during surgery may cause iris prolapse. Anterior chamber hemorrhage is managed by waiting 5 or 6 hours, and then delicately pressing on the eye to evacuate blood and aqueous. When the lens is fragmented, a small loop or spoon is used to evacuate the material.

Jericho noted that after the lens is extracted, "glutinous strands of liquid", which were "elastic and viscous", or "phlegm" might appear. This observation most likely represented vitreous loss, although Jericho explicitly denied this possibility. Jericho recommended evacuating this material "with the small spoon (usually made of gold)" to avoid "visual deterioration, which is often not known or often neglected by even experienced physicians."<sup>9</sup>

Jericho advertised in London in 1776 that he had remedies for "the Gravel, Inflammation, Fistula Lacrimalis, Films, Spots, Weakness of the Eyes, and the Gutta Serena, proceeding from Venereal Causes, and performs that amazing Operation, the Extraction of the Catharact, directly in the same Manner as the famous Baron Wenzel." He wrote that he had just returned from the West Indies, and offered testimonials of Londoners from Antigua, St.

Kitt's, and Montserrat.<sup>E</sup>Jericho advertised in 1777 that he had performed cataract surgeries, as well as an enucleation, during time spent living on Antigua. These surgeries, which would have taken place between 1767 and 1776, might be the earliest identified cataract extractions in the New World. Jericho testified at the 1777 trial in London of his assistant, who was convicted of stealing Jericho's belongings, which included a pair of forceps, a spatula, and a probe, all made of silver.<sup>e34</sup>

Jericho arrived in Philadelphia in October 1783, writing that "He cures all diseases of the Eyes, and those who have the cataract, he extracts the same, and he desires the Gentlemen of the Faculty to be present at every operation."<sup>F</sup> He wrote that "Dr. Bond", i.e. Thomas Bond, MD (1712-1784), was satisfied after observing Jericho's operation.<sup>e35</sup>

In March, 1784, Christopher Rex of Philadelphia County testified that Jericho provided him "the happy restoration of sight, after four years blindness by a cataract on both eyes."<sup>G</sup> This may be the earliest cataract extraction identified in the United States.

In 1784 and 1785, Jericho proceeded to Baltimore,<sup>e36</sup> Virginia,<sup>e36,e37</sup> Charleston,<sup>e38,e39</sup> Boston,<sup>e40</sup> New York,<sup>e41</sup> and Philadelphia.<sup>e42</sup> Baltimore physician Charles Wiesenthal noted that Jericho produced an unfavorable outcome after "extracting the crystalline lens" and implied that Jericho was a "most errant quack."<sup>6</sup> His visits to Bath, (West) Virginia<sup>e36</sup> and Bath, England,<sup>e43</sup> suggested an interest in natural springs. He returned to Jamaica and possibly Santo Domingo. He practiced in London between 1791 and 1794,<sup>e43</sup> and in Utrecht by 1796.<sup>e44</sup>

# VI. Extraction by Leprilete after 1782

Lewis Leprilete (1750-1804) of France trained in Paris and settled in Rhode Island in 1782, before moving to Massachusetts. Leprilete was the first to advertise cataract extractions in the United States in 1782, stating, "He has with Success performed the nice and most difficult Operations of Lithotomia, Cataract, and Midwifery." He added, "Cataract is an Operation by which the Eye is delivered of the crystalline Humour, become opacous."<sup>H</sup> Leprilete also bears the distinction of being the first in America, in 1791, to write about Benjamin Franklin's invention of bifocals.<sup>12</sup>

It is likely that Leprilete did actually perform cataract extractions, although the evidence is circumstantial. His protégé and partner from 1790 onwards, Nathaniel Miller, MD (1771-1850), became known for cataract extractions. With regards to Dr. Miller, one historian noted: "In the early periods of his practice, before the establishment of eye infirmaries, he was much consulted in diseases of that organ, and had the reputation of a successful oculist. Ordinarily he preferred the extraction of the lens to its depression in cases of cataract."<sup>3</sup> Miller performed a cataract extraction within 8 weeks of beginning practice in 1792.

Leprilete, a well-regarded general surgeon, was a member of local medical societies<sup>e45</sup> and taught medical students.<sup>e46,e47</sup> He reported a surgery in which a man "had his thigh amputated."<sup>e48</sup> He also reported multiple cases of lithotomy, the youngest in a child just

under four years old.<sup>e49</sup> When Nathaniel Miller's wife developed a cancerous growth of the breast, she insisted that Leprilete be the surgeon to excise it.<sup>1</sup>

Leprilete was recalled by a contemporary as a "courteous and lively Frenchman...with great elegance and precision, wearing ruffles at his wrists".<sup>e46</sup> Leprilete moved to Norton, Massachusetts, in 1785,<sup>e50</sup> and then to Jamaica-Plains, outside Boston, in 1791 (Figure 3).<sup>e51,e52</sup> He married "the daughter of a plain farmer" in 1784,<sup>e46</sup> and became a naturalized "subject" of Massachusetts in 1790.<sup>e53</sup> Tragically, their only son perished in his eighth year of life from small-pox.<sup>e54</sup>

From about 1794 to 1801, Leprilete went to France,<sup>e47</sup> and then stopped in Guadaloupe on his return to Massachusetts. He served in the French army while away. It is said that Leprilete was unwilling to speak of Napoleon,<sup>e55</sup> who seized power in 1799. Leprilete died of prostate cancer in 1804.<sup>23</sup> His body was donated to Dr. John Warren (1753-1815) for anatomic dissection.<sup>e47</sup> Nathaniel Miller named his son after Leprilete.<sup>e56</sup>

#### VII. Other cataract extraction

In the decade after Jericho and Leprilete arrived in North America, several other physicians known for cataract extraction entered practice. For instance, Mason Fitch Cogswell, MD (1761-1830) of Hartford, who began practice in 1789, was training in New York at the time of Jericho's visit.<sup>e57</sup>

According to a posthumous biography, New York surgeon Richard Bayley, MD (1745-1801) had a "general preference of extraction above depression of the lens in cataract"<sup>21</sup> Bayley returned to New York in 1772 and in 1777 after trips to London for training, but it is unknown when he began to extract cataracts.

John Tyler, MD (1763-1841) of Frederick, Maryland advertised in 1786 that he had observed both cataract extraction and depression during his training in Europe,<sup>e58</sup> but subsequent biographies suggest that he was known for depression (couching).

Philip Syng Physick, MD (1768-1837) had returned from Europe by 1792,<sup>2</sup> and certainly had performed cataract surgery by 1795. Physick became a prominent educator at the University of Pennsylvania. Like Jericho, Physick's method of cataract extraction was similar to that of Wenzel.<sup>2</sup>

# VI. Perspective on the American pioneers of cataract surgery

Those who introduced cataract surgery to America before the full flowering of academic medicine in the New World cannot be dismissed as quack oculists or charlatans. Certainly, theatrical itinerant oculists such as Yeldall did the most to attract attention. Advertisements and testimonials published by the likes of Stork, Graham, and Jericho contained some puffery. But we have no reason to question the training or skill of Morphy or Stork. Moreover, De Lacoudre, Jackson, Jericho, Leprilete, Tyler, Bayley, Physick, and even Graham received training within prominent European schools, hospitals, or mentorships. Jericho's treatise on cataract surgery is comparable with other works of the period. Stork,

Jackson, Jericho, Leprilete, Bayley, Tyler, Cogswell, and Physick taught other surgeons and students. De Lacoudre, Flemor, and Bartlett were general surgeons. The same can be said of Jackson, Leprilete, Cogswell, Bayley, Tyler and Physick, all of whom became pillars of their regional medical communities.

## VII. Conclusions

The Caribbean colonies appear to have served as a gateway for these surgical techniques as they entered North America. Evidence of couching appears in Anglo-America later than one might have supposed: in 1751 by Morphy on Montserrat, and in 1761 by Stork on the North American mainland. Of course, earlier surgeons might have occasionally performed couching without leaving surviving records. While Jericho exposed many American communities to the technique of cataract extraction (with a mixed reception), Leprilete appears to have established the technique in one place by becoming a fixture of the New England medical community. These pioneers exposed American doctors and the public to cataract surgery.

## VIII. Literature Search

References numbered e1, e2, etc. are in an online supplement. We searched for couching(ed), oculist (oculiste or oculista in the French and Spanish databases), cataract (cataracte, catarata) in: Hemeroteca Nacional Digital de Mexico,<sup>e8</sup> the Early English Books Online Text Creation Partnership,<sup>e9</sup> Eighteenth Century Collections Online,<sup>e10</sup> the 17th-18th Century Burney Collection Newspapers,<sup>e11</sup> French-Canadian Newspapers,<sup>e12</sup> OurOntario.ca Community Newspaper Collection,<sup>e13</sup> America's Historical Newspapers, 1690-1922,<sup>e14</sup> Accessible Archives,<sup>e15</sup> Caribbean Newspapers, Series 1, 1718-1876,<sup>e16</sup> and Guerra's American Medical Bibliography.<sup>8</sup> Other resources utilized included Google Books, Google Scholar and American biographies.<sup>21,e5,e17</sup>

# Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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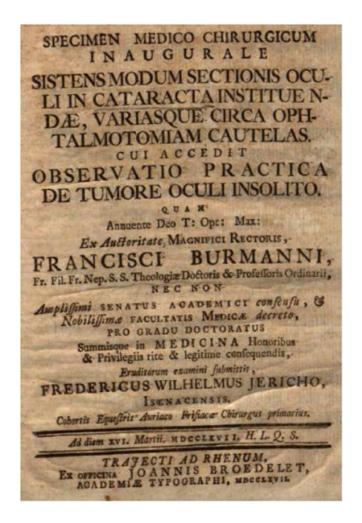
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#### Figure 1.

The medical school thesis on cataract surgery of Frederick William Jericho, the earliest known cataract extractor in the Western hemisphere, was published at Utrecht in 1767.<sup>15</sup> Image courtesy of the University of Wisconsin.



#### Figure 2.

Wenzel's technique for incising the cornea when extracting the cataract. A knife was used to make entry and exit incisions 6 clock-hours apart. The knife was moved inferolaterally to connect these incisions.<sup>17</sup> In Jericho's technique to incise the inferior limbus, the entry and exit incisions were along the horizontal meridian.



## Figure 3.

The Hallowell House at 464 Centre St., near Boylston St., in Jamaica Plain, Massachusetts, was used as a hospital during the American Revolution. Lewis Leprilete, the first to advertise cataract extraction in the United States in 1782, purchased the property in 1791 as his residence and the site where he performed surgeries. Memorial plaques for Leprilete and his son were placed on the property after their deaths.