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Obstetrical Forceps: History, Mystery, and Morality

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Houston History of Medicine
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Robert Rakel, M.D.

Welcome to our first program for this academic year for the Houston History of Medicine Society. As you all know, you can find everything on our website at www.hhom.org. We are fortunate today to have one of our favorite speakers. Dr. Ron Young is the head of the Department of Gynecology in the Baylor Department of OB/GYN. He did his basic training in Basel, Switzerland. I just need to tell you my favorite Switzerland story, if I may. A group of us were there for a meeting. We went to dinner and walked out from dinner, and there were no cabs around, so I said, "I will walk and find one. There has to be a cab stand around here somewhere." So I went walking, and a couple of blocks away there was a fellow walking his dog, and he said something to me. I shrugged my shoulders indicating I did not understand him, so then he said something to me in another language. I said, "I am sorry. I do not understand you." And he said, "Oh, you're an American." They all speak at least three languages, and I was barely fluent in one.

Dr. Young has been on the faculty here at Baylor for 35 years and he is still teaching, still working full time, so I really admire that in him. His topic today is one of special interest to me, because if we think we have unethical physicians around today, wait until you hear his story, "Obstetrical Forceps: History, Mystery, and Morality"

Ronald L. Young, M.D.

Thank you. I am happy to be back with another history lecture. It is a favorite pursuit of mine. This one is a very interesting story, the history of obstetrical forceps, because it is a history of scientific breakthroughs, of great endeavors and progress, but it's also a history of connivers and con artists and flat-out criminals. As it unfolds, you'll see that I guess we all come from the same gene pool, so that being a doctor doesn't spare you from some of the weaknesses of the human flesh.

Forceps came about because of the difficulty in delivering babies. Unfortunately, the human female comes with an ischial spine diameter of only 8cm, and that is the lower level that allows for human birth. An old professor of mine used to say tongue-in-cheek that the physicists and the philosophers can argue themselves blind about the limits of the universe and how big it is, but we gynecologists know the lower limits of the universe, and the lower limits of the universe is 8cm. At a diameter smaller than 8cm, human delivery is very, very difficult, if not impossible, and that

means if human babies cannot be born, then human minds cannot be born, so that people who even contemplate the universe will not be around unless some other animal is contemplating the universe as we speak. But this led to forceps. The fact that women had trouble delivering babies in medieval times, let alone ancient times, probably half the babies did not succeed through a pregnancy and a delivery, and probably a quarter of the mothers did not succeed through pregnancy and delivery.

Since it says, “History, Mystery, and Morality,” the ethics of the whole thing, the actual beginning to this story is a few slides down the way, but this is a good prologue slide to show. It is a bas-relief that was discovered in Rome in the early part of the twentieth century but comes from the second or third century of the Christian era. It was presented by Baglioni in Rome in 1937 in this article in *Physiology and Medicine* in Italy, and it is an absolutely astounding archaeological finding. It shows a parturient mother. She has just delivered a baby. Here you see the midwife or a relative—she is holding the baby that has just been delivered—her anxious husband, probably a sibling of the baby, the physician, the physician’s slave or assistant, who is holding an instrument of destruction here, because physicians always hedged their bets and they brought along these sharp instruments so that in case the baby died, which the baby frequently did, they would begin to take the baby out piecemeal, and that is an activity that persisted for another millennium and a half, another 1,500 years. But what’s astounding about this structure here is this: This physician is holding in his hand a forceps not unlike the Simpson forceps that predates our history by probably 1,500 years. It is absolutely astounding. Where did it come from? And why did it disappear into history? The answer is—and the name of this lecture is “History, Mystery, and Morality,”—that this, of course, was a fraud. It was bought by a very wealthy Connecticut family. Their intention was to turn it over to an archaeological collection up at Yale, but when it was shown to be an absolute forgery, of course it had to be destroyed. So that is a good beginning into the forceps story.

That the Romans had these kinds of instruments, there is no doubt. You can see some very sophisticated threaded screw-type instruments. Not all of these were obstetrical instruments, but some of them are. Some of them are instruments that were very destructive, as I said, to break a fetus apart that had not survived the labor or delivery.

And so for over 15 centuries, the use of forceps remained primarily that of destructive activity, to aid in the extraction of dead fetuses. And a lot of what we knew, we knew from the field of animal husbandry, where they also wrestled with similar problems. So tongs for extracting fetuses existed from classical times and were widely used into the Middle Ages, but only for dead babies.

Although highly improbable, there have been claims that some tongs or forceps were used to remove living babies, and a lithotomist living in Zurich, Switzerland, in the fifteenth century

claimed to have invented two such instruments, one a “duck-bill” scoop instrument to extract dead fetuses, but then a long, smooth tongs possibly useful in helping delivering living babies. Possible. We tend to ignore it. It gets no place in history. But on the other hand, we have to remember that the first successful cesarean section in which both mother and baby survived was carried out by a Swiss pig farmer, also from the country around Zurich, so strange things happen.

Our story really begins with the events of the Reformation and Counter-Reformation. So Luther breaks what became the Protestant Church away from the Catholic Church, and then a series of Counter-Reformation moves came about, which led inevitably to centuries of slaughter and fights between Catholics and Protestants. And into the middle of this comes Catherine de' Medici. She was the consort, the wife of King Henry II of France. She, incidentally, was the mother of three French kings. She was a young woman from a very devoutly Italian family, obviously a Catholic family. She really did not understand the dynamics of what was going on between the Protestants and the Catholics, and in France the Protestants were a very powerful and growing minority known as Huguenots, the French Protestants. And so as the Counter-Reformation gathered steam, the fight to put this Protestant movement down got its steam, a plot developed in Paris in the sixteenth century which Catherine de' Medici took part in, might even have been one of the instigators, and that was to try to declaw the Huguenot movement by assassinating their leadership. This took place on the so-called St. Bartholomew's Day Massacre of 1572. The intent was just to destroy the Huguenot leadership. And as you can see in this painting by Dubois, a Frenchman who settled in Switzerland, we can see the body of Admiral Coligny, one of the Huguenot leaders, being shoved out of a window. He has been killed. But then this quickly accelerated into an overall slaughter of Protestants. And here we see that selfsame Catherine de' Medici. This is the Louvre, which was the royal palace. She has exited and is inspecting this pile of bodies here that had been slaughtered in this St. Bartholomew's Day Massacre. This led to a voluntary expulsion of the Huguenots. They were not totally kicked out of France for another hundred years under Louis XIV, but they began to scatter mostly into Protestant countries, some as far away as Africa, Asia, and the Americas. And the Huguenots have become, as any persecuted minority, they sort of circled their wagons, they were resourceful, industrious people, intelligent people, and as is the case with many persecuted minorities, they achieved some remarkable things over the course of history, led by their leader John Calvin, the Swiss theologian from Geneva, the French-born theologian. And so the Huguenots are known in the fields of politics and military, business, famous names that are recognizable to us. In the creative arts and the performing arts, there are some interesting names there too.

But the chap that we are most interested in, the Huguenot that is the foundation of our story, is William Chamberlen. He was a surgeon in Paris, a very successful person who saw the writing on the wall. As I said, the official expulsion of the Huguenots would not take place for another hundred years, but he felt that their position was extremely insecure, and so he left with his

family and ran to England around 1576, as best as we can ascertain, about four years after the St. Bartholomew's Day Massacre. His eldest son Peter is the one who is purported to have invented the modern obstetrical forceps. When the Chamberlens came to England, they respelled their name from Chamberlen here to Chamberlain. I have maintained this original spelling throughout the lecture. They first showed up in Southampton, then moved to London. And maybe because of the exotic connection of being French and their skills also playing a big role, they became enormously successful in the practice of obstetrics and surgery and rapidly worked their way up the social ladder to become the midwives to royalty and to high society.

This is the genealogy of the Chamberlens that we will go through in part through the course of this lecture. William Chamberlen had two sons, both of whom he named Peter, Peter the Elder and Peter the Younger. Peter the Elder gets the credit for inventing the forceps. This is said to have occurred around the year 1600. Some historians have listed it as 1598. That is not very relevant. But what happened was that once the forceps were developed, they became a family secret, and all of the family members partook of this secret for the next hundred and almost one hundred and fifty years. They went to great lengths to keep this unknown to their contemporaries, their competitors, and to the public at large, even to the people they served. So what is said of the Chamberlens is that when they were summoned, they came in a gilded carriage and they had this gilded box covered with brocaded cloth carried into the house by servants. The sound of the instruments was muffled by the fact that there were other veils inside of the box. As soon as they confronted the woman in labor, her husband and her servants and relatives all would shoot out of the room, the woman herself was blindfolded, and then the Chamberlens went about their business of delivering her, making a lot of noise to distract what was going on and especially the sound of the forceps clanking against each other. So you heard bells, screams, and eventually you heard the cry of a baby, and that signaled to the world that another successful delivery had taken place. And as I said, this secret would abide in the family for at least three more generations.

Peter the Elder became a surgeon and obstetrician to Queen Anne of Denmark. She was the wife of King James, James VI of Scotland, James I of England, who was in the Stuart branch that ended up on the chopping block eventually.

Because of their success and the jealousy of their contemporaries and the opposition of the women whose jobs they were taking away, the Chamberlens were at odds with their society right from the get-go and especially with the Royal College of Physicians. So we have to recall the history of those days. Physicians had medical degrees from one university or the other, and they were licensed, and their license came from the crown. Surgeons were typically barbers, and they had a sideline of blood-letting, leeching, tooth extraction, and minor surgical procedures. They also were known for hanging their bandages soaked in blood outside of their places of business, and that led to the barber pole today, that whirling barber sign with the red and white stripes

outside. That came from these bloody bandages. The surgeons got their licenses usually from a local bishop, sometimes from the archbishop, but at least in the social strata, in the feeding chain, they were down a bit. So Peter the Elder and Peter the Younger were members of the Barber Surgeon Company and not of the Royal College of Physicians. The members of the Royal College constantly accused the Chamberlens of practicing medicine without a license, and eventually they harassed Peter the Elder so much that he was tossed into Newgate Prison for a very short time. That did not last too long. His patron, Queen Anne, through the intervention of the Archbishop of Canterbury, made sure that he was released almost immediately.

Peter the Younger, his younger brother with the same name, was also an extremely successful male midwife, surgeon, and obstetrician. He continued to have trouble with the Royal College. He attempted to join the Royal College but was dismissed because of insufficient knowledge of his profession. He is credited possibly with also co-inventing the forceps. That is not well known. But he began to show another family trait, which was this get-rich-quick, scheming, entrepreneurial vein that ran through this family, and in 1616 he attempted to organize the female midwives, demanding a high fee for his licensing of their activities as well as a percentage of their delivery fees. Obviously, this was opposed and he was not successful, although it was a good idea, you have to admit.

His son was Peter the Third, so-called Dr. Peter, who is probably the best known of all of the Chamberlens, and of course he too was an extremely successful obstetrician who lived 82 years. You see him here in a portrait at age 57. He was the first to really obtain a medical license. He studied in England at Oxford and Cambridge and then went abroad to Heidelberg and Padua. He enrolled in Padua in 1619, and about a year later he completed his studies there at the age of 20. So he did have a medical degree, and in 1628 he joined the Royal College of Physicians. He also had a very, very bluestocking practice, so to speak, being the midwife to at least three queens and all sorts of nobility and important people.

But the opposition to their activities continued, and they continued in historical record because we have at stands and museums all over England these broadsides, these sheets and pamphlets that were circulated in the streets there. Young boys ran around passing out these pamphlets, which were called broadsides, and they were attacking the Chamberlens or attacking male midwives in general. The female midwives were obviously trying to defend their turf. Dr. Peter answered one of these pamphlets with his own, "The Voice of Rhama: or the Crie of Women and Children as Echoed forth in the Compassions of Peter Chamberlen." And in this pamphlet that he produced, he hinted at the first time, because he had to defend himself, and the means by which he defended himself was to play up the safety that patients enjoyed by visiting the Chamberlens and not any other midwife, and he did that by hinting that his family had something special that gave them certain advantages and gave their patients added safety. The real secret, of course, would not come out for a while.

Peter Chamberlen, or Dr. Peter, or Peter the Third, attended the birth of the future King Charles II by Queen Henrietta Maria. He also tried to unionize the female midwives, extracting fees for their deliveries, etc, etc, and he was also unsuccessful. And as a matter of fact, he fought so much that he was eventually dismissed from the Royal College in 1649 for repeated acts of contumacy, which is defined here; I had to look it up. But when you look at the records of the time, what contumacy really meant to these people was that he was not attending lectures. So he was remiss in attending lectures of the Royal College. Again, King Charles had him reinstated to the Royal College immediately. Remember, they well patronized the Chamberlen family. He was a well-known public figure, a health advocate, and a leader in the seventh-day Sabbatarian Christian religion. He got fed up with the politics of London and eventually fled to Essex County to Woodham Mortimer Hall, which became the home of the Chamberlen family. At least two generations lived there. And it was there, about a hundred years after they had sold the house out of the family, that the box of the original Chamberlen forceps was discovered in the floorboards of the attic. The present owners gave them over to the Medical and Surgical Society, who passed them on to the Royal Society of Medicine in 1818. Essex County put up this plaque outside that house that Peter Chamberlen and at least Dr. Hugh Chamberlen, one of his sons, lived there. And also his tombstone in the area attests to the fact that he studied abroad, was a physician in ordinary to three kings and queens, James and Queen Anne, Charles I and Queen Mary, and Charles II and Queen Catherine, and also to foreign princesses because he spoke all those languages and had traveled all over Europe. And this is the actual box that was discovered in 1813 under the floorboards in one of the attics in Woodham Mortimer Hall, and these are not exactly the original Chamberlen forceps but models of the Chamberlen forceps that were used in those days.

So the fact that the family was successful, was protected and got away with what we would consider were somewhat unethical practices of keeping their invention secret, they attended—this is just a very small list—almost all of the royalty in England, and it is said that through their ministrations that they actually may have changed the course of European history, because who they took care of had the babies, and half of the other ones did not survive.

Peter the Third had three sons. Paul and John were just practicing midwives, and they did very well, but Paul was also a bit of a charlatan and a well-known quack, and he lent his name to the so-called “Anodyne Necklace” scandal that arose in 1715. He may have invented it or at least promoted it. It was just a little amulet that was placed around the neck of a baby to help with teething and also to promote survival and diminish infant morbidity and mortality. It was exposed as a total fraud eventually, and it did a lot of harm to Paul Chamberlen’s reputation.

But the man who really tilted was Hugh the Elder. He was the midwife to the Portuguese Princess Catherine Henrietta of Braganza. She was the wife of Charles II when the crown was

restored. He had a successful practice but suffered from the family weakness for scheming and get-rich-quick plans. He failed in many projects, including land bank, state medical services, health insurance, and plague prevention.

Short of cash, he traveled to France around 1670 and made a decision to give up the family secret and sell it to the French. So he approached Francois Mauriceau and Clement. Mauriceau was the head of gynecology and obstetrics at the Hotel-Dieu, which is the oldest hospital in Paris. Clement was the royal obstetrician to the queens of France. He attempted to sell it for 10,000 crowns, about \$3,800 in our money, but real money in those days. They did not take it all at face value, they certainly did not give him a *sou* for the invention, but they challenged him to prove its worth by confronting him with a hard case, a 38-year-old rachitic dwarf with a grossly deformed pelvis who had been in labor for six days with a fetus in transverse lie. Though he worked feverishly for a solution, in the end both the mother and the child died, whereupon the French were disgusted and Mauriceau tosses Chamberlen out, declaring him to be a common swindler. On the other hand, having learned of the history of the forceps from Chamberlen before all this got started, he derides the entire Chamberlen family for keeping such an important development secret. Somehow between then and now, Chamberlen and Mauriceau became good friends again, so they parted good company, and Chamberlen actually procured a copy of Mauriceau's book to take back to England. Mauriceau wrote this book, a treatise on the illnesses of pregnancy and labor, which was enormously successful and established his reputation as the leading obstetrician on the continent. Published in Paris in 1668, it went into many editions and translations. Chamberlen's English translation also went into many editions and made him a great deal of money. And in the preface to one of his translation editions, Chamberlen actually wrote, "My father, brothers, and myself (tho' no one else in Europe as I know) have by God's blessing and our own industry, attained to and long practiced a better way to deliver women without prejudice to them or their infants." He gave no details, but this was a hint. Remember, he had already tried to dump it, so he did not have a whole lot to lose.

Despite the fact that he made a lot of money on this book, that took years, and he needed a quick fix to other money problems. He later went to the Netherlands, probably about 10 or 15 years later, and managed to sell his secret to the Dutch obstetrician Roger Roonhuyzen. The Roonhuyzens were the Chamberlens of the continent. They also had had a secret invention—not exactly forceps but more like a scoop instrument—and they kept that a secret, except that they did not keep it totally a secret; they sold it to doctors, extorting a lot of money so that they made a ton of money on their invention, which turned out to be totally useless. Hugh Chamberlen sells him one blade of the forceps, which is really one of the remarkable feats in history. Now, why Roonhuyzen fell for this ruse, we will see in a couple of slides down the line, and it has to do with his own invention. But he did fall for it. When he finally found out that he had been duped and paid for half of the forceps, he became irate at the Chamberlens, although, as I said, he was apparently willing to ignore the fact that his own family had monopolized their own invention in

the Lowlands for over 50 years. So the design was sold not only to Roonhuyzen but also somehow managed, whether Hugh Chamberlen sold it directly or whether one of Roonhuyzen's people sold it, it went to the Medical-Pharmaceutical College of Amsterdam and then further by them to some selected physicians. But then after a few years, when people tried to make the secret public, it seemed that he had only bought one blade, so they really did not know how to use these forceps or what the use of it exactly was.

Hugh exits the story at this point. He moves away to Scotland, he goes up and down in a bunch of business schemes, eventually gets into the health insurance racket and publishes a book and disappears.

The Roonhuyzen forceps was this instrument here, which is nothing more than a scoop. And eventually a disgruntled physician, realizing that he had been duped by the Roonhuyzens, publishes a description of the Roonhuyzen forceps, breaking the family monopoly. This caused a sensation in the Lowlands, despite the fact that this instrument, is not only useless but even dangerous.

Before that, an assistant to van Roonhuyzen supplied a sketch of the blade to a Belgian anatomist and surgeon by the name of Jean Palfyn, and the story takes another turn. Palfyn lived from 1650 to 1730, a remarkable old age in some of these chaps considering when they lived. There has been a lot of speculation about Palfyn because they say, "Did he really know the secret ahead of time?" because they only had one blade to work with. But Palfyn apparently was fascinated by what he knew about the Chamberlens' blade, and he started working on refinements that led to his own discovery. He saw some potential in this, so he added another blade and offered it as his own invention, so to speak. It consisted of two spoons linked with a clamp or a binding but not crossed with a joint. The Palfyn forceps were initially known as *tire-tete* to pull on the head. Interestingly enough, he never used them, not until much later in his life. He was always afraid to use them. He probably was not much of a guy in the field.

These are some manifestations of early Palfyn forceps. By this time they were called Palfyn's "hands," and here are some early examples.

He sent a pair of his forceps to the famous surgeon Lorenz Heister, seen here, of the University of Helmstadt in the Netherlands. Heister tried to modify the design, but he himself never, ever delivered a baby with them without doing harm to the mother and/or the baby, and he gave it up. But he went back to Palfyn and said, "Look, it is your invention. You do it." And he finally persuaded and prevailed on Palfyn to use the forceps in a delivery. He tried, and all he did was cause injury. He never had a successful delivery.

Undeterred, he decided to present this invention to the Royal Academy in Paris, so he journeyed there in 1720 and '21. These instruments were now called "The Hands of Iron," and he made his presentation there as an original invention. And since the exact age of the modern forceps was totally unknown, both Belgium and France ignored the Chamberlens and have maintained that the inventor of the modern forceps was their own Flemish physician, Jean Palfyn. He has been honored with statues and coins in both Belgium and France.

The last of the Chamberlens in this story was Hugh the Younger, the son of Hugh the Elder, a well-known obstetrician who began to get pangs of guilt and probably towards the end of his career actively pushed for the exposure of the secret. He was a friend and recipient of a great deal of patronage from the Duke of Buckingham, arguably one of the most powerful men in England. He later had an intimate relationship with the duchess when the duke passed away, and the duchess persuaded her son to put up a statue or monument to Hugh the Younger, which still stands today in Westminster Abbey. He is the only Chamberlen who has ever been honored so historically, and he helped to finally release the secret into the public domain. I have seen a few references that said that he did this around 1730, which is interesting because he died in 1728. But the fact remains that he did do it, and models derived from the Chamberlen instrument finally began to appear gradually in the late 1720s and into the 1730s in both England and in Scotland.

It is even argued who really showed the first illustration, whether it was Chapman in 1733 or Hody in 1734, but part of the secret remained, because not everyone could avail themselves of the forceps or had read these journals or even heard of them and the fact that there was also by this time some growing controversy about the forceps, as seen here in this speech to the Paris Academy by a Dr. De la Motte around this time. He declared that a pair of forceps could never be used successfully in a living woman, but echoing Mauriceau, hedging his bet, also declared that if anyone could invent a successful instrument like that and keep it a secret for his own profit, he deserves to be availed of this rather unhappy fate.

And so before we pass along to the next chapter of this story, some final thoughts about the Chamberlens. Obviously, as history shows, the success of successful forceps delivery was not solely dependent on possession of the instruments. It is clear that the Chamberlens also developed a very important skill set that was passed down to their progeny through the generations, and this made them even more successful than subsequent forceps users who wrestled with forceps for another hundred years or so until there were some advancements in the use of the forceps.

So the next century belongs to this man, William Smellie, from Lanark in Scotland. He was a man who practiced medicine before getting a license but later did enroll at the University of Glasgow and received an M.D. degree in 1745. After training in obstetrics in London and Paris,

he opened a practice in London and also opened a very important teaching practice. He ministered to the poor, and his students became wealthy and famous, as you will see. He died a poor man, but he was a great innovator, and except for one possible black splotch on his life, which we will visit soon, he was one of the inventors of the curved forceps and he invented manikins for instruction, etc. He was a Renaissance man. He is believed to have painted this portrait of himself.

This is a wooden forceps that Smellie invented and were typical of the forceps in use during this twenty years in the early eighteenth century. Smellie first involved professional physicians in midwifery. He said that it was okay for people with medical licenses to deliver babies. He is known to medical history as the inventor of the long obstetrics forceps which were used on Queen Charlotte by the Scottish founder of modern obstetrics, William Hunter, whose brother, John Hunter, was the father of scientific surgery. The Hunters were both Scotsmen, also from the Lanark area, and when they came to London they lived with Smellie and were taught by Smellie and became among his most famous disciples. Smellie also had other pursuits, as you can see here. Smellie was one of the first to accurately describe how the forceps should be used, because people had a habit of shoving the forceps way up inside to get them around the hips of the fetus, and this caused enormous destruction to the uterus and to the woman. There was no pelvic curvature—notice there's no curve; these are straight forceps—until Smellie and Levret and others invented the pelvic curvature.

This just shows a certificate of attendance at one of Smellie's lectures in 1737. He was a great teacher, and that is what he strove for. He ministered to the poor, and he taught the next generations. He is still revered in Scottish medical history. This is his tomb back in Lanark, which is tended to by the state.

This is one of his pupils, John Hunter, the father of modern surgery. You can see in the background, barely, the skeleton of the Irish Giant, Charles Byrne, who was studied by doctors at that time. This is the Hunterian Collections at the Royal College. This is the same skeleton of the Irish Giant. This is Hunter's bust.

But the one we are really interested in is his brother, William Hunter, who was an anatomist and physician. And if Smellie was the father of modern midwifery, he is the father of modern obstetrics and gynecology. He also, importantly, was a teacher of his brother, who became more famous but depended a lot in his career on William. It was said of him that, "He never married, he had no country house, he looks, in his portraits, as a fastidious, fine gentleman; but he worked till he dropped and he lectured when he was dying." Though mentioned prominently in the history of the forceps story, Hunter kept a pair of rusty forceps in his office and often boasted that he had never used them, which of course was not quite true because he used them on Queen Charlotte, the wife of King George III.

On the dark side, we look at some of these people. They are giants in our history. We celebrate their lives as physicians because we are physicians. But I came across this amazing article that was in the *Observer* just recently that I read a few months back. It is well known that many of the leading physicians of the era engaged in grave robbing. It has been further suggested, however, that Hunter, his brother John, and his former tutor Smellie were all involved with either commissioning outright murder or showing blind disregard for how corpses had been obtained for their study. The supporting evidence for this theory includes the large number of pregnant corpses Hunter was able to obtain for study in a relatively short time. He published an atlas in a short time which showed almost a week-by-week development of the fetus. Where would he serendipitously get all these pregnant dead patients? And so the author of that article posits that he murdered them or had them murdered. And why did people do strange things like that? It is said it was an endless struggle to gain a foothold in obstetrics, trying to gain a foothold in medicine, trying to fend off the counterattacks of female midwives and non-accepting physicians, which led them possibly to take extraordinary measures.

Here is a picture of Hunter himself examining a patient behind a curtain, because there were a lot of prohibitions to the activities of the obstetricians. “Not til after a strenuous fight with the midwife was it customary for the obstetrician to be present at confinements.” And again, they got away with this because attitudes about women were frequently extremely negative in those days.

This is just a coincidence, another William Smellie not related to our William Smellie, or not closely related, another Scotsman who was a famous encyclopedist. He was the editor of the most famous encyclopedia of the day. His article on women had but four words. But before you get your hackles up over this disregard for the female side, remember that attitudes about physicians were scarcely any better.

This is Lawrence Sterne, the Irish writer. He wrote the famous British novel *Tristram Shandy*. In there is a Dr. Slop, one of his characters. It was modeled after Sterne’s uncle, John Burton. Slop was voted one of the “Ten Best Bad Doctors” in literature. Dr. Slop is missing three front teeth from tugging so hard on the forceps that he pulled them straight into his mouth. It is said he is modeled after Burton. Burton did not knock his teeth out, but he crushed his nose with a forceps delivery.

Here is a broadside that attacks Smellie himself, despite all his good works—minus the bit with the corpses—that was against the use of his wooden forceps.

And despite all of this, the early to mid 1700s saw major breakthroughs in the development of obstetrical forceps. The French finally came out with a forceps with a joint to them that allowed for easier application and fixing of the forceps around the fetal skull. And then Andre Levret in

Paris published the first great treatise on female anatomy in which he described the planes of the anatomy and then came up with the pelvic curve for the forceps to improve safety and to protect the woman's anatomy. His work is well known in England. Smellie, in his book *A Treatise on the Theory and Practice of Midwifery*, mentioned Levret's work on the anatomy of the female published in 1751. And so the forceps got its pelvic curvature, and this allowed it to become a common obstetrical instrument for almost the next two centuries, almost up to today. Following Levret's accurate description of the pelvic planes, Smellie and Pugh and Levret himself came up with these instruments with the cephalic and pelvic curves, which increased safety for both mother and child. Here is the cephalic curve; that goes around the head of the baby. Here is the pelvic curve, and that accounts for the anatomy of the woman. Levret hedged his bet a bit. Here is a perforator. You just unscrew the grip, and if the baby died anyway, he started puncturing away at its head to facilitate delivery of the dead baby. It is sort of weird. Pugh actually predated Levret's invention or discovery of the pelvic curvature, but he never published, so Levret gets most of the credit for it. Smellie also invented a forceps with both pelvic and cephalic curves.

Forceps have never been without their detractors. Remember they were always attacked, their use was attacked, and because they were in the hands of a lot of incompetent physicians, they led to a lot of catastrophic outcomes. And so this led to an open warfare between defenders and opponents of the use of forceps, and this spilled over into the next century and spilled over into the Americas. This is Samuel Bard, who authored the first American obstetrical textbook. He never even mentioned forceps in his first two editions. And then came this astounding paragraph by one of our forebears, Isaac Taylor. "I have never seen any bad results with the application of forceps where the *os uteri* is only dilated to the size of a five cent piece or seven eighths of an inch... The introduction is perfectly feasible. I would as soon introduce the thin, narrow bladed forceps in such a case as when the head is in the pelvic cavity with a small, contracted vulval orifice. The introduction of the forceps through this small orifice need create no astonishment, as this is but a minor circumstance... The forceps stimulates the uterus to more perfect action." This would kill probably 102 percent of all women he used it on. How he wrote that and what he was thinking, I can not imagine, but that is the way it was.

So the fight between the conservatists, as they were called in those days, and the interventionists carried on into the nineteenth century and probably ended with the "Triple Obstetrical Tragedy." This is Thomas Denman, the leading British midwife of the late eighteenth and early nineteenth century. He was an opponent of the forceps to the degree that he championed that if you had a large baby you should rupture the membranes and induce premature labor to get the baby out and not have to use forceps. He was a leading conservatist. He had a son who was a well-known doctor, and he had twin daughters that were married to very famous physicians, Richard Croft and Matthew Baillie. In 1816, Princess Charlotte of Wales, the heiress to the throne of England, became pregnant. She miscarried, and then shortly after that at the end of 1816, in February of 1817 she became pregnant again. She was the granddaughter of the reigning King George III. He

was our king of the American Revolution. She was the only child and therefore the heir of the future King George IV, who was at that time the Prince of Wales. She was the wife of this dashing chap, Prince Leopold of Saxe-Coburg-Saalfeld. He was a central European who was a very dashing cavalry officer and was a general in the Russian cavalry. They were a much beloved couple. As I was reading about them, you can almost imagine they had the same popularity as William and Kate these days. They were very beloved of the country, and they looked forward to her delivering what would be an heir to the throne when she passed on. In attendance to her were Sir Richard Croft and Matthew Baillie, the sons-in-law of Denman. Croft was a physician and a male midwife, and he was the personal physician of King George III. Matthew Baillie was her personal physician, but at this point in time he was primarily practicing pathology. And then the third was John Sims, who was primarily at this stage of his life a botanist. Baillie was the nephew of Hunter and the son-in-law of Denman, who were both violent opponents of the use of forceps. The tragedy played out here in Claremont Country House in County Surrey, where Prince Leopold and Princess Charlotte went as she approached her confinement. Croft was the primary *accoucheur* or midwife. Following current dogma, at least in England, he restricted her diet and exercise and bled her throughout the pregnancy. Christian Stockmar, who was the personal physician of her husband, Prince Leopold, strongly opposed all of this. Her first stage of labor lasted 26 hours. At the beginning of the second stage of labor, Croft sent for Dr. John Sims. Sims arrived about seven hours later but was never allowed to approach the patient or even see her. Her second stage of labor lasted 24 hours, so 50 hours of labor. A transverse lie had been diagnosed by Croft, but probably it was an occiput transverse, because they would not have debated forceps if she was in a transverse lie. Forceps were not used because they were mostly “out of favor” and certainly out of favor with that team. Sims agreed with not using forceps. He said it was okay for the manual removal of the placenta. She eventually delivered a nine-pound stillborn baby. Sims undertook to resuscitate the baby himself but in vain. Initially, the princess did well. She inquired after the baby, she inquired after her husband and after her father. She accepted the news with the stiff upper lip that was expected of her class. She did well. Everything looked to be progressing into the postpartum period. But then around midnight she began to get sick. She fainted, vomited, lapsed into a coma, and very quickly died. So at once the nation was deprived of her as heiress to the crown and her son as heir to the crown. The cause of death was concealed bleeding. All the physicians involved were at the funeral procession. Although the princess’s husband and father sent messages to thank Croft, Croft was distraught and unnerved by what happened. The autopsy showed that everything had been done for the best, but Croft could not overcome this tragedy, and so a few months later, he shot himself using two pistols, one for each temple. And near his body was a copy of Shakespeare’s play *Love’s Labour’s Lost*, found open to this passage: “Fair Sir, God save you! Where is the princess?”

With the “Triple Obstetrical Tragedy,” the deaths of those three, conservatism went into decline and interventionism climbed in popularity. David Davis was a proponent of forceps use. James

Simpson was a strong proponent of forceps use, and he invented a forceps in 1845 which is called the Simpson forceps and is still in use today.

Progressing into the nineteenth century, one author described the obstetricians of this period as possessed with, “an incredible ardor for inventing instruments, sometimes dangerous, often useless, but always ingenious.”

Think about your baby being delivered with this contraption, with one blade stemming into the mouth and being pulled all over the place. This was a French invention.

Here is one that hedges the bet. You have got this scoop instrument that is trying to get the baby’s head out, but built onto the forceps is this syringe which injects holy water so that you can baptize the baby *in utero*.

The “Eclectic” forceps invented in America in 1833 were a forebear of the modern forceps with a modern joint to them and both curvatures.

And this axis-traction device which was invented by Tarnier and the first real major breakthrough for over a hundred years that I used when I was in training, this traction bar was attached to the blades, and you pulled on it instead of on the forceps directly, and you got anatomical traction on both the head and the pelvis.

In this vignette, in 1892 in the brand new Sloan Maternity Hospital recently opened in New York, we see the head of the hospital delivering a woman with forceps, McLane. The resident, Tucker, is listening to the fetal monitor and the fetal heart tone. They would get together and invent the Tucker-McLane forceps which are still in use today.

So by the mid-nineteenth century, forceps were used in 1 of 167 deliveries, which was a phenomenal number, and the era of forceps was in full bloom.

And this led us into the twentieth century and to Dr. Joseph DeLee. DeLee was the outstanding obstetrician in the United States. He practiced in Chicago. He became known as the father of preventive obstetrics or prophylactic forceps, and most of that derived from a misinterpretation of what he actually said and what he actually meant. What he said in 1920 is, “We must not bring the ideals of obstetrics down to the level of the general...practitioner—we must bring the general practitioner of obstetrics up to the level of that of the specialist...For the one, watchful expectancy, for the other, prophylactic forceps.” But this term *prophylactic forceps* took hold, and women wanted forceps. They were highly sedated at that time, they could not push too well, and so the forceps delivery became very, very common.

The last modern invention was by Piper, University of Pennsylvania, in 1929, who introduced a forceps which was used on the after coming head of a breech.

So the trend towards liberal use of anesthetic and operative forceps delivery continued unabated almost into the 1980s.

By the 1990s there was a trend towards more natural childbirth, and this began to impact negatively on the use of forceps. At the same time, vacuum use increased and, paradoxically, cesarean sections increased. I just read today on the Internet it is over 50 percent in Beijing and almost over 40 percent in all of China, much more than the United States.

So today in the United States, less than five percent of vaginal births are accomplished via operative vaginal approach. That means forceps or vacuum extraction. And vacuum extraction has gained at the expense of forceps, where it is now four times as much. Forceps are less than one percent in vaginal deliveries; vacuum is a little less than four percent. These numbers are seen here. Operative intervention is holding fairly steady and vacuum fairly steady, at the expense of forceps. British forceps use in this time period declined by almost a quarter and American forceps use by almost 90 percent. In 2001 in the United States, the C-section rate was 25 percent, and people began to start recommending again, "Why don't we go back to forceps?"

So we come to the end, and what comes around goes around comes around, and we revisit Palfyn to put an end to this story. The reason I revisit Palfyn is because I would like to revisit again the issue of the morality of forceps use and the morality of making money out of it. We have these ongoing controversies now of who owns the genes, who owns the DNA, and it is an argument that has not been settled yet. Did the Chamberlens have a right to benefit from their invention? It is debatable. Here is Palfyn. We said that he went to Paris in 1720-1721. Why it took him so long to get to Paris is because of this. He could not afford a carriage. He walked from Belgium to Paris. He died as poor as a church mouse. And even though he is honored as the inventor of the modern forceps, he obviously never benefited from it. We are raised in the environment to believe—most of us anyway—that physicians should not thus benefit from their endeavors; they should benefit from their hard work and their skills and their reputations but not necessarily from major breakthroughs that they make in medicine.

So I will leave you with that. Thank you very much for your attendance and attention. If there are any questions, I would be happy to answer them.