CESAREAN SECTION--
A BRIEF HISTORY

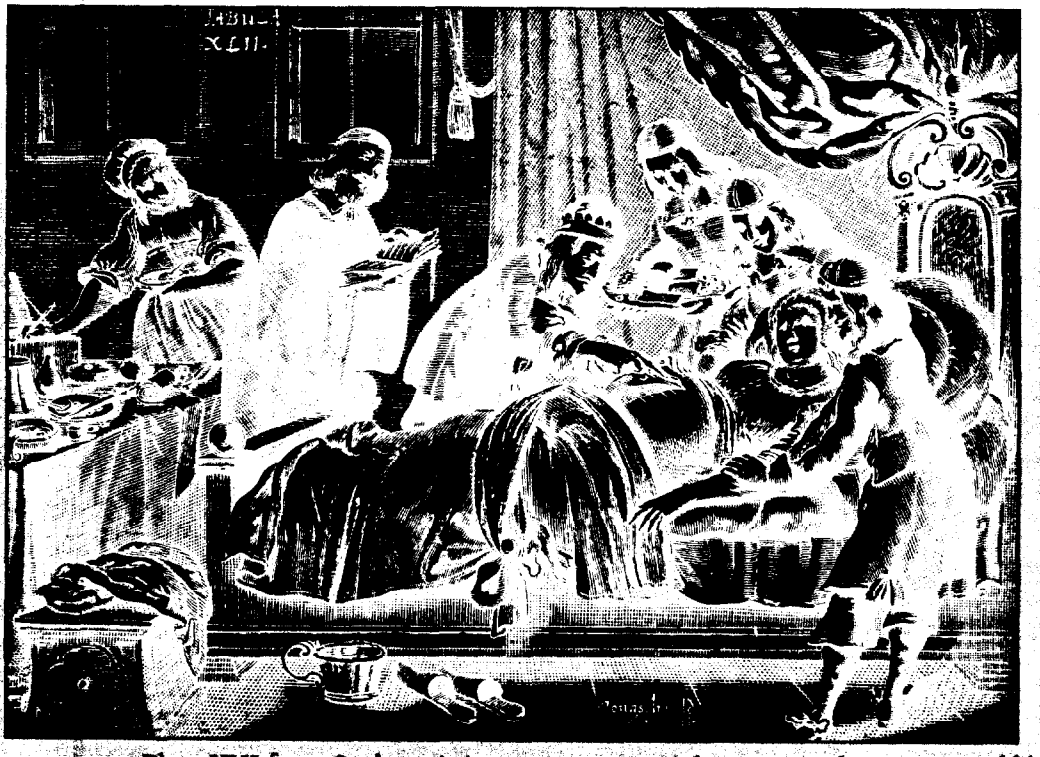

Plate XLII from Scultetus' *Armamentaerium chirurgicum bipartitum*, 1666

A Brochure to Accompany an Exhibition
on the History of Cesarean Section at the
NATIONAL LIBRARY OF MEDICINE
30 April 1993 - 31 August 1993

By Jane Eliot Sewell, Ph.D.
for The American College of Obstetricians and Gynecologists

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Front cover illustration: Plate XLII from Johannes Scultetus, Armamentaerium chirurgicum bipartitum..., 1666

Thanks to the Prints and Photographs Collection of the National Library of Medicine's History of Medicine Division for supplying most of the pictures for this brochure and the exhibit.

The
American
College of
Obstetricians and
Gynecologists

PREFACE

The American College of Obstetricians and Gynecologists is pleased to provide this booklet, intended to complement the National Library of Medicine exhibit on the History of Cesarean Section.

We extend our thanks to the staff of the History of Medicine Division - National Library of Medicine (NLM), in particular Elizabeth Tunis, Jan Lazarus of the Division's Prints and Photographs Collection, and Acting Chief Philip M. Teigen for their cooperation in preparing and in sharing this exhibit with the medical public. The exhibit contributes but one more example of the many contributions of NLM to medical learning, and to the preservation of our historical heritage.

The American College of Obstetricians and Gynecologists is an organization of over 33,000 physicians dedicated to improving the health care of all women, especially through programs of physicians and patient education, setting guidelines for practice, and evaluating medical practice. We value our partnership with NLM.

Please enjoy the exhibit.

Warren H. Pearse M.D.

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CESAREAN SECTION

A Brief History

Cesarean section has been part of human culture since ancient times and there are tales in both Western and non-Western cultures of this procedure resulting in live mothers and offspring. According to Greek mythology Apollo removed Asclepius, founder of the famous cult of religious medicine, from his mother's abdomen. Numerous references to cesarean section appear in ancient Hindu, Egyptian, Grecian, Roman, and other European folklore. Ancient Chinese etchings depict the procedure on apparently living women. The Mischnagoth and Talmud prohibited primogeniture when twins were born by cesarean section and waived the purification rituals for women delivered by surgery.

Yet, the early history of cesarean section remains shrouded in myth and is of dubious accuracy. Even the origin of "cesarean" has apparently been distorted over time. It is commonly believed to be derived from the surgical birth of Julius Caesar, however this seems unlikely since his mother Aurelia is reputed to have lived to hear of her son's invasion of Britain. At that time the procedure was performed only when the

The extraction of Asclepius from the abdomen of his mother Coronis by his father Apollo.
Woodcut from the 1549 edition of Alessandro Beneditti's *De Re Medica.*

mother was dead or dying, as an attempt to save the child for a state wishing to increase its population. Roman law under Caesar decreed that all women who were so fated by childbirth must be cut open; hence, cesarean. Other possible Latin origins include the verb "caedare," meaning to cut, and the term "caesones" that was applied to infants born by postmortem operations. Ultimately, though, we cannot be sure of where or when the term cesarean was derived. Until the sixteenth and seventeenth centuries the procedure was known as cesarean operation. This began to change following the publication in 1598 of Jacques Guillimeau's book on midwifery in which he introduced the term "section." Increasingly thereafter "section" replaced "operation."

One of the earliest printed illustrations of Cesarean section. Purportedly the birth of Julius Caesar. A live infant being surgically removed from a dead woman. From Suetonius' *Lives of the Twelve Caesars*, 1506 woodcut.

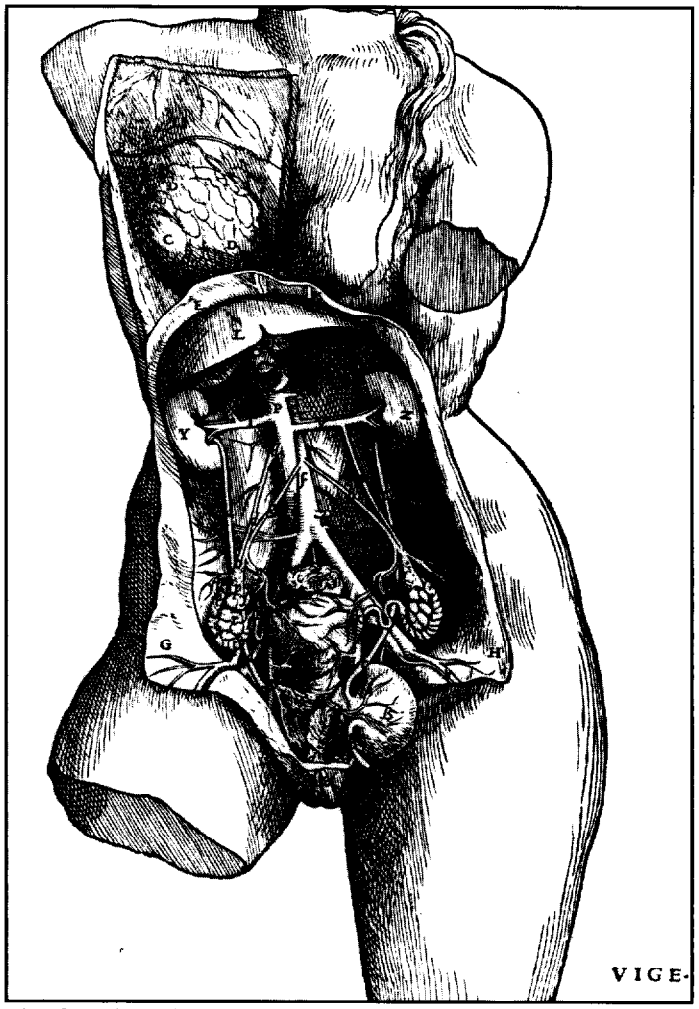
During its evolution cesarean section has meant different things to different people at different times. The indications for it have changed dramatically from ancient to modern times. Despite rare references to the operation on living women, the initial purpose was essentially to retrieve the infant from a dead or dying mother; this was conducted either in the rather vain hope of saving the baby's life, or as commonly required by religious edicts, so the infant might be buried separately from the mother. Above all it was a measure of last resort, and the operation was not intended to preserve the mother's life. It was not until the nineteenth century that such a possibility really came within the grasp of the medical profession.

There were, though, sporadic early reports of heroic efforts to save women's lives. While the Middle Ages have been largely viewed as a period of stagnation in science and medicine, some of the stories of cesarean section actually helped to develop and sustain hopes that the operation could ultimately be accomplished. Perhaps the first written record we have of a mother and baby surviving a cesarean section comes from Switzerland in 1500 when a sow gelder, Jacob Nufer, performed the operation on his wife. After several days in labor and help from thirteen midwives, the woman was unable to deliver her baby. Her desperate husband eventually gained permission from the local authorities to attempt a cesarean. The mother lived and subsequently gave birth normally to five children, including twins. The cesarean baby lived to be 77 years old. Since this story was not recorded until 82 years later historians question its accuracy. Similar skepticism might be applied to other early reports of abdominal delivery — those performed by women on themselves and births resulting from attacks by horned livestock, during which the peritoneal cavity was ripped open.

Cesarean section performed on a living woman by a femalem practitioner. Miniature from a fourteenth-century "Historie Ancienne."

The history of cesarean section can be understood best in the broader context of the history of childbirth and general medicine — histories that also have been characterized by dramatic changes. Many of the earliest successful cesarean sections took place in remote rural areas lacking in medical staff and facilities. In the absence of strong medical communities, operations could be carried out without professional consultation. This meant that cesareans could be undertaken at an earlier stage in failing labor when the mother was not near death and the fetus was less distressed. Under these circumstances the chances of one or both surviving were greater. These operations were performed on kitchen tables and beds, without access to hospital facilities, and this was probably an advantage until the late nineteenth century. Surgery in hospitals was bedeviled by infections passed between patients, often by the unclean hands of medical attendants. These factors may help to explain such successes as Jacob Nufer's.

By dint of his work in animal husbandry, Nufer also possessed a modicum of anatomical knowledge. One of the first steps in performing any operation is understanding the organs and tissues involved, knowledge that was scarcely obtainable until the modern era. During the sixteenth and seventeenth centuries with the blossoming of the Renaissance, numerous works illustrated human anatomy in detail. Andreas Vesalius's monumental general anatomical text *De Corporis Humani Fabrica*, for example, published in 1543, depicts normal female genital and abdominal structures. In the eighteenth and early nineteenth centuries anatomists and surgeons substantially extended their knowledge of the normal and pathological anatomy of the human body. By the later 1800s, greater access to human cadavers and changing



The female pelvic anatomy. From Vesalius's *De Corporis Humani Fabrica*, 1543.

emphases in medical education permitted medical students to learn anatomy through personal dissection. This practical experience improved their understanding and better prepared them to undertake operations.

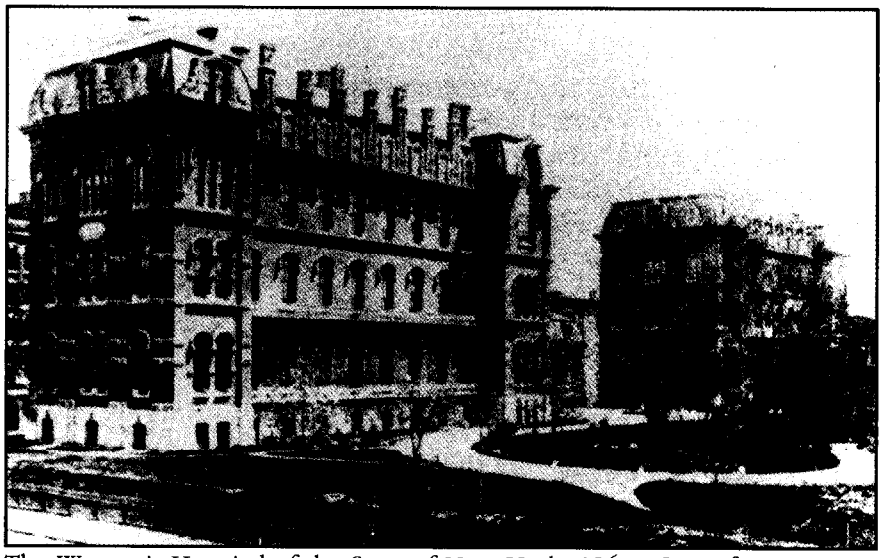
At the time, of course, this new type of medical education was still only available to men. With gathering momentum since the seventeenth century, female attendants had been demoted in the childbirth arena. In the early 1600s, the Chamberlen clan in England introduced obstetrical forceps to pull from the birth canal fetuses that otherwise might have been destroyed. Men's claims to authority over such instruments assisted them in establishing professional control over childbirth. Over the next three centuries or more, the male-midwife and obstetrician gradually wrested that control from the female midwife, thus diminishing her role.

In Western society women for the most part were barred from carrying out cesarean sections until the late nineteenth century, because they were largely denied admission to medical schools. The first recorded successful cesarean in the British Empire, however, was conducted by a woman. Sometime between 1815 and 1821, James Miranda Stuart Barry performed the operation while masquerading as a man and serving as a physician to the British army in South Africa.

While Barry applied Western surgical techniques, nineteenth-century travelers in Africa reported instances of indigenous people successfully carrying out the procedure with their own medical practices. In 1879, for example, one British traveller, R.W. Felkin, witnessed cesarean section performed by Ugandans. The healer used banana wine to semi-intoxicate the woman and to cleanse his hands and her abdomen prior to surgery. He used a midline incision and applied cautery to minimize hemorrhaging. He massaged the uterus to make it contract but did not suture it; the abdominal wound was pinned with iron needles and dressed with a paste prepared from roots. The patient recovered well, and Felkin concluded that this technique was well-developed and had clearly been employed for a long time. Similar reports come from Rwanda, where botanical preparations were also used to anesthetize the patient and promote wound healing.

Successful Cesarean section performed by indigenous healers in Kahura, Uganda. As observed by R.W. Felkin in 1879.

While many of the earliest reports of cesarean section issue from remote parts of Europe and the United States and from places far removed from the latest developments in Western medicine, it was only with increased urbanization and the growth of hospitals that the operation began to be performed routinely. Most rural births continued to be attended by midwives in the late nineteenth and early twentieth centuries, but in the cities obstetrics — a hospital-based specialty — squeezed out midwifery. In urban centers large numbers of uprooted working class women gave birth in hospitals because they could not rely on the support of family and friends, as they could in the countryside. It was in these hospitals, where doctors treated many patients with similar conditions, that new obstetrical and surgical skills began to be developed.



The Woman's Hospital of the State of New York, 1867. One of America's first large hospitals for the diseases of women.

Special hospitals for women sprang up throughout the United States and Europe in the second half of the nineteenth century. Reflecting that period's budding medical interest in the sexuality and the diseases of women, these institutions nurtured the emerging specialties and provided new opportunities for medical practitioners, as well as new treatments for patients. Specialties such as neurology and psychiatry centered on mental and nervous disorders and obstetrics and gynecology centered on the functions and disorders of the female reproductive tract.

As a serious abdominal operation, the development of cesarean section both sustained and reflected changes within general surgery. In the early 1800s, when surgery still relied on age-old techniques, its practitioners were dreaded and viewed by the public as little better than barbers, butchers, and tooth pullers. Although many surgeons possessed the anatomical knowledge and the courage to perform serious procedures they had been limited by the patient's pain and the problems of infection. Well into the 1800s surgery continued to be barbarous and the best operators were known for the speed with which they could amputate a limb or suture a wound.

During the nineteenth century, however, surgery was transformed — both technically and professionally. A new era in surgical practice began in 1846 at Massachusetts General Hospital when dentist William T.G. Morton used diethyl ether while removing a facial tumor. This medical application of anesthesia rapidly spread to Europe. In obstetrics, though, there was opposition to its

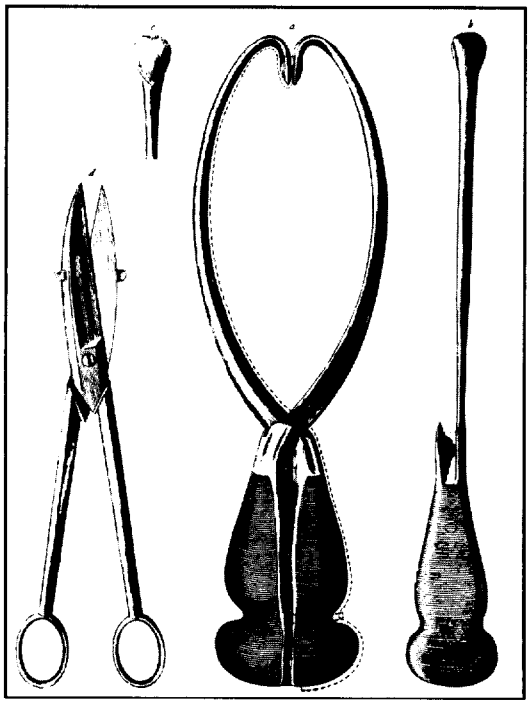
A Cesarean patient prior to dressing the wound, 1822.

use based on the biblical injunction that women should sorrow to bring forth children in atonement for Eve's sin. This argument was substantially demolished when the head of the Church of England, Queen Victoria, had chloroform administered for the births of two of her children (Leopold in 1853 and Beatrice in 1857). Subsequently, anesthesia in childbirth became popular among the wealthy and practical in cases of cesarean section.

By the century's close, a wide range of technological innovations had enabled surgeons to revolutionize their practice and to professionalize their position. Anesthetics permitted surgeons to take the time to operate with precision, to cleanse the peritoneal cavity, to record the details of their procedures, and to learn from their experiences. Women were spared the agony of operations and were less susceptible to shock, which had been a leading cause of post-operative mortality and morbidity.

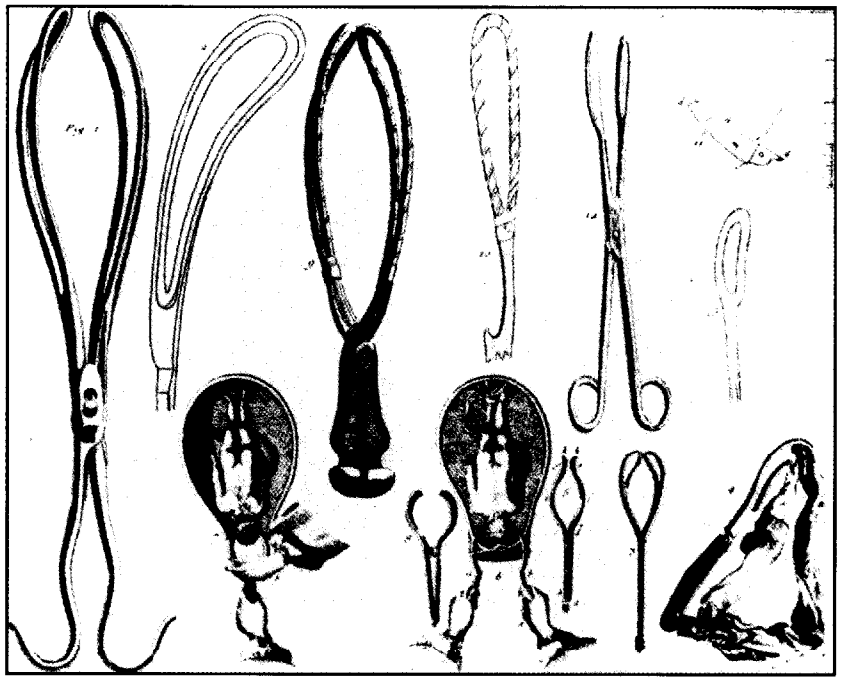
As many doctors discovered, anesthesia allowed them to replace craniotomy with cesarean section. Craniotomy had been practiced for hundreds, perhaps even thousands, of years. This unhappy procedure involved the destruction (by instruments such as the crotchet) of the fetal skull and the piecemeal extraction of the entire fetus from the vagina. Although this was a gruesome operation, it entailed far lower risk to the mother than attempts to remove the fetus through an abdominal incision.

While obstetrical forceps helped to remove the fetus in some cases, they had limitations. They undoubtedly saved the lives of some babies who would otherwise have suffered craniotomy, but even when the mother's life was saved, she might well suffer severely for the rest of her life from tears in the vaginal wall and perineum. The low forceps that are still commonly used today could cause vaginal tears, but they were less likely to do so than the high forceps that in the nineteenth century were too frequently employed. Inserted deep into the pelvis in cases of protracted labor, these instruments were associated with high levels of fetal damage, infection, and serious lacerations to the woman. Dangerous as it was, cesarean section may have seemed preferable in some instances when the fetus was trapped high in the pelvis. Where severe pelvic distortion or contraction existed, neither craniotomy nor obstetrical forceps were of any avail, and then cesarean section was probably the only hope.



Destructive scissors and crotchets. From William Smellie's *A Sett of Anatomical Tables*, 1754.

Craniotomy. Perforation of the skull, removal of cranial contents, and extraction of the collapsed skull.

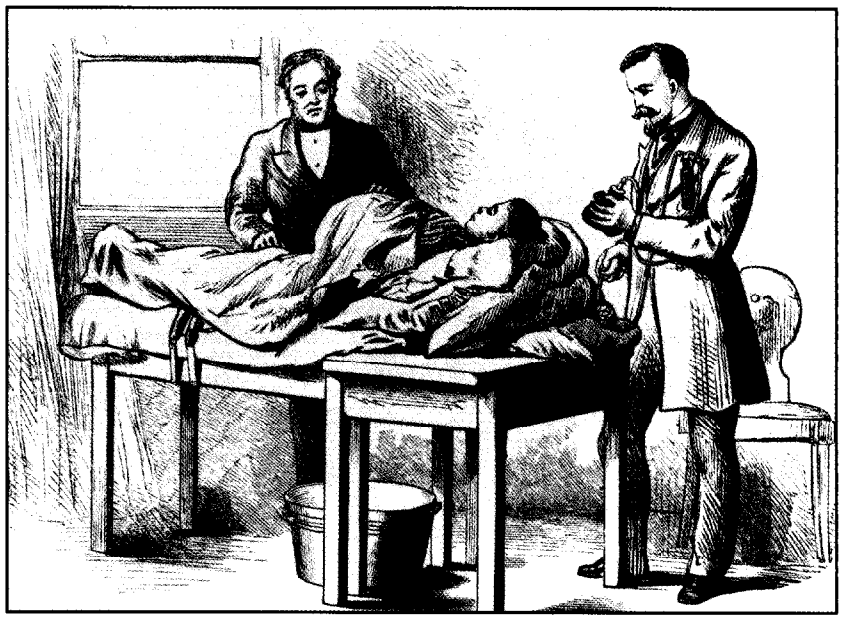


Obstetrical forceps. Eighteenth century, French.

While doctors and patients alike were encouraged by anesthesia to resort to cesarean section rather than craniotomy, mortality rates for the operation remained high, with the infections septicemia and peritonitis accounting for a large percentage of post-operative deaths. Prior to the establishment of the germ theory of disease and the birth of modern bacteriology in the second half of the nineteenth century, surgeons wore their street clothes to operate and washed their hands infrequently while passing from one patient to another. In the mid-1860s, the British surgeon Joseph Lister introduced an antiseptic method using carbolic acid, and many operators adopted some part of his antisepsis. Others, however, were concerned about its corrosive- ness and experimented with various aseptic measures that emphasized cleanliness. By the end of the century antisepsis and asepsis gradually were making inroads into the problems of surgical infections.

Unfortunately, surgical techniques of that day also contributed to the appallingly high maternal mortality rates. According to one estimate not a single woman survived cesarean section in Paris between 1787 and 1876. Surgeons were afraid to suture the uterine incision because they thought internal stitches, which could not be removed, might set up infections and cause uterine rupture in subsequent pregnancies. They believed the muscles of the uterus would contract and close spontaneously. Such was not the case. As a result some women died of blood loss — more from infection.

Once anesthesia, antisepsis, and asepsis were firmly established obstetricians were able to concentrate on improving the techniques employed in cesarean section. As early as 1876, Italian professor Eduardo Porro had advocated hysterectomy in concurrence with cesareans to control uterine hemorrhage and prevent systemic



Abdominal surgery to remove diseased ovarian tissue (ovariotomy). Surgeon and anesthesiologist in street clothes. From Thomas Spencer Wells, *Diseases of the Ovaries*, 1872.

infection. This enabled him to reduce the incidence of post-operative sepsis. But his mutilating elaboration on cesarean section was soon obviated by the employment of uterine sutures. In 1882, Max Sänger, of Leipzig, made such a strong case for uterine sutures that surgeons began to change their practice. Sänger's monograph was based largely on the experience of U.S. healers (surgeons and empirics) who had used internal sutures. The silver wire stitches he recommended were themselves new, having been developed by America's premier nineteenth-century gynecologist J. Marion Sims. Sims had invented his sutures to treat the vaginal tears (fistulas) that resulted from traumatic childbirth.

J. Marion Sims repairing a vesico-vaginal fistula with silver wire sutures. 1870.

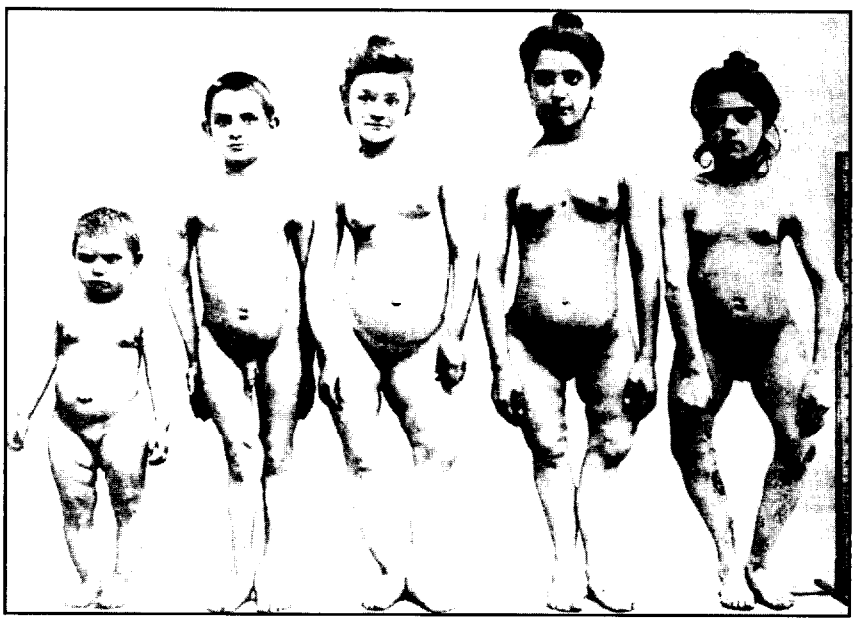
As cesarean section became safer, obstetricians increasingly argued against delaying surgery. Rather than waiting for many hours of unsuccessful labor, doctors such as Robert Harris in the United States, Thomas Radford in England, and Franz von Winckel in Germany opted for an early resort to the operation in order to improve the outcome. If the woman was not in a state of collapse when taken to surgery her recovery would be more certain, they claimed. This was an argument sweeping through the general surgical community and one that resulted in greater numbers of operations on an expanding patient population. In obstetrical surgery the new approach also assisted in reducing maternal and perinatal infant mortality rates.

As surgeons' confidence in the outcome of their procedures increased, they turned their attention to other issues, including where to incise the uterus. Between 1880 and 1925, obstetricians experimented with transverse incisions in the lower segment of the uterus. This refinement reduced the risk of infection and of subsequent uterine rupture in pregnancy. A further modification — vaginal cesarean section — helped avoid peritonitis in patients who were already suffering from certain infections. The need for that form of section, however, was virtually eliminated in the post World War II period by the development of modern antibiotics. Penicillin was discovered by Alexander Fleming in 1928 and, after it was purified as a drug in 1940, became generally available and dramatically reduced maternal mortality for both normal and cesarean section births. Meanwhile, the low cervical cesarean section, advocated in the early twentieth century by the British obstetrician Munro Kerr, had become popular. Promulgated by Joseph B. DeLee and Alfred C. Beck in the United States, this technique reduced the rates of infection and of uterine rupture and is still the operation of preference.

In addition to surgical advances, the development of cesarean section was influenced by the continued growth in number of hospitals, by significant demographic changes, and by numerous other factors — including religion. Religion has affected medicine throughout recorded history and, as noted earlier, both Jewish and Roman law helped shape early medical practice. Later, in early to mid-nineteenth century France, Roman Catholic religious concerns, such as removal of the infant so that it could be baptized, prompted substantial efforts to pioneer cesarean section, efforts launched by some of the

country's leading surgeons. Protestant Britain avoided cesarean section during the same period, even though surgeons were experimenting with other forms of abdominal procedures (mainly ovarian operations). British obstetricians were far more inclined to consider the mother primarily and, with cesarean section maternal mortality over fifty percent, they usually opted for craniotomy.

As the rate of urbanization rapidly increased in Britain, throughout Europe, and the United States there arose at the turn of the century an increased need for cesareans. Cut off from agricultural produce and exposed to little sunlight, city children experienced a sharply elevated rate of the nutritional disease rickets. In women where improper bone growth had resulted, malformed pelvises often prohibited normal delivery. As a result the rate of cesarean section went up markedly. By the 1930s, when safe milk became readily available in schools and clinics in much of the United States and Europe, improper bone growth became less of a problem. Yet, many in the medical profession were slow to respond to the decreased need for surgical delivery. After World War II, in fact, the cesarean section rate never returned to the low levels experienced before rickets became a large-scale malady, despite considerable criticism of the too frequent resort to surgery.



A family with rickets. Paris, 1900.

The safe milk movement was a measure of preventive medicine promoted by public health reformers in the United States and abroad. These reformers worked with governments to improve many aspects of maternal and infant health. Yet while more and more women received prenatal attention — indeed more than ever before — surgical intervention continued to rise. So too did the involvement of state and federal governments in financing and overseeing maternal and fetal care. Accompanying these trends was a tendency over the past half century for the status of the fetus increasingly to be given center stage.

Since 1940, the trend toward medically managed pregnancy and childbirth has steadily accelerated. Many new hospitals were built in which women gave birth and in which obstetrical operations were performed. By 1938, approximately half of U.S. births were taking place in hospitals. By 1955, this had risen to ninety-nine percent.

During that same period medical research flourished and technology was greatly expanded in scope and application. Advances in anesthesia contributed to improving the safety and the experience of cesarean section. In numerous countries, including the United States, spinal or epidural anesthesia is used to alleviate pain in normal childbirth. It has also largely replaced general anesthesia in cesarean deliveries, permitting women to remain conscious during surgery. It results in better outcomes for mothers and babies and facilitates immediate contact and bonding to occur.

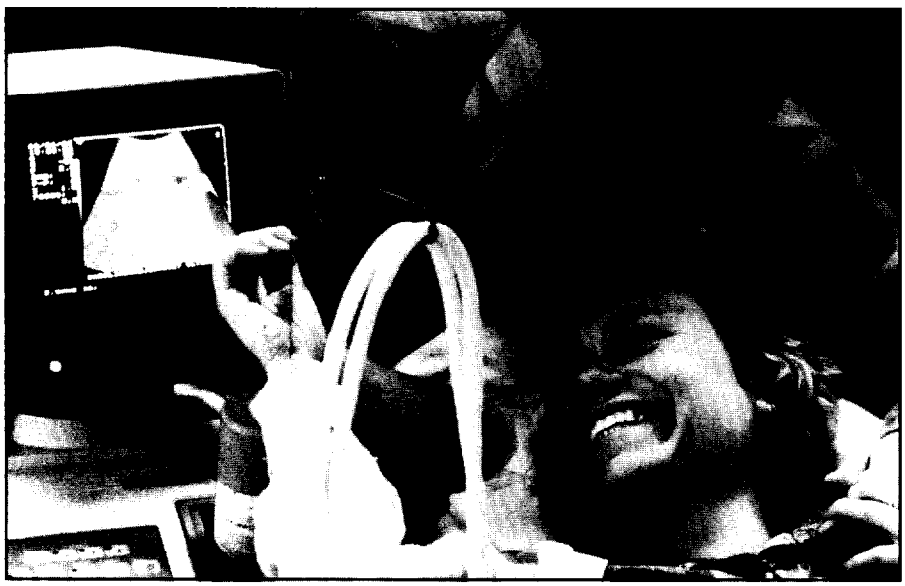
These days, too, fathers are able to make that important early contact and support their partners during both normal and cesarean births. When childbirth was moved from homes to hospitals fathers were initially removed from the birthing scene and this distancing became even more complete in relation to surgical delivery. But, the use of conscious anesthesia and the increased ability to maintain an antiseptic

and antibiotic field during operations allowed fathers to be present during cesarean section. Meanwhile, changes in gender relations were altering the involvement of many fathers in pregnancy, childbirth, and parenting. The modern father participates in childbirth classes and seeks a prominent role in birthing — normal and cesarean.

Currently in the United States slightly more than one in seven women experiences complications during labor and delivery that are due to conditions existing prior to pregnancy; these include diabetes, pelvic abnormalities, hypertension, and infectious diseases. In addition, a variety of pathological conditions that develop during pregnancy (such as eclampsia and placenta praevia) are indications for surgical delivery. These problems can be life-threatening for both mother and baby, and in approximately forty percent of such cases cesarean section provides the safest solution. In the United States almost one quarter of all babies are now delivered by cesarean section — approximately 982,000 babies in 1990. In 1970, the cesarean section rate was about 5%; by 1988, it had peaked at 24.7%. In 1990, it had decreased slightly to 23.5%, primarily because more women were attempting vaginal births after cesarean deliveries.

How can we explain this dramatic increase? It certainly far exceeds any rise in the birth rate, which went up by only 2% between 1970 and 1987. In fact there were several factors that contributed to the rapid rise in cesarean sections. Some of the factors were technological, some cultural, some professional, others legal. The growth in malpractice suits no doubt promoted surgical intervention, but there were many other influences at work.

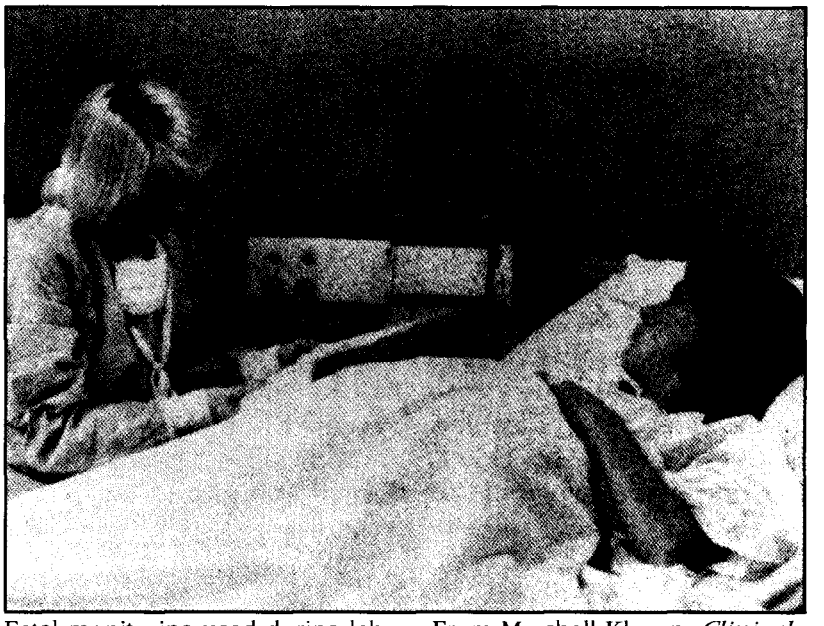
While the operation historically has been performed largely to protect the health of the mother, more recently the health of the fetus has played a larger role in decisions to go to surgery. Hormonal pregnancy tests — tests that confirm fetal existence — have been available since the 1940's. The fetal skeleton could be seen using X-rays, but, the long-term hazards of radiation prompted researchers to seek other imaging technology. The answer in the post-war era came from wartime technology. Ultrasound, or sonar equipment that had been developed to detect submarines, became the springboard for soft tissue ultrasonography in the late 1940's and early 1950's. Ultrasound made it possible to measure fetal growth and fetal skull width in relation to the mother's pelvic dimensions and now has become a routine diagnostic device. While this type of visualization provided medical



First sight of the fetus by ultrasound. From Lennart Nilsson, *A Child is Born*, Dell Publishing Co., 1990.

personnel with valuable information, it also influenced attitudes toward the fetus. When the fetus could be visualized and its sex and chromosomal makeup determined through this and other more modern tests such as amniocentesis and chorionic villus sampling, it became more of a person. Indeed, many fetuses were named months before birth.

The fetus then has become a patient. Today it can even be surgically and pharmaceutically treated in utero. This changes the emotional and financial investment both medical practitioners and expectant parents have in a fetus. This is even more pronounced after the commencement of labor when the fetus increasingly becomes the primary patient. Since the advent of heart monitors in the early 1970's, fetal monitoring tracks fetal heart rate and indicates any signs of distress. As a result of the ability to detect signs of fetal distress, many cesarean sections are swiftly undertaken to prevent such serious problems as brain damage due to oxygen deficiency.



Fetal monitoring used during labor. From Marshall Klavan, *Clinical concepts of fetal heart rate monitoring*, Hewlett-Packard, 1977.

With these innovations came criticism. Fetal monitoring as well as numerous other antenatal diagnostics have been faulted in recent years by some of the lay public and members of the medical profession. The American College of Obstetricians and Gynecologists and similar organizations in several other countries have been working to reduce some of the reliance on high-cost and high-tech features of childbirth and to encourage women to attempt normal delivery whenever possible.

The trend toward hospital births, including cesarean section, has been challenged. Since 1940, the experience of giving birth has become safer and less frightening, and many women have come to view that experience more positively. Thus was spawned the natural childbirth movement, a development fueled by the modern feminist movement, which has urged women to take greater responsibility for their own bodies and health care. The soaring cesarean section rate of the past two decades has also been questioned by lay people. Consumer advocacy organizations and women's groups have been working to reduce what they see as unnecessary surgery. Some doctors have for many years expressed doubts about the rates of cesarean section. Recently many medical practitioners have responded to this situation and have begun to work with lay organizations to encourage more women to undertake normal delivery.

These efforts seem to be having some effect. Despite the recent increase in cesarean section rates there appears to be a leveling off — the figure for 1988 was almost identical to that for 1987. Perhaps one of the most important factors is the changing opinion toward the formula "once a cesarean section, always a cesarean section." This expression embodied the notion that once a woman had a cesarean she would require surgery for all subsequent deliveries. This was, apparently, the cause of the greatest increase in cesarean sections between 1980 and 1985. But many women were deeply concerned about that edict and the morbidity following major surgery. They organized vaginal-birth-after-cesarean groups to encourage normal births subsequent to surgery. Soaring health care costs have also contributed to efforts to avoid the more expensive cesarean births. The American College

of Obstetricians and Gynecologists responded swiftly to calls from within the organization and from the patient population and in 1982, as a standard of care, recommended a trial of labor in selected cases of prior cesarean section. In 1988, the guidelines were expanded to include more women with previous cesarean births. Consequently, there was a steady increase in vaginal births after cesarean in the late 1980's. In 1990, an estimated 90,000 women gave birth vaginally after cesarean section.

The trend in Western medicine seems now to be away from higher levels of cesarean section, and a new ten-year study by an Oxford University research team emphasizes this point. The study involved a comparison of cesarean section rates that average almost 25% in the United States and 9% in Great Britain, and suggests that the trends in the United States need to be questioned. This study indicates that, while cesarean section continues to be a procedure that saves the lives of mothers and infants and prevents disabilities, both the medical and lay communities must bear in mind that most births are normal and more births should progress without undue intervention.

As this brief history suggests, the indications for cesarean section have varied tremendously through our documented history. They have been shaped by religious, cultural, economic, professional, and technological developments — all of which have impinged on medical practice. The operation originated from attempts to save the soul, if not the life, of a fetus whose mother was dead or dying. Since ancient times, however, there have been occasional efforts to save the mother, and during the nineteenth century, systematic improvement of cesarean section techniques eventually led to lower mortality for women and their fetuses. Increasingly the operation was performed in cases where the mother's health was considered endangered, in addition to those in which her life was immediately at stake. Finally, in the late twentieth century, in mainstream Western medical society the fetus has become the primary patient once labor has commenced. As a result, we have seen in the last 30 years a marked increase in resort to surgery on the basis of fetal health indications.

Modern Cesarean section with father present. From Lennart Nilsson, *A Child is Born*, Dell Publishing Co., 1990.

While there is sound reason to believe that cesarean section has been employed too frequently in some societies during the last two or three decades, the operation clearly changes the outcome favorably for a significant percentage of women and babies. In our society now women may be afraid of the pain of childbirth, but they do not expect it to kill them. Such could not be said of many women as late as the nineteenth century. Moreover, most women now expect their babies to survive birth. These are modern assumptions and ones that cesarean section has helped to promulgate. An operation that virtually always resulted in a dead woman and dead fetus now almost always results in a living mother and baby — a transformation as significant to the women and families involved as to the medical profession.

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The National Library of Medicine has a rich collection of written works on the history of cesarean section — and numerous film and other visual sources.