A BRIEF HISTORY OF CHILDBIRTH and PAIN RELIEF IN LABOUR

Introduction The following history represents a selection of articles taken from the Internet and other sources. These are referenced at the end. They give a reasonably accurate and concise history of childbirth and should provide any prospective mother of the 21st century with a realistic perspective of the safety of childbirth. Thus, when she embarks upon her pregnancy, knowledge of the past outcomes of childbirth should instill in her an unprecedented confidence in what modern obstetric practice can offer her.

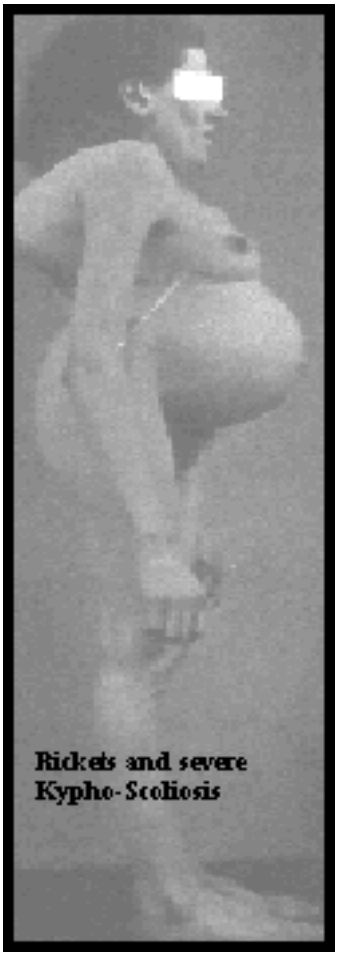
Although modern obstetric practice cannot guarantee a woman in childbirth a perfect outcome (and nor will it ever do so) the prospect in the 21st century, of acheiving a perfect outcome, is unprecedented. What will be evident from the following is that in the not so distant past, man was by and large left to the mercy of Nature and women were apprehensive about their's and their baby's outcome. With increasing knowledge in the last 200 years and in particular the last 50 years, what man has managed to achieve in modern obstetric practice is to improve on Nature's imperfections. Sadly, many women in under developed countries such as India and Africa for reasons beyond their control, do not enjoy the privileged safety of childbirth that women have come to enjoy and expect in developed countries such as Australia, America and Europe. There are an estimated 4 million neonatal deaths and 500,000 maternal deaths worldwide each year. The vast majority of these deaths occur in developing countries, where 43 percent of births are attended by traditional birth attendants, the proportion generally being higher in rural areas.

Finally, regardless of what perceptions many media outlets may convey to the Public about interventional obstetric practice, the aims of childbirth have not changed; a safe outcome for both mother and baby. This means a normal vaginal birth where possible and without intervention but within reasonable safety margins for both the mother and her baby.

Birthing Practices in Modern Times
Women can rejoice in the knowledge that there has never been a safer time to give birth to a baby than now!

With increasing knowledge in the process of childbirth, advanced monitoring systems are available to recognise problems early and deal with them before problems arise. In other words, a proactive approach to childbirth before problems arise and set in rather than a reactive one when problems have become established sometimes surreptitiously. As you will read later in this essay, much of what we know and take for granted in relation to hygiene and bacterial infection was largely unknown until the mid to late 19th century and was responsible for a large number of maternal deaths. Thus, armed with this simple knowledge now, has made birthing and operating rooms a much safer place for women. Similarly, advanced technological developments and an array of modern investigations and equipment in particular ultrasound have transformed the practice of Obstetrics and gynaecology in the last 50 years. Modern anaesthetics have come a long way from giving the mother chloroform or a bottle of whiskey for easing pain. Women for the first time in history have been empowered to decide who they want present in the delivery rooms whilst they give birth including husbands, sisters, friends, children, doulas, midwives or their parents. This is important, considering that all males were banned from delivery rooms until the mid-1900's. Women by and large are free of the many superstitions that surrounded labor and birth, such as for example the myth that whipping of male servants outside of a delivery room will speed up the birthing process!

Ancient times: **Two great curses** haunted natural childbirth from ancient times, the shrunken pelvis from severe Rickets and obstructed labour resulting from this and other causes. With urbanization and hospitalization, puerperal fever became common. Because so often mothers died in childbirth and children in infancy, attitudes and expectations towards birth and babies were different from ours. Parents expected that children would die in infancy, and death in childbirth was an expected tragedy.



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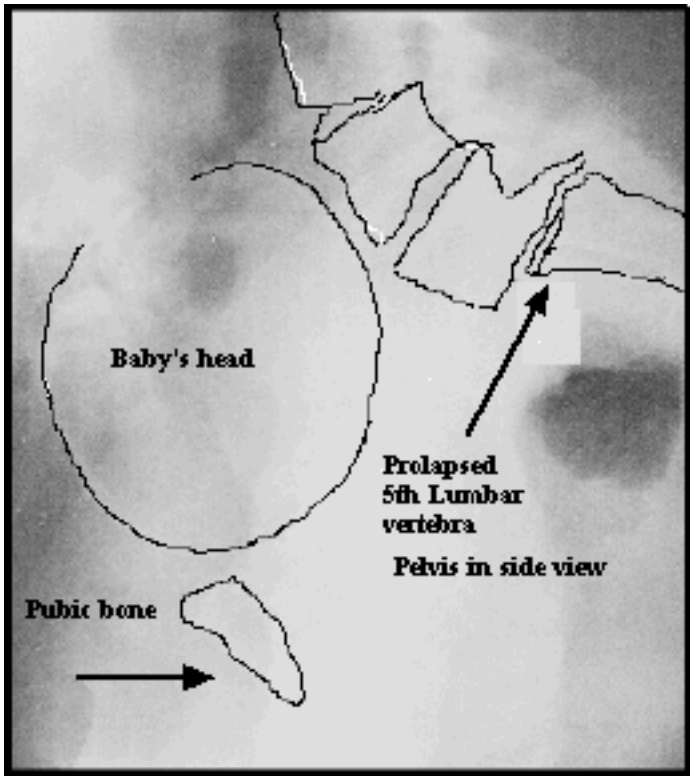


The history of childbirth has been recorded since A.D.98 when Soranus, a great Physician of the Greco-Roman Era who apparently had good baby delivering skills, wrote a text book of obstetrics that was actually used until the 16th century. During the Medieval Period (also known as the Dark Ages, approximately 500 – 1500 AD) there weren't really any records kept of obstetric practices. It has been presumed that during the Medieval Period the birthing of babies was mostly left up to midwives. It was preferred this way, as it kept the mother away from the large hospitals that were full of infections during those times.

Men were not allowed anywhere near childbirth situations. In fact, men were not allowed near birthing situations for hundreds of years. There is a story of one Doctor, Dr. Wertt of Hamburg, in 1522, who had the idea to dress up in women's clothes to gain entry to a labor room. He was discovered and was burned at the stake for his effort!

It was not really until the 1970's that fathers were allowed into birthing rooms, and at that time it was not so that they could help, they had to stand in the corner and just watch! Another record of birthing superstitions was that women were whipped to induce labor. There is record of a tale of one birthing experience where a medieval German Empress had 20 men whipped just outside of her labor room; coincidentally, she did in fact have a successful labor!

With the Renaissance and the invention of the printing press, medical knowledge was able to spread throughout the world. The first book of obstetrics was printed in English in 1544; it was called the **"Birth of Mankynde" by Thomas Raynalde.**

WHAT WAS IT LIKE TO HAVE A BABY IN THE 19TH CENTURY?

A Mother Prepares for Childbirth (Reference:Lancet Vol 359,No 9308)
This touching picture, by Thomas Dalziel (1823-1906), shows a mother contemplating the little robe prepared ready for her new baby. She stands, her dress swollen out around her, looking down at the little garment so intently that we see only the top of her mob-cap. Her home is poor, and sparsely furnished. Cracks show in the wall. Yet the preparations this mother has made for the new arrival suggest no poverty of feeling. The cradle, an old-fashioned hooded rocker, stands alongside, ready for the precious burden. A linen chest stands in the shadows, and the chest of drawers is clothed in white for a domestic shrine: a bottle and a candle flank a lace-frilled cushion, bearing the greeting "Welcome Sweet Babe", pricked out in shiny new pin-heads. Past generations echo in the old cradle and traditional greeting, while the baby's gown and the mother imply the pressure of the future. The artist shares the pathos of the woman's contemplation, pregnant with uncertainty: who shall wear this garment? Is it a christening robe, or a shroud?

From time immemorial, birth and death--for both mother and child-- were so closely related that all hopes were admixed with fear. At the time Dalziel made this sketch in the 1850s, for every 200 livebirths, one mother and 20 babies were lost. These figures are probably underestimates. Especially in times of dearth, and in the charitable lying-in/ maternity hospitals (which were often foci of epidemics of puerperal sepsis) child mortality rates were much higher. Every mother knew she risked her life giving birth, and that her child might not survive. Many women had their own shrouds ready alongside the baby clothes, and wrote notes of farewell before the onset of labour.

Women's letters and diaries revealed their fear of pregnancy and labor. They knew that the months of pregnancy would be uncomfortable at best and full of possible dangers and that labor could result in damage to a woman's health or even death. Many women had a friend, a mother, or a sister who had died in childbirth or had known the sorrow of a stillbirth or the death of a newborn. The dangers and suffering that women endured in childbirth affected other family members as well. One husband wrote: "[childbirth] is an hour of harrowing anxiety. . . . There is surely no pain like it in the world. . . . It is the rending asunder of all but soul & body. . . . What a load from the heart of a husband . . . [when] the precious life of a wife is spared."

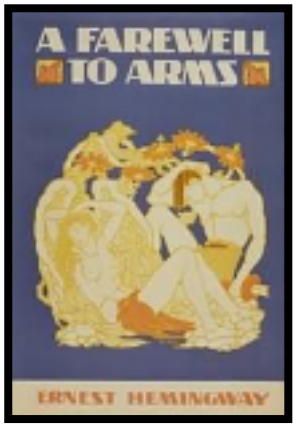
A Successful Outcome - A baby is born on a cold winter's night in the 1800's

Imagine that you are living in a small country town in Britain in the nineteenth century. The roads are unsealed, there is no running water in your home, no electricity and water and wood for heating and cooking has to be brought in from outside. Luckily winter has not yet started and it is mid afternoon when your waters break. Your husband has just arrived home from work and he immediately goes out again and summons the midwife and the god-sibs (or gossips as they were known then and from where the modern term "gossip" derives) who are going to assist his wife in the birthing.[1] There are no drugs or medicines for pain relief, or any of the modern comforts that we take for granted! You are shivering with cold in the light of a shortening candle, as another long, painful and hard contraction starts. Having summonsed your assistants, your husband is nowhere to be seen as it was unheard of for men (even if they were a doctor!) to be present during the birth of their baby, during the 1800's. Interestingly, husbands did not attend the birth of the child until about the late 1960's and early 1970's. Finally, after a long 16 hours, your baby appears into this world. You are tired, cold, hungry and your husband fell asleep at the local pub. No doubt someone will get word to him and he'll be home soon after.

Fortunately things have gone well for you, but you shudder at the memory of your best friend who died during the birth her baby last month from puerperal infection which was common in these times.

Two Historical Un-successful Outcomes resulting in Death (not uncommon)

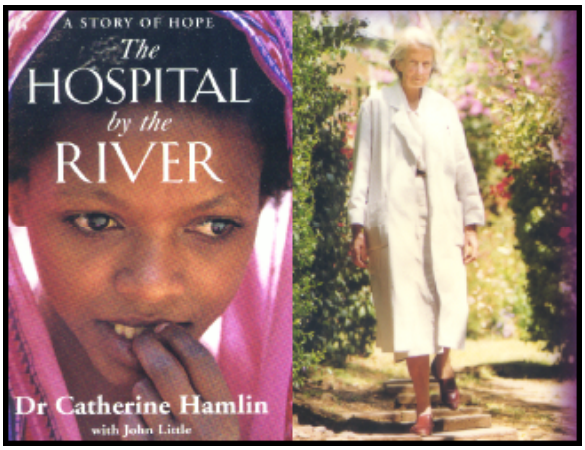
The dangers of leaving things to nature were illustrated by the tragic death in childbirth of Princess Charlotte, George IV's only child and heir to the throne of England. On the morning of Nov 6, 1817, after a labour of some 50 hours, primigravid Princess Charlotte died; Two weeks after the due date, the first stage of labour, lasting 26 hours, was characterised by uterine dystocia; the 24-hour second stage, during which meconium was expelled, resulted in the still birth of a son; postpartum, there was a haemorrhage which undoubtedly contributed to the Princess' demise 6 hours after birth. A Caesarean Section, judiciously performed (perhaps on the evening of Nov 4 after several hours of non-progression in the second stage), might have resulted in a healthy mother and liveborn infant; the need for the subsequent rapid marriage of the Duke of Kent (and the birth of Queen Victoria), might have been averted, and England might never have known the splendour and prudery of the Victorian era. Sadly for the Princess, the operation was in its infancy and no physician would dare attempt it without anaesthesia on the royal personage. Forceps had been kept in readiness but were never used and indeed may not have helped. Nevertheless the obstetrician, Sir Richard Croft, was widely criticised because of his conservative approach and not using forceps which had been given a bad reputation by other Obstetrician's indiscriminite use of them. Sir Richard sadly shot himself not long after and was buried near William Hunter (1718-1783) another famous Scottish Obstetrician of the time.



*"It seems she had one haemorrhage after another. They couldn't stop it. I went into the room and stayed with Catherine until she died. She was unconscious all the time, and it did not take her very long to die".*Ernest Hemingway (A Farewell to Arms)

100 years later, things were only slightly better. The work of Ernest Hemingway is most noted for its tough, peculiarly masculine qualities and its realistic portrayal of the brutality and futility of war. It is remarkable then that in A Farewell to Arms, which is based on Hemingway's experiences as a volunteer ambulance driver on the Italian Front in the last days of World War I, the most significant and poignant death is not from bullet wounds on the battlefield but in the delivery room from the complications of Caesarean Section. Catherine is the English nurse central to the story, and her labour fails to progress; the description of the remorseless pain and exhaustion of her contractions, of the operation itself, of the delivery of "a fine boy" (dead) and of her succumbing finally to postpartum haemorrhage is among Hemingway's finest prose.

Un-successful Outcomes resulting in severely damaged mother and death of baby (again not uncommon)



Up until the early to mid twentieth century in developed countries such as England, Europe, America and Australia, it was not uncommon that if a woman survived childbirth, she was often severely damaged having lost her baby in the process. A fistula, that is, a communication track between the bladder and/or rectum and the vagina resulted. These complications of childbirth today in these same countries are extremely rare and mainly occur in under developed countries. To quote from Hamlin and Nicholson in 1966 "*In vast areas of the world, in South East Asia, in Burma, in India, in parts of Central America, South America and Afrika 50 million women will bring forth their children this year in sorrow, as in ancient Biblical times, and exposed to grave dangers. In consequence today, as ever in the past uncounted hundreds of thousands of young mothers annually suffer childbirth injuries; injuries which reduce them to the ultimate state of human wretchedness*"

[1] Upper-class and middle-class women enjoyed abundant assistance at the time of childbirth—family members and friends assisted in the labor and subsequent confinement. The well-to-do hired nurses especially for the event and the weeks of convalescence. For lower-class women, there might be no assistance except a neighbor who came for the delivery and might provide help with household chores for a few days afterward. Among elite and common folk, husbands occasionally remained with their wives during labor and delivery.

Surgeons at the Fistula Hospital, established in Addis Ababa by two Australian Doctors, the late Dr Reginald Hamlin and his wife Dr Catherine Hamlin (nee Nicholson) as mentioned above, have been repairing obstetric fistulae at a rate of up to 20 a week--13 000 operations since 1974, in a population of 58 million. In virtually all cases, the fistula is the result of prolonged and agonising labour, the pressure of the impacted fetal head against the pubic symphysis leading to necrosis of maternal soft tissues; in most cases, a timely Caesarean Section would have resulted in a healthy mother and baby. Doubtless, in some cases, the sensible use of forceps or the ventouse by a skilled practitioner might have effected a safe delivery; but the point is that Caesarean Section, as an indicator of quality obstetric services, was not easily available to these many women in obstructed labour. A similar situation may be assumed for much of Africa; that Catherine Hamlin herself anticipates a continuing and major need for the Fistula Hospital indicates the magnitude of the problem there--and in parts of Asia and Latin America many women still experience the prolonged agonies of Princess Charlotte and Hemingway's Catherine.

The Invention of Forceps
One of the greatest innovations in the treatment of obstructed labor was forceps. Obstructed labor was perhaps the number one cause of death to birthing mothers, previous to the 1600's and later (including as mentioned above the birth of Princess Charlotte's baby. With the invention of forceps, came a great increase in the survival rate of mothers and babies during childbirth. Previous to this time, death during childbirth was **"an expected" tragedy.**

Forceps were invented by William Chamberlen, but they were a crude invention at that time. The use of forceps was really pioneered by William Smellie (1697-1763); he was a doctor of family medicine in Scotland. He left Scotland in 1739 to study in London and Paris and returned to London and set up a midwifery school. Smellie, was a great teacher, and laid down rules for using the forceps which are remarkably similar to those still taught today. He published his landmark *Treatise on the Theory and Practice of Midwifery* in 1752. Unfortunately, his principles were not followed by many obstetricians of the time and whose indiscriminite use gave them reputation as a dangerous instrument. Thus, by the turn of the 19th Century, eminent Obstetrician's including Sir Richard Croft were reluctant to use them.

A Brief History of Caesarean Section

Introduction:
In recent times (late 20th and early 21st centruy) there has been severe criticism of Obstetricians not only in Australia but worldwide, that the Caesarean Section rate has become too high. **What is too high is a relative term** and should be considered in the context of the times. This is where it is important to look at the history of Caesarean Section. I will return to the question of what is high in my conclusions.

Another of the greatest "inventions" for the treatment of obstructed and difficult labor was the Caesarean Section.
Caesarean 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. Numerous references to Caesarean Section appear in ancient Hindu, Egyptian, Grecian, Roman, and other European folklore. Ancient Chinese etchings depict the procedure on apparently living women.

According to Greek mythology Apollo removed Asclepius, founder of the famous cult of religious medicine, from his mother's abdomen.

Yet, the early history of Caesarean Section remains shrouded in myth and is of dubious accuracy.

The Name:
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 mother was dead or dying, a measure of last resort. Roman law "Lex Caesare" under Caesar decreed that all women who were so fated by childbirth must be cut open; hence, caesarean. It was not until the nineteenth century that such a possibility really came within the grasp of the medical profession.

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."

There were basically 3 periods in the history of Caesarean Births

1. Before 1500 - Contained many myths. Not much was known about anatomy, bacteria or hygiene. The operation basically used to deliver live babies from dead mothers or more often, dead babies from dead mothers because of the high mortality rates associated with the operation.

2. 1500 to 1876 There were sporadic reports of successful Caesarean Section on mothers where both mother and baby survived. For example in 1500, Jacob Nufer, a sow gelder from Switzerland, operated on his wife following a prolonged labor of several days and failed assistance by 13 midwives. The mother went on to deliver 5 more children and the Caesarean Birth lived for 77 years. However, some historians do not accept the validity of this case because it was reported in 1582 or 82 years after it was done. It should also be remembered that any operations that were done, were done without any pain releif and the patient had to be held down by several assitants.

With the advent of the printing press from Germany (Johanes Gutenburg 1450), the blossoming of the Renaissance, numerous works from Leonardo Da Vinci and Andreas Vesalius's (1514-1564) to name two, illustrated human anatomy in detail. In the eighteenth and early nineteenth centuries anatomists and surgeons substantially extended their knowledge of the normal and pathological anatomy of the human body.

During the Renaissance, the practice of Caesareans was revived. One of the first published detailed account of a Caesarean was in 1596. Scipione Mercurio stated in his instructions that you need four strong assistants to hold the patient down as the incision is made; he then applied a liquid concoction of varied herbs before removing the baby. He did not, however, record if this event made way for the survival of either the mother or child.

After Nufer, the first Caesarean Sections with survival of the mother were performed in Ireland by Mary Donally in 1738; in England by Dr James Barlow in 1793; and in America by Dr John Richmond in 1827. The "first" in the British Empire outside the British Isles was performed in South Africa before 1821 by James Miranda Barry (a female Edinburgh graduate who masqueraded successfully as a man from 1809 until her death in 1865. All these operations were performed **without anaesthesia.**

In the first half of the 19th century, there was increasing interest in the operation, which was performed more often but still with appalling results. There were several reasons for this. Until the middle of the19th century, there was **no awareness** of the need for antisepsis during surgery, there were **no effective anaesthetics** and there were religious objections to interfering with divine will in the process of childbirth. Robert Barnes, of London, summed up the situation in 1874 when he wrote that the maternal mortality rate from the procedure was 75%, and stated that "the Caesarean Section occupies a doubtful place between conservative and sacrificial obstetrics"." However, vast changes were imminent.
By the later 1800s, greater access to human cadavers and changing emphases in medical education permitted medical students to learn anatomy through personal dissection. This practical experience improved their understandingof anatomy and better prepared them to undertake operations. With the advent of Anaesthesia in 1847, such operations could be carried out more humanely and painlessly.

Added to this was Antisepsis - For the first time, a scientific connection was made between disease and bacteria. Seminal works include:

1. In his treatise Alexander Gordon's work of 1795, *"The Treatise on the Epidemic of Puerperal Fever in Aberdeen"* he reported the epidemic of Puerperal Fever of 1789-1792 in Aberdeen. In this, he mentions the contagiousness of Puerperal Fever. *"This disease seized such women only as were visited or delivered by a practitioner, or taken care of by a nurse, who had previously attended patients affected with the disease."* Movingly, he wrote: *"It is a disagreeable declaration for me to mention, that I myself was the means of carrying the infection to a great number of women".*

2. Eventually others reached the same conclusion, including those of an American, Oliver Wendell Holmes (1809-94) who in 1843 published his treatise on *"The contagiousness of puerperal fever"* . In his treatise, Holmes emphasising the doctor's role as vector of infection, proposed that a doctor involved in active obstetrics should never take any active part in postmortem examination of cases of puerperal fever. He goes on to acknowledges the work of Alexander Gordon and to quote from Gordon's work that a "*Mr. White, of Manchester, (Charles White 1773 in his* "Treatise on the management of pregnant and lying-in women") had said: "*I am acquainted with two gentlemen in another town, where the whole business of midwifery is divided betwixt them, and it is very remarkable that one of them loses several patients every year of the puerperal fever, and the other never so much as meets with the disorder"—a difference which he seems to attribute to their various modes of treatment".*

3. Ignaz Semmelweis, a hungarian doctor, described 4 years later in 1847 how his best friend Professor Jakob Kolletschka cut his finger whilst doing an autopsy. He died soon after in a manner similar to the way women in childbirth do with puerperal fever. The death rate from Puerperal Fever at his hospital was 13% and the local midwife run hospital 2%. He figured that there might be a connection between students moving from the post mortem room to the maternity ward and he sets up a trial where they wash their hands in carbolic acid. He cut the mortality down to 2% similar to the local midwife run hospital. When his work *"The etiology, concept and prophylaxis of childbed fever"* was published in 1861, his peers ostracised him with poor reviews. but his work did not go unnoticed.

Others also made the connection between bacteria and disease.
4 Louis Pasteur (1822-1895) - in France "the Germ Theory" and
5. Joseph Lister(1827-1912) - in England

Lister acknowledged the work of Semmelweis in 1876 with his statement, *"without Semmelweis, my achievements would be nothing".*

3. 1876 to the present day. By the 1880s Listerian antisepsis was adopted by most British and American lying-in hospitals, but at the end of that decade modern asepsis was replacing the antiseptic spray.

In the mid-19th century death rates remained high and Caesarean Section was often combined with hysterectomy - the Porro technique which rendered the woman alive but infertile. In the 1880s, with the advent of asepsis, a conservative operation was developed by Max Sanger of Germany 1882 and the "classical" operation—a vertical incision in the upper part of the uterus—became more frequently used. It was observed however, that this incision did not heal very well and in 1906 the modern "lower segment" operation was introduced by F.A.Kehrer,

which carries less risk of subsequent rupture. The first planned Caesarean Section in Australia was performed by John Cooke, at the Alfred Hospital in Melbourne, in 1885; it was done for cancer of the vagina potentially obstructing labour.

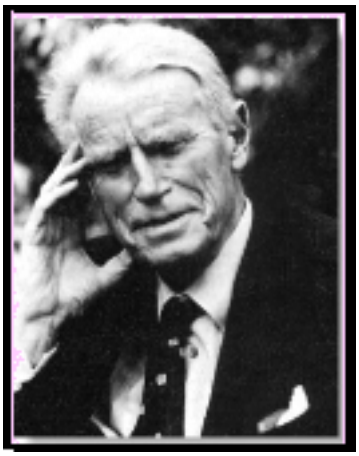
By the 1920s, Caesarean Section was widely regarded as a safe procedure to be undertaken electively: CarIton Oldfield claimed that the risks "... are little more than those of normal labour, and certainly less than those of allowing obstructed labour to proceed ... with eventual craniotomy". Indeed, the future Queen Elizabeth II was delivered - "feet first" - by Caesarean Section, in April 1926. The indications, in the living mother, now included absolute pelvic deformities, prolonged labour, transverse lie and other malpresentations and major antepartum haemorrhage. The interests of the fetus were thus being consid.ered, although the operation was not yet performed in the fetal interest alone.
At a time when general maternal mortality was 0.4%, Eardley Holland, in 1921, found a maternal mortality rate for the operation of 1.4% for women not in labour, although this rose to 26% for women in prolonged labour, especially after many vaginal examinations or failed forceps delivery. Strict surgical asepsis was recommended by all authors of the time, who also perceived the need for skilled anaesthesia.

Antenatal Care
Until the 20th century obstetrics had been limited to childbirth itself, and unless medical problems arose during the pregnancy, nineteenth-century women did not seek prenatal care from a physician and relied instead on advice from other women. However, the new century saw the introduction of antenatal care. In 1901 John Ballantyne set aside a bed for antenatal patients in Edinburgh Royal Infirmary. Antenatal clinics were opened in Boston, Sydney, and Edinburgh in 1911, 1912, and 1915 respectively.

By 1917, Caesarean Section was an established part of the obstetric repertoire, but it was uncommon and carried a high mortality--up to 30%. The Practice of Obstetrics by J C Edgar (Philadelphia: Blakiston, 1913), an authoritative text of the time, gives only a small number of indications: severe pelvic contraction, eclampsia, and, rarely, placenta praevia.

Obstetrics remained a branch of surgery until 1929, when the British College of Obstetricians and Gynaecologists was founded through the drive and ruthlessness of William Blair-Bell, who became its first president. The first college to break away from the long established colleges of physicians and surgeons, it was granted the title "Royal" in 1938 and obtained its royal charter in 1947.

By the 1930s, the safety of the operation had increased and the list of indications had lengthened; nevertheless it was still only ever done in the interest of the mother. A Caesarean Section rate of less than 4% was considered desirable, and when rickets was not present, 1-2%. Over the next two to three decades, as anaesthesia became safer and blood transfusion and antibiotics were introduced, not only did the maternal indications for Caesarean Section widen but the concept of operating in the interest of the child alone entered obstetric practice.



By 1950, maternal mortality associated with Caesarean Section had been reduced to 0.15%, owing both to improvements in technique and to the measures, already mentioned, by Ian Donald.' Intravenous fluid therapy, from its beginnings with physiological saline in 1875, had become increasingly sophisticated during two world wars, as had transfusion of human blood. Karl Landsteiner's discovery of the ABO blood groups in Vienna in 1900, and his later work on other blood groups and rhesus factor in New York in the 1930's, contributed enormously to the safety of blood transfusion in obstetrics.26

In the late 1960s, Chassar Moir recommended the operation in placenta praevia and other situations to preserve the infant's life, but he was most concerned that it not be done for "trivial reasons". By 1970, 8% of all deliveries in England and Wales were Caesarean Sections.

Mention should also be made again of the late Professor Ian Donald of Glasgow. It was this great man's pioneering work that established ultrasound as a very important diagnostic tool in Obstetrics in the late 1950's. Obstetric ultrasound has been and continues to be one of the most important diagnostic tools that has increased the safety of childbirth for both women and babies. In the autumn of 1954 Professor Donald accepted the **Regius Chair of Midwifery** at **Glasgow University**, where, to quote his own words he *"arrived with the residue of a Leverhulme Research grant from the RCOG, a rudimentary knowledge of radar from my days in the RAF and a continuing childish interest in machines, electronic and otherwise".* This was combined with an awareness of echo-sounding (hence the preference for the term sonar) and contact with some of the few others in the world who were interested in its possible medical applications. He was truly a great man and his work on ultrasound lives on.

Since then, the Caesarean Section rate in almost all western countries has risen substantially, reaching 25% in the USA (where by 1984 it was the most common surgical operation), 18% in Australia, and 13% in the UK (Curr Obstet Gynaecol 1991; 1: 158-65). The list of indications for the operation has continued to lengthen, and although in many cases it prevents the kind of tragic outcome experienced by Charlotte and Catherine, in others it seems to be done more for reasons that would justify Moir's apprehension.

The high rate of Caesarean Sections in most western countries is now regarded as a major public-health problem and has spawned much discussion, numerous publications and meetings, varied recommendations, and some success at reducing the rate in certain hospitals, although without any agreement as to what the optimum rate should be, and with some indications--uterine dystocia and fetal distress--not well defined.

Of course, the absence or relative lack of medical services in large parts of the world has been frequently remarked upon, as has the propensity for surgery in western countries that is either unnecessary or not strongly indicated. However, without change for the better, reminders are timely, and there is no greater contrast than that between the denial of what is now an extremely safe operation to millions of women in one part of the world and the frequency with which it is carried out, for possibly minor reasons, elsewhere.

That Caesarean Section is now safer than ever before is evidenced by the maternal mortality rates in all western nations. Even though

death is still more likely after Caesarean Section than after vaginal delivery, women undergoing Caesarean Section often have intercurrent medical problems that contribute to, or directly cause, their death, the operation itself being incidental.

And the mortality rates themselves--2 per 100 000 for vaginal deliveries, 36 per 100 000 for all emergency Caesarean Sections in England and Wales, for example--are tiny compared with those of earlier decades of the last century. They also contrast starkly with the estimated rates for Ethiopia, of 750-800 maternal deaths per 100 000 deliveries, where many deaths go unreported and only 15% of the population receive any antenatal care at all.
So rare now in the west are maternal deaths associated with Caesarean Section that they are often outside the experience of individual obstetricians. Certainly, most such obstetricians (and their patients) would imagine that labours like those of Charlotte and Catherine are the stuff of history books.

CONCLUSIONS:

Well over 200 hundred years ago, one of the wisest of William Smellie's injunctions was: *"... we ought never to trust too much or be over sanguine in respect to any particular method of practice but vary the same as we feel it is necessary".* [33] (William Smellie (1697-1763) was a famous Scottish Obstetrician of the time and pioneer of forceps)

The authors, who incidentally wrote this Historical Review of Childbirth in 1954 when the Caesarean Section rate was about 5% state that

" *Some may question if this has taken place- they may protest that the pendulum has swung too far to Caesarean Section now that the operation has become so safe. Personally, we would not venture to predict where this tendency may end. Certainly it is possible to push Art too far, as from time to time has happened in the past. But equally certainly,* ***Nature can be asked to do too much,*** *as also has happened in the past. By all means let us do everything to bring about natural childbirth, as Fairbairn early in the century and Dick Read in more recent times have stressed. But with Caesarean Section as safe as it is today,* ***its scope should be wisely extended".***

In each decade of the 20th century, the Public and Obstetricians were saying that the rate was ***too high.*** For example, one very prominent Sydney Obstetrician stated in 1932 that a rate greater than 1% was scandalous. By today's standards, his rate of 1% would be scandalous and questions would be asked about his standard of practice. One can see then from the foregoing a significant public and professional attitudinal change towards Caesarean Section in each 20 year period from 1900 to 2005. It has gone from a chance of dying of 30% at the turn of the 20th century to 0.008% in 2005 to become a safe option of childbirth. So what does "high rate of Caesarean Section" mean? In simple terms it relates to the times in question and the expectations of women of those times.

IN SUMMARY: In the last 200 years, Caesarean Section has gone

- From being an unacceptable option of childbirfth to an acceptable option of childbirth
- From having a High Mortality Rate to Very Small Mortalty Rate -
- From so called "High Rates for their times" to even "Higher Rates".
- Women's expectations are no longer fatalistic AND
- Caesarean Section, having become a safe option is becoming consumer driven

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