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The Cesarean Section and its Substitutes

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THE CESAREAN SECTION AND ITS SUBSTITUTES.

No better evidence of the marvellous development of surgery during the past ten years exists than the status of the Cesarean operation then and now. At that time surgeons and obstetricians were only fairly beginning to realize the errors of the past and to be influenced by the successes obtained in abdominal surgery. Undoubtedly the modern successful revival of the operation is to be attributed to the introduction of the principle of antisepsis into surgery. The boldness in operating and in reasoning about operations, which grew out of the successes made possible by this principle, led men to throw off the shackles of the past and to apply the light of the present to this as to all other operations. The result has been to show that success in Cesarean section depends upon the same principles which underlie success in all operations, and that the operation, instead of being "the most dangerous in surgery," is to be classed among the comparatively safe operations, having a scarcely greater inherent mortality than ovariotomy.

It is my purpose in this paper to discuss briefly the present status of the Cesarean section and the principles underlying its successful performance, and to consider it in its relation to its substitutes, puerperal hysterectomy, symphysiotomy, and embryotomy.

The statistical method of establishing the status of an operation is the one usually followed, but, as is well known, it is open to many objections and can yield anything but reliable results. First there is the difficulty of securing the entire number of cases, and then the greater difficulty of knowing the condition of the patients at the time of operation, and then the difficulty of

[1] Read before the Philadelphia County Medical Society, November 9th, 1892.

estimating the degree of skill of the host of operators included in the table. Hence, even if the table includes all the cases, it simply demonstrates the results of good obstetrics and good surgery together with bad obstetrics and bad surgery—results which are worthless for the purpose in hand. I believe a better method is to study the subject in its general aspects, and to confine our study of statistics to those of a few well-known operators. In a typical Cesarean operation done before labor, or during its first stage, we have the following conditions to deal with: The patient is a healthy woman, in good condition, with a healthy peritoneum, a healthy uterus with aseptic contents, and with a non-infected birth canal. Under such favorable conditions an abdominal surgeon would expect the best results from any operation not unduly prolonged and not accompanied by serious hemorrhage. Ovariotomy under these conditions has yielded the best results. Experience has shown that pregnant women are good subjects for anesthesia and for operations in general. The technical details are easily under the control of an expert. The incisions are made under the guidance of the eye, and the suture ligatures are likewise so placed. Hemorrhage from the wound is thus easily controlled by the surgeon, and hemorrhage from the placental site is controlled by the action of the uterus itself. Hence the dangers, theoretically, resolve themselves into the possibility of infecting the peritoneum by the surgeon's hands, instruments, etc., and of hemorrhage due to non-action of the uterus. The first accident *should* never happen, and practically it very seldom does in careful hands; and the second is even more rare, as the uterus only fails to act when its muscle is exhausted by long hours of labor. The theoretical considerations involved would indicate that the inherent dangers of the operation are slight, and the results obtained by the best operators amply bear this out. For example, Sänger has had nine operations without a death. Zweifel did thirteen operations in Leipzig without a death, then operated on a case having a dead and putrid fetus and lost it. Eight operators in Leipzig, including Sänger and Zweifel, had thirty-six cases with two deaths, one of which was referred to above. The results of Leopold, and Cameron of Glasgow, are similar. They saved the mothers who were in good condition, and lost only those whose condition before operation indicated such a result (the later results of Leopold and Cameron are not obtainable). In this country there

have been no large series of operations. Drs. Kelly and Lusk have had four each. Dr. Kelly saved all, although one case was desperate at the time of operation. Dr. Lusk lost one unfavorable case. The Kensington Hospital for Women (two cases by Kelly and two by myself) and the New York Maternity Hospital have each had four cases and saved all.

These statistics are quoted simply as illustrating what has been accomplished. Better results can be obtained in *favorable cases*, as the above include a certain number of unfavorable cases—that is to say, some bad obstetrics, and even some bad surgery; for example, Zweifel's fatal case was unfit for the classical operation, and should have had the Porro operation or panhysterectomy.

An advocate is said to harm his cause by stating it too strongly, but I feel that the facts in the case justify and fortify the statement that the Cesarean section done by the expert before or early in labor is scarcely more dangerous than the average of labors as at present conducted in our great cities. Undoubtedly the average mortality of the operation as done heretofore is many times greater, but it cannot be too strongly insisted upon that this represents the mortality, not of the operation, but of the bad obstetrics and the bad surgery which heretofore has largely prevailed.

Operators are in agreement concerning the principles governing success in this operation, with three exceptions. The points agreed upon are: 1. The diagnosis should be made during pregnancy and the operation determined upon, and the patient should be put in good condition for operation. 2. The operation should be done with the same antiseptic and other care given to other celiotomies. To achieve the best results it must be done by an expert. 3. The after-treatment should be the same as after celiotomies in general, modified by the treatment necessary for the puerperal state.

The points at issue are: 1. Should the operation be done before labor, or early in the first stage of labor? 2. Should the uterus be turned out, or incised *in situ*? 3. Should the uterus be constricted by rubber tubing to control hemorrhage during operation, or should manual compression be employed?

The first point is the most important. Desiring to avail myself of his extensive knowledge of this subject, I have asked Dr. Robert P. Harris, of Philadelphia, who was a very early advo-

cate of the Cesarean operation before labor, to give me his opinion, which follows:

"My studies of the Cesarean section commenced in 1869 and have been continued, with some interruptions, ever since, during part of which interval I have witnessed many operations[1] and watched the cases into recovery, having seen but two die, and these had a bad prognosis. My first object in study was to discover why some reported cases of our country recovered and why others in much larger number died. In time I became thoroughly convinced that the seeds of death were sown, as a general rule, before the knife was used, either through pre-existing disease or the result of parturient exhaustion and change. This was made to appear much more decidedly after it became the practice to close the uterine incision by sutures in all cases, such as has been done in the last ten years upon seventy women in the United States. It was then made to appear that delay in operating prevented a rapid uterine union and favored the production of peritonitis, sepsis, and nerve shock ending in death. Finding the value of early operating, I made it my special mission to urge upon all operators to make their celio-hysterotomies as soon after the invasion of labor as possible; and it has been the acceptance of, and action upon, this belief that has led so largely to the reduction of our mortality in America. In fact, it has become a general belief that if a woman has no organic disease and is operated upon directly after labor has begun, she has a very fair prospect of recovery; and our records plainly establish this fact.

"Although the importance of early operating to recovery has been demonstrated, it has been found to be quite difficult to secure the patients in proper season for this, and it has only been accomplished in a small proportion of cases, even in our large cities. A labor of at least an hour or two was for a long time

[1] I have been present at three Porro operations and visited two more cases in their convalescence. One woman died who had albumin in her urine; the rest recovered. I have been present at eight Sänger-Cesarean operations, and many times visited a ninth woman in her convalescence, which was a battle for life against a taint of syphilis. One woman with a very unfavorable prognosis died. I made an autopsy in the case of a rachitic dwarf in 1885, upon whom the old Cesarean operation was performed in 1835 and in 1837. One child is now 57; the other died when 43. The mother was 76. I saw the girl and boy in their early childhood on several occasions. I have thus taken a special interest in fifteen Cesarean deliveries, from which there were thirteen recoveries.

thought to be an essential element of success, in order that uterine contraction should be certain to follow the use of the knife, and drainage be secured by having an open cervix. Where an operation was determined upon prior to labor, the inconveniences of a night call and of securing proper assistance at night were a serious obstacle to immediate action, especially in cases at a distance from the operator's residence. This was so much felt to be an inconvenience that Dr. Anna E. Broomall upon one occasion slept night after night at the Woman's Hospital, so as to be on hand to operate directly after labor was announced. She operated in the middle of the night and saved mother and child. This was in May, 1889. She would not wait for labor now.

"It has long been known that an evacuating wound of a pregnant uterus, especially where gestation is far advanced, will be followed at once by a contraction of the organ quite as marked as where it has occurred normally in labor. This has been very remarkably exhibited in cases of horn-rip Cesarean delivery, some of which date a number of years back, and under which ten women and seven children were saved out of fourteen subjects between the years 1530 and 1888, ten of the casualties having occurred during the present century.

"My attention was first drawn to this fact of contraction in a practical way in September, 1880, when I saw the late Dr. Elliott Richardson, of Philadelphia, perform a Porro operation upon a woman, eight and a half months pregnant, at a selected time. We had considered the case of this dwarf in consultation, and the operation took place in accordance therewith and was fully successful.

"This was the first of a series of Porro and Sänger Cesarean operations that have been performed in this country in which there was no delay in uterine contraction after the removal of the fetus. This operating at a convenient, selected time has been objected to in Europe because of two deaths that occurred under it in the experience of Prof. Hector Treub, of Leyden, within the last five years, through the uteri having failed to contract.

"His first operation was upon a primipara of 28, in whom he completed a Sänger section under cervical compression made with an Esmarch elastic tube. When this tourniquet was removed the uterus filled with blood, and, the hemorrhage proving beyond control, the operation was converted into a Porro and the stump dropped in. The woman died of anemia in three

days. Here I believe the uterine atony was due to the paralyzing effect of the elastic tourniquet, which is far less safe and reliable than manual compression. In April, 1886, Dr. Emilio Fasola, of Florence, Italy, had the same difficulty in a case where tubing was used upon a woman *ten hours in labor*, and was obliged to exsect the uterus after completing the first Sänger operation in Italy. He wisely treated the stump externally, and the woman recovered.

"Prof. Treub's second operation is much more unaccountable in its results, as the tubing was not used, and still the uterus showed but a trace of contraction under hypodermic injections, massage, and faradization. The woman was a rachitic dwarf, four feet five and a half inches high, 41 years old, and pregnant for the fourth time. The operation was completed under the Sänger method, but the woman died from the previous blood loss soon afterward. Against this one case we place fourteen operations in this country in which the fetus has been extracted through a uterine incision, where the women were not in labor when the abdomen was opened, and where prompt uterine contraction followed the evacuation of the amniotic fluid.

"Cases of uterine atony such as that of Prof. Treub's second must be so rare that we do not feel inclined to weigh it against the many advantages to be gained by an operation before labor and at a convenient, selected time. Cases of cancer of the cervix uteri must not get into labor, if they are to recover, and two that I have seen operated upon before there were any pains did remarkably well. If we are to choose between operating before labor and not being able to do so for some hours after it has begun, let us take the little risk of atony, and do so at a selected hour, rather than run the multiple dangers of delay."

The advantages of operating at a fixed hour, with patient, room, assistants, and operator ready, instead of doing an emergency operation, decided me in favor of operating before labor in the case of Mrs. C., September 28th, 1892. I was also led to this conclusion by having seen its advantages in two cases operated upon before labor by Dr. Kelly.

To my mind the one objection to operating before labor is that the issue of the labor in some cases might prove the operation unnecessary. But this should occur only in the hands of one unskilled in pelvimetry and in estimating the relative size of

head and pelvis, and hence is rather an argument for counsel in diagnosis than against operation before labor. In the future it seems likely that symphysiotomy will supersede the Cesarean section in cases of contracted pelvis with a conjugate above two and three-quarter inches. If this proves true this argument likewise will fall to the ground. The anomalous case of Treub alone stands against the method. Hypodermics of ergotin and strychnine, given *before* operating, should lessen the risk of hemorrhage which he encountered.

The question, Should the uterus be turned out or incised *in situ?* I would answer by saying, do not turn it out. Turning it out complicates the operation by requiring a long incision, giving a large surface for the radiation of heat, favoring displacement or escape of the bowels, and requiring a longer time in suturing the wound. With a little care blood and liquor amnii can be kept out of the peritoneal cavity; and even should this not be accomplished, both are aseptic and can easily be sponged or washed away.

The question, Should the uterus be constricted with a rubber ligature to prevent hemorrhage during the operation? I would answer in the negative. Experience has proven that the risk of paralyzing the uterus in this way is not imaginary, and has shown, in the hands of others, that the practice is unnecessary. I have seen four Cesarean operations, and in them hemorrhage was readily controlled without the tube.

The only other point in the technique that I shall touch upon is the sutures. In my opinion silk is the best material. It can be made aseptic by boiling, and has many well-known good qualities. Enough deep sutures (about seven) should be introduced to control bleeding from the wound. They should be drawn fairly tight. About twice as many superficial sutures should be introduced to insure a neat approximation of the edges of the wound. In my judgment it is best to introduce them in the regular way, and *not* after the manner of Lembert. I have used the method advised in two cases, the first in April, 1890. Dr. Kelly and others now advocate this method. Its advantages are that time is saved, and that these sutures assist in controlling bleeding from the lips of the uterine wound.

The Porro Operation.—The relative merits of the classical and of the Porro-Cesarean section are still under discussion, with the majority favoring the classical operation because of its

supposed greater safety. Dr. Harris tells me that the statistics of the two operations are in favor of the classical operation, whether the results are taken of all cases in a given year, or the results of the best operators advocating the two methods. This evidence is of value, but to me it indicates rather a difference in the condition of the cases and in the skill of the operators than in the relative danger of the two operations. In typical cases both operations should give almost perfect results. The fact that the results under the Porro operation are not so good as under the classical operation, I believe is to be explained on the ground that the Porro is the operation of election in cases *seen late*, in cases *already septic*, and in cases complicated by *fibroid tumors*. My own objection to the Porro operation in typical cases is that it unnecessarily robs a woman of her womb and ovaries, and takes away from her the power of bearing children. It has been amply demonstrated that second or third Cesarean operations are more safe than the primary operation, which itself is no longer dangerous. Hence I am opposed to depriving women having deformed pelves of their fertility, whether by the Porro operation or by operations on the tubes or ovaries. The burden of proof as to its value rests with those who advocate this needless sacrifice of the sexual organs.

The Porro operation and panhysterectomy I would reserve for atypical cases. When the pregnancy is complicated by large fibroid tumors, or when the uterus is septic, or when the operator is called in *late*, after the uterus is exhausted by long labor, I believe the advantages of hysterectomy are manifest. In the first case the patient is cured of the tumor at the same time, without greater and at times with less risk. In the second case the infected uterus is removed and the many dangers of puerperal sepsis avoided. In the third case the dangers of atony of the uterus and possible post-partum hemorrhage and of sepsis (well known to be rare in this class of cases) are likewise avoided. In my judgment the field of the Porro operation and puerperal panhysterectomy embraces these three classes of cases. In these cases the advantages of these operations over the classical operation are so obvious as not to require an argument. I have personal knowledge of two deaths from the classical operation which I believe could have been avoided by the Porro. These cases were operated on *late*.

Symphysiotomy.—The operation of symphysiotomy gives

promise of being a great boon to women with deformed pelves. The record of fifty-four cases with fifty-three women and forty-eight children saved (Harris) commands our admiration. Even the one maternal death was due, not to the operation, but to metro-peritonitis following a long labor. The operation, however, as a practical fact is too new to us in America to enable us to have fixed opinions concerning its practical value. If, however, the claims of its advocates prove true, especially if the pubic joint heals soundly, rapidly, and well, certainly symphysiotomy will displace the Cesarean operation done for flat pelves with a conjugate above two and three-fourths inches, and also for certain cases of generally contracted pelvis and of osteomalacia; and, moreover, it will take away the old excuses which have been used to justify embryotomy on the viable child in the past. Personally I welcome the operation of symphysiotomy on this account.

Embryotomy.—Embryotomy has been an operation always hard to justify when done on the viable child. The Roman Catholic Church condemns it and holds the operator morally guilty of homicide. The decalogue condemns it. It has been justified on the ground that it is better to kill one than to permit two to die. This condition no longer exists, with the modern Cesarean operation and with pubiotomy recognized. It is no longer a question of killing one to save the other. With proper management both can be saved. I find myself in positive disagreement with those who say that the *child* should not be considered, but only the *mother*, and who justify themselves by saying that without the intervention of art the child will die as surely as though its brain should be broken up by the perforator. The dictum of the profession, especially in England, France, and America, has so long been in favor of embryotomy that time and facts, and the earnest advocacy of a more humane and life-saving practice by those who are convinced that symphysiotomy and the Cesarean section should take the place of embryotomy on the viable child, will be needed to establish a better practice. That embryotomy on the viable child will soon be condemned as universally as it is now defended I do not doubt, and I hope that every one convinced of the rightfulness of this principle will speak out and disregard the traditions and prejudices of the past. If this be done the final day of the sacrifice of the innocents will be at hand.

I believe that practical men will still find a place for embryotomy. It will be done in preference to the Cesarean section or symphysiotomy:

1. On the dead child.

2. On human monsters and cases of hydrocephalus.

3. In cases *seen late* by the surgeon, when the fetus is believed to be non-viable, whether by long pressure from delayed labor or by undue or violent efforts at delivery by the forceps. In such cases embryotomy will be considered as against symphysiotomy or hysterectomy, and will, I believe, be elected at the present time.

4. In cases of labor remote from assistance. This class, however, should be sharply limited to emergency cases; and it is to be hoped that symphysiotomy will prove sufficiently easy of performance to supplant embryotomy in almost all such cases.

Conclusions.—1. Cesarean section in typical cases is a safe operation.

2. It should be performed preferably before labor, and not later than the first stage of labor.

3. The classical operation is to be preferred to puerperal hysterectomy in typical cases, because it is equally if not more safe, and because it preserves the fertility of the woman.

4. Puerperal hysterectomy is to be preferred in certain atypical cases: (*a*) Cases, seen late, in which infection of the birth canal and atony of the uterus are to be feared. (*b*) Infected cases. (*c*) Cases complicated by large fibroid tumors of the uterus.

5. Symphysiotomy will probably supersede Cesarean section done for the relative indication.

6. Embryotomy is no longer justifiable on the living viable child as an elective operation.

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