THE CÆSAREAN OPERATION IN THE UNITED STATES.

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In entering upon the preparation of a record embracing exclusively the cases of Cæsarean section which belong to the credit of the United States, it becomes a matter of some importance to determine what constitutes the operation called by the title "Cæsarean," a question which has recently been impressed upon me by reason of the receipt of numerous letters reporting cases under this name, to which they were not entitled. I take the ground, that there is and can be but one operation truly "Cæsarean," and that is the ancient "section," made through the abdominal and uterine walls for the purpose of removing the fœtus, with the hope of saving the life of the mother, and if possible that of the child. The application of the term to any other form of operation only creates confusion and leads to error, as any one will find to his constant annoyance who undertakes to collect a record such as I here present. The abdominal section for the removal of a fœtus which has escaped into the peritoneal cavity through a rent in the uterus, is frequently called the Cæsarean operation; and so also is the opening by the

same means of an extra uterine fœtal cyst, or the evacuation of one through the vagina. Gastro-hysterotomy has several times been reported to me under this head; and in fact men appear to think if they have cut in any way into the abdominal cavity for the removal of a fœtus, whether they incise the uterus or not, that they have performed the Cæsarean operation.

The triple term of Greek origin, "gastro-hysterotomy," conveys in itself the definition of the word "Cæsarean" as properly applied; and this, to avoid confusion, I soon found myself forced to use in all letters of inquiry, instead of the latter.

The nomenclature of abdominal surgery is certainly very defective, and might readily be corrected. The Greek word γαστηρ, meaning both abdomen and stomach, has led to much confusion in the use of the term "Gastrotomy," which should be limited to operations involving the stomach itself. The word ητρον, meaning lower belly, should be used as the root of a new term, "Etronotomy," for incision of the lower abdomen when internal organs do not require section, in which event the term should bear upon the viscera involved. "Hysterotomy" should be confined to operations through the vagina, and never applied, as by the French and some English writers, to the Cæsarean operation, the former even employing it instead of the abdominal section in describing the operation after ruptured uterus. The term "Laparotomy," for section of the lumbar region, should come into more general use. "Gastrotomy," as now employed, covers too great a range of meaning to

have a true definiteness of character. If the uterus could not be reached except through the abdominal walls, the term Hysterotomy would be sufficiently definite for the Cæsarean operation.

It is not my purpose to enter into a disquisition concerning the history of this ancient operation, in order to determine the origin of its name, or whether Julius Cæsar or any of his family were introduced by it into society. It matters little, in this connection, whether or not it was known to the Jews before the Christian era, or who originated the process. It might have been a woman opening her own abdomen in a desperate effort to obtain relief, or doing the same office for a companion without due regard to consequences; or perhaps an enraged bull or cow; or a husband intent upon affording speedy relief to an agonizing wife unable, after long suffering, to deliver herself.

These are not idle hypotheses, as they all have foundations in the occurrences of modern times. The first authentic instance of the operation in the British Isles was that performed with success by Mary Dunally upon Alice O'Neal, in Ireland, in 1739, after a labor of twelve days; and the first *recorded* in the United States, by a girl of fourteen years of age upon herself in 1822. Several women have been known to recover, and their children live, after the latter have been removed from them through a rent produced by the horn of a bull or cow. And the case of Elizabeth Alenspachen, of Siegenhausen, Germany, who was operated upon with success by her husband in the early part of the sixteenth century, will be found mentioned in al-

most every work upon obstetrics. There is therefore every reason for believing that the possibility of success may have been first demonstrated either by an accident or the boldness of ignorance.

Of the first 38 cases operated upon in Great Britain, covering the period from 1739 to 1845, but four recovered, one being that referred to as the work of a common midwife. We are in the habit of giving great credit to the successful surgeon, and are not perhaps sufficiently alive to the fact that, all other things being equal, a happy termination is often not so much due to any difference of management, as to an unaccountable indisposition in the parts wounded to take on an unhealthy action. This is particularly the case with all operations exposing the peritoneal cavity, and in no one more so than that of gastro-hysterotomy. Very few of the subjects of this operation are in a physical condition to inspire us with a hope of success at the time of its performance; most of them either having some disease in their osseous system, as malacosteon, or bearing the consequences of rickets, in the form of bone deformities and a stunted growth. It is therefore not to be expected that such patients should recover from so severe an operation, involving tissues of a highly vascular character and inflammatory nature, unless it be performed under the most favorable circumstances possible as to time, place, and the physical condition of the patient. If every expedient, in the form of embryotomy, turning, decapitation, etc., be first resorted to, and the woman exhausted thereby to a degree rendering the danger to her life almost equal to that result

ing from the Cæsarean operation itself, it is hardly to be expected that she will survive this final stroke of surgery with any but that minimum amount of hope which is based upon the knowledge that some have recovered when it appeared impossible that they should. It may be contended that the rickets of childhood leaves no evidence of physical weakness in the health of the adult; but it is at least a matter of serious doubt whether such stunted subjects can bear hemorrhage and exhaustion like those of full bodily development.

Next to the immediate dangers from shock, hemorrhage, and peritonitis, we have those which follow almost as a natural result from the long time usually permitted to elapse before the Cæsarean operation is finally determined upon, viz.: secondary nerve-shock, septicæmia, and slow exhaustion; hence the importance of being previously informed as to what constitutes the necessity for this species of surgical interference, so that the patient can have all the benefits which may arise from a prompt decision, and an early use of the knife. Like traumatic erysipelas in some of its features, peritonitis, as the result of gastro-hysterotomy, is most apt to occur in those whose systems have by some means been reduced below the standard of health, whether the cause be recent or remote.

If this operation could be performed experimentally upon one hundred sound healthy women soon after the commencement of a natural labor, there is every reason to believe that a very large proportion would

recover, even greater than from ovariotomy, which is necessarily practised upon diseased subjects; and it is no doubt this previously healthy state which has saved those who have recovered from the dreadful fright and shock consequent upon being torn open by a bull or cow, or such as have operated upon themselves, or been opened after rupture of the uterus. If rupture of the uterus was generally treated in this way immediately after its occurrence, there can be little doubt but that a much larger proportion of the women would be saved than now escape after the means commonly resorted to, of delivering the fœtus *per vias naturales.*

Delay.—This word is given special prominence here, as expressing one great cause of the want of success in the Cæsarean operation, especially in England, but also to a considerable extent in this country. There is no operation in the whole range of surgery in which there is such a disposition to hesitate and wait, in the hope that it may be avoided, as this; and it is not infrequently postponed for hours after it has become evident that nothing can be gained by it. Both of Dr. Gibson's operations, performed with full success upon Mrs. Reybold of this city, were in contemplation before labor, and commenced as early as deemed practicable. Ovariotomy was at one time regarded by many physicians as an unjustifiable operation, on account of the great mortality which followed it; but success in a large proportion of cases, in the hands of experienced surgeons, has placed it in its true light before the profession. Apply the same skill and care to the

Cæsarean operation, and it will then present its true measure of danger as a surgical operation, instead of the exaggerated character which it has been made to exhibit.

Gastro-hysterotomy has been very rarely performed in the United States, so much so that in many of the thirty-seven commonwealths not one can be found. New York City, with its transfluvial neighbors, and Philadelphia, collectively containing more than 2,000,000 of inhabitants, present but five cases of the operation, three of which belong to Philadelphia. Of these five, two women and one child perished. It is apparently of a more recent date than the abdominal section for extra-uterine pregnancy, or the vaginal for the same condition, there being no published example that I can find prior to the year 1822, whilst it is well established that the former was performed in a case of long-standing cystic pregnancy in New York, in 1792, by Dr. McKnight;* and the latter in 1816, at Edisto Island, South Carolina, by Dr. John King.† Both women, and in the latter the child, were saved. I am inclined to believe, however, that the Cæsarean operation was performed much earlier than the cases published. Perhaps the oldest operation of gastro-hysterotomy in North America was that which was performed in the Island of Jamaica,‡ in 1769, upon herself by a slave woman, with success.

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* Memoirs Med. Soc. London, vol. iv.

† N. Y. Med. Repository, 1871, p. 388.

‡ Boston Med. and Surg. Jour., vol. xii., p. 398.

Among the blacks of the South there has been a larger proportion of cases than the whites of the whole country, and in some of the cotton-growing and sugar producing States nearly every subject of the operation was a negress. This has, however, been subject to a considerable variation; for South Carolina, with an abundant black population, presents but one case, and the only one in Georgia was a white woman, as also in North Carolina, so far as can be ascertained by careful inquiry. In the Carolinas, I am informed upon good authority, there is very little deformity among the blacks, and the women seldom require the use of the forceps to accomplish their delivery. A contrary condition appears to prevail in Louisiana and Alabama, where the Cæsarean cases have been in much larger proportion than any other part of the Union. It may also be of some interest to state here, that in Mexico the native women are remarkably free from pelvic deformity, as I have learned recently, from a physician of large experience in that country, and that they are rather inclined than otherwise to excessive development of the pelvis.

The question of practical delivery per vias naturales, as based upon the conjugate and other diameters of the pelvis, has never been satisfactorily settled, and probably never can be, so long as human skill varies and the fœtal head is not of uniform size at maturity. A small fœtus may readily be removed alive through a moderately narrowed pelvis, where a large one might cause great difficulty, and even endanger life. I have seen a mother, after a severe labor under craniotomy, give birth, with-

out assistance, to a second child within a year, simply because of the first having a large solid head, and the second the reverse; and this variation of development lost the woman about half of a large family of children.

Since the revival of the cephalotribe of Assalini, and its improvement by Baudelocque and his successors, the question of possibilities in delivery through deformed pelves has assumed a more definite character in regard to the space demanded in inches and fractions for the assurance of success. There is a disposition on the part of the advocates of this instrument to narrow down the practicable space to such a point that the dangers of cephalotripsy, evisceration, amputation, &c., made necessary for the passage of the fœtus, render the collective operative procedure quite as dangerous as the operation of gastro-hysterotomy, if not more fatal to the mother, without the advantage of saving the life of the child. It is impossible to make a rule of measurement to apply to all pelves, as they differ so much in interior contour, the conjugate measures being often no indication of the largest circle of space at either strait. I have in my possession a manuscript collection of drawings of forty deformed pelves, sixteen of them representing those of women who died from the Cæsarean operation, and no two of them have the same figure, either in the superior or inferior strait. We can classify these deformities into *reniform*, *rostrate*, *cordiform*, *oblique*, &c., but still we must come at last to the necessity of deciding in each individual living case,

what it is our duty to do, and to make this decision firmly and without delay.

The deformities of the pelvis which we have to contend with in this country are almost entirely due to rickets; some few are believed to be congenital, or may result from coxalgic distortion; but cases of malacosteon, so common in some European localities, are exceedingly rare, so much so that many of our most experienced obstetricians have never seen an example of the disease. The general contour of the superior straight in most cases of deformity will indicate the disease which produced it; the rostration of the ossa pubis being due in almost all instances to adult pelvic softening, and the reniform changes of the strait to rickets. But there are exceptions to this rule, as irregular rostration is sometimes produced by the latter.

Rickets being a disease of early infancy, affecting a large proportion of its subjects during the creeping period, produces various pelvic shapes, according to the peculiar mode of locomotion adopted by the child, which form of propulsion is in a measure selected of necessity, from the condition of the lower extremities. The closure of the superior strait from rickets is sometimes as nearly complete as it is in the worst cases of malacosteon, one of my drawings from an American case* representing this strait as a distorted transverse slit, five-eighths of an inch in the conjugate diameter, and at no point more than an inch wide. Another sketch repre-

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* See case reported in this paper by Prof. Abram Sager, to appear in next number of this journal.

sents a pelvis so deformed by the same disease, that the superior strait will at no point admit of the passage of a sphere of more than $1\frac{7}{16}$ of an inch in diameter, and the inferior strait is still smaller; yet after failure of delivery in this case by craniotomy, the Cæsarean operation was twice declined by a majority of the physicians in consultation, and the woman died from rupture of the uterus, after seventy-two hours of labor.* There appears to be a disposition on the part of physicians in such cases to wait and hope, when they can give no good solid reason for so doing. No doubt the results of the celebrated case of Elizabeth Sherwood, delivered of a putrid fœtus by Dr. William Osborne, London, in 1776, has led to an erroneous opinion as to what might be expected by patient waiting. Because this woman escaped rupture of the uterus and septicæmic poisoning, it does not prove that it would be generally a safe practice to perforate the fœtal head, wait thirty-six hours for putrefactive softening to take place, and then by three hours' traction deliver the fœtus through a deformed pelvis, in her case said to measure $1\frac{3}{4}$ inches by about $2\frac{1}{4}$. Because, after a labor of seventy-five hours, she made a good recovery, I do not think it should recommend a practice for general adoption, to avoid the dangers of the Cæsarean operation.

The dangers of embryotomy in extreme deformity of the pelvis should be compared with those of gastro-hysterotomy, where the operation has been primary,

* Ransom's case, Trans. Obstet. Soc., London, 1867.

and performed early and not as a sequence to craniotomy, as in many cases, if we wish to decide in a labor as to which form of delivery offers the patient the best hope of recovery. If the circumstances of the case show an equality of risk, then it is clearly our duty to adopt the latter for the sake of the child; and it will in many cases, even where the destruction of the fœtus offers a fractional difference in favor of the woman, be a question of conscience between her and the operator as to their duty in the case. So far as a general rule can be made to govern the profession in this country, it has been conceded that we are always justified in destroying the child to save the mother, provided: 1st. That its death is clearly unavoidable; and 2d. That by its destruction we do not endanger the life of the woman to a degree equal to or greater than by the Cæsarean operation promptly performed. It is a question for individual consideration whether the offer of the risk of self-sacrifice on the part of the mother, in order to save her offspring, shall be acceded to or not; it certainly should not be if her risk by the operation be much greater than by some other mode of delivery, ending in the death of the fœtus. The position of a woman in society, her ties of relationship and friendship, and the associations which surround her, make her life far more important than that of an infant whose prospect of living to maturity, even under the most favorable circumstances, is very doubtful; and hence the slight consideration paid to the latter when the risk of the life of the former must be much increased to save it. We use the forceps to keep her from suffering, prevent exhaus-

tion, and the dangers of a ruptured uterus, and at the same time hope by the skilful application of them to preserve the child's life; but if we cannot do so and are satisfied that our judgment is correct, we do not hesitate, however reluctantly, to sacrifice it for her sake, and she in most instances prefers this decision to running any additional risk of her own life. But whilst we do this, we must not allow ourselves to fall into the error of making improper estimates of the dangers of one form of assisted delivery as compared with another.

We do not yet know in this country, with any degree of accuracy, what are the risks of the Cæsarean operation, promptly performed, as compared with those of embryotomy in badly deformed pelves. We can approximate the knowledge by consulting the obstetrical tables of foreign countries, it is true; but as these are mainly obtained from hospital practice, we cannot be said to know the proportion of deaths to recoveries which we ought to anticipate from operations performed under favorable circumstances in our own land. It is with a view to the formation of a more correct estimate than is usually held of the risk to life in the mother and child by gastro-hysterotomy, that I have taken upon myself the task of collecting the published and unpublished cases of the operation from all parts of the United States, and now give to the medical profession the benefit of my researches. I do not claim to have obtained records of all the cases, knowing that this is impossible at this date, some of the operators having died without leaving any notes of them; but I have in

some instances obtained by persevering search, even posthumous records from obscure and distant localities. My experience has taught me that in this country, at least, the publication or withholding of cases has been very little influenced by favorable or unfavorable results so far as the operation in question is concerned. I have had more trouble in searching and obtaining abstracts of favorable cases than their opposites, and have still in my memoranda data to show where very favorable results were obtained by surgeons long since dead, who never published, and notes of whose cases seem buried with them. I still have a hope that in the future, some of these unrecorded operations may be brought to light. As I before stated, the deformed pelves met with in the United States are mainly the result of rickets, a disease which in former times was regarded as by no means common among the native population, even of the lowest classes; but there is a reason to fear that with the growth of large cities this immunity will not continue, and in fact even now among what have been denominated the "waifs of society," the disease is becoming far more common, involving, according to some investigators, as high as thirty per cent. of them to a greater or less degree. Small pelves are not uncommon among our native women, and often lead to the necessity of using the forceps, or resorting to turning or craniotomy; but the badly deformed cases have hitherto been found almost always in foreigners, dwarfs, or negroes. This has been the case with all the subjects of the Cæsarean operation in New York and Philadelphia, as well as those of extreme deformity I have myself met with,

the most marked of the latter being a negress and an Irish woman.

The case of the former is one of some interest in its bearing upon the question as to which should be performed—embryotomy or gastro-hysterotomy. This negress was a young primipara who had had rickets in childhood, by which she obtained a deformed pelvis and a stunted growth. She had been four days in labor under the care of a midwife, and was finally the subject of a consultation at which a number of physicians and surgeons were present. The conjugate diameter of her pelvis measured a fraction over two inches, the index-finger striking the promontory of the sacrum in the ordinary line of introduction at a distance of 2⅓ inches from the pubic arch. She was in strong labor, the child alive, and waters long evacuated. Several skilful accoucheurs favored the Cæsarean operation; but the surgeon called upon to perform it declined, stating his belief that so soon as he should commence to incise the uterus its contractions would convert the wound into a rupture, and thus increase the risk to the patient. This plausible reasoning prevailed, and one of the accoucheurs perforated the child's head, and delivered it by making traction with a pair of Meigs' craniotomy forceps attached to the edge of the perforation, by which the head was elongated and gradually drawn through the pelvis. The woman made a rapid recovery. If any one will examine all the records of our American cases, he will find that in not one of them was a rupture induced by the knife of the operator; thus an error in reasoning was the means of preventing the

performance of the Cæsarean operation in a case where it was obviously uncalled for, and where, from the duration of labor, there was very little reason to hope for a favorable termination.

Promptness of decision and action are all important, if success is to be secured as a result of gastro-hysterotomy. As soon as the deformity of the pelvis, or the nature and extent of the obstacle to delivery can be ascertained, it should be determined whether craniotomy, cranioclasm, or the Cæsarean operation should be resorted to; and if the last, it ought to be performed as early in the labor as possible, and for these reasons, viz.:

1st. Prolonged muscular action not only reduces the strength of the patient, but favors hemorrhage from the uterine incision, and the utero-placental sinuses, by the induction of muscular inertia and consequently the failure of prompt contraction after the removal of the fœtus.

2d. General exhaustion favors the production of a fatal result from shock, peritonitis, and septicæmia.

3d. The results of these operations which have been promptly performed in the United States show that where no attempt at forcible delivery has been made, and the section has been completed within twenty-four hours from the commencement of labor, gastro-hysterotomy is by no means as dangerous an operation as the general statistics would indicate.

4th. Experience teaches that where muscular exhaustion of the uterus has not been permitted to occur, the organ will usually contract firmly and permanently,

thereby shortening the uterine incision to about two inches, and rendering a resort to the use of sutures in it seldom necessary, except for the arrest of hemorrhage where large vessels have been opened.

5th. Two prominent causes of peritonitis, viz., the escape of lochia, and effusion of blood into the abdominal cavity, are generally avoided by an early operation, as the uterine incision does not gape open, as in cases where muscular exhaustion has taken place.

Promptness of action is in one sense a relative term, and cannot be measured in all cases by hours, as labor is much more exhausting in a given time in some than in others, either from the violence of its character, or the previous physical state of the patient enduring it, so that what might be promptness in one case would be delay in another. This difference of the character of labor and the powers of endurance will account for the favorable results of some late operations, as compared with others earlier performed. The operation is at best a dangerous and uncertain one, but so also is ovariotomy, some women recovering under the most adverse circumstances, and others dying where there have been good reasons for anticipating a favorable result. But this very danger and uncertainty diminish to a marked degree in the average, where a series of cases have all been operated upon under conditions regarded as favorable to recovery. If the woman has been in good health prior to the commencement of labor, has a good and but slightly accelerated pulse, has not been operated upon by turning, craniotomy, or em-

bryotomy, and does not appear exhausted by her own efforts at expulsion, she will in the majority of instances recover from gastro-hysterotomy. Perhaps it will be safe to say that in this country at least 66 per cent. of such women have recovered.

Of fifteen women operated upon during the *first day* of labor, ten recovered; fourteen of the children were delivered alive, one of whom being a monster, soon died, and another, the offspring of a sickly mother, also perished. Thus, in fifteen operations, ten women and twelve children were saved. The uterine suture was used in but one instance, a fibroid tumor in the line of the incision causing it to close imperfectly. These are not selected cases, but all that come within the time specified. I have good reason for believing that several other favorable cases were operated upon sufficiently early to be rated as *promptly performed*, but I prefer to limit the list to such as cannot be questioned. I should not consider a case of arm-presentation (with a contracted superior strait and impaction of the fœtus in the pelvis, the uterus empty of liquor amnii, and the woman making for hours violent expulsive efforts) to be promptly aided by the Cæsarean section, if performed near the close of the first day of labor, because by this time she may have been the greater portion of the day exhausting herself in fruitless efforts to expel the fœtus, the peculiar position of the child rapidly terminating the first pains of labor by the perforation of the membranes and evacuation of the amniotic fluid. Neither should we consider an operation to be long delayed, even if performed after the close of the first day of la-

bor in all instances, for the tedious character of some labors is such that the function is scarcely established until many hours have passed by, and the patient is not materially exhausted, as evinced by her change of spirits, and the muscular power she evinces when her expulsive pains are brought to bear in extending the fœtus. The only true measure of promptness is a favorable condition of the patient at the time the operation is performed.

The general results of gastro-hysterotomy in the United States will be found to compare favorably with those reported by Dr. Charles F. Rodenstein, of Westchester, N. Y., in the number of this Journal for February, 1871, where he says: "I have collected the records of over four hundred cases which have been operated on since the beginning of this century; of these about 43 per cent. have terminated fatally to the mother."

According to the analysis of M. Pihan Dufeillay,* in

* I am inclined to regard this statement of Dufeillay as somewhat of an exaggeration; at least it is not a fair deduction from the cases which he collected, as shown from the fact that he confounds the Cæsarean operation with the abdominal section made for the removal of the fœtus already escaped into the peritoneal cavity through a rupture of the uterus, and writes of the performance of "hystérotomie" after such an accident, when the term is clearly a misnomer, as the knife does not touch the uterus, but merely opens the abdominal walls. If I had placed all such operations, the records of which have been sent me, to the credit of the Cæsarean section, the favorable results of gastro-hysterotomy would have been very much improved in my report. Under the most favorable deduction that can be made, from the promptly performed operations of the United States, which are in very small minority, we cannot claim a saving of more than from 70 to 73 per cent. of the women and children; and even this result can only be inferred from a mass of testimony in my possession, as yet in too imperfect a state for publication.

the 18th vol., 5th Series, page 304, of the Archives Générales de Médecine, 81 per cent. of the women recovered, where the operation was resorted to early and before the strength of the patient had been exhausted by fruitless attempts to overcome the obstruction; while but 19 per cent. recovered where the operation was resorted to after a long and exhausting labor. Up to the year 1866, 89 per cent. of British Cæsarean cases had died; hence the very strong opposition to the operation which is almost universal among English obstetrical writers, and the great claims made by some of them for the almost general applicability of the cephalotribe in extreme pelvic deformities; witness for instance this opinion of Dr. Robert Barnes*: "I repeat with all the emphasis that conviction based upon experience dictates, that delivery by the natural passages, either by cephalotripsy, by the craniotomy forceps, or by my new method of embryotomy, if the conjugate diameter measures 1.50″, is perfectly practicable, and with a presumption of safety to the mother much greater than that attending the Cæsarean section. I am even confident that the same may be predicated with a conjugate diameter reduced to an inch and a quarter, or even an inch."

In view of the increased efficiency of the cephalotribe, Dr. J. Braxton Hicks says:† "With the various plans of late developed which are at command I consider there are few cases in which the head itself will give

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* Robert Barnes' Lectures on Obstetrics, page 315. London, 1871.

† Trans. Obstet. Soc., London, 1870, page 127.

insuperable trouble; the *body* is now the difficult element in the extremely severe obstacles."

Dr. Robert Greenhalgh, who has had considerable experience in gastro-hysterotomy as an operator and observer, and who has visited and seen some of the cases of Dr. Ludwig Winkel, thus expresses himself:* "I believe that craniotomy and extraction by the crochet or cephalotribe, in cases of extreme deformity of the pelvis, is more difficult and probably more fatal to the patient than the Cæsarean section; and moreover, by the latter operation, if timely performed, there is every probability that the child's life may be spared." No one has better described the dangers of craniotomy than Dr. Barnes, before quoted, and without here mentioning them for want of space, let me refer you to the London Medical Times for Nov. 14, 1868, or The Half-Yearly Abstract, for July, 1869, Phila., in which latter volume will also be found several valuable monographs by the same writer, bearing upon craniotomy and the Cæsarean operation.

Dr. Cleveland, in the London Obstetrical Transactions,† page 128, reports a case in point, upon the difficulty with the body, referred to by Dr. Hicks, where after removing the fœtal head and all the cervical vertebra, he was foiled in the attempt to bring down the body within operative reach.

Dr. Robert Dyce expresses my own views when he says:‡ "I am quite satisfied that each case of extreme

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* Op. cit., 1865. † For 1870.

‡ Edinburgh Med. Jour., vol. ii., part 2, 1862.

deformity must in great measure be treated less on a general principle than on its own individual peculiarities, and that such and such measurement should not be held exclusively as indications for the Cæsarean operation, irrespective of collateral circumstances."

I close my quotations of English authorities with the language of Dr. John Burns, an old writer, but still applicable at the present time: "It is one thing to extract, and another to extract safely, in extreme deformity." . . . "We ought to be satisfied not only that we can bring through the child, but that we can do so without so much violence as must in all probability kill the mother." . . . "I question much if extreme cases be not as dangerous to the patient as the Cæsarean operation; they are certainly more painful." (Principles of Midwifery. London, 1837.)

I feel that I cannot give a better American opinion upon the relative values of gastro-hysterotomy and embryotomy, than that expressed to me in a letter lately received from Dr. Charles S. Mills, of Richmond, Virginia, who has twice performed the Cæsarean section. He writes: "Having witnessed the fatal results in a great many cases of embryotomy, none of which have ever been made known to the profession, to say nothing of injury inflicted on the patient, entailing in many subjects a miserable state of existence to which death would be preferable, I am decided in the opinion that in most cases in which craniotomy or embryotomy is resorted to in consequence of physical deformity, the preferable operation, and least hazardous to both mother and child, would be gastro-hysterotomy, resorted to as

soon as its necessity is ascertained, rapidly performed, and with as little exposure as possible of the abdominal organs, and vigilant attention to the patient afterward."

Prof. Hugh L. Hodge, in his "Obstetrics," page 281, says, with reference to the *question of delay:* "Deferring the operation to a late period of labor has been probably one important reason why the Cæsarean section has so often terminated fatally to the mother and her infant. On the contrary, if it be resorted to before the child or the parent have been injured by unavailing efforts at delivery, and especially before the membranes are ruptured, while the moral and physical being of the mother are in good condition, and when there are no symptoms of inflammation, fever, or exhaustion, strong hopes may be entertained for the salvation of both the mother and the child." Page 284: "The hope also may be entertained that if the patient be in good condition mentally and physically, and if the deformity of the pelvis be ascertained previous to the occurrence of labor, so that suitable preparations can be made for the operation, gastro-hysterotomy will prove far more successful than in times past, and perhaps may be justified even in cases of moderate deformity when the child is alive, for the purpose of preserving its life, as well as that of its mother."

For the mode of performing the operation, see Hodge's Principles and Practice of Obstetrics, in which the steps are very simply and accurately given by one who was present at Dr. Gibson's second successful operation upon Mrs. Reybold, of this city.

The following are the causes, so far as stated, which have been assigned as necessitating the performance of gastro-hysterotomy in this country:

	Cases.
1. Deformities of the pelvis; in almost all instances the result of rickets in childhood, but in no case the effect of malacosteon	32
2. Occlusions, or constrictions of the os uteri, vagina, or both, the results of previous disease, with other complications	8
3. Pelvic exostosis; generally from the sacrum, and the result of syphilitic disease	5
4. Transverse position of the fœtus, and its impaction in the pelvis, for want of proper timely assistance	5
5. Large fibrous tumors occupying the pelvic cavity	2
6. Ventral hernia, with os uteri displaced and beyond reach	1
7. Combined extra and intra-uterine pregnancy, the former concealing the latter, until after making the abdominal section	1
8. Constriction of the body of the uterus, retaining the fœtal head, and preventing the forcible delivery of the child by traction on the feet	1

In performing the operation of gastro-hysterotomy in this country, the abdominal incision has in nearly all the cases been made directly through the linea alba, and the uterine opening in front, between the cervix and fundus. Other plans of incision have been proposed, especially by European surgeons, for the uterus, with a view to favor a better closure and union; and sutures of various materials and characters have been devised and used in the abdominal, and sometimes in

the uterine wound; but in my judgment there is no plan of operation or suture, which can compensate for the almost criminal hesitancy and delay, which are a marked feature in the history of Cæsarean cases. The simple central incision made in the first stage of labor, whilst the woman is still strong and her infant unmutilated, is better than all the more complicated plans devised to avoid the injurious effects of delay. There may be some cases where the uterine wound should be united, under pressure by sutures, to avoid hemorrhage, and gaping, even under the most favorable circumstances, as to time and condition; but these are exceptional ones, as is that reported by Prof. Sager* in the "abstract," where sutures were used to prevent hemorrhage and the gaping caused by the presence of a small fibroid tumor directly in the line of the incision. The question of uterine and peritoneal toleration, in the case of suturing the uterus, has yet to be decided: that it appears important as a measure necessary to insure recovery in some instances cannot be denied; neither can it be said that it would not be an improvement, provided it could be shown not to favor inflammation, and that after union it would occasion no future trouble.

In but six cases operated upon in this country have sutures been used, all of which but one were late operations, and the exception was a deformed cripple, who soon died from shock resulting from hemorrhage and escape of lochia into the abdomen, notwithstanding the

* See Abstract of Cases in next number of this Journal.

use of sutures to prevent the gaping of the uterine incision. Two of the five late cases still live, one having six silver sutures in her womb, and the other five linen ones, where they have remained, according to very recent reports received by letter, for nearly four years without producing any inconvenience. In one of these cases, viz., that of Mad. Despretz, it hardly seems possible, from reading the record, that she could have recovered without this artificial closure of the uterine wound, which did not shorten and gaped wide ly, falling in on one side. The question of the safety of such sutures has been fully discussed in a paper by Dr. Charles F. Rodenstein, of Westchester County, N. Y., in the February number of the American Journal of Obstetrics for 1871, page 577, in which he advocates their use as a preventive of secondary gaping of the uterine wound and the escape of the discharges into the peritoneal cavity, as well as for the arrest of primary hemorrhage. I am not aware of any form of removable uninterrupted uterine suture having ever been used in this country. Judging from the results of eleven cases in which I find that sutures have been used, I am disposed to believe that they do not materially add to the gravity of the operation, as five of the women recovered. It is a matter for future determination, whether the tendency of the suture to produce inflammation is not much more than counterbalanced by its arresting hemorrhage and the escape of noxious discharges into the peritoneal cavity, as well as the prevention of visceral strangulation of the wound.

In concluding the introductory part of this paper, I regret to find that after eight months of diligent search, the statistical portion is still far from perfect or complete, in points wherein I have expended the greatest amount of care and labor. To give this in all respects an impartial character has been my aim from the beginning, and I have endeavored with every degree of care to render the statistical work as fair in its representations as possible, by presenting a record of every obtainable case, published and unpublished. I had hoped to have presented at this time a finished tabular statement, embracing all the cases of gastro-hysterotomy of every grade possible to collect; but recently received letters have indicated other lines of search, and increased my anxiety to fill up records long since imperfectly received, so that I am inclined to withhold its publication until a future time, especially as I know sufficient of the incomplete returns to satisfy me as to their importance in the general result. But for the delay incident to making researches by means of correspondence through so vast a country as ours, I should have long since finished my task, and I feel now that it is perhaps better to postpone the concluding tables than to publish them in an imperfect form.

No one State in the Union probably equals Louisiana in the number of Cæsarean operations, their successful results, or the early period of their history. That the operation was performed a number of times with success in the early part of this century, prior to any of the cases I have here recorded, there is every reason to believe; in fact, it is highly probable that the Louisi-

ana operations constitute a fifth of the whole credit of the Union. It is true that I present but 8 cases, seven of which recovered, and one died, with a saving of one-half of the children; but there is good reason to believe that this number might with propriety be extended to 15 cases, with but two deaths, and that even this does not represent the full complement of operations that have been performed. I have searched the French medical periodicals of the years in question, and through the kindness of Dr. S. M. Bemiss, of New Orleans, have also made a thorough canvass of the State; but beyond the eight cases, we have not been able to find any which may be definitely reported, as they unfortunately belong to the dead past, and I fear can never be brought to life. We made a very special search after the records of seven operations said to have been performed upon the same woman, the last one fatal, by Dr. Prevost, of Donaldsonville, some forty to fifty years ago, but to no avail.

If we calculate the risks of gastro-hysterotomy in this country from the cases operated upon in cities and large towns, or by their surgeons in their immediate vicinity, giving them all the advantages that skill and service can command, we find that 60 per cent. of the women recovered, or 15 out of 25. Nine of these 25 were operated upon with a reasonable degree of promptness, calculated as to time and condition; of these, 7 recovered, and the same number of children were saved. All of the nine children were alive when delivered. The *whole mortality* among the children, owing to the

TABULAR SUMMARY OF CÆSAREAN OPERATIONS IN U. S.

No.	Year.	Locality.	Age.	Color.	Cause of Difficulty.	Name of Operator.	Result to Woman.	Result to Child.	Cause of Death, Woman.	Cause of Death, Child.	Duration of Labor before Operation.
1	1822	Nassau, N. Y.	14	Black.	Not any.	Girl, herself.	Recovered	Not stated			A few hours.
2	1827	Newton, Ohio	..	White	Vaginal contraction and eclampsia.	Dr. J. L. Richmond	"	Lost		Loins cut across in delivery.	34 hours.
3	1828	Occoquan, Va.	25	Black.	Vaginal occlusion.	A country charlatan	Died.	"	Peritonitis	Long labor.	At intervals for 12 or 15 mos.
4	1832	Northumberland, Pa.	..	White	Deformed pelvis.	Drs. Dougal and Van Valzah.	"	"	"	Craniotomy	Over a day.
5	1833	Columbiana Co., Ohio	23	"	" "	Dr. Robert Estep	Recovered	"		Long labor and decapitation.	Performed late.
6	1834	" "	24	"	" "	" " "	"	"		Cross-birth.	" "
7	1835	Philadelphia, Pa	26	"	" "	" William Gibson	"	Saved			A few hours.
8	1835		31	"	" "	" A. Brooke	Died.	Lost	Peritonitis	Uterine pressure	3½ days.
9	1837	Carroll Co., Tenn	..	"	Vaginal contraction and rigid os uteri.	" John Travis,	"	Saved	"		Over 2 days.
10	1837	Philadelphia, Pa.	28	"	Deformed pelvis.	" William Gibson	Recovered	"			A few hours.
11	1838	New York City	42	"	" "	" R. K. Hoffman	"	Lost		Feeble & deformed.	24 hours.
12	1838	North of N. O., La.	..	Black.	Not any.	A drunken negress	"	Saved			Less than a day.
13	1840	Hamilton, Ohio	..	White	Deformed pelvis.	Dr. Cyrus Falconer	Died.	"	Peritonitis		" "
14	1845	Cortland Co., N. Y.	41	"	Fibrous tumor.	" Azariah B. Shipman	"	Lost	Shock	Long labor	Several days.
15	1845	Fredericksburg, Va.	30	"	Rigid os uteri following peritonitis.	" Brodie S. Herndon	Recovered	"		" "	Irregularly for 6 weeks.
16	1846	Thibodeaux, La.	30	Black.	Exostosis	" J. A. Scudday	"	"		After delivery.	12 hours.
17	1847	Mt. Vernon, Ind.	26	White	"	" Wm. H. Byford	Died.	"	Peritonitis	Long labor	3 days.
18	1848	Wilcox Co., Ala.	..	Black.		" Zacch. Nettles	Recovered	Saved			
19	1849	Thibodeaux, La.	33	"	Exostosis	" J. A. Scudday	"	"			A few hours.
20	1849	St. James, La.	..	"	"	" Thomas Cottman	"	Lost		Craniotomy	Over a day.
21	1849	Richmond, Miss.	..	"	Ventral hernia	" B. Harvey	Died in 3 weeks.	Saved	Irritative fever		Several hours
22	1850	Opelousas, La.	22	"	Deformed pelvis.	" Vincent Boagni	Recovered	Lost		Long labor	Over 2 days.
23	1850	Near Bethlehem, Pa.	31	"	" "	" Benj. Wilhelm.	"	"		" "	2 days.
24	1851	Perry Co., Ala.	18	"	" "	Drs. E. R. Schowalter and M. Langhorne	Died.	"	Exhaustion and convulsions.	" "	72 hours.
25	1851	Bayou Sara, La.	25	"	Occlusion of os uteri.	Dr. David B. Gorham.	Recovered	Saved			48 hours.
26	1852	Oktibbeha, Miss.	24	"	Deformed pelvis.	" Wm. H. Merinar	"	Lost		Long labor	3 days.
27	1852	Fayettville, N. C.	21	White	Arm presentation.	Drs. Mallett and McSwain.	"	"			Performed late.
28	1853	——, Ala	17	Black.	Deformed pelvis.	Dr. J. W. Crawford	Died.	"	Exhaustion	Long labor	50 hours.

29	1854	Oktibbeha, Miss.	26	Black.	Deformed pelvis.	Dr. Wm. H. Merinar.	Recovered	Saved				Before rupt. membranes.
30	1855	Eastville, Va.	25	"	Vaginal occlusion	" Wm. G. Smith.	Died.	"	Exhaustion			Over a day.
31	1855	Corning, N. Y.	26	White	Deformed pelvis.	" Joshua B. Graves.	"	"	Perforation of vagina and rectum.			4 days.
32	1855	Oktibbeha, Miss.	27	Black.	" "	" Wm. H. Merinar.	"	"	Peritonitis.			A few hours.
33	1856	Richmond, Va.	..	"	" "	" Edward Drew	"	"				
34	1856	" "	28	"	" "	" Charles S. Mills.	Recovered	"				Actively 4½ hrs.
35	1856	Wilcox Co., Ala.	19	"	" "	Drs. A. C. Matheson and Gaillard.	Died.	Lost	Exhaustion	Long labor		2 or 3 days.
36	1857	New Orleans, La.	..		" "	Dr. Langenbecker	"	Saved.				
37	1857	Council Bluffs, Iowa.	20	White	" "	" Wm. F. McLelland.	Recovered	"				Perform'd early.
38	1857	San Francisco, Cal.	36	"	" "	" Elias S. Cooper	"	Lost.		Long labor		61 hours.
39	1857	Lawrenceville, Ga.	28	"	" "	" A. J. Shaffer	Died.	"	Peritonitis.	Craniotomy		42 hours.
40	1860	Florence, Ala.	27	"	Transverse position.	" James W. Stewart.	Recovered	"		Uterine pressure		Over 30 hours.
41	1860	New York City	38	"	Exostosis	" B. Fordyce Barker.	Died.	Saved	Peritonitis.			2 days.
42	1861	Hamburg, Ark.	..	Black.	Deformed pelvis.	" L. J. Newton	Recovered	"				A few hours.
43	1862	Matamoras, Ind.	..			" H. Case	"	Lost.				
44	1862	St. Louis, Miss.	32	White	Arm presentation	" Charles A. Pope	Died.	"	Exhaustion	Transverse position and uterine pressure.		26 hours.
45	1863	Jefferson Co., Ind.	..	"	Fibrous tumor.	" J. W. Conway	Recovered	"		Not stated		14 hours.
46	1866	Burnt Corn, Ala.	35	"	Shoulder presentation	" R. Fowler	"	"		Embryulcia		60 hours.
47	1866	Westchester Co. N.Y.	39	"	Arm "	" G. J. Fisher	Died.	"	Exhaustion following fright and excitement.	Uterine pressure		After exhaustion.
48	1867	Pittsfield, Mass.	28	"	Deformed pelvis.	" Wm. Warr'n Greene	Recovered	Saved				26 hours.
49	1867	Richmond, Va.	34	Black.	" "	" Charles S. Mills.	Died.	Lost.	Pre-existing peritonitis.	Asthenia and malformation.		Nearly 2 days.
50	1867	New Haven, Conn.	18	"	" "	" T. Beers Townsend.	Recovered	Saved				62½ hours.
51	1867	New Orleans, La.	23	White	Occlusion of vagina and os uteri.	" H. C. D'Aquin	"	Lost.		Craniotomy		10 days.
52	1868	Mobile, Ala.	19	Black.	Deformed pelvis.	" J. T. Gilmore	Died.	"	Peritonitis.	Uterine pressure		Over 2 days.
53	1869	Aberdeen, Miss.	22	"	Extra and intra uterine pregnancy combined.	" R. Paul Sale	"	2 Saved.	Septicæmia			Extra - uterine pains for 4 or 5 weeks.
54	1869	Philadelphia, Pa.	31	White	Deformed pelvis.	" Walter F Atlee	"	"	Visceral obstruct'n			A few hours.
55	1869	Edgefield, S. C.	32	Black.	Contracted vagina	" Walter Hill	Recovered	"				56 hours.
56	1869	Baltimore, Md.	26	"	Deformed pelvis.	" James W. Butler	Died.	Lost.	Peritonitis.	Craniotomy		Performed late.
57	1869	Ann Arbor, Mich.	35	White	" "	" Abram Sager	"	Saved	Secondary shock			8 or 9 hours.
58	1870	Kingsbridge, N. Y.	40	"	" "	" P. De Marmon	"	"	Metro-peritonitis			44 hours.
59	1870	Portland, Me.	40	"	Convulsions, and constriction of uterus.	" T. A. Foster	"	Lost.	Albuminuria, convulsions, and exhaustion.	Uræmic poisoning.		Irregularly for 2 weeks.

gravity of the delayed cases, amounted to 56 per cent. or 14 out of 25.

APPENDIX.

TABULAR SUMMARY OF THE CÆSAREAN OPERATIONS PERFORMED IN THE UNITED STATES.

Upon more mature deliberation, I have concluded to publish the summary as far as completed at this time, especially as the abstract of cases will not appear until the next number of this journal. As my researches by the aid of correspondents are as yet by no means ended, I hope at a future day to furnish a table as complete in all points as it may be in my power to make it. Although I cannot at this time give the important points of more than 59 cases, I have discovered the localities and operators of about 70, 39 of which, or nearly 56 per cent., recovered. Of the 59 cases presented in the accompanying table, it will be seen that 52 per cent. recovered, and 48 died. The *color* of the women has been noted in 57 cases, of which 30 were whites, and 27 blacks. Of the former, 15 recovered and 15 died; of the latter 15 recovered and 12 died. Twelve white children were saved and 17 perished, against 14 blacks saved to 13 lost. This greater mortality in the white children goes to show that the preponderance of loss in the white women was due rather to the gravity of their cases prior to the operation, than to any ethnological cause, as might be presumed to occasion it. Almost all the cases are from the lower walks of life.