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OBSTETRIC SURGERY A MODERN SCIENCE

ITS SCOPE AND LIMITATIONS *

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Last to share in the general advance in modern medical science has been obstetrics. While there remain unsolved problems in the pathology of pregnancy and parturition, a considerable gain has been made in reducing the mortality and morbidity of parturition from hemorrhage, septic infection and shock, and in securing a sound anatomic recovery for the mother, and this with a lessened risk for the child. The application of the principles of surgery to obstetrics has made this possible. The development of antisepsis and asepsis marked the beginning of a new era in general surgery. The application of antisepsis to the parturient woman resulted in deaths from poisoning by antiseptic agents. At this time abdominal surgery had a high mortality rate because antiseptic solutions were commonly introduced within the peritoneal cavity. When we learned to limit the application of antiseptics to the exterior of the body, to our hands, instruments and appliances, general surgery was vastly improved, abdominal surgery became possible, and obstetric science entered on a new era.

While puerperal septic infection became far less frequent at this time, a contracted pelvis still had terrors for the obstetrician, the immediate repair of lacerations was imperfectly carried out, and many pathologic conditions in the abdomen and pelvis complicating labor received no attention. Antiseptic and aseptic obstetrics, while enthusiastically received and practiced in hospitals, was not thoroughly done in private houses and, while a considerable improvement in mortality and morbidity in hospitals was obtained, a far less proportionate gain was made in private practice.

At this time we firmly believed that puerperal septic infection never arose except by actual contamination from without during labor. We had not sufficient experience in dealing with appendicitis, pyosalpinx and other intrapelvic and abdominal conditions to recognize the fact that a focus of infection might be present in the pelvis or abdomen of the patient before labor began. We also failed to recognize that bacteria in the vagina may make their way into the uterine cavity after labor, and that it is impossible to

know how virulent these germs in their new surroundings may prove.

The development of modern obstetric surgery dates from the perfection of the classic cesarean section, when Saenger accurately closed the uterine muscle and peritoneal covering separately. The mortality and morbidity of the classic section immediately fell to a rate corresponding to that of other abdominal operations. Next came the observation that patients infected during labor became so through repeated examinations after the membranes had ruptured, conveying bacteria from the vagina into the uterine cavity. Especially dangerous are unsuccessful attempts at delivery, which bruise and lacerate the tissues and deposit bacteria on open surfaces. It was observed that, while the instruments themselves and the hands of the operator might be sterile originally, and that while an attempt might be made to sterilize the vagina, repeated manipulation and examination so injured the epithelium of the genital tract that infection almost certainly occurs. While, theoretically, it may be possible to sterilize the vulva and vagina, it is practically a difficult task. When the lesson was learned that internal examinations should be made as rarely as possible; that diagnosis during labor should be made by palpation and auscultation and pelvimetry, and that it is a matter of gravity and responsibility to attempt vaginal delivery during labor, patients were brought to section uninfected and the results of the operation materially improved.

There still remains a relic of bad practice in the fact that the attempt is sometimes made to deliver the unengaged head by forceps. While this may rarely be successful, it often fails, and the unsuccessful attempt frequently leaves the patient wounded and infected. It is difficult to eradicate from the mind of the general profession the belief that one need not wait for engagement and molding for the successful application of forceps; but, until this is abandoned, there will remain from this source a considerable maternal and fetal mortality and morbidity.

The modern conception of the genital tract at labor was for a time greatly confused by conflicting reports from bacteriologists concerning the condition of the vagina and cervix. There is abundant evidence that bacteria, morphologically identical with virulent bacteria, are present in the vagina during pregnancy and at the beginning of labor. Their virulence can only be determined by transplanting them on a favorable soil. Some streptococci under these circumstances become hemolytic or directly poisonous, and others show much less virulence. The attempt completely to sterilize the vagina during labor cannot be carried out with absolute accuracy, and repeated attempts may injure the patient and result in infection. These con-

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

ditions are of importance in considering the question of the immediate repair of lacerations. The lochial discharge from the apparently healthy uterus cannot be considered as absolutely sterile for, should it escape into the peritoneal cavity after cesarean section, infection may result. Should the lochia be retained in the uterus without drainage, infection may develop. Hence, when the genital tract has been invaded by the hand or instrument of the obstetrician, it is incumbent on him to see that the uterus drains freely during the puerperal period. This is old knowledge, but made reasonable and plain by modern research. Bacteriology has established no important facts concerning puerperal septic infection, but explains the phenomena previously observed by careful clinicians. When we remember that the genital tract must have drainage after labor, it is seen that any attempt at immediate repair, to be successful, must not interfere with this condition of primary importance. So immediate closure of the torn cervix, if improperly performed, may result in the retention of lochia and infection. And the same is true of the immediate repair of the pelvic floor and perineum.

For the mother, modern obstetric surgery aims to obviate the dangers of contracted pelvis and disproportion between mother and child; to deal successfully with foci of infection or pathologic conditions of the pelvis or abdomen complicating labor; to repair the lacerations in the genital tract produced by labor, and thus to restore the mother to a sound anatomic condition after parturition. While these results are certainly important, modern obstetric surgery does far more in the interest of the child. Delivery by abdominal section is the safest artificial method of delivery. Not only is the life of the child saved, but also injuries to the nervous system which may seriously jeopardize its health are avoided.

The anatomic scope of modern obstetric surgery embraces delivery through the cervix and vagina with or without enlargement of the bony pelvis. By symphyseotomy and pubiotomy the dimensions of the bony pelvis can be substantially increased. Modern obstetric surgery also enables the obstetrician to solve a complex problem when conditions arise which justify the prevention of further reproduction. While he will always be on his guard against those who try to persuade him to operate without good reason, in cases in which there is a history of repeated difficult and dangerous parturition, the parents having living children, and further parturition would be attended with unusual suffering and risk, and husband and wife request sterilization, it may properly be done. In the case of feeble-minded and degenerate individuals, the consent of parents or guardian may justify the same procedure. When the mother is attacked by a disease which renders parturition exceedingly dangerous, the operation is justifiable. Here experience shows that to meet the demands of modern surgery, the operation may not only render the woman sterile but also remove the tubes and ovaries and the body of the uterus and also the appendix. The question of leaving one or both ovaries must be decided on the merits of each case, with reference to the age and the general condition of the patient. The surgeon is a true conservative, and when he invades the abdomen, for whatever reason, he aims to leave the patient in such a condition that future interference may not become necessary.

Modern obstetric surgery includes the small class of cases in which the anatomic conditions may render vaginal delivery possible, but the physiologic elements necessary for spontaneous parturition are absent and the suffering caused by uterine contraction may be more than the patient can safely bear. The term "physiologic incompetence" for labor has been suggested to describe this condition. In some of these cases the macroscopic or gross anatomy of the patient may be normal, but some condition of the uterine muscle may be present which renders efficient uterine contractions impossible and vaginal delivery dangerous. Elective cesarean section without labor is very successful in these cases, and may be repeated with success.

Do the results of modern obstetric surgery, as compared with the results obtained by spontaneous labor, justify its existence, or have we lost the art of obstetrics and substituted for it a surgical monstrosity?

The maternal mortality of labor is difficult to estimate outside of institutions. The natural desire to avoid injurious criticism frequently leads to an inaccurate report concerning the death of patients in the puerperal period. It is fair to state, however, that the maternal mortality of spontaneous labor is a fraction of 1 per cent. under ordinarily favorable conditions. The mortality of spontaneous labor for the child is the mortality of asphyxia and, while it is difficult to obtain exact statistics concerning this, it is not a negligible factor in considering the results of spontaneous labor. Under the general head of birth pressure, fetal mortality may result in spontaneous labor from visceral hemorrhage.

If we place in direct contrast with this the results obtained by the classic cesarean section, when mother and child are in good condition, it is not unusual to find a series of cases ranging from forty to sixty without maternal death. If larger series of cases are taken, a mortality of from 2 to 3 per cent. is stated. In my experience, in 151 cases of patients not septic and not toxic at the time of operation, the maternal mortality was 0.066 per cent.

As regards the fetal mortality in classic cesarean section in cases in which mother and child are in good condition, I may quote the statement made by the author of the most recent American textbook, that "cesarean section is the most certain method of delivering a living child which exists." My experience fully agrees with this statement.

It would be interesting to know whether an essential improvement has taken place in artificial delivery through the vagina by the development of modern obstetric surgery. This limits vaginal delivery by forceps to cases in which the head is well engaged, avoids attempts at vaginal delivery when contracted pelvis or disproportion exists and, after such delivery, disinfects and drains the uterus and repairs lacerations.

The statistics of the older methods of performing this operation give a maternal mortality of between 1 and 2 per cent. In my experience, forceps delivery followed by antiseptic drainage of the uterus and immediate repair of lacerations has given no maternal mortality or morbidity in sixty-eight private patients, while in hospital cases this procedure has had no direct mortality.

High maternal morbidity following the use of forceps is stated by Gans¹ from the Königsburg clinic as

1. Gans: *Monatschr. f. Geburtsh. u. Gynäk.*, 1908, xxvii, No. 4.

21 per cent., and of these, 3.82 per cent. were cases of severe septic infection. In estimating the frequency of lacerations in forceps cases, episiotomy was required in 24.73 per cent., and of these patients 51.06 per cent. sustained lacerations during delivery. The perineum was considerably lacerated in 16.9 per cent. To avoid extensive lacerations of the cervix, it was necessary to incise the cervix in 5.65 per cent.

The fetal mortality following the use of forceps varies in proportion to the mode of application. In the so-called low forceps operations, the fetal mortality of the Sloan Maternity was approximately 10 per cent., in medium operations 19.2 per cent., and in high operations 38.5 per cent., an average of 14.5 per cent. In the Königsburg clinic the fetal mortality attending the use of forceps was 12.45 per cent. In this clinic the high application of forceps had a mortality of 33.33 per cent. for the children.

Gans made an effort to trace the subsequent history of children delivered by forceps. In seventy cases one had failed to develop normally, and birth pressure had unquestionably been the cause of retarded growth. Another child delivered by the easy application of forceps had an injury to the muscles at the back of the neck and head producing contraction. In four there was a history of convulsions, and these had been difficult deliveries without apparent injury at the time of birth, although two of the children had scars on the cranial bones caused by forceps. It is interesting to note that in Gans' cases, among the primiparas delivered by forceps, one third of them had not again become pregnant after several years. This indicates some injury to the genital tract which interfered with conception.

The fact that version and extraction is accompanied by a comparatively high mortality makes it difficult to compare this procedure with delivery by cesarean section if the interests of the child are to be taken into account. The same criticism applies to the induction of premature labor which is accompanied by a maternal mortality of approximately 1 per cent. and a high fetal morbidity and mortality.

The indiscriminate application of cesarean section as a last resort is not modern obstetric surgery, but is the old and familiar error which for so long a time prevented the development of modern obstetric science. In cases in which repeated attempts have been made at delivery, and infection has developed, if delivery is effected by abdominal section, it must be accompanied by the removal of the fallopian tubes and the body of the uterus. Should this be declined, craniotomy or some form of embryotomy is indicated. The decision to limit the classic cesarean section to proper cases is a modern decision and has resulted in great improvement. The indiscriminate application of delivery by cesarean section when the mother is suffering from some dangerous disease is an error of the past and not the best teaching of the present. In eclampsia, for many years, the rule was to deliver the patient immediately, and the violent and dangerous method known as forced labor was responsible for many deaths. The indiscriminate application of cesarean section to eclamptic cases has thus been shown to be an error, and the limitation of the operation to a very small percentage of cases is a modern advance.

When we consider the limitations of modern obstetric surgery, we come on a condition which is general throughout medicine at the present day. The development of laboratory work and the use of so-called

instruments of precision has led to the neglect of clinical observation made by the senses only. We study the pulse more by a blood pressure apparatus than by the finger. We rely more on bacterial cultures for a knowledge of the general condition of the patient than our powers of observation—by vision and touch. In obstetrics we are too apt to rely on given measurements as indicating the choice of operation, rather than a thorough study of the individual case. Modern obstetric surgery should be limited carefully by a thorough knowledge of the natural phenomena of labor, by the practice of palpation and auscultation in all cases, and, above all, constant observation in diagnosing the engagement of the presenting part. No more common or dangerous error is made in studying labor than to mistake the unnatural position of the head of excessive lateral obliquity for a normal engagement. What is described by some writers as presentation of a parietal bone is often mistaken for a vertex presentation and for engagement. If delay occurs in labor under these conditions, the forceps are applied improperly and unsuccessfully. Modern obstetric surgery should be carefully classified and limited by accurate physical examination of the patient, and the tendency to resort to abdominal section should be strictly kept within certain bounds.

In the treatment of patients infected during labor, the obstetrician may be tempted to resort to section when craniotomy should be performed and, if section is chosen, to leave behind the body of the septic uterus. A further error in these cases consists in dropping the septic stump and closing the abdomen without drainage. In cases suspected but not proved to be septic, when the woman is young and in fairly good condition, the effort may be made to save the uterus by packing and draining it with 10 per cent. iodoform gauze; but, when there is good reason to believe that septic infection is present, delivery by section should not be resorted to unless the operator is prepared to remove the tubes and body of the uterus and to leave the stump outside the peritoneal cavity.

In this paper I have abstained from discussing different methods of performing cesarean section. In the hands of competent obstetricians several methods are successful and, as the obstetrician acquires wider experience, he will choose his method in accordance with the needs of the individual case.

The most important and essential limitation in modern obstetric surgery is the choice of those persons who shall practice it. Modern obstetric surgery can best be done by obstetricians, and not by general surgeons or by gynecologists. The technical performance of delivery by abdominal section is in many cases comparatively simple, and the general surgeon and gynecologist are inclined to vary the monotony of their practice by short excursions into the field of obstetrics; but they lack the practical experience which is the basis of all sound judgment in deciding to perform an obstetric operation and in choosing the best method.

Modern obstetric surgery has been slow in development because human life has been cheap. Compensation has been willingly given for the removal of abdominal tumors with a reasonable certainty that they would not return. But the birth of a child is the beginning of trouble and expense for a considerable period of years, and the legal value of human life is its wage earning capacity. This is well exemplified in the experience of a young general practitioner who had been trained in modern methods of antisepsis. He was called to

attend the patient in her home and made every effort to secure a proper aseptic technic. The husband interrupted him in this, saying that this was an ordinary case of confinement and that he could not afford to have all this done for his wife. The enormous waste of human life going on at present has created a sudden and renewed interest in obstetrics, and the time is ripe for securing a permanent advance in this branch of medicine. The multiplication of hospitals throughout the country, the opening of maternity wards, and the better training of medical students will produce a certain number of obstetricians capable of properly performing modern obstetric surgical operations. To these men cases of complicated labor will come and will receive proper attention with a corresponding lessening in maternal and fetal mortality and morbidity and a decided increase in the working capacity, reproductive ability and general health of women.

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MEDDLESOME MIDWIFERY IN RENAISSANCE *

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According to the Bureau of Census, in 1914 there died in the United States 10,518 women during childbirth. This figure represents the deaths in two thirds of the estimated population of the United States. On this basis we must admit that there are about 15,000 deaths from childbirth in this country every year. This number does not take into consideration the postponed mortality, as, for example, that from operations undertaken to correct the bad effects of childbirth, and that from conditions which are not readily ascribed to the fact of childbirth, such as endocardial disease, nephritis from puerperal infection, etc.; nor does it include those deaths in which the women are buried under another diagnosis, either ignorantly or intentionally. I feel that no exception will be taken to the statement that there die annually in the United States 20,000 mothers during childbirth. The mortality of the newborn children also is noteworthy high, although it is impossible to show by statistics how many children die every year from the immediate and remote effects of childbirth. Most of us, however, certainly those connected with hospitals, know that too many children are lost at birth, or from the late effects of either spontaneous or instrumental delivery.

Of great importance is the continued excessively high morbidity of both mothers and babies as the result of labor. One of the most striking facts of the modern hospital treatment of parturient women is the still high percentage of women who have moderate degrees of fever during the puerperium, in spite of most rigorous aseptic and antiseptic precautions. According to the report of the Census Bureau, 4,664 women died of sepsis in 1914, but it is impossible to even guess how many women suffered from puerperal infections and carry the marks of the disease. If we estimate the mortality of all cases of puerperal infection as 5 per cent., this would mean that there were about 100,000 infected puerperae in the United States in 1914. This

estimate is, I am sure, too low. All the hospitals with which I have been connected for the last twenty-five years show varying percentages of puerperae with fever. At times as high as 15 per cent. has been reported. These women in the majority of instances are not very sick, the fever seldom goes above 102 F., and if it does it is not high long. The temperature is usually ascribed to other causes, but it is most often due to a mild pelvic infection with which the puerpera is well able to cope. But although the women recover, often quite promptly, the pelvic inflammation leaves permanent traces in the form of peritoneal adhesions or parametric thickenings, and later uterine displacements. This fact was emphasized by Emmett long ago, but it deserves repeating. The patient recovers and leaves the care of the obstetrician, but she comes back again for relief of distressing symptoms which he will find it hard to relieve. The procession of women passing through our dispensaries and private consulting rooms, repeating monotonously the statement, "Doctor, I have never been well since my baby was born," should draw our attention to the fact that things are not right in obstetric practice.

I have studied my case cards carefully and find that the majority of women who have borne children suffer from physical damage due to childbirth. As a cause of uterine disease, in my gynecologic practice, childbirth is much more frequent than gonorrhea. True, vesicovaginal and other fistulas and complete perineal lacerations are more seldom met, as compared with olden times, but minor degrees of laceration, prolapsus uteri, etc., are certainly no less frequent. If we were to judge from the prevalence of operations corrective of uterine displacements, we would have to say they are more frequent than formerly, but we are nowadays submitting more of these cases to operation.

As a producer of invalidism and semi-invalidism, the lacerated cervix is, in my opinion, more often culpable than a corresponding degree of perineal laceration. The patulous os allows the cervical mucous membrane frictional contact with the septic vagina; the open cervix permits the entrance of bacteria into the uterus; the diseased mucosa is a focus of infection, and even low grades of inflammation can produce bad after-effects. The lymphatics, being loaded continually with bacteria and toxins, become inflamed, the connective tissue in the uterine ligaments soon takes part in the process. Parametritis postica is almost a constant attendant on chronic cervicitis. Backache, bearing down sensations, constipation, dysmenorrhea, semi-invalidism, are the symptoms of parametritis postica. Sooner or later, the infection travels upward along the lymphatics to the uterus, and chronic metritis results. Some authors call the enlarged, fibrous, heavy uterus simply myometropathia. I prefer the other term. Sturmdorff has most graphically described this condition and I agree fully with him that one of the most frequent causes of this disease is the lacerated cervix. I do not need to mention the other evil results of laceration of the cervix, but the tendency toward cancer, although discussable, should be borne in mind.

I feel sure that the accoucheur does not accord the cervix the dignity it deserves. Its mucous membrane is very delicate and easily torn; it is very sensitive to untoward influences, especially infection, and if the latter once obtains a foothold, the eradication of the same is almost impossible. The cervix is the center of the tendinous supports of the uterus. It may be likened to the hub of a wire wheel. The cervix is the protector

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