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THE PRESENT STATUS OF OPERATIVE OBSTETRICS REFERRING
TO THE ABUSE OF CÆSAREAN SECTION¹

BY JOHN OSBORN POLAK, M.Sc., M.D., F.A.C.S., AND A. C. BECK, M.D., BROOKLYN

THE operative furor has surely invaded obstetrics, when even the physiological processes of normal labor are disturbed, and a normal sized child, in normal position, passing by a normal mechanism through an ample pelvis, with dilatable soft parts, is interfered with; the head disengaged, a version done and delivery accomplished by breech extraction on the plea that the woman is saved an hour or two of second-stage pains.

Other enthusiasts, either for their own convenience or to save the woman an hour or so of suffering, are routinely applying forceps when the head has reached the ischial spines, and the cervix is fully dilated; while others have so widened the indications for cæsarean section that this operation is being employed daily on patients who present no real obstetric indication for it, simply because it is the most convenient way to get the baby out.

It is the purpose of this brief paper first to review the present status of operative obstetrics, and to show that there is a difference between surgical obstetrics and obstetric surgery done for justifiable indications; second, that routine operative intervention, even in the hands of the expert, is not free from danger to both mother and child; and finally that

while cæsarean section is the easiest and quickest method of delivery, there is a higher *morbidity* and a higher *mortality* following abdominal hysterotomy, than follows abdominal section generally in properly selected cases.

First, let us study the operative incidence in a series of a thousand consecutive cases, which have had intelligent and painstaking prenatal study—where each labor is conducted with a full knowledge of existing conditions, on the principle of aseptic intelligent expectancy, and where intervention is done, not withheld, on proper indications, solely in the interest of the mother or the child—and then let us compare these with 1,113 cases delivered by one man, an acknowledged expert, who has deliberately interfered with the normal processes of labor as a routine procedure.

In this series of a thousand cases there were 106 patients with actual contraction of the pelvis, an incidence of 10.6 per cent, 344 in which the occiput was posterior at the beginning of labor, and 42 cases in which the presentation was abnormal. These included 27 breeches—6 face or brow, 4 transverse, 4 sets of twins, and one complex presentation with

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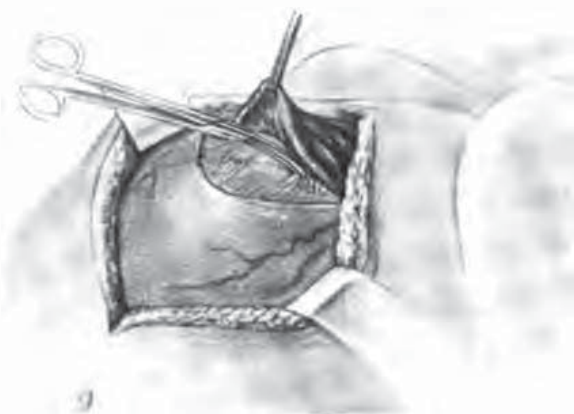


Fig. 1. Modified Kroenig cervical cesarean section. Separation of bladder from anterior face of uterus.

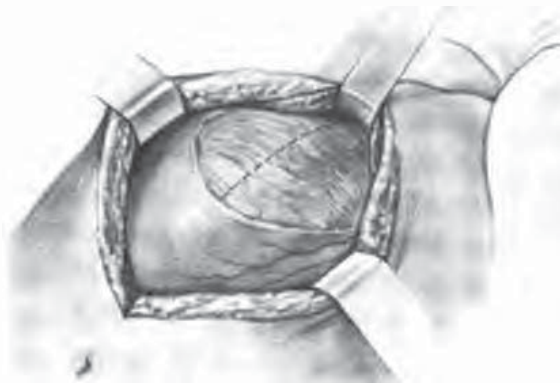


Fig. 2. Modified Kroenig cervical cesarean section. Bladder retracted, area for incision exposed.

the head and cord presenting; yet in this series the incidence of operative intervention was as follows:

Forceps deliveries—low and median.....	22
Version—internal or bipolar.....	5
Induction of labor—by bag.....	4
Manual conversion of face into a vertex.....	2
Perforation of the after-coming head.....	1
Cleidotomy.....	1
Cæsarean section.....	8

This gives an incidence of forceps of 2.2 per cent, an incidence of version of 0.5 per cent, and an incidence of cæsarean section of 0.8 per cent. The number of stillbirths in this series was 19 or 1.9 per cent; including all of the infants dying within the first 2 weeks after delivery—6 more deaths should be added, making a total infant mortality of 25 in a thousand cases, or 2.5 per cent.

Compare these statistics with those published in the *transactions of the Association of Obstetricians, Gynecologists and Abdominal Surgeons* for 1920, by one of the most skillful surgical obstetricians in America.

During the year ending August 31, 1920, he personally delivered 1,113 women on whom he performed 920 versions, 39 forceps operations, and 80 cæsarean sections; or approximately one cæsarean in every 14 cases—10 women were so far advanced in labor when they were first seen that they could not be prevented from delivering spontaneously, and 12 babies were born before the attendant reached them.

In this series 41 were stillborn, and 34 died before the mother was discharged from the

hospital; making a total foetal mortality of 75, or 6.7 per cent, or nearly three times the mortality rate of the infants of the previous series referred to. Such facts leave no room for argument, they clearly demonstrate the contention that I made at the beginning of this paper, namely, that routine operative intervention even in the hands of the expert, is not free from danger to both the mother and the child.

Operative obstetrics no longer recognizes the induction of premature labor in contracted pelvis, for it is admitted that induction is not free from danger; the increased danger of infection is actual, not fanciful, and complications as premature rupture of the membranes, malpositions of the foetus, prolapse of the hand or cord do occur. Furthermore, operative intervention is required to terminate labor in a very large number of the cases (54 per cent of bag cases); this necessarily subjects the child to greater danger, not only because of its prematurity, but because it is subjected to unnecessary manipulation.

Present-day obstetric teaching recognizes the propriety of giving each case an aseptic test of labor when the pelvic deformity falls within the relative class, for over 80 per cent of these cases (8 out of 10) spontaneously deliver; or can be terminated after the head has reached the spines, by low forceps.

High forceps is an operation of history, its high foetal mortality, and the frequent incidence of severe maternal injuries have



Fig. 3. Modified Kroenig cervical cesarean section. Showing the location of the incision in the lower uterine segment.

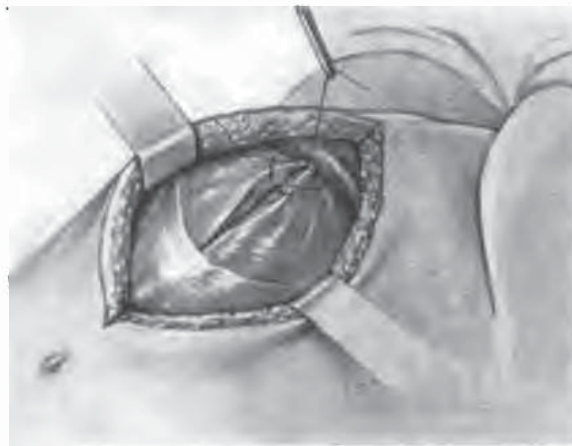


Fig. 4. Modified Kroenig cervical cesarean section. Closing the uterine incision with a running suture of the muscle.

caused the procedure to be relegated to the atrocities of the past. On the other hand, low forceps applied with the head at or below the spines, is an operation which, when indicated, is purely life saving.

Proper attention to the action, rhythm, and rate of the foetal heart after the membranes have ruptured and the head has passed through the cervix into the vagina, will give notice to the observing accoucher as to when a low forceps delivery should be employed, for many children lose their lives as the result of too conservative a delay during the perineal stage.

Low forceps applied under surgical anæsthesia, with the patient in the proper posture, does little or no damage to the pelvic soft parts (in the hands of a competent man).

Version according to the technique perfected and so ably described by Potter, has a wider field than has been generally given it, *but not as an elective routine procedure in normal cases*. While the majority of occipito-posterior positions of the vertex, will spontaneously rotate to the front, if the head engages and reaches the pelvic floor, and the powers are sufficient (possibly without increasing the risk). This tedious mechanism may many times be avoided by a timely version. Version, however, has its widest indication as an emergency procedure in complex presentations—brow, face, and the accidents such as prolapsed cord, placenta prævia, abruptio pla-

centæ where rapid delivery is demanded in the interest of the child.

In present day obstetrics, embryotomy has but a limited field, and is now practically never done on the living child except in the presence of an infected mother, and even here, the Porro operation may come into competition, if there is strong necessity of delivering a living child. On the other hand, perforation cleidotomy and evisceration should have a more general use in terminating the delivery of the dead foetus.

CÆSAREAN SECTION—ITS ABUSES

There seems to be a fallacious impression in the minds of both the general medical and lay public, that cesarean section is a perfectly safe and simple operation which can always be guaranteed to give perfect results under all circumstances. They evidently forget the fact that *abdominal surgery always carries with it a certain risk to the life of the patient*, even in the most competent hands and under the best conditions. Hence, instead of being chosen as the operation of election after careful consideration, because it is the safest and best method of delivery for the patient, cesarean section is looked upon by many poorly trained obstetricians and general surgeons who do consultation obstetrics, even though they do not pretend to have a working knowledge of fundamental principles of the obstetric art as a panacea for all ob-

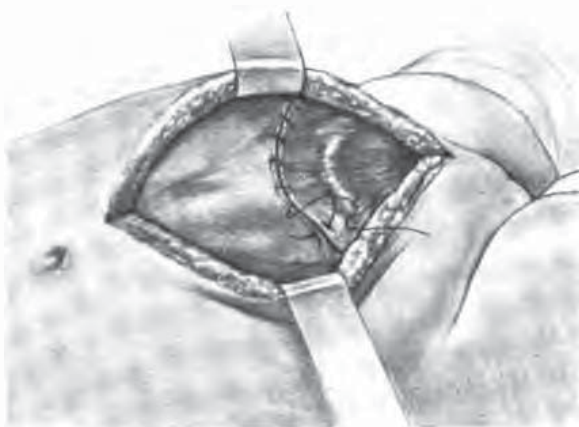


Fig. 5. Modified Kroenig cervical caesarean section. Uterine incision in the lower segment covered with bladder reflection. Sutures being placed.

stetric ills—presumably the ease with which the operation can be performed by the average abdominal surgeon is the prime factor in the choice of suprapubic delivery in improper cases; for as compared with the ordinary obstetric operation, except perhaps an easy low forceps, caesarean is the easiest method of delivery for the obstetrician, and the safest operation for the child.

Notwithstanding this general impression, our study of the results in 2,200 operations of which 200 are from our own clinic shows that caesarean has a *greater morbidity and mortality than the ordinary abdominal operation* done for other pelvic conditions.

The development of the aseptic technique in surgery has made it possible to consider the rights of the child as well as the rights of the mother; hence in modern obstetrics, abdominal hysterotomy done under proper conditions by a competent operator, has been used in the interest of the child as an elective procedure in preference to some of the mutilating operations.

It may be performed as an operation of election, when a thorough examination demonstrates the fact that the child will be subjected to serious danger, in case an attempt is made at pelvic delivery, or that the health of the mother is likely to suffer seriously as a result of such a pelvic delivery. These conditions warrant the somewhat increased risk that attends an abdominal operation.

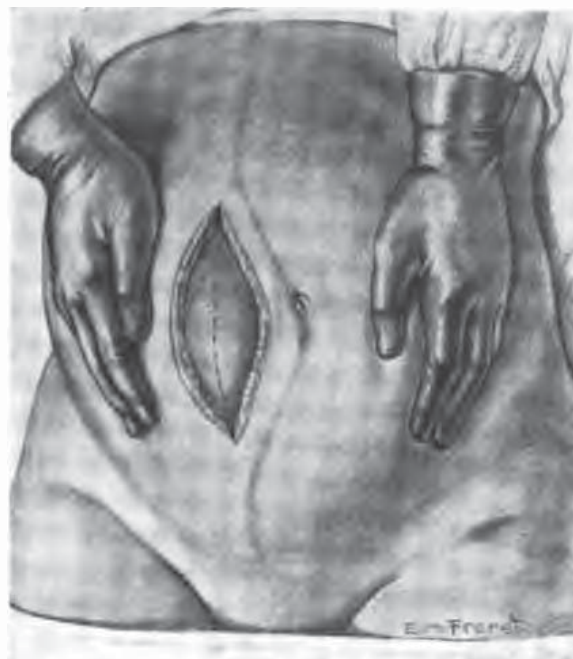


Fig. 6. Classical caesarean section. Showing how the assistant crowds the uterus into the abdominal incision by pushing the uterus upward and forward with the hands on the sides of the abdomen.

Study of the end-results shows that those obtained by caesarean section performed at the time of election, that is before labor begins or early in the course of labor, are much better than the results of the late or secondary operation. This therefore, *implies the necessity of very careful prenatal study, the proper estimation of the relative size of the child to the particular pelvis and the aseptic conduct of the labor*, so that if the operation is indicated it may be performed at a time when the best results may be expected for both patients.

Unfortunately, in general practice, prenatal study receives very little consideration, and most labors are conducted with questionable asepsis and repeated vaginal examinations. It is common knowledge that the majority of pregnant women are allowed to enter upon labor without any preliminary examination; the attendant having no accurate knowledge of the relative size of the pelvis or foetus, or of the position of the foetus; hence section is done not as an operation of election, but as an operation of the last resort, often after

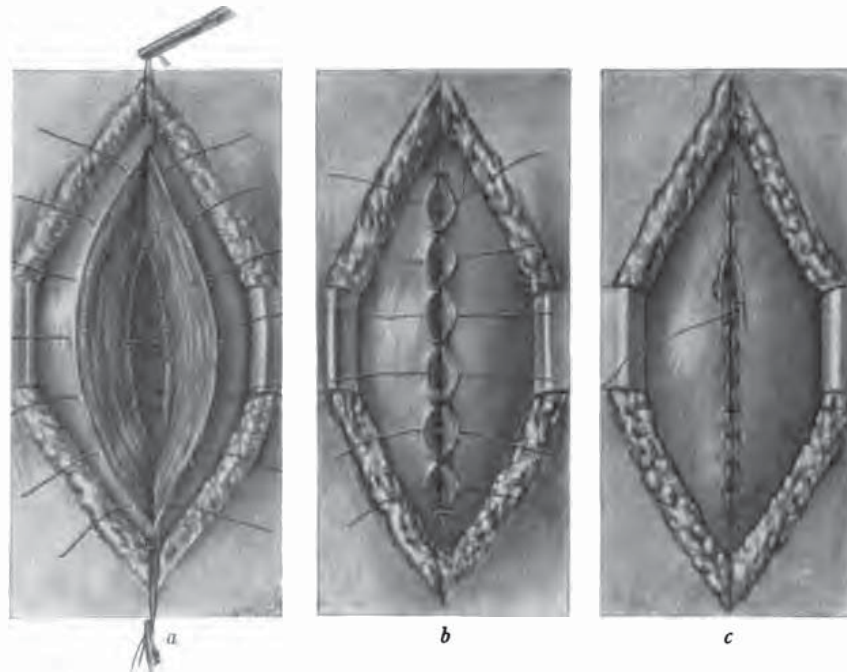


Fig. 6. *a*, Wound brought into the incision (abdominal) by traction sutures, interrupted sutures through peritoneum and muscle, just skipping endometrium, placed. *b*, Deep layer tied. Second line between each deep suture placed. *c*, Final peritonealization of uterine wound with running suture.

the patient has been subjected to repeated vaginal examinations which always open an avenue for infection; or after attempts have been made at intrapelvic delivery. These cases are potentially infected and, therefore, when section is done it is attended with a morbidity or mortality higher than should be present in properly selected abdominal cases.

Several operators can show a series of 100 or more consecutive sections without a fatality; but from a study of several thousand case reports where the operation was done by the best operators, we feel certain that their mortality will come as it has come to others.

While these surgical obstetricians have widened the indications for the use of this procedure, so that they include almost every conceivable difficulty, the obstetric surgeon is limiting the indications in both his practice and his teaching, placing its election on well-grounded indications.

Broadly speaking, the indications for abdominal delivery may be classed as those that are absolute and those that are relative.

Cæsarean section is indicated in the patient in whom some definite pelvic obstruction exists either as a result of actual contraction, or by the presence of tumors blocking the pelvis which renders delivery *per vaginam* even of a dead or mutilated fœtus either impossible or so dangerous that abdominal delivery is attended by less risk to the mother.

A contracted pelvis with a true conjugate of 6 or 6½ centimeters or an immense child will give the absolute indication. This is admitted to be the only absolute indication for operation, and any operator who performs cæsarean for other reasons must be sure that the benefits which are to be expected from the operation both for the mother or the child, are sufficient to warrant the increased risk to the mother's life.

In the relatively contracted pelvis, cæsarean is considered only with a view of saving the life of the child, for in dystocia from this cause embryotomy may safely deliver from below. This leads us to the one question that should always be considered: *is it proper to*

TABLE I.—TABULATED STUDY OF TWO THOUSAND CASES OF CÆSAREAN SECTION FROM REPORTS OF OBSTETRIC CLINICS IN AMERICA, EXCLUSIVE OF LONG ISLAND COLLEGE HOSPITAL

Group I—Clean Cases	
Sections.....	210
Maternal deaths.....	6
Mortality percentage.....	2.9
Group II—Potentially Infected Cases	
Sections.....	1260
Maternal deaths.....	78
Mortality percentage.....	6.2
Group III—Frankly Infected Cases	
Sections.....	530
Maternal deaths.....	61
Mortality percentage.....	11.5

TABLE II.—AN ANALYTICAL STUDY OF TWO HUNDRED CASES OF CÆSAREAN SECTION OCCURRING IN THE MATERNITY SERVICE OF THE LONG ISLAND COLLEGE HOSPITAL, FROM SEPTEMBER 1, 1912, TO SEPTEMBER 1, 1921

These cases were reviewed with reference to the following points, and the subjoined tables based on the results of this study.

1. Seen in the hospital before labor
2. Referred from outside physicians
3. Membranes.....
 - (a) Intact
 - (b) Hours ruptured
4. Vaginal examinations
5. Total number made.....
 - In hospital
 - By physician
 - By midwife
 - On the outside
6. Number of hours in labor
7. Type of operation.....
 - (a) Classical
 - (b) Transperitoneal
 - (c) Porro-Supracervical hysterectomy
8. Diagnosis.....
 - Condition demanding cesarean
9. Puerperium.....
 - Highest temperature
 - Day postpartum on which it occurred
 - Number of days above 100.4°
 - Febrile—classes as febrile when temperature was 100.4° or more for 96 hours
 - Cause of morbidity
10. Condition on discharge

add that increased risk to the woman in order to save the child.

My own feeling is that the healthy unborn child has equal rights with the mother, provided she is not potentially infected, yet we cannot blind ourselves to the fact that the woman is assuming an increased risk when she agrees to abdominal delivery.

The further admitted indications may be stated as follows: Labors in multiparæ who have had previous obstetric disasters may be terminated by section, unless the present child is manifestly smaller than the previous children have been or the previous disaster can be traced to the faulty judgment or poor operative skill of the former attendant.

Placenta prævia as an indication for abdominal delivery has its advocates. We teach and practice it, when the patient is at or near term, in good condition and has not been subjected to vaginal invasion with a live child and a central or nearly total implanta-

TABLE III.—THE EFFECT OF VAGINAL EXAMINATIONS ON MORBIDITY

No vaginal examinations, labor being conducted by abdominal and rectal palpation	
Total cases.....	97
Febrile cases.....	28
Morbidity.....	28.8 per cent
Vaginal examinations were made	
Total cases.....	96
Febrile cases.....	50
Morbidity.....	52 per cent
These have again been divided into those in which all of the vaginal examinations were made in the hospital under strict aseptic precautions and those in which the vagina was invaded on the outside prior to admission.	
Vaginal examinations in the hospital	
Total cases.....	65
Febrile cases.....	27
Morbidity.....	41.5 per cent
Vaginal examinations on the outside prior to admission	
Total cases.....	31
Febrile cases.....	23
Morbidity.....	74.2 per cent

TABLE IV.—THE EFFECT OF RUPTURE OF THE MEMBRANES ON MORBIDITY

	Not ruptured	Ruptured
Total cases	106	87
Febrile cases	34	44
Morbidity percentage	32	50.5

TABLE V.—EFFECT OF HOURS IN LABOR ON MORBIDITY

Operated on early in labor	
Total cases.....	83
Febrile cases.....	26
Morbidity percentage.....	31.3
Operated on late in labor	
Total cases.....	110
Febrile cases.....	52
Morbidity percentage.....	45.4

tion of the placenta. Unfortunately these conditions rarely obtain, for the average patient with central placenta prævia has usually lost considerable blood and has had careless and unaseptic measures used for the control of bleeding, so is potentially or actually infected and is necessarily a bad operative risk.

Since Petersons' exhaustive paper on cæsarean in *eclampsia*, the operation has been frequently used to empty the uterus in eclampsia, while we occasionally employ it in the pre-eclamptic toxæmia, when eliminative treatment has failed to relieve the toxic symptoms and the obstetric conditions either in the bones or soft parts make infrapelvic delivery difficult and dangerous.

We cannot, in the light of present day statistics and the results obtained from the Stroganoff treatment, feel that abdominal delivery saves many more lives.

Abruptio placenta is a proper, though rare indication, and then only when the birth passages are totally unprepared. In addition to these, the indication for section has been extended to breech presentation with large

TABLE VI.—MATERNAL MORTALITY

Causes of death	
Peritonitis and septicæmia	8
Hæmorrhage	2
Eclampsia	4
Postoperative shock	1
Postoperative pneumonia	1
Total deaths	16
Mortality percentage	8

16 deaths in 200 cases.
If we deduct the four deaths due to eclampsia there were 12 deaths in 196 operations or a mortality of 6.1 per cent.

TABLE VII.—ANALYSIS OF MORTALITY IN CLEAN CASES AND IN THE POTENTIALLY OR FRANKLY INFECTED CASES

Clean cases conducted in the hospital in which only rectal examinations were made or where a vaginal examination was done, surgical asepsis was observed.	
Total cases so conducted	148
Deaths	6
Mortality percentage	3.3
Potentially or frankly infected cases which had been handled on the outside prior to admission to the hospital	
Total cases	48
Deaths	7
Mortality percentage	14.6
All cases of both classes	196
Deaths	12
Mortality percentage	6.1

TABLE VIII.—STILLBIRTHS

Stillbirths in 200 cæsarean operations	2 or 1 per cent.
Infant deaths in the first 14 days	9 or 4.5 per cent.
Cause of infant deaths	
Died 1st day after delivery—maternal emergency prematurity	2
Died first 8 hours after delivery—toxæmia prematurity	1
Died 6 hours after delivery—toxæmia prematurity	2
Died 1 hour after delivery—prematurity	1
Died 10 hours after delivery from rupture of the lung result of mouth-to-mouth insufflation	1
Died 5 days after delivery—bacteræmia	1
Died 10 days after delivery—abscess of lung	1
Total	9
Total fetal mortality in 200 operations including those babies dying before leaving the hospital	11 or 5.5 per cent.

foetus in elderly primiparæ; prolapsed cord with ruptured membranes, large child, and unprepared soft parts, to the delivery of the physically unfit, and in cardiacs to lessen the strain of labor, also to women in labor after previous cæsarean sections because of the danger of rupture of the hysterotomy scar, for delivery in the presence of obstructive pelvic tumors or dystocias resulting from previous suspension operations which have become uterine fixations, and in deliveries after the cervix has been amputated and the pelvic structures repaired by extensive plastic operation.

In order to demonstrate that there is actually a greater morbidity and mortality in cæsarean than attends ordinary abdominal sections, and that therefore the indication should be definite and the operative conditions favorable, we have undertaken an analysis of twenty-two hundred cases. Two thousand of this number represent the abdominal

CÆSAREAN SECTIONS

Incidence of Section in Long Island College Hospital Series
8 in 1000 or 1 to 125

Incidence of Section in Johns Hopkins Hospital Series
9+ in 1000 or 1 to 110

Incidence of Section in Potter's Series

71+ in 1000 or 1 to 14

INFANT DEATHS

Long Island College Hospital Series
25 in 1000 or 1 to 40

Potter's Series

67.3 in 1000 or 1 to 14.8

deliveries in some of the leading obstetric clinics in America; and two hundred are taken from the case records of the maternity service of the Long Island College Hospital, from September 1, 1912, to September 1, 1921.

In the first group, owing to the incompleteness of the data supplied, we have been unable to do more than compute the mortality rates.

In the series taken from the records of our own service, we have been able to make a more careful analysis, and make a study not only of the mortality but of the morbidity incident to section.

In the first group of 2,000 sections collected from other clinics (Table I), we have divided the cases into the following classes:

1. The clean case—under this head we have included all of those elective cæsareans, where the operation was done before labor, or soon after labor had begun, and in which no vaginal examinations had been made.

2. The case potentially infected—in this class will fall those patients who have had a test of labor, with ruptured membranes, and those who have been subjected to repeated vaginal examinations by physician or midwife, prior to entering the hospital.

3. The frankly infected cases, or those which have been long in labor, with ruptured membranes, careless and repeated vaginal invasions, having had futile attempts at delivery before admission to the clinic.

The 200 cases of cæsarean occurring in the maternity service of the Long Island College

Hospital, were carefully reviewed, and the foregoing tables are based on the results of this study (Tables II to VIII).

Though it may be said that our series is too small from which to draw conclusions, we feel sure that the morbidity in *cæsarean* is vastly greater than is found in the ordinary clean abdominal sections.

If one thinks for but a moment that the uterine wound leads directly to an infected field, it is surprising that more lives are not lost.

Our bacteriological studies of the flora of the postpartum uterus, which have lately been confirmed by Loeser, show that on the fifth and sixth day, the majority of puerperal uteri contain pathogenic organisms, which have migrated into the uterus through the open cervix from the vagina. These, therefore, are brought in direct contact with the suture line, just at the time when if there has been any defect in technique, such a faulty hæmostasis, sutures tied too tightly or carelessly placed, the wound may become inoculated, and the infection spread along the suture line. This, and the admirable culture ground offered by the placental site, are, to our mind, the reasons for the high morbidity even in clean cases.

SUMMARY

A careful perusal of the foregoing statements and of the appended tables must leave the impression in the mind of the reader—

That surgical intervention is being too freely employed to terminate labor, and furthermore that the results for mother and

child from such interference (oftentimes unindicated) with the physiological processes of labor do not justify their employment.

That the adoption of the principle and practice of *aseptic intelligent expectancy* in labor, when the factors of labor are known to be normal or approximate the normal, is still the safest method of delivery not only for the mother but for the *fœtus*.

That there is a high morbidity even in the *clean cæsarean* section, very much higher in fact than is common in operations for pelvic tumors, such as fibromyomata and ovarian cysts. This is due to the presence of infective bacteria in the cavity of the puerperal uterus, which migrate from the vagina to the interior of the uterus, through the open cervix.

That even in expert hands there is a definite maternal risk from *cæsarean* section, greater than is generally known. Our mortality studies show that this ranges from 2.9 per cent to 14 per cent, depending on the time in labor at which operation is done, after rupture of the membranes and on the amount of vaginal invasion present.

And finally, in view of these facts, we feel that every pregnant woman should have greater prenatal study and care than is commonly given her, so that complicating conditions may be recognized, prevented, or corrected before labor, and where this is not possible, the knowledge gained from this study will permit the obstetrician to conduct the labor in such an intelligent and aseptic manner, as to minimize the dangers from abdominal delivery.