A STUDY OF THE INTEGRITY OF THE UTERINE SCAR AFTER CESAREAN SECTION.*

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Delivery by Cesarean section has become in recent years a not infrequent operation. From all parts of the country we may read reports of longer or shorter series of cases. And, when we consider the welfare of both mother and child, the results in the presence of pelvic deformity are visibly better than with any other method of procedure. It requires, however, a nicety of judgment and a reserved enthusiasm in dubious cases to distinguish clearly the choice between abdominal and vaginal birth. Although the dramatic glamour of former years still clings to its execution, the extraction of the child from the mother's womb through an abdominal incision is not a difficult feat. With the employment of modern surgical technic, as in all other abdominal work, it has largely lost its septic and hemorrhagic terrors.

Nevertheless, we cannot afford to disregard the other surgical problems involved. A heavy muscle not supported or reinforced by fascial covering is cut through; a muscle which may be called upon later to functionate vigorously. Besides the risks attending the section of any intraperitoneal organ lined with mucous membrane, there is the added danger of rupture through or adjacent to the cicatrix in future pregnancies.

As the indications broaden for the operation of Cesarean section, more and more do we include the lesser degrees of pelvic contraction; and in rare instances we may feel justified in performing abdominal hysterotomy upon cases of eclampsia and placenta previa where the soft parts are tight and rigid. Although in such conditions the immediate pelvic results are ideal, we are occasionally forced to remember that, after all, a woman once "Cesareanized" has a uterine scar of unknown strength. The fact that she was brought safely through her accouchement is not all. What of her future pregnancies?

The question did not formerly obtain when the operation was

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done solely for absolute contraction of the bony pelvis. We all knew that these women must again be subjected to Cesarean section in their later deliveries unless they had been previously sterilized by resection of the tubes. But now a class of cases is gradually assembling who might be perfectly capable in succeeding labors, in so far as the bony obstruction is concerned, of having their babies by the vaginal route, or who could push a smaller child through a moderately contracted pelvis without damage or great effort. Occasionally, however, under the stress of labor such a uterus will rupture at the location of the old scar.

In 1908, Brodhead(1) had collected nineteen cases of rupture from the literature, adding one of his own. Following this paper Mauclaire and Burnier(2) summarized twenty-two cases, fifteen of them being repetitions of Brodhead's collection and seven of them being new cases. A rupture after two Cesareans was reported by Cameron(3) in 1910, and one by A. G. Collins(4) in 1911. Cameron also reported a case in the same communication, similar to several in the series about to be described, of impending rupture, where on opening the abdomen at the second Cesarean a thin window of peritoneum at the uterine scar was the only structure separating the abdominal cavity from the interior of the uterus.

In the majority of these published cases there is no detailed description made of the ruptured muscle microscopically and it is not clearly defined whether the scar itself gave way or the adjacent muscle tissue. Mauclaire and Burnier note that in most of the microscopic reports there is agreement as to occasional imperfect healing of the wound, but that none give evidence of a true invasion of the scar by decidual cells similar at all to the true erosion that takes place in a ruptured ectopic pregnancy.

A suggestive experimental study was made in 1910 by Mason and Williams(5) of Boston on the strength of scars in the uteri of pregnant guinea-pigs. They excised areas of muscle wall of the uterus, containing the old scar and stretched the tissue to the point of tearing. On examination of the laceration thus produced they proved to their satisfaction that the tissue gave way not at the scar but through normal muscle fibers. The animals used were so small as to make microscopic description of the scar itself of no value.

It has impressed the writer that further valuable information may be derived from a study of the uterine scars of former Cesareans in human females. This has been attempted by

selecting from the case histories of the Lying-In Hospital and from personal experience in the operation of Cesarean section;

I. Instances of abdominal Cesarean section followed by vaginal delivery, of which there are three cases,

II. Descriptions of the gross appearance of the intact scar in repeated Cesareans,

III. Instances of marked attenuation of the scar of which there are four cases described at a later Cesarean,

IV. Instances of rupture of the uterus after one or more Cesarean sections, of which there are four cases, and finally,

V. By making microscopic examination of the margins of the rupture in the uterine muscle and of sections through the old unruptured scar.

Considering first the cases of Cesarean section followed by vaginal delivery:

CASE I.—(C. N. 3093.) Mrs. Mollie A., age thirty-three years, iii-para, with a history of several still-births by instrumental delivery and anxious for a living child. Her pelvis was of the funnel type, moderately flattened at the brim and with a narrow outlet. The head refusing to engage, a 4100 gram baby was successfully delivered by Cesarean section on Sept. 22, 1903. The uterine wound was sutured with chromicized catgut in layers, and her convalescence was smooth. Two and a half years later, on March 26, 1906 (C. N. 7280) after two hours of moderate pains she was spontaneously delivered per vaginam of a 3600 gram baby with smaller head measurements than the previous one.

CASE II.—(C. N. 12071.) The same woman, Mrs. Mollie A., presented herself pregnant at term on March 9, 1908. She was again delivered with ease under the care of the house surgeon of a 3450 gram child. There was no hemorrhage or laceration, and both patients were discharged in good condition on the eigth day.

CASE III.—(C. N. 10525.) Mrs. Annie S., age twenty-five, ii-para, was admitted Aug. 9, 1907. Her first baby had been born alive in Germany with the use of forceps. The membranes were ruptured and dilatation of the os was complete. Her temperature on admission was 101° and her pulse 120. The child presented by the vertex in the L. O. A. position. She was delivered by Cesarean section of a 3700 gram baby, the indication for the operation not being stated in the history. Her convalescence was complicated by a more or less severe toxemia from uterine infection, for which intrauterine douches were employed on the eighth and eleventh days. She left the hospital on the nineteenth day.

In September, 1909, two years later, this patient was admitted to the writer's service. Her last menses had occurred November 23, 1908, so that she had expected her confinement in August.

On admission September 11, she had been in active labor for about eight hours. The cervix was dilated to the diameter of three finger tips and the head lay above the brim in transverse position with the occiput to the right. The interspinous measurement was 23 cm. and the intercristal 28 cm. The external conjugate was 17.5 cm. and the internal true conjugate measured 8.5 cm. It was evidently a simple flat pelvis. With pressure above by the Kerr-Mueller method the head could be made to engage in the brim and it was decided to attempt vaginal delivery by forceps. A high application of the axis-traction instrument followed by anterior rotation with the small solid blades accomplished a fairly easy extraction of a 3500 gram child. The writer felt at the time that the woman might have delivered herself spontaneously, but considered it unwise to risk further tension on the old uterine scar in view of the history of possible sloughing and consequent thinning of the cicatrix, together with the use of the intrauterine douche. The woman left the hospital with her baby on the tenth day.

There were forty-two cases in which at a subsequent Cesarean the scar was either not discernible or was described as solid with no apparent thinning or stretching. Most of these have already been reported by McPherson (6). In the four instances in which the writer has had occasion to perform repeated Cesarean section, the scar in the uterus has been represented merely by a slightly depressed linear whitening of the visceral peritoneum.

In sixteen out of the forty-two cases in the hospital records of the multiple operation ther ewere adhesions of the omentum, either to the uterus or to the anterior abdominal wall—in some cases exceedingly dense. These adhesions did not seem in any way to affect the strength of the uterine cicatrix. It is noteworthy here that adhesions once formed, when tied off and cut, always recur and in denser fashion, at later Cesarean sections, thus rendering the operation more difficult and tedious. Six times the placenta was found attached over the region of the old incision without impairing its solidity. Seven times the incision in the original operation had opened into the placental attachment. Suture of the placental site in all these resulted in a sound scar as proved at the second operation.

The instances of marked attenuation of the scar are most interesting and instructive. In two of them the placenta was found directly under the old wound, in one of which the scar was described as soft, irregular and translucent, almost transparent. In the other two the placenta was not in relation with the old incision. The thinning in these had evidently depended entirely

upon improper healing of the uterine wound. Their convalescence had been febrile and intrauterine douches had been used in both. We all know how prone the uterine tissue is to slough in vaginal Cesarean in the presence of any infection. There is no doubt the same process occurs when the wound is higher up and entirely within the uterine cavity. In one of the author's cases operated upon in 1905, four knotted chromicized gut sutures united by a shred of necrotic uterine tissue came away with a vaginal douche on the fifteenth day. If she ever becomes pregnant again we will anticipate a greatly weakened scar and avoid labor by elective section.

One of these thinned scars produced by sloughing of the uterine wound was excised at a later Cesarean. Sections through it show it to consist at its weakened portion merely of the peritoneal coat and subperitoneal cellular tissue. The muscle tissue of both margins of the wound did not unite primarily but healed by granulation. The remainder of the muscle tissue in the specimen is normal. There is a history of stormy convalescence following the original operation with retention of lochia for which intrauterine douches were given on the ninth and thirteenth days postpartum. Evidently there was infection and gaping of the inner layers of the wound. The placenta lay posteriorly and not in relation with the thinned scar.

There are four cases to report of actual rupture of the uterus in or adjacent to the old scar that occurred in subsequent pregnancies. One of them has already been reported by Brodhead, through the courtesy of Lobenstine, in whose service at the Lying-In Hospital it occurred. It is interesting to review it in order to report the later pathologic findings in the uterus.

CASE I.—(C. N. 4483) Mrs. Bertha G. (R. C. James). Deliveoy by Cesarean section. Adherent membranes. Excessive hemrorhage. Uterus packed. Patient had been in labor thirty-six hours with strong pains. Os three fingers dilated. Mild temperature, 100 to 101 for four days. Baby weighed 3300 grams and lived.

(C. N. 7664.) Mrs. Bertha G. Eighteen months later (R. W. Lobenstine), second Cesarean done. There was no trace of the old scar. Baby weighed 3850 grams and lived.

(C. N. 11372.) Mrs. Bertha G. On Dec. 11, 1907, this patient was again admitted to the service of Dr. R. W. Lobenstine, in a condition of extreme shock, and with a very imperfect history of her labor. Uterus had probably ruptured eighteen hours before admission, after labor pains had been occurring for only about five hours. The abdomen was moderately dis-

tended. The fetus could be plainly felt through the abdominal wall. The entire abdomen was exquisitely tender. By vaginal palpation the cervix was soft, about 2.5 cm. long and admitted one plus fingers. Her pulse was barely perceptible. The patient looked as if she would die at any moment.

At operation, child and placenta were found free in the peritoneal cavity. The uterus lay in the posterior part of the abdomen, and was opened up vertically from internal os to fundus along its anterior aspect. The rupture was through one of the old Cesarean wounds, and was so extensive that the uterus was flattened out. A supravaginal hysterectomy was then done.

The first eight days of convalescence were rather uneventful. On the eighth day the pulse and temperature were elevated. Pneumonia developed in the right chest posteriorly and the woman died.

Postmortem examination through the laparotomy wound found the pelvis and abdominal viscera apparently normal. No pus. No subdiaphragmatic abscess.

The baby weighed 3300 grams. Still-born.

Report No. 2074, Dec. 11, 1907, from the Hospital laboratory on section from margin of rent in uterus, "showed a uterus with rupture in anterior wall extending from fundus to cervix. Section through tissue at margin of rupture shows cloudy swelling of the muscle, an exudate in places between the muscle fibers composed of leukocytes and serum. Congestion of the blood-vessels and thrombi on the inner surface of the uterus. There is no excess of fibrous tissue present in the section." In other words, there was no evidence of scar tissue. From the microscopic appearance, it cannot be said whether the rupture occurred directly in the old scar or closely adjacent to it, as the rent goes through apparently normal muscle tissue.

CASE II.—(C. N. 6885.) Mrs. Becky A. Age, twenty-three, i-Para. Reported from the service of Dr. A. B. Davis. High forceps. Baby weighed 2600 grams, and died two months later.

(C. N. 8918.) Mrs. Becky A. Dec. 23, 1907. Transferred from O. P. D. for Cesarean delivery. Membranes intact. Cervix fully dilated. Bloody urine. Bleeding from cervix. No placenta made out by vaginal examination.

At operation the placenta was directly under the uterine incision. The convalescence was protracted. The temperature the second day was 103. Pulse 140. Temperature was high till the sixth day. Intrauterine douches were employed in the treatment of her condition. On the twenty-sixth day postpartum there was still profuse purulent discharge from the uterus. Cystitis and tardy involution complicated convalescence. Gonococci were found in the baby's eyes on the twelfth day. It weighed 3000 grams and survived.

(C. N. 11607.) Mrs. Becky A. Jan. 9, 1908. Age, twenty-five, iii-Para, was admitted to the hospital. Labor began at 1 A. M., June 9. She was operated at 3 P. M. the same day, the pains

being mild, the cervix two fingers dilated and the membranes intact.

Operation.—The abdominal scar was of a keloid type from the former Cesarean. There were omental adhesions to the anterior abdominal wall and to the uterus on the right of the median line above and below the umbilicus. The intestines protruding were packed back with gauze pads. Because of the low position of the uterus and the adhesions it was necesssary to enlarge the abdominal opening 12 cm. downward and to the left of the umbilicus. At this stage old black tenacious clots were found between the left broad ligament and the abdominal wall and were removed. A partial rupture of the uterus was discovered at the lower end of the old uterine cicatrix, which had thinned out and spread until it was 2 cm. wide. Five cm. above the bladder reflection of the peritoneum in the median line and in the old cicatrix was a rent 3 cm. long through which intact membranes the size of an English walnut protruded. This was probably the source of the old bleeding and there was no fresh hemorrhage. The uterus was opened with scissors and by tearing (as the patient was believed to be dying and was taking the anesthetic badly) and the child delivered. There was little active bleeding and only some slight oozing of black blood. The lower end of the uterine wound looked as though the sutures had given away long ago in the first repair and the uterine peritoneal surface healed over. These surfaces were freshened before introducing the sutures and the tubes were exsected to prevent further conception. The convalescence was fairly smooth. The baby weighed 2150 grams and lived and both patients left the hospital on the twentieth day.

CASE III.—(C. N. 12583.) Mrs. Sarah M. May 15, 1908. Reported from the service of Dr. A. B. Davis. vii-Para; age thirty-three. One living child with instruments. Two spontaneous deliveries, children living. Three still-births with instrumental delivery. Flattened pelvis. Face presentation, R. M. P. In labor for twenty-four hours before admission. Membranes ruptured. Cervix two fingers dilated. Delivered by Cesarean section (Dr. A. B. Davis). Baby weighed 3500 grams and lived. Temperature 102 on second day. Pulse 120. Pulse and temperature normal after fourth day. Discharged fifteenth day postpartum.

(C. N. 17780.) Mrs. Sarah M. June 1, 1910. Age thirty-five, viii-para. Second Cesarean section. Prolonged labor. Floating head. Patient admitted in labor about 9 P. M. having contractions about every fifteen minutes. Stated that she had had pains all day, with pain in lower abdomen for two weeks. On May 31, the pain was so severe that this hospital sent its ambulance for her about noon. She refused at that time to come in. Upon admission, cervix was less than two fingers dilated. Membranes intact and protruding and head wholly above brim. Could not be engaged by suprapubic pressure.

Fetal heart was not heard. Patient's abdomen was markedly distended and she complained of extreme tenderness upon pressure over the fundus. Face was flushed, lips dry and brown. Pulse ranged from 100 to 110 and of good quality. Temperature 100.8. No douche and one vaginal examination.

Operation.—Abdomen opened through old cicatrix. Upon entering the abdominal cavity, clots in a thin layer were found, over the upper anterior surface of the uterus but there was no fresh bleeding. There were no adhesions of any kind. Uterus filled abdomen tightly full. On examination a rupture about 4 cm. long was found in the lower portion of the old Cesarean scar, and through this opening placental tissue protruded about 1 cm. above the surface of the uterus. Upon inserting two fingers into this opening, and in attempting to lift the uterus up, the cicatrix in the uterine wall readily separated throughout its entire length. The placenta was directly under the opening. After removal of the child, the uterus contracted well and tended to slip away into the lower abdomen. There was considerable hemorrhage. The uterine wall was very thick. The edges of the uterine wound were freely freshened with scissors and some "cicatricial" (?) tissue cut away. (Unfortunately no microscopic examination was made of these clippings.) The uterine tear was limited to the old uterine wound. The uterus was then closed in the usual way.

Patient upon leaving the hospital had the uterus adherent just below the umbilicus to the anterior abdominal wall. Uterus as a whole had involuted well and the woman underwent a fairly smooth convalescence. The baby lived, weighing 3530 at birth.

CASE IV.—(C. N. 6156.) Mrs. Martha C., ii-para, age thirty-one. First confinement (1903) was instrumental and the child was still-born. A number of years ago the patient was operated upon in Germany for osteomyelitis of both tibiæ and has scars the length of both legs anteriorly. She walks since with a limp. The right leg is 2 cm. longer than the left. At the antepartum examination four months ago, the extent of the pelvic deformity was not discovered. When this patient was first seen, Aug. 25, 1905, she had been in labor for several hours with the head above the brim in the R. M. P. position. The pelvis was found to be of a generally contracted type with a working conjugate of not more than 8 cm. Membranes ruptured and cervix was fully dilated four hours previously, with an arm prolapsed. A version was considered but the uterus was too tightly contracted about the child to introduce the hand with safety and turn the infant. A high application of the axis-traction forceps was made but it was impossible to engage the head with fair traction. During these maneuvers the cord prolapsed in a long loop. It was replaced manually and the cervix and vagina lightly tamponed with gauze. The patient was sent to the hospital and a Cesarean section performed by the writer. The second assistant's hand was thrust into the vagina at the beginning of the

abdominal incision and was of great value at the time of extraction of the child in pushing the head up through the tightly contracted Bandl's ring that gripped the infant between head and shoulders. The incision in the uterus went directly into the placental site. The child weighed 3400 grams and lived. The mother had a stormy convalescence with considerable abdominal distention and tenderness over the uterus during the first week, and with a temperature of 100° to 101° for three weeks, finally leaving the hospital on the thirty-eighth day with her baby, which weighed 4200 grams, healthy and breast-fed.

Examination on discharge showed an abdominal wound about 3.5 inches in length with tendency to keloid hypertrophy. The uterine fundus was 7 cm. above the symphysis and evidently adherent to the anterior wall as it was extremely difficult to reach the cervix vaginally. Two successive Cesarean deliveries were done by Dr. R. W. Lobenstine, as follows:

(C. N. 11199.) Mrs. Martha C. Nov. 15, 1907. Membranes intact. Operation early in labor. Scar not noted, but can be seen in specimen after third Cesarean. Convalescence smooth, except for pain over right iliac region where she had had a severe cellulitis at the time of her first operation. Baby weighed 3750 grams and lived.

(C. N. 14129.) Mrs. Martha C. Dec. 3, 1908. Omentum found widely adherent to anterior abdominal wall. Considerable hemorrhage. No description noted of former uterine scars. It was deemed inadvisable to sterilize the patient at this time. (Unfortunately, as it afterward proved.) Convalescence stormy until tenth day. Temperature 100 to 101. Abdominal wound broke down.

This woman was next seen in January, 1911. She was then pregnant for the fifth time and from her data and the size of the child it was estimated that she would be at term about March 8. Nothing more was heard of her and as she did not appear in March it was believed that she had been delivered at some other institution. However, on April 6, at approximately the end of the eleventh lunar month in her pregnancy she was brought to the hospital by her husband (C. N. 19409) in a condition of shock, markedly pale, cold, sweating and having severe abdominal pain. From what history we could obtain she had had a few uterine contractions for an hour and had then suffered sudden excruciating pain in the abdomen. In this agony she had come to the hospital in the street car, having to be carried from the car by the hospital office attendants.

On the writer's arrival at the hospital, no fetal heart could be heard. The patient was pale and cyanosed, and with an imperceptible pulse. She was continually moaning and begging for relief from her intense continuous abdominal pain. The abdomen was tense and greatly distended and everywhere was very sensitive to touch.

Operation.—(One hour after admission.) The abdomen was

painted with pure tincture of iodine and the patient rapidly draped with sterile sheets on the table where she lay. A minimum amount of ether was used. At the same time as the abdominal incision was made an intravenous infusion of normal saline was begun. The abdomen was opened from umbilicus to pubes. It was full of dark blood and clots. The fetus and placenta were loose in the abdominal cavity. The uterus lay flattened against the posterior abdominal wall, rent from top to bottom along its anterior surface. There was no fresh hemorrhage. The fetus and placenta were removed and a rapid hysterectomy

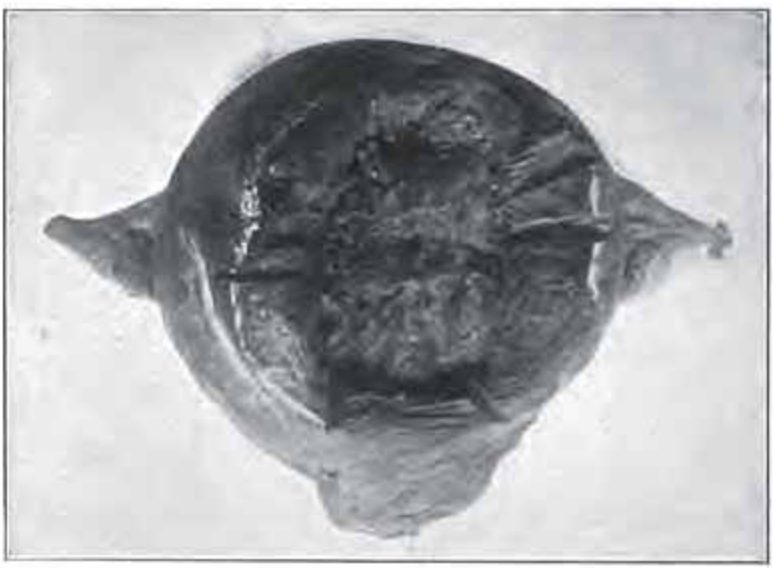

FIG. 1.—Case IV. Anterior surface of uterus ruptured between Cesarean scars

performed with clamp and ligature. Blood clots were removed and the patient being in such desperate condition no attempt was made to close over the cervical stump. The pelvis was packed in its lower portion with iodoform gauze pushed into the vagina from above and the abdominal wound quickly closed with through and through sutures. Shock treatment was instituted and active efforts at resuscitation employed but the patient expired thirty minutes after the completion of the operation. The fetus weighed 4500 grams and the dimensions of the head as well as the firmness of the cranial bones showed it to be considerably over-time.

From an examination of the uterus it would be inferred that the laceration did not take place in one of the old scars, but between two of them. The margins are fully as thick as the

remainder of the uterine wall. Along each side of the rent the white line of an old incision is readily discernible on the peritoneal surface. At some distance to the right of the tear is the other of the three scars.

It is to be supposed that two parallel scars less than a centimeter apart isolate between them an intermediate danger zone of tissue that has on both its trophic nerve supply and its blood supply intersected, and is therefore intrinsically weaker than the muscle tissue distal to these incisions. This situation might be avoided either by making the second incision at a considerable distance from the first one, or else by always excising the old scar at a subsequent Cesarean section. It is not advisable to go immediately through the former cicatrix for a much larger opening would be necessary as the inelastic margins of such a wound do not stretch sufficiently to accommodate the after-coming head and ragged tears may result at either end. Such tears are uncontrollable in extent and difficult to suture satisfactorily.

Sections for study were made from five points along the margins of the rupture. These sections included the site of the former incisions as marked by the overlying peritoneal scar on either side of the rent and well into the adjacent muscle tissue. Microscopic examination shows the serous coat of the uterus to be thickened at the location of the previous scars. Along the ruptured edge there is normal muscle tissue infiltrated with red and white blood cells and serum which has separated the fibers to a certain extent. Evidently the rupture occurred through normal uterine tissue. There is no indication of the presence of scar tissue in the muscle of any of the five sections examined. At points where the section of tissue goes through the third solid scar as marked by the depressed thickening of the peritoneal surface, intact muscle fibers can be seen crossing the apparent old line of incision. As far as can be observed under the microscope an apparent regeneration of the severed muscle fibers has taken place.

It has been demonstrated that the muscle fibres of the uterus are arranged in whirls and run in many different directions. Some advantage is taken of this fact in opening the uterus as we usually tear through the inner thickness of the incision with the fingers instead of completing it with the knife. Thus there is reason to believe that many of the uterine muscle fibres are not severed in their continuity but are split apart somewhat

after the nature of the ordinary intramuscular abdominal incision, though in a more minute fashion.

It is impossible as far as our investigations have gone, to discover any scar tissue in a well-united uterine wound that has healed by primary intention.

In accordance with the gross and microscopic findings we might explain this rupture after three Cesareans as occurring with the onset of labor in a uterus already distended by an overtime child; the rent taking place in the narrow segment of apparently normal muscle tissue isolated between two closely approximated parallel scars, this strip of tissue being intrinsically weaker on account of previous section of its blood and nerve supply.

Much has been written as to the proper method of suture of the uterine wound. It is sufficient to note that any method of suturing is suitable, providing the stitches are placed closely enough and deeply enough. To our mind it is less dangerous to occasionally go through the mucous membrane, rather than in avoiding it, to place the stitch so superficially as to allow the inner surface of the wound to gape.

We may profit in our future operating from a brief consideration of the teachings to be derived from these few illustrative cases. The repeated section is usually a no more difficult proposition than an original section. Among the histories at the hospital are records of women upon whom three, four and even five successful Cesarean sections have been consecutively performed. Out of fifty instances of the multiple operation, the old scar was either not found at all or when noted was solid in forty-two. Four times it was attenuated in form, twice there was partial rupture at the location of the old scar and twice complete rupture of the uterus. Therefore it is suggested:

First.—In undertaking a Cesarean section upon a woman who has been long in labor, with ruptured membranes, and who may be infected, in addition to the immediate dangers of septic morbidity and mortality, we must recognize the probability of obtaining a poorly healed scar that will be a bad risk in future pregnancies.

Second.—When performing repeated Cesarean section it would be best to excise the old uterine scar, rather than make a new incision parallel to it and avoid the isolation of a weakened strip of uterine wall between two scars.

Third.—Intrauterine douches are to be avoided in the treat-

ment of retained lochia after Cesarean section, not only for their immediate dangers, but also on account of the risk of mechanical injury to the uterine wound.

Fourth.—In the management of a parturient woman who has been previously "Cesareanized" for the relative indications, such as moderate pelvic contraction or excessive size of fetus, or certain types of eclampsia and placenta previa, we must be guided by the history of the previous convalescence as well as by the method of suturing employed. Only thus can we be assured of the integrity of the old scar and to what extent it will stand the stress of labor and of vaginal delivery.

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