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THE SURGICAL TREATMENT OF VAGINAL DELIVERY.*

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THE obstetrical management of labor consists essentially in the delivery of the child. It is not long ago that the obstetrician contented himself with this and with such repair of lacerations and management of hemorrhage as the lack of antiseptic facilities made possible. As a result of this condition of affairs it was not uncommon for women to pass through labor, sustaining severe lacerations and suffering from more or less hemorrhage afterward.

When antisepsis and asepsis were adopted, obstetric surgery was perhaps the last branch to develop under these new conditions. Success in abdominal surgery led to the revival of Cesarean section. Antisepsis made possible symphysiotomy with better results than had previously been obtained. Vaginal Cesarean section was added to the list of operations, pubiotomy has received an extensive trial, and suprasymphyseal section is now under consideration.

The success of these operations has depended, not only upon antisepsis and asepsis, but upon the application of surgical principles to the management of parturition.

The two foes which the surgeon most dreads are hemorrhage

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and septic infection. He further considers no operation complete which does not leave the patient's tissues as thoroughly repaired as her vital condition will permit. The major obstetric operations have been successful in proportion as hemorrhage and septic infection were avoided and the patient left in sound condition.

In the various forms of Cesarean section upon uninfected patients, the operator closes all wounds and usually obtains primary healing. Upon infected patients, the Porro operation and the suprasymphyseal uterine fistula carry out the surgical principle of drainage and the shutting off of infected tissues from the peritoneal cavity.

Vaginal delivery by forceps, version and extraction, or craniotomy have not been as thoroughly performed under surgical principles as have the major operations. Observation shows that obstetric disasters usually originate in difficult vaginal delivery under imperfect surgical technic.

The purpose of this paper is to record experiences in the surgical treatment of vaginal delivery and to elicit discussion upon this point.

We must admit that surgical operations are the substitution of a lesser evil for a greater. A surgical operation is rarely welcomed, usually dreaded, and becomes acceptable only when the surgeon and what he does are considered less dangerous than the disease or condition for which operation is performed. In our efforts to protect parturient women from the consequences of difficult vaginal delivery we must be sure that what we do lessens and not increases the danger.

It is obvious that we are not discussing normal labor, which is possible only in normal individuals. Nature's mechanism for protection against hemorrhage and infection in normal labor is so perfect that nothing but a positive indication should lead to interference.

In the endeavor to protect the parturient woman from hemorrhage the value of prophylaxis must not be forgotten. As hemorrhage often follows uterine relaxation, and this is caused by exhaustion, if we would protect the patient from hemorrhage, she must not be allowed to become exhausted. A correct diagnosis of the comparative size of mother and child and the mechanism of labor present will prevent the fatal delay in impossible labor. But although the conditions may render vaginal delivery possible, we see many patients whose strength is limited

and who, in spite of prophylactic treatment, become exhausted in the second stage of labor.

In dealing with these cases one must not only avoid the exhaustion which precedes relaxation of the uterine muscle, but also prevent as far as possible the occurrence of lacerations. Full dilatation of the cervix is recognized as a most important prerequisite for successful vaginal delivery. This must be obtained whenever possible by the preservation of the membranes in primiparous women. Dilatation of the cervix and vagina by bags is most successful in many cases. In others, this method converts a favorable into an unfavorable mechanism, causes severe suffering, and predisposes to exhaustion. Manual dilatation under ether preceding delivery is often more efficient and less distressing and exhausting to the patient.

The delivery accomplished, the necessity for immediate removal of the placenta may not always be present, although the patient has failed to deliver herself. If she be allowed to come partly from the influence of ether, and if tonic doses of strychnia and ergot are given hypodermically, as soon as the child is delivered the uterus will usually contract sufficiently to detach the placenta and bring it within convenient reach of the obstetrician. Should, however, partial placental separation occur with hemorrhage, the placenta should immediately be separated and delivered by the gloved hand.

The uterus having been emptied and brought to contraction and controlled by the hand of an assistant, the question next arises in the mind of the operator: Is relaxation likely to return, and shall anything be done to make this practically impossible?

I realize fully that the introduction of the hand, instrument, or foreign body within the uterus, is to be avoided. We formerly regarded the interior of the uterus in labor with as much dread as the peritoneal cavity, but in my experience it is safer, under antiseptic precautions, to take measures to prevent relaxation of the uterus than to omit those precautions and some time later treat postpartum hemorrhage. In my experience, in cases where relaxation may reasonably be expected, and hemorrhage feared, the emptying of the uterus should be followed by irrigation with salt solution, or one per cent. lysol, and thorough tamponing of the cavity with 10 per cent. iodoform gauze. This manipulation may be done in two ways, depending upon the number of assistants available for the operator. Where more than one assistant, having sterile hands, are present, the two lips

of the cervix may be grasped separately by tenaculum forceps, drawing them down to the vulva, and gauze packing introduced under direct vision. If such assistance is not available the left hand of the operator may be introduced within the vagina at the cervix, the fundus being brought downward and forward by the hand of the anesthetizer placed upon the abdomen. The gauze is then introduced into the cervix with dressing forceps and is packed to the fundus by the fingers of the left hand of the operator. Bumm has drawn our attention, in his excellent illustrations, to the danger of tamponing the lower uterine segment only and leaving the upper expulsive segment empty for the accumulation of clotted blood. This error can be avoided by either of the methods described. Hemorrhage from the body of the womb is usually promptly controlled by this method. In cases of extreme exhaustion the gauze may be wrung out of adrenalin 1:1,000, and then introduced.

Hemorrhage from the genital tract persisting after the body of the uterus is tamponed occurs from laceration. The value of suture of the cervix in checking such bleeding has long been recognized, and I need not detain you by dwelling on this point. So, hemorrhage from the deep lacerations of the segments of the pelvic floor is promptly controlled by suture. In some cases the anterior segment of the pelvic floor may be torn sufficiently deeply to cause persistent arterial bleeding, which may not be detected until this portion of the genital tract is examined under a good light.

I am well aware of the fact that if such prophylactic treatment be carried out the obstetrician will tampon some uteri unnecessarily, but I have yet to observe a case in my own experience and that of those who work with me in which septic infection or perforation of the uterus has occurred as a result of this method, and in my experience it is a lesser risk than the treatment of postpartum hemorrhage an indefinite time after labor by hot douching, the introduction of vinegar, and the attempt to tampon the uterus when the patient is not under an anesthetic.

We all, I think, recognize the importance of hemorrhage as predisposing to septic infection. Its prevention, then, is directly in the line of antisepsis. Next in importance in preventing sepsis is the detection and immediate closure of lacerations. By the term "laceration" we do not refer to solutions in continuity of the mucous membrane only, but to such tears as penetrate the submucous tissue, opening blood-vessels and lymphatics.

The occurrence of severe hemorrhage from torn vessels in the cervix has suggested to obstetricians the control of such bleeding by immediate suture. In the writer's experience, primary union often occurred in such cases, and if this was observed when suture was performed for hemorrhage, why should union not occur when suture was performed for lacerations without considerable hemorrhage? For some time we have made it a rule to immediately suture, when the vital condition of the patient permitted it, lacerations of the cervix extending nearly or to the vaginal junction. This practice has been applied among hospital and private patients by the staff of the Jefferson Maternity. While I have not obtained our latest statistics as to the number of cases, they aggregate several hundred; and a careful analysis of this work a few years ago gave 80 per cent. of complete primary union of the cervix after immediate suture, 10 per cent. of partial union, and 10 per cent. of failures. In none of these cases did infection occur. The preliminary uterine packing with gauze was employed in these cases wherever laceration was extensive. This undoubtedly contributed to the success of the suture, for in some reported cases of repair infection followed cervical suture from the retention of the lochial discharge and imperfect drainage of the uterus. As the gauze packing remains for forty-eight hours, the uterine sinuses become firmly closed, drainage is established, and the risk of infection is certainly less than if the tampon had not been applied.

In considering the closure of the torn cervix after labor, we do not attempt a complete anatomical restoration to the unimpregnated cervix, nor do we believe that such restoration is of practical value to the woman liable to repeated parturition. The cervix should be closed, however, to within half an inch, or in favorable cases quarter of an inch of the external os. The remaining portion will close sufficiently to render the involution of the cervix practically complete, and the cervix is less likely to tear in subsequent labor.

In cases of severe laceration through the cervix and into the fascia of the posterior segment of the pelvic floor, the closure of the upper extremity of such laceration is of special importance. These stitches may embrace some of the tissue forming the sacral ligaments and, by restoring the parts, tend to draw the cervix backward, thus preventing retroversion. While these stitches are not easy to pass, their importance justifies the effort.

The method of closing the anterior and posterior segments

of the pelvic floor is familiar and requires no special description. Tears in the sulci and fascia of the levator ani muscle are of primary importance. Next comes the sphincter and its surrounding fascia, even though the tear has not extended into the bowel. If these two regions have received attention, the perineum may be closed in such a way as to carry the posterior vaginal wall upward and backward, thus preventing rectocele and prolapse.

In our experience, lacerations of the anterior segment should not be neglected. Not only do they cause hemorrhage, but tend to prolapse of the anterior vaginal wall and tissues about the urethra.

While it may be interesting to discuss surgical operations before specialists, who usually operate in hospitals, the practical question arises as to the application of such methods to confinement cases in private houses. Is this possible with safety to the patient and without unduly increasing the burden of her expense? What apparatus and assistants are necessary for such procedures?

Unquestionably, difficult vaginal deliveries should, if possible, be conducted in hospitals. Primiparous patients should, as a rule, be confined in hospitals. The number of women who seek hospital care in labor is constantly increasing, and no large general hospital provided with facilities for surgical work should hesitate to receive a confinement case. The fear that the confinement case will become infected in a general hospital by reason of the surroundings of the hospital does not obtain in the present stage of hospital hygiene and antisepsis. At the Jefferson General Hospital I frequently deliver private cases by forceps or version, the patient occupying afterward a private room, with excellent results. Delivery is accomplished in a small operating-room reserved for clean cases, from which the patient is transferred to her own room.

In private houses the operator must transport sufficient appliances to establish and maintain antisepsis and aseptic technic. Edgar has shown us most completely how instruments and apparatus may be available at all times for such a purpose. In my own experience, my outfit contains a portable sterilizer in which the necessary instruments, suture, and ligature material are boiled just before being used. Sterile linen for covering the patient's lower extremities and abdomen, sterile gowns for the operator and assisting nurse, gauze for packing in sealed bottles are also available. The anesthetizer is considered a most important assistant, and should not only have at his disposal ether

and chloroform, but instruments and apparatus for hypodermic stimulation, and intravenous saline transfusion. In addition to the nurse who has charge of the patient, a nurse whose time is given to the preparation of dressings and supplies and the care of instruments accompanies the operator. It is her duty to boil the instruments, see that the sterile packages of linen and dressings are in readiness, boil a douche bag, assist at the delivery, and thread needles and assist at the repair of lacerations. This nurse is provided with sterile gloves and a sterile gown. The nurse in charge of the patient assists at the delivery, prepares the patient for delivery, and looks after the child. This makes a total of four medical persons required for obstetric operations in private houses. Additional assistants are often convenient and useful, but in ordinary cases they cannot readily be obtained. The patient's lower extremities can be kept in position by the use of a sheet folded in the longest way, passed beneath the neck, and tied to each leg on the outer side below the knee. An operating table may be carried by the operator, or improvised with the kitchen table. If the patient will use a high, single bed, with four wooden cubical blocks eight inches in diameter, which are to be placed under the legs of the bed thus raising it sufficiently high, it will enable the operator to perform vaginal delivery with comparative comfort. This is often less formidable to the patient and her friends than the transference to an operating table. Such a high bed is most convenient for the nurse, during convalescence.

In performing such operations, our reliance must be placed more upon asepsis than upon antisepsis as regards the patient. While the external parts should be thoroughly prepared with soap, sterile water, and bichloride, we limit vaginal douching to a single irrigation with lysol, 1 per cent. After delivery the uterus and vagina are thoroughly but gently irrigated with 1 per cent. lysol, and in addition to the uterine tamponing the vagina is moderately tamponed with bichloride gauze. The gauze is removed forty-eight hours after delivery, and the genital tract, including the uterus, thoroughly irrigated with 1 per cent. lysol. No other douches are given during the puerperal period. In the after-care of the patient, dilute bichloride solution or lysol is poured over the stitches as often as necessary. Sterile or bichloride gauze dressings are employed. The suture material is twenty-day chromicized catgut for all tissues except the skin in which silkworm gut is employed. To maintain a

tonic condition of the uterine muscle, strychnia and ergot are given through the first week or ten days of the puerperal period.

The steps of such an operation may be defined as anesthesia, placing the patient in position, catheterizing under anesthesia, thorough vaginal examination under anesthesia, irrigation of the vagina, delivery, the delivery of the placenta, irrigation and tamponing of the uterus, closure of the lacerations of the cervix, posterior pelvic segment and perineum, and anterior pelvic segment.

The tamponing of the vagina with bichloride gauze completes the operation. The time occupied for such delivery in private houses is on the average not more than one hour. Of this the actual delivery of the child takes about one-third of the time. The remainder is occupied in preventing hemorrhage, closing lacerations, and maintaining asepsis.

In private patients, concerning whom this paper is especially written, I have had two failures in closure of the pelvic floor. In both of these, the stitches in the sphincter and its fascia tore out during the first week of the puerperal period, because the patient strained upon the bedpan during movements of the bowel. In both of these patients it was necessary to perform a secondary operation to restore the functions of the sphincter. These operations were successful. Other than these, there have been no complications in these cases. Infection has not developed, 80 per cent. of cervical lacerations closed, 10 per cent. united partially, and 10 per cent. failed to unite. In some of those apparent failures, thorough examination with a speculum revealed the fact that the stitches placed the highest up had been successful, and that the vaginal portion of the cervix had healed at the upper extremity, leaving the lower two-thirds of the cervix without union.

It is now recognized that after vaginal Cesarean section and pubiotomy, incisions and lacerations in the cervix, pelvic floor, and perineum should be immediately repaired under antiseptic precautions.

Why should not other cases of vaginal delivery in which lacerations occur, and in which hemorrhage and sepsis threaten, be treated upon surgical principles?

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