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THE INDUCTION, COMPLICATED BY HEMORRHAGE, OF LABOR*

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THE induction of labor has established its place among the most valuable operations of obstetric surgery. The indications for its performance have, of late, been considerably changed by the increased performance of cesarean section and by the more frequent use of analgesia and anesthesia in labor. The distinction between the induction of labor and the emptying of the uterus by dilatation and curetting, or by elective operation, must not be forgotten.

At present, in primiparous patients labor is rarely induced for contracted pelvis, but is indicated in cases where pregnancy is turning the scale against the general health of the patient and where the saving of health or life may be hoped for if pregnancy is terminated. Such are cases of disease of the heart complicated by pregnancy, tubercular infection complicated by pregnancy, toxic conditions not yielding to treatment, and where a profound disorder of the nervous system is greatly aggravated by pregnancy.

In multiparous patients, induction of labor is more frequently indicated. In cases where patients have had several difficult labors with children disproportionate to the mother's pelvis; in cases where, after having several children, the mother shows a tendency to go overtime, and in cases of severe visceral disease in multiparous patients, labor is often induced.

In placenta previa, labor may be induced to advantage when the

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situation of the placenta is such that rupturing the membranes alone will suffice to control hemorrhage through pressure by the presenting part. In other cases of placenta previa and in accidental separation of the normally implanted placenta, delivery by section is indicated.

In fulminant toxemia, with or without convulsions, induction of labor is only indicated when the patient is practically in and has largely completed the first stage of labor. Then the rupture of the membranes will be followed by the temporary cessation of the convulsions, which will return with increased violence when the uterus begins to act.

Two methods at present are commonly employed; one, the introduction of a foreign body within the uterus to stimulate uterine contraction, or the stimulation of the uterine contractions by rupturing the membranes and lessening the quantity of amniotic liquid, or, second, the administration of drugs. The induction of labor by psychic effect, while occasionally successful, is unreliable.

In inducing labor, it is well not to ignore the mechanism of labor. The unshortened and unsoftened cervix requires something more than simple stretching in a lateral direction at right angles to the long axis of the uterus. The dilating bag does not favor the softening or retraction of the cervix, and this is one of the disadvantages attending this method. The introduction of bougies or a rectal tube, or gauze promotes the softening of the cervix, its retraction and obliteration, and is not likely to displace the presenting part. This method is not especially painful, or likely to result in septic infection.

If the statement of patients can be believed, the use of dilating bags causes severe pain and sometimes tends to displace the presenting part. Accidents in the use of the bag, resulting in the bursting of the bag and the escape of liquid or air into the uterus need not result seriously.

It has been urged as an objection to the use of bougies that they may separate the placenta or pierce or wound the tissue at the placental site in such a manner as to cause hemorrhage. This paper is largely concerned with the discussion of this topic.

Before narrating our cases, it may not be amiss to call attention to the induction of labor by the use of drugs. Castor oil, quinine and pituitrin are those commonly selected. This method has received full exposition by Watson of Toronto, who publishes a considerable series of cases and is satisfied with his results. Choosing a favorable time, he gives castor oil, quinine dissolved in dilute hydrochloric acid, and follows this by small doses of pituitrin, given sufficiently often to initiate and continue uterine contraction. When labor has once been established, it is allowed to proceed, if possible, spontaneously.

In the administration of drugs, the psychic element can rarely be

completely eliminated. If a patient is positively told that certain effects will follow the taking of a given drug, such effects are enhanced. Of this, the writer had an interesting illustration when a patient, a trained nurse, who married a physician, and who presented a moderately contracted pelvis, desiring to avoid operation, consented to the induction of labor. The patient was familiar with the circumstances and the reasons for the proposed interference. All preparations were made for a given day. The only medication employed was a simple laxative. Without interference or the further use of drugs, the patient came into labor at the time appointed. Furthermore, the patient repeated this performance twice afterward, on each occasion the preparations for inducing labor were fully carried out, the result being a psychic effect which produced the desired result.

We recognize hemorrhage during pregnancy as that which is not concealed and in which blood escapes through the vagina, or that which is concealed, where blood accumulates in the uterus, in the abdominal cavity or between the layers of the broad ligaments. In the writer's experience with the induction of labor, hemorrhage has occurred and the cases seem of sufficient interest and importance to justify their narration.

CASE 1. A woman whose first pregnancy had been terminated by the use of forceps. In her second pregnancy, domestic complications had caused great nervous disturbance; the patient's general physical condition was impaired and she had gone overtime, with no sign of labor. She entered the Jefferson Hospital and under anesthesia by nitrous-oxide and oxygen, the cervix was dilated somewhat by the gloved hand, the membranes separated from the lower portion of the uterus and two bougies were inserted without difficulty. The fetal head was presenting, but was freely movable at the pelvic brim. The introduction of the bougies was followed by considerable oozing hemorrhage, the blood was dark in color, the quantity not excessive. The bougies were introduced in the afternoon. A vaginal packing of ten per cent iodoform gauze was used. During the night and the following morning, hemorrhage persisted, although of moderate quantity. Labor did not develop. There was no evidence of placenta previa, neither was the patient highly toxic. The patient had been, before marriage, a trained nurse, and understood thoroughly the points in her case.

In view of the hemorrhage, the failure of labor to develop and the fact that the patient's circumstances in life were such that each pregnancy must be an extraordinary burden, the patient and her husband requested delivery by operation, with sterilization. This was readily accomplished by abdominal section, followed by the delivery of the child and supravaginal hysterectomy. The ovaries were left, the appendix was removed. Mother and child recovered from the operation without incident.

On examining the uterus, it was lined with an extraordinarily thick and soft membrane. At the time of operation, it was observed that the placenta had not separated, nor had the bougies touched the placenta, or done violence. They were in proper position between the membranes and the wall of the uterus.

A thorough microscopic examination of the specimen revealed the cause of the

hemorrhage. The patient had chorioepithelioma, the microscopic appearance of the uterus being highly characteristic of that condition.

The patient was last seen five years after the operation in good general condition.

CASE 2.—A remarkably robust multipara, who had given birth to large children with considerable difficulty and suffering. The essential element seemed to have been the excessive size of the child. Accordingly, in the fourth pregnancy, it was determined to induce labor at term. The position and presentation were normal, the pelvis was slightly larger than the average, the membranes unruptured, the patient's general condition good. Under nitrous-oxide and oxygen anesthesia, the cervix was dilated by the gloved fingers, the membranes separated, a thorough examination made, which revealed no abnormality. Two bougies, one after the other, were then inserted very gently and carefully, passing up on the left side of the pelvis between the membranes and the wall of the uterus. The introduction of these bougies was followed by a hemorrhage so profuse that the sound of the blood pouring into a bucket beneath the edge of the bed was distinctly heard. A vaginal packing of iodoform gauze was at once introduced and the abdomen again examined, and evidence was found that the placenta had begun to separate. The husband of the patient was immediately notified of the condition and the patient was delivered by abdominal cesarean section. It was feared that the bougies had separated the placenta, pierced its substance, or done some important injury.

On section the bougies were in the position to which they had been introduced on the left side of the uterus, the placenta was attached on the right upper portion of the uterus and had begun to separate. There was no connection then between the bougies and the separation of the placenta, unless it was that the bougies had set up uterine contraction which began the separation of the afterbirth. The uterine decidua seemed unusually friable and the placental substance contained considerable calcareous matter. A vigorous child was readily delivered, the uterus emptied and sutured by closing the muscle with buried stitches of medium-sized, best quality silk, stitching over the peritoneal covering of the uterus with continuous catgut and closing the abdomen in the usual manner. The patient's recovery was uncomplicated and she nursed her child successfully. The placenta had separated through about one-fourth of its lower portion.

It may be interesting to note that within two years after this operation, this patient gave birth to a living child, well-developed, with very little assistance. Labor developed at term, and when dilatation was complete, the membranes were ruptured and the patient completely anesthetized with ether and oxygen. Vigorous uterine contractions developed, which brought the head to the pelvic floor, whence it was readily extracted by the hands. The placenta was immediately removed by introducing the hand within the uterus and the interior of the uterus was thoroughly palpated. No evidence of the former operation could be detected. Mother and child made an uninterrupted recovery.

In this case had the woman not been in the first instance delivered by section, it might always have been supposed that the bougies wounded the placenta or partially separated it. It was absolutely proved by direct vision that the bougies did not touch the placenta, nor were they even on the same side of the uterus.

CASE 3.—A multipara whose first labor had been difficult, terminated by forceps, with considerable laceration. To avoid further complications, as a complete repair operation had been done, it was decided to induce labor in a subsequent pregnancy. The pelvis was of average size, the presentation and position favorable, the patient's general condition good. Nitrous-oxide and oxygen were administered, the cervix dilated, the membranes separated and two bougies inserted. There was considerable

hemorrhage accompanying their insertion. This readily ceased on the introduction of the vaginal packing with ten per cent iodoform gauze. Labor developed within eight hours and was terminated by the use of forceps. A living child was delivered, without difficulty, and mother and child made good recovery. The cause of the bleeding could not be ascertained; the placenta was intact, no wound or lesion of the cervix or uterus could be found.

CASE 4.—Bougies were introduced to induce labor in the case of a patient in the wards of the Maternity Department of the Jefferson Hospital. No complication attended their introduction; the patient went into labor, was delivered spontaneously. When the placenta was delivered, one of the bougies was sticking through its substance, having perforated the placenta completely. This condition would not have been discovered by any symptom or complication arising during the labor. There was during the labor no hemorrhage whatsoever.

One can readily understand that if the placenta be attached unusually low it might easily be wounded by bougies, and hemorrhage result. Any cause which produced uterine contraction in a toxic patient, or one whose decidua was diseased, might result in separation of the placenta. Chorionepithelioma would certainly bleed if bougies were introduced into such a uterus during pregnancy. In case three, however, where no complication could be found and slight hemorrhage occurred, an explanation for the hemorrhage is not forthcoming.

It may be suggested that the use of a new sterile rectal tube which does not pass beyond the lower uterine segment is safer than the use of bougies. The writer has employed this method with satisfaction in several cases. It is not, in his experience, as prompt in its action, nor does it soften the cervix so thoroughly as the use of bougies.

From his experience, the writer is not inclined to believe that the use of bougies does cause serious hemorrhage. On the whole, in his experience, this method has been the most uniformly successful of any employed for the induction of labor. It has produced the result of more closely resembling spontaneous parturition than any other.

The literature on the subject throws no light upon the question. Cases are recorded where the placenta has been lower than usual and bougies have wounded the placental tissue, but the writer has been able to find no case where serious injury to mother or child has followed the use of bougies in the induction of labor.