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THE TREATMENT OF PUERPERAL ECLAMPSIA.¹

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It is necessary to preface our remarks upon the preventive and curative treatment of puerperal eclampsia with the statement that the real cause of the condition in the human female is still an unknown quantity. As far as we are aware, no new light has been thrown upon the pathology and etiology of the condition.

That the pre-eclamptic condition and the subsequent eclamptic seizure are due to (1) uræmia, (2) hydræmia, (3) ammoniæmia, (4) reflex irritation, (5) microbic influences, or (6) to the influence upon the system of some toxic material, modern scientific investigation does not permit us to state. Most observers are agreed that the last mentioned approaches the true explanation, and that the condition is one of toxæmia, of auto-infection, of an accumulation in the blood of some toxic material—biliary, urinary, fetal, or all three, but just what this material is has not up to the present time been determined. It appears probable, moreover, that the condition has not one but many causes. Further, modern clinical research and study would seem to prove that the pre-eclamptic state, or what some have been pleased to term "the toxæmia of pregnancy," has certain well-marked symptoms and signs to guide us to a diagnosis of this condition, and that in the majority, if not in all instances, this state extends over a period of days, if not weeks or months.

The limits of the present paper do not permit us to enlarge further upon the clinical picture of this pre-eclamptic condition, other than to state that it resembles closely the clinical picture seen in slow or rapid poisoning by some mineral or narcotic poison, and that the condition is always accompanied by failure of the eliminative organs to do their duty, notably on the part of the kidneys. If these premises are correct, then of the two treatments of eclampsia, the preventive and the curative, the former is by far the most important, especially so when we come to find that in the majority, if not in all instances, the eclamptic seizure is a preventable accident.

(a) **The Preventive Treatment.**—What symptom or sign, or what combination of symptoms or signs, have we then, that will enable us to recognize this pre-eclamptic state, in order that we may be warned in time to prevent the subsequent eclamptic convulsions?

The symptoms of the state preceding an eclamptic attack include a rapid pulse, accompanied usually by high arterial tension, loss of appetite, gastric and intestinal disturbances, headache, lassitude mental and physical, a gradual or rapid diminution of all the excretions, both liquid and solid—in a word, what one

¹ Read before the New York Academy of Medicine, at a special meeting, November 27, 1896.

would expect to observe from the introduction or retention in the blood of some toxic material.

Aside from the direct examination of the blood itself, the condition of the urinary secretion offers us the most convenient physical sign or clinical index of this pre-eclamptic state. The amount of urine passed in twenty-four hours is not always a reliable guide of kidney failure. Albuminuria, as is well known, may be absent before, during, and even after an eclamptic seizure. The amount of urea excreted is a far better guide, as has been shown by Bouchard, of Paris, in the non-pregnant condition, and recently by Dr. E. P. Davis, of Philadelphia, in pregnancy; for the latter found that when urea fell to 1.5 per cent., stimulation of the excreting processes resulted in distinctly favorable results, in all cases in which toxic symptoms were previously present. It is not to be inferred from this that urea causes the convulsions, for large quantities of urea may be injected into rabbits without producing toxic symptoms. Indeed, Bouchard found that bile had nine times the toxic power of urea. It is generally accepted that the diminution in the amount of the urea excreted indicates kidney inadequacy, but it is not always a reliable guide. There are other substances in the urine with as great or greater poisonous qualities. Urea may be found in sufficient quantity and an eclamptic attack occur. Bouchard determined the toxicity of the urine by injections of the same into the circulation of rabbits. His experiments show that normal healthy urine is toxic in the proportion of a certain unit per kilo by weight of the rabbit. In kidney insufficiency, when some poison or poisons are retained in the circulation, the toxic properties of the urine diminish, and it requires more of the urine to the kilo by weight of the rabbit to produce toxic symptoms in the animal. This gives us a delicate test for determining kidney inadequacy in doubtful cases. Bouchard's experiments further show that in renal insufficiency the poisons retained in the patient's blood arise from:

1. Food, especially nitrogenous food, as muscle, and food containing the salts of potassium.
2. Bile.
3. Putrefaction in the intestines, and absorption of its products.
4. Toxic materials constantly being produced by the metabolism of all the cells of the body.

To this last we add the metabolism of the foetal tissues, as this greatly increases the toxic material in the mother's blood, for, clinically, we are familiar with the fact that when the foetus dies *in utero*, or is delivered in the case of a living child, the eclamptic seizures usually cease.

Again, Winckel's observation that in twin and triplet pregnancies there is a greater predisposition to eclampsia has been verified by others. Moreover, the tendency to eclampsia becomes greater proportionately with the advance of gestation and the consequent increase of foetal metabolism.

Further, we know that the maternal mortality diminishes progressively from the ante-partum to the post-partum states; namely, that it is greatest when eclampsia sets in during pregnancy, is less during labor, and lowest of all when the attack occurs for the first time

after the birth of the child. Thus, the mortality during eight years at the Boston Lying-in Hospital, as has been shown by Green,¹ was: Ante-partum eclampsia, maternal mortality, 46 per cent.; foetal mortality, 69 per cent. Intra-partum eclampsia, maternal mortality, 25 per cent.; foetal mortality, 25 per cent. Post-partum eclampsia, maternal mortality, 7 per cent.

Our present knowledge of the causation of puerperal eclampsia, meagre though it be, furnishes us, if not with the key to the successful preventive treatment of the condition, still with a working hypothesis, namely, the early recognition of the pre-eclamptic state. To accomplish this, something more than a perfunctory monthly or bimonthly examination of the urine for the presence of albumin is called for, since non-albuminuric eclampsia occurs in from nine to sixteen per cent. of cases, and it would appear to be quite as fatal, if not more so than an eclampsia accompanied by albuminuria. Something more is demanded than the late recognition of renal insufficiency, as it shows itself in a marked diminution in the quantity of urine, specific gravity of the same, and amount of urea excreted.

When we shall accustom ourselves to watch our cases of pregnancy, not only for the physical signs of pronounced renal inadequacy as an index of an approaching eclamptic attack, but also for the general symptoms of the overcharging of the blood with toxic material—as high arterial tension, headache, gastric disturbances, physical and mental lassitude, and further for failure of the bowels, liver, skin, and lungs properly to perform their functions, and intelligently treat the same, then, and then only shall we have done our whole duty by our patient, and done all in our power to correct the pre-eclamptic condition and avert an impending eclampsia.

We would formulate our line of treatment of this pre-eclamptic state somewhat in the following manner:

1. Reduce the amount of nitrogenous food to a minimum.
2. Limit the production and absorption of toxic materials in the intestines and tissues of the body, and assist in their elimination by improving the action of (1) the bowels, (2) the kidneys, (3) the liver, (4) the skin, and (5) the lungs.
3. If necessary, remove the source of foetal metabolism and of peripheral irritation in the uterus by the emptying of that organ.

Our first indication, the reduction of the amount of nitrogenous food to a minimum, can best be fulfilled in an exclusive milk diet, to which, as the symptoms subside or disappear, can be added fish and white meats. We have found it not only safer, but less trying to the patient, to commence with an absolute milk diet, than to compromise and afterward be compelled to cut off all but the milk. For our second indication—that of elimination—we must first secure an abundant supply of pure air and water. This may be assisted by moderate exercise or light calisthenics or massage, in certain instances. For the bowels we advocate daily doses of colocynth and aloes at bedtime, followed by a saline in the morning. For the liver an occasional dose of calomel and soda at bedtime, followed in the morning by one of the stronger sulphur waters, as Rubinat, Villacabras, or Birmenstorf. Increased diuresis is secured by maximum doses of glonoin. The action of the skin is encouraged by encasing the body in wool or flannel underclothing, by massage, by the warm bath, hot bath, hot pack, or hot-air bath, according to the urgency of the case.

We are accustomed in instances of eliminative insufficiency to give at bedtime twice weekly, or more

frequently if necessary, a tablet composed of calomel, digitalis, and squill, each one grain, and muriate of pilocarpine, one-twentieth of a grain. This is followed in the morning by a full dose of Villacabras water. We have found a decided diaphoretic-diuretic action follow the administration of such a combination, with the additional prompt action upon the liver and intestines as well. So of our five eliminative processes four are stimulated to more energetic action by its use.

Because jaborandi has been practically abandoned as a diaphoretic in the presence of an eclamptic attack, we know of no good reason contraindicating its use in this, the pre-eclamptic state, in the absence of pronounced cardiac disease, and we advocate its use for its diaphoretic and diuretic actions.

Finally, when exercise cannot be taken and an abundant supply of fresh air is wanting, oxygen inhalations will prove of service. Some preparation of iron will also be called for, as the tincture of the chloride, or Basham's mixture.

This, then, is the general hygienic and medicinal treatment of the pre-eclamptic state. No hard and fast rule can be laid down. Every case must be treated on its merits. In one a restricted diet and mild stimulation of the renal and intestinal functions is sufficient, and the patient may be allowed to be about and even exercise in the open air, her skin being protected from sudden changes by being incased in wool or flannel. Other more pronounced cases of eliminative insufficiency must be kept absolutely quiet in bed upon an exclusive milk diet, and the stimulation of all the eliminative organs must be resorted to, to remove the symptoms of impending eclampsia.

But it must be kept ever before us that the hygienic and medicinal treatment is only of secondary importance to the milk diet, and that the latter is the foundation of the preventive treatment of puerperal eclampsia. Given a case in which, in spite of an exclusive milk diet and the vigorous stimulation of the five excretory outlets already mentioned, the symptoms and signs of the pre-eclamptic condition continue or at any time become urgent, the indication is to induce artificially abortion or premature labor.

We cannot understand the position of those authorities (notably of the British school of midwifery) who advise against inducing labor in the presence of urgent symptoms of the pre-eclamptic state.

The arguments that by the methods usually in vogue induced labor increases reflex excitability and precipitates convulsions; that by the same methods, because of the time necessary to remove the barrier of the cervix, the patient's fate is sealed before the delivery is effected; and, moreover, that the onset of labor increases the danger to the patient, are good ones and must demand our attention.

In answer, we would state that our methods of terminating the pregnancy need not increase reflex excitability, and if perchance they do, the excitability is readily controlled for the time necessary to accomplish our ends; that the time necessary is, in most cases, very short; and, finally, that to-day the onset of labor and the termination of pregnancy may be practically brought about at one and the same time, and we have no prolonged or tedious labor to react unfavorably upon the patient.

The objection raised by Byers at the last (second) International Congress of Obstetrics and Gynecology, held at Geneva, in September, 1896, that induced labor, because of the necessary manipulation, increases the risk of sepsis, will not deter us from performing the operation when we know we are surgically clean.

Charles, of the Liège Maternity, reported, at the last International Congress of Obstetrics and Gynecology, in favor of induced labor, when treatment fails or the symptoms become urgent in the pre-eclamptic

¹Green: "Puerperal Eclampsia. Experience of the Boston Lying-in Hospital in the Last Eight Years." American Journal of Obstetrics, 1893, xxviii., 13-44.

state. His statistical table shows that every mother recovered and seventy-five per cent. of the children were saved.

We believe in a rapid manual dilatation of the os in these cases, but only after the cervical canal is in a condition favorable for its safe performance. Moreover, we would insist upon a complete dilatation of the os before delivery is undertaken.

(b) **The Curative Treatment.**—In the presence of an eclamptic attack we face a desperate condition. The latest statistics from various parts of the world still place the maternal mortality at from twenty-five to thirty-five per cent. As long as the pathology of eclampsia remains obscure there can be no rational curative treatment of the condition. Our experience does not permit of our recommending any single treatment. Many subjects recover, no matter what the treatment, many die in spite of treatment, and others do well without any treatment at all. No single treatment can be recommended; each case must be managed according to the indications present. Our experience has taught us that not a single but a combined treatment promises best for saving the lives of mother and child in the event of an eclamptic seizure. We would offer for this combined treatment three indications, as follows:

I. Control the convulsions.

II. Empty the uterus under deep anæsthesia, by some method that is rapid and that will cause as little injury to the patient as possible.

III. Eliminate the poison or poisons which we presume cause the convulsions.

Although we have named these indications in the order of their importance, still we often carry them all out at one and the same time. In another class of cases we fulfil the first and third, and wait for a suitable moment to carry out the second. The third indication—elimination—should really go hand in hand with the first two and be put into action at one and the same time with them.

(I.) *Control the convulsions.* There is to-day a wide range of opinion regarding the relative value of the various medicinal means employed to control eclamptic convulsions. That eclamptic attacks must be controlled, that the danger to mother and child is in direct proportion to the number of convulsions occurring before the emptying of the uterus, most observers are agreed. The four medicinal means most certain and safe as antieclamptics are chloroform, morphine (hypodermatically), veratrum viride, and chloral hydrate, the latter alone or combined with sodium bromide. It would appear from the Transactions of the last International Congress of Obstetrics and Gynecology that of these drugs morphine is most frequently relied upon.

We cannot altogether subscribe to the teachings of the Rotunda Hospital, that morphine and chloral when given in eclampsia "act just like the poison which causes the eclampsia and increase the tendency to death;" still we believe we are too prone to resort to the purely symptomatic treatment with narcotics and anæsthetics, forgetting the more important eliminative treatment. At the Rotunda chloroform is now given only when operative interference is required. For the convulsions at this hospital morphine would seem to have given much better results than chloroform for years past. Our preference is for chloroform, veratrum viride, and chloral, in the order named. Until three years ago we used morphine freely in eclampsia, but since have abandoned its use almost entirely, as we believe it prolongs the post-eclamptic stupor and increases the tendency to death during coma by interfering with the eliminative processes.

Second only to chloroform in value is veratrum viride. Provided the pulse be strong as well as rapid,

it is the most certain means at our command for temporarily and even permanently controlling the convulsions. When the pulse is weak we rely upon morphine hypodermatically, chloroform by inhalation, and chloral by rectum, with stimulation if necessary. As a temporary measure in ante-partum and intra-partum and even as a curative means in post-partum eclampsia, veratrum viride will, we believe, accomplish all that has been claimed for it.

(1) Veratrum viride reduces the pulse rate, and convulsions are practically unknown with a pulse rate of 60 or under; (2) it reduces the temperature; (3) it relaxes and renders more yielding the rigidity of the cervical rings; (4) it causes prompt diaphoresis and (5) diuresis, so that it aids not only in the fulfilment of our first indication, the control of the convulsions, but in the third, the elimination of an unknown poison as well. Our practice has been to rely upon chloroform, veratrum viride, and morphine or chloral as temporary measures, and the prompt emptying of the uterus permanently to control the convulsions.

(II.) *Empty the uterus under deep anæsthesia by some method that is rapid and that will cause as little injury to the woman as possible.*

Those who follow the teachings of Charpentier, of France, and Winckel, of Germany, namely, that the uterus in eclampsia should be left alone, except after full dilatation of the os, as the irritation of inducing labor or artificially dilating a cervix precipitates convulsive attacks, will, we believe, see many cases lost that could be prompt and intelligent measures be saved. It would appear from careful observation that the danger is practically over in some ninety per cent. of cases the moment the uterus is emptied, if accomplished early in the attack. Not that by this means the convulsions always cease, but they become less dangerous, and the case becomes one of post-partum eclampsia, in which the mortality, as we have stated, is only seven per cent.

Although one can scarcely find an authority to-day, as shown by the reports of the last international congress, who absolutely rejects local interference in the presence of ante-partum or intra-partum eclampsia, still authorities differ widely as to the extent to which such interference shall be carried out. Charpentier, in 1892, as the result of an exhaustive analysis of four hundred and fifty-four cases of eclampsia, and again in the present year (1896) as the result of further observation, practically arrives at the same conclusions, namely:

1. That labor should be waited for and terminated naturally whenever possible.

2. That induced labor should be reserved for exceptional cases in which medical treatment has entirely failed.

3. That interference should be delayed until the cervix is dilated or dilatable, so as to avoid danger to the mother; that in eclampsia Cæsarean section, manual dilatation of the cervix, and especially deep incisions of the cervix are absolutely unjustifiable.

Charpentier, in this statistical analysis of the different methods of treating eclampsia and of the method known as Dürrssen's deep incisions of the cervix, arraigns the latter in very forcible language, characterizing the operation as brutal and unjustifiable. He places himself in "resolute opposition to forced labor, . . . and even to induced labor, which he reserves for exceptional cases where medical treatment fails." He rejects absolutely forced labor by deep incisions of the cervix. From his analysis of the 454 cases, which included all known methods of treatment of eclampsia, he has constructed the following table: Mortality from spontaneous labor, 13.93 per cent.; from artificial labor, 29.13 per cent.; from Cæsarean section, 36.26 per cent.; from forced labor, 40.75 per

cent. The infant mortality in the 454 cases was 16.4, or 36.12 per cent. Charpentier concludes that the best treatment in eclampsia is to wait until labor begins, and let it alone unless absolutely necessary to interfere. In the mean time he administers chloroform and bleeds if the patient be robust.

On the other hand, it would appear from the literature of the last five years and from the reports of the last international congress (Geneva, September, 1896) that the weight of medical opinion is in favor of emptying the uterus in as short a time as possible in instances of eclampsia, whether the attack occurs before or during labor, although there is a wide range of opinion as to the means to be employed. In the second stage of labor, after dilatation has been secured, all authorities are agreed that the immediate emptying of the uterus is indicated and is to be performed promptly; the indication under such circumstances is readily carried out without additional danger to mother or child. In pregnancy and the first stage of labor the undilated cervix is the barrier to immediate delivery, and it is here that obstetricians differ so widely as to the best method of procedure. An expectant or palliative treatment means almost certain loss of the child, and something like one-third of the mothers are lost. On the other hand, the child is saved and the mother is practically safe, as far as the eclampsia is concerned, if the uterus is immediately emptied by appropriate surgical means.

During pregnancy and the early part of labor four procedures are offered for rapidly emptying the uterus, viz.:

1. Cæsarean section.
2. Mechanical dilatation of the cervix (various methods).
3. Deep incisions which at once completely remove the barrier of the cervix.
4. Combined mechanical dilatation and deep cervical incision.

The first method, Cæsarean section, for the relief of eclampsia still carries with it a high mortality (36.26 per cent. according to Charpentier's figures); moreover, there are many objections to its employment, as the uterine atony and hemorrhage, the irritation of the uterine and abdominal scars and of the curative peritonitis about the uterine sutures, all of which are to be avoided as exciting causes of subsequent eclamptic seizures.

The second method, the mechanical dilatation of

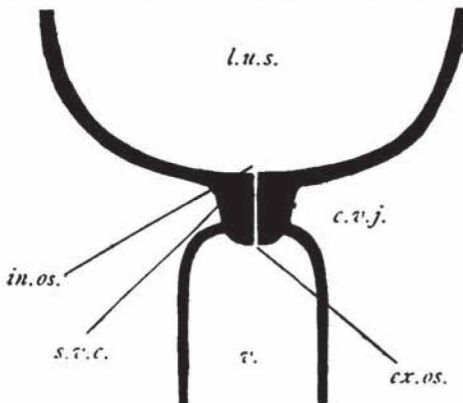


FIG. 1.—Cervix in Latter Part of Gestation or at Beginning of Labor. Vaginal and supravaginal portions of cervix unchanged. *v.*, Cuff of vagina; *ex.os.*, external os and infravaginal portion of the cervix; *c.v.j.*, cervico-vaginal junction; *s.v.c.*, supravaginal portion of cervix; *in.os.*, internal os; *l.u.s.*, lower uterine segment.

the cervix and the immediate extraction of the fœtus, appears to be the popular method of the day. Properly performed the method is safe and efficient. Before dilatation is well advanced, however, from forty minutes to an hour and a half is necessary safely to

carry it out, and certain conditions of the cervix, even in this time, refuse to yield to manual dilatation or result in lacerations into the lower uterine segment. The third method of delivery, by deep cervical incision, offers us a surgical means for emptying the uterus

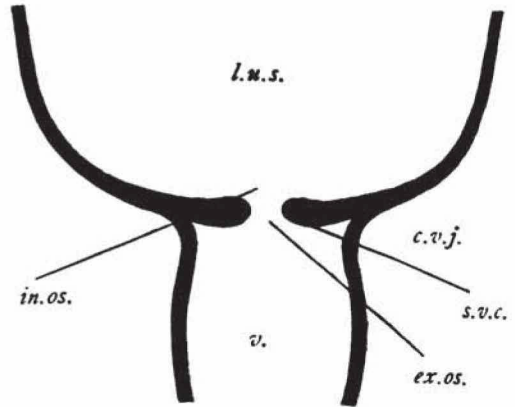


FIG. 2.—Lower Uterine Segment During Labor. *v.*, Cuff of vagina; *ex.os.*, external os, infravaginal portion of cervix has disappeared; *c.v.j.*, cervico-vaginal junction; *s.v.c.*, supravaginal cervix, small portion only remaining; *in.os.*, internal os; *l.u.s.*, lower uterine segment.

in from five to ten minutes, provided the supravaginal portion of the cervix has disappeared or is made to disappear by appropriate means. The fourth or combined method is a combination of the second and third methods, and is applicable to cases in which the supravaginal portion of the cervix is still present and rapid emptying of the uterus is demanded. Here mechanical dilatation of the os until the internal os has been caused to disappear is made use of, and the dilatation then in an instant completed by the incisions. The third method and its modification, the fourth, are comparatively new, and we have few statistics as to the results of the operation. We believe a rapid manual dilatation of the os and subsequent extraction of the fœtus will fulfil the indications in most cases, but unless this can be intelligently carried out, with a due appreciation of the mechanism of dilatation, especially in primiparæ, a purely expectant treatment will give better results. Unfortunately puerperal eclampsia is four times more frequent in primiparæ than in multiparæ, although, on the other hand, the mortality is greater in the latter.

The cervix uteri is composed of constricting and dilating muscle, and, while it is true that the first convulsions usually induce labor, still the resulting asphyxia exerts a marked constricting action upon the body of the uterus and cervix, which is especially marked at the internal ring of the os. Therefore, any method of rapid manual dilatation of the os that is undertaken before the internal os has been made, partially at least, to disappear is attended with great danger of uterine rupture (Figs. 1, 2). This is especially true in primiparæ, in whom the supravaginal portion of the cervix obtains late in pregnancy and even up to the beginning of labor (Fig. 1). We believe a warning should be sounded against the careless undertaking of rapid manual dilatations of the os, particularly in eclampsia. Uterine rupture and death have, we know, been the outcome. Moreover, undue shock has resulted from the dragging of a fœtus through an imperfectly dilated os, to say nothing of the loss of the child.

In placenta prævia the hemorrhage and the resulting anæmia of the lower uterine segment and cervix render these parts more readily dilatable. In eclampsia the reverse obtains, as we have already hinted. Hence it is that in eclampsia in instances in which the internal ring of the os has been drawn up into the body of the uterus (Figs. 2, 3), and the external ring

remains rigid and tense, particularly in primiparæ, and there is urgent need of rapidly terminating the labor, we prefer four clean incisions extending from the edge of the os to the utero-vaginal junction, in

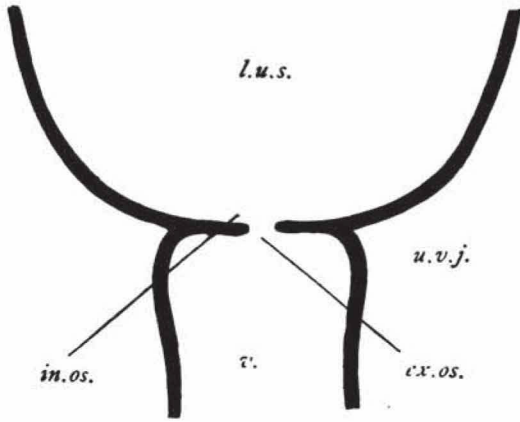


FIG. 3.—Lower Uterine Segment During Labor. Os uteri in progress of dilatation. Supravaginal and infravaginal portions of the cervix have disappeared. Os admits one finger. *v.*, Cuff of vagina; *ex.os.*, external os; *u.v.j.*, utero-vaginal junction; *l.u.s.*, lower uterine segment.

order to save the patient from the greater dangers of rapid manual dilatation.

In the second place, we believe a warning is not out of place against the premature extraction of the fœtus before full dilatation has been secured and the external ring of the os paralyzed. Premature extraction, under such circumstances, we know has resulted in many unnecessary and dangerous lacerations of the lower uterine segment, and an increase of the mortality for the child and mother.

(III.) *Elimination of the poison or poisons which we presume cause the convulsions.*

For the elimination of the toxic materials from the blood and tissues we have nothing new to offer. We believe it essential, however, to rely not upon one but upon all the eliminative organs of the body, and, moreover, that the fulfilment of this third indication in the treatment of eclampsia should go hand in hand with the first two already mentioned. To this end we secure catharsis as early and as promptly as possible by the administration of croton oil, compound jalap powder, or calomel, followed by salines and high enemas of sulphate of magnesium. In the coma or post-eclamptic stupor of the condition, we have relied mainly upon the repeated administration of concentrated solutions of sulphate of magnesium or Villacabras water, by means of a long rectal tube high up in the descending colon. The hypodermatic administration of magnesium sulphate we have found too slow and uncertain to be of any use. Diuresis we obtain by dry or wet cups over the kidneys, followed by hot fomentations. The value of glonoin as a diuretic and antieclamptic, the latter by reducing the arterial tension, we believe, cannot be overestimated. Second only in value to glonoin we consider veratrum viride. We give it at this time for the same reasons and looking for the same results as when we administer it in the pre-eclamptic condition. Diaphoresis we encourage by means of the hot-air bath or the hot pack, our preference being for the former. Pilocarpine as a diaphoretic in the presence of an eclamptic attack we utterly reject, because of the danger of œdema of the lungs and glottis which it may produce. We have seen these conditions follow promptly upon its administration. The drawing off of large quantities of toxic liquids in the form of blood or serum, by means of venesection, catharsis, diaphoresis, diuresis, followed by the replacement of the same, by intravenous, stomachic, rectal, or hypoder-

matic means, causing a washing or disintoxication of the blood and tissues, as it were, has thus far proved of doubtful value. In instances of collapse, however, with the small compressible pulse, the introduction into the blood of a normal saline solution is of the same value here as in collapse under other circumstances. As a general stimulant, to assist in the elimination from the lungs and to prolong life in the post-eclamptic stupor or coma, we have found the free administration of oxygen of the greatest value. Further, alcohol will often be needed as a stimulant during and after an eclamptic attack, and strychnine in the post-partum state and in the face of threatened collapse—although for physiological reasons it would seem to be contraindicated—has served us well.

Finally, although no one has been or is a firmer believer than the writer in the efficacy of a prompt removal of fetal metabolism and of irritation for not only the control but the cure of the eclamptic condition, still we beg to enter a protest, first against the careless use of the term *accouchement forcé* as applied to the rapid, scientific, and intelligent emptying of the uterus; and, secondly, to the easy confidence with which this *accouchement forcé* has been recommended as the best if not the only means at our command for the control of eclamptic seizures, without attaching sufficient importance to the condition of the cervical barrier. By *accouchement forcé*, we understand to-day three operations, namely, (1) the complete instrumental or manual dilatation of the cervical canal, followed by (2) either combined or direct version, or the application of the forceps, and (3) the immediate extraction of the child.

The *accouchement forcé* of the older writers upon obstetrics was often quite another and more serious operation, for the condition of the cervical canal was frequently lost sight of, and it too frequently meant (1) the plunging of the hand or the application of the forceps through a cervical canal imperfectly dilated,

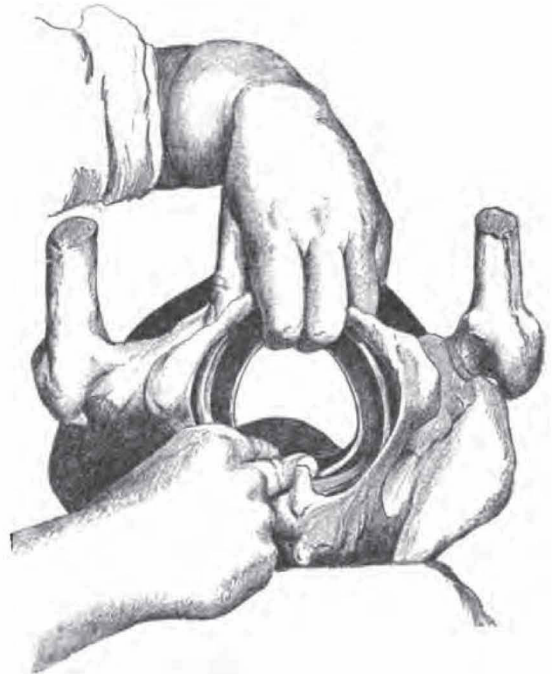


FIG. 4.—Bimanual Dilatation of the Parturient Os. Os two-thirds dilated. Entire effacement of the internal os. Compare Fig. 5. (From a photograph.)

and (2) the immediate extraction of the fœtus through this constricted os. That the latter definition of the term still obtains, seems proven by the frequency of accidents in the extraction of the fœtus that are con-

stantly being brought to our notice. Our maternity hospitals are repeatedly in receipt of ambulance or emergency cases due to the neglect on the part of the operator to fulfil the first condition of the operation, namely, complete dilatation. Within the past few days, while preparing this very portion of the paper, the writer was summoned by telephone to remove from the uterine cavity a foetal head decapitated by traction upon the trunk, in the presence of an imperfectly dilated os. The retained head resulted in post-partum hemorrhage, and the additional shock of its subsequent extraction. It is no uncommon event for emergency cases to be brought to our hospitals with a podalic version or extraction partially completed because of the operations being attempted in the presence of a partially dilated os (Figs. 4, 5); moreover, for uterine rupture to occur, due to the same cause.

In Fig. 5 we have represented the outcome of a premature extraction through an imperfectly dilated os. With such a complication—a rigid, imperfectly dilated external os, grasping the foetus tightly under

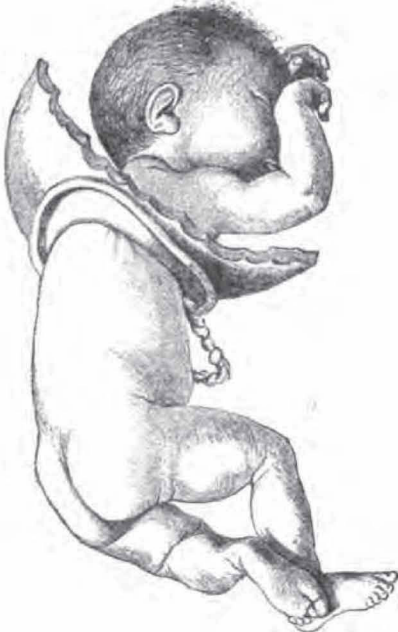


FIG. 5.—Dangers of a Rapid Breech Extraction through an Imperfectly Dilated Os. External os not fully dilated or paralyzed. Traction on the legs results in extension of the head and both arms.

the armpits—the loosening of the arms, the dragging of these, and subsequently the head through the os will take considerable time, and not only forfeit the child's life but subject the lower uterine segment to dangerous if not fatal rupture. Our plea in these cases is not alone for complete dilatation or disappearance of the external ring, as seen in Fig. 6, but further, for a paralysis of the ring as we see it performed in Fig. 7, so that the dangers of the extraction, whether by forceps or version, may be reduced to a minimum for both mother and child.

The limits of the present paper forbid our entering upon the arguments for or against any particular variety of rapid manual or instrumental dilatation of the parturient os, further than to state that our preference is for a rapid bimanual method, as shown in the illustrations, since we have given this method an abundant trial over a period of several years, and it has proved most satisfactory.

The bimanual method is to be preferred to other digital and instrumental methods, because (1) the membranes are preserved throughout the operation or until full dilatation is obtained; (2) there is no interference with the original presentation and position;

(3) the sense of touch of the operator's fingers is unimpaired; (4) there is no constriction of the operator's hands; (5) the amount of force exerted upon the

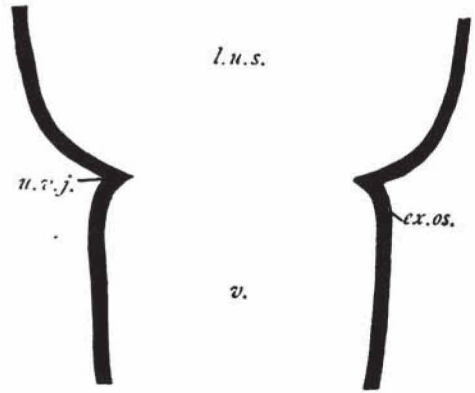


FIG. 6.—Lower Uterine Segment at Completion of First Stage of Labor. Os uteri completely dilated. *v.*, Cuff of vagina; *ex. os.*, border of external os, scarcely perceptible; *u. v. j.*, utero vaginal junction.

external ring can be better estimated, and hence there is less likelihood of lacerations occurring; (6) in placenta prævia there is less preliminary separation of the placenta by this method than by any other; (7) by no method with which we are acquainted, can not only complete dilatation but complete paralysis of the parturient os be so quickly and safely obtained (Figs. 4, 7).

Again, we beg leave to protest against the undertaking of a rapid manual dilatation of the os (namely, the entire dilatation completed within an hour) before the cervix has become, at least slightly, relaxed by uterine action and is already somewhat yielding. A rigid cervix, in the condition as we see it in Fig. 1, should, we believe, receive a preliminary treatment, a cervical dilator of gauze or hydrostatic bag, that will set up some uterine action and render the rings of the os yielding enough to make a rapid dilatation a safe

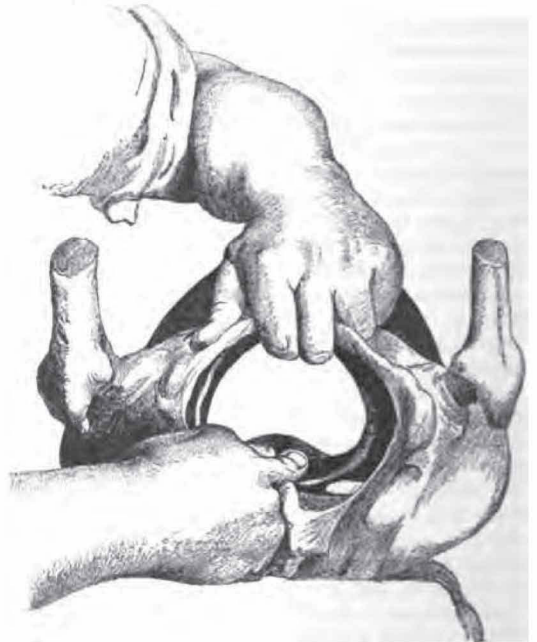


FIG. 7.—Bimanual Dilatation of the Parturient Os. The os is fully dilated and is being stretched and paralyzed, to prevent subsequent accidents to the after-coming head during the extraction of the foetus. Compare Fig. 6. (From a photograph.)

operation. In the presence of even a minimum amount of uterine action, or with a softening, yielding, and relaxing os, although the anatomical conditions may

obtain as in Fig. 1, we may still undertake the rapid manual dilatation and produce complete paralysis of the cervix within an hour, as seen in Fig. 7. Far better a purely expectant treatment, as regards emptying the uterus, than the attempt rapidly to overcome a rigid os by manual methods, the supravaginal portion of the cervix being present. We have known complete uterine rupture to result from such an undertaking, the maternal intestines prolapsing between the fingers of the operator. Fortunately for the eclamptic woman, the frequency of the attack increases proportionately with the progress of gestation, and, we may add, with the increase of fetal metabolism. Hence, the attack is more frequent in the latter part of pregnancy and in labor, when we can more readily and safely apply our surgical principle of treatment, namely, an early and rapid evacuation of the uterus.

Unfortunately, the attack is four times more frequent in primiparæ than in multiparæ, and in the former the presence of the supravaginal portion of the cervix late in pregnancy and of an unyielding and unrelaxed os compel us to make use of preliminary and temporizing means before we can safely perform a rapid dilatation of the os and subsequent extraction of the fœtus. It is in such cases, and at such a critical time, when we are waiting for the measures preparatory to a rapid dilatation and emptying of the uterus to act, and to give us at least a yielding and relaxed cervical canal, if not a partial disappearance of the internal os, that we have found *veratrum viride* most valuable and life-saving, by reason of the various actions of the drug already mentioned.

50 EAST THIRTY-FOURTH STREET, NEW YORK,
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