

## CONDUCT OF FIRST STAGE OF LABOR\*

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THE care of the pregnant woman during the first stage of labor may be considered as the last and most important portion of antepartum care. In the woman who has been under observation, many important general and local observations have been recorded. It is not necessary to note them again. The woman has been brought to the end of her pregnancy in the best possible general condition and the relation of the fetal size to the pelvic capacity has been noted. The end toward which all this work has been directed has arrived. The physician must now maintain the physical and mental status of his patient during labor and must take measures to avoid the complications of delivery and the puerperium. On the other hand, when the woman is seen for the first time by the physician at the beginning of labor it is necessary to carry out all the observations usually spread over the long period of prenatal observation. Her general condition may or may not be as good as it might have been if she had been under observation during her pregnancy. In the latter instance an attempt to set down the proper care during the first stage of labor would involve a discussion of many measures such as general physical examination, pelvimetry and blood examination, which ordinarily would be done in the antepartum period. It is customary in a consideration of this subject to include a list of the materials and instruments necessary to conduct labor and delivery in the home, but such a list may be obtained from any standard textbook.<sup>1</sup> This discussion of care during the first stage of labor will be devoted to general

principles, which should be uniform regardless of whether the patient is delivered at home or in the hospital. Furthermore, it will presume that the patient has been under medical supervision during the antepartum period and has begun labor with no anticipated complications. This will eliminate from this discussion all measures which properly should be carried out in the antepartum period, and also those cases which might be considered under the head of abnormal labor.

In the normal woman the condition of the cervix at the onset of labor is of primary importance in considering the first stage of labor. In many women marked changes occur in the cervix during the last month of pregnancy. In the primiparous patient these are often, but not always, accompanied by the subjective symptom of "lightening" and the objective finding of engagement of the fetal head. In the multiparous patient these changes in the cervix are also present, but engagement often does not take place until the onset of labor. While the failure of engagement in the primiparous patient before the onset of labor should make the careful obstetrician reconsider his estimate of fetal size and pelvic capacity, this failure is often found to be of no significance. In a fair proportion of normal primiparous women the head descends rapidly during the first stage of labor, engaging for the first time. Regardless of engagement the changes noted in the cervix during the last three or four weeks of pregnancy consist of a gradual retraction and thinning of the structure. The cervical canal becomes obliterated. The rigid cervix of early

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pregnancy may become soft and dilatable. Finally, partial dilatation may occur even up to 2 or 3 cm. Careful examinations during the last four weeks of pregnancy will reveal some or all of these changes in a large proportion of patients. Their cause remains unknown, as does the mechanism concerned with the onset of labor. Some of these patients begin labor with half, a few with nearly all of the changes necessary for the termination of the first stage of labor. Activity on the part of the patient does not seem to be a marked factor since this favorable condition of the soft parts is often observed in cardiacs who have been bedridden for months. Such changes, according to their degree, form a basis for predicting the duration of the first stage of labor in the normal woman.

A knowledge of their character is of enormous importance in planning the delivery of the toxemic patient, or the patient suffering from a medical complication of pregnancy. The failure of the cervical changes to take place during the last month of pregnancy should make the physician suspect that there is an error in the estimated date of confinement. In most instances this will be found to be true, the patient delivering two to three weeks later than the expected date. True postmaturity rarely occurs. During this additional time the cervical changes often take place. A small proportion of women, usually primiparae, will enter labor with none of these preparatory changes accomplished. The cervix is long, firm, and closed with no obliteration of the canal. Such a patient may be said to start labor at scratch. A long and protracted first stage may be expected and it should be cared for in a particular manner which will be considered later.

The actual cause of the onset of labor is unknown. It is usually announced by the occurrence of rhythmic, painful uterine contractions which gradually become stronger and decrease their interval. They are accompanied by a progressive change in the cervix. The patient describes

these early pains as being similar to menstrual cramp, being felt chiefly in the sacral region and radiating forward and down the anterior aspects of the upper thighs. Signs of impending labor may be listed as follows: (1) A loss of weight of from one to three pounds occurs rather consistently in the last week or ten days of pregnancy; (2) the cervical changes previously described; (3) the occurrence of a slight bloody discharge near the estimated date of confinement. This is of special significance if advanced cervical changes are present since such patients may deliver with extraordinary rapidity; (4) the occurrence of rupture of the amniotic sac. This event is usually followed closely by the onset of true labor if marked cervical changes are present. If they are not, several days may elapse before labor begins spontaneously. It is unwise to stimulate labor in the latter type of case since as a rule it will be shorter and easier in the normal woman if allowed to come on spontaneously.

While all such patients should be hospitalized, rectal and vaginal examinations should not be performed on the patient with ruptured membranes until the onset of labor since such investigations only serve to carry infection into the amniotic sac. Infection appears to occur spontaneously in these cases after the onset of labor and in its conduct it becomes necessary to carry out rectal or vaginal examinations, but these should be restricted to a minimum.

The patient should be informed concerning the characteristics of the onset of labor and of those signs which more or less immediately precede labor. She should be warned of the importance of immediately reporting any bloody discharge or the persistent leakage of fluid to her physician. False labor may occur during the last month, the normal contractions of the pregnant uterus becoming definitely painful. As a rule this phenomenon may be distinguished from true labor on the following points: (1) The patient describes the pain as in the front of the abdomen and not in the back; (2) the interval is irregular

and does not tend to decrease; (3) the contractions do not get progressively stronger; (4) these painful contractions are more noticeable when standing and tend to disappear when the patient lies down; (5) they are not accompanied by any changes in the cervix; (6) they may be quickly abolished by morphine grain  $\frac{1}{6}$  given hypodermically. The occurrence of such pains may be ignored in the patient whose cervix is not yet prepared for labor. They should be investigated as soon as possible in the patient whose cervix shows marked changes. Occasionally false labor may be a very troublesome complication. One patient who had intermittent painful contractions preventing sleep for a month before the actual onset of labor, required hospitalization and heavy sedation to secure sleep.

Some women become incontinent during the last month. The patient may mistake this symptom for rupture of the amniotic sac. This leakage only occurs at long intervals and has a definite urinous odor as compared to the characteristic odor of amniotic fluid. Berliand<sup>2</sup> has suggested that the normal acid reaction of the vagina might be changed by the leakage of alkaline amniotic fluid, and that this altered reaction as denoted by the change in color from orange to green in filter paper soaked in brom-thymol blue might be useful in dealing with doubtful cases of amniotic rupture.

Having determined that the patient is actually in labor one may consider the management of the first stage under the following heads: (1) general precautions against sepsis; (2) the initial examination of the patient; (3) the preparation of the patient; (4) observation of the progress of labor; (5) diet and fluid intake; (6) indications and technique for vaginal or rectal examinations; (7) a consideration of drugs which relieve pain.

Before considering the conduct of labor, it is important to recall the relationship of sepsis to the first stage. The overwhelming evidence at the present time is to the effect

that in the exogenous type of puerperal sepsis the infecting organism is, in the great majority of instances, introduced during labor. In a few instances such an organism may be acquired a few days before labor begins. The most frequent infecting agent, the hemolytic streptococcus, is introduced to the patient from her environment or, directly or indirectly, by one of her attendants. It is important to warn the pregnant woman to avoid all individuals with proved or suspected hemolytic streptococcus infections during the last month of her pregnancy. If such individuals exist in her household she should be strictly separated from them. White<sup>2</sup> has recently shown that living and virulent organisms can be recovered from the dust of the sick room. Such conditions must be the cause of some of our puerperal hemolytic streptococcus infections. A few years ago a case was seen by the author in which this was almost certainly the cause.

Following the onset of labor it is advisable to limit the number of individuals present in the patient's room to the smallest possible number. B. P. Watson has shown at the Sloane Hospital the amazing number of contacts made by women in labor. The more that this is cut down, the more the possible sources of exogenous infection are cut off. This is especially true during the winter and early spring months when carriers of this organism become very common. Routine nose and throat cultures have been performed on the attendants of the obstetrical service at Bellevue Hospital for the past four years and show a rise in hemolytic streptococcus carriers from about 1 per cent in October to from 10 per cent to 20 per cent in February. The prevalence of hemolytic streptococcus in the nose and throat should make it obvious that all individuals, both nurses and doctors, who treat or examine a woman in labor should be masked. The mask should cover both nose and mouth and should consist of at least four thicknesses of gauze. Holland states that the mask at present highly approved in Great Britain

has in addition a layer of wax paper. This should further diminish the danger of droplet spread of infection. The individual with an acute upper respiratory infection or with an acute infection about the hands should be rigidly excluded from contact with the patient in labor. Such individuals should not be allowed to return to their duties until the infection has disappeared and check-up cultures show the absence or marked diminution of hemolytic streptococcus. Doctors or nurses continuing the care of labor patients under such circumstances are taking a great risk with the welfare of the patient.

Colebrook<sup>4</sup> has been able to isolate streptococci from the hands of a small percentage of pregnant women and feels that this may be a source of puerperal infection. The patient must be warned against the risks of handling herself during labor. The nurse should be instructed to guard against this if the patient becomes unmanageable. It might be stated that it is almost impossible to prevent this type of contamination when deep analgesia is used during labor, because the patient can no longer control herself. It should be emphasized that the separation of obstetrical patients from the general medical and surgical patients is of obvious importance. The isolation of all patients showing a febrile puerperium should be strictly carried out.

The organisms causing infections of the endogenous type are probably present in the genital tract of all pregnant women. The anaerobic streptococcus is the most frequent of these bacteria to become pathogenic. They become virulent and invasive as a rule when some factor such as anemia, hemorrhage, toxemia, exhaustion, excessive trauma, instrumentation, and occasionally amniotic sac infection is present in the pregnant woman. Their prevention is related to the elimination of these factors. It is obvious therefore that this type of infection cannot always be avoided. On the other hand infection of the exogenous type can and should be

reduced to a minimum since we can, in most cases, control the source. Following this brief and inadequate consideration of the relationship of sepsis to the first stage of labor, the care of the woman in labor can be discussed.

Having determined that the patient is actually in labor, certain observations should be routinely carried out. It is not necessary to perform a complete physical examination on the patient who has been under careful antepartum observation, nevertheless, the temperature and pulse should always be noted. In the event that fever is present, a careful search should be made for its cause. The blood pressure should be taken and this observation repeated at least every six to eight hours during labor. If any elevation of the systolic or diastolic pressures is noted readings should be performed more frequently. A specimen of urine should be secured and examined for albumin, and if it is present early in labor a second specimen should be examined later if labor is prolonged.

An abdominal examination reveals all the necessary facts in most cases of early labor. It is important to note the character of the abdominal wall since this is of importance in the second stage. The size of the uterus should be noted, excessive enlargement suggesting twins or hydramnios; a small uterus suggesting prematurity. The shape of the uterus is of importance, a broad short uterus suggesting a transverse presentation. The axis of the uterus should be observed and is of importance if deviations from the midline occur. Such deviations may be corrected by binders such as have been devised by Beck. The frequency, intensity and duration of the uterine contractions should be carefully observed. The presentation and position of the fetus should be noted. The upper pole is first palpated, determining whether it is breech or a vertex. Pressure upon the upper pole with one hand then brings the back into prominence to the other palpating hand on one side, the small parts usually being felt on the other. The presenting part may

then be palpated with both hands, again keeping the question of a breech presentation in mind. The location of the cephalic prominence in relation to the fetal back should be noted since this is an indication of the flexion or extension of the head. The depth to which the head has descended into the pelvis should be observed. Lack of engagement at the onset of labor should not be a source of worry even in the primiparous patient since this fails to occur at this time in about one-third of these cases. Even apparent over-riding often disappears as the head is flexed anteriorly and laterally and directed into the pelvic brim by the increasing uterine forces. On the other hand failure of descent and engagement to occur in the primiparous patient after strong regular pains have existed for several hours should be a source of concern and justifies the performance of a thorough vaginal examination. Stereoscopic x-ray studies, performed and read according to the method of Caldwell and Moley<sup>5</sup> will be found to be of great value in this type of case. The fetal heart should be noted as to rate and regularity and its point of greatest intensity checked carefully in relation to the supposed position and presentation of the fetus. Failure to find the heart sounds best transmitted over the fetal back should lead to a careful check on the findings by abdominal palpation. Occasionally one cannot be certain of the presentation by abdominal examination. A vaginal examination using a strict technique to check on the abdominal findings is justifiable under such circumstances. This will occasionally result in the detection of an unsuspected breech presentation. Finally one should note carefully whether or not the amniotic sac is intact. Both history and observation of fluid leaking away with pains is of importance in making this observation.

These initial observations having been made the patient should be prepared for labor. All the pubic and genital hair should be shaved off beginning on the lower abdomen and including the anal region. While

this procedure is not of marked importance in the woman who delivers spontaneously and without laceration, it is a great assistance if there are injuries to repair following delivery and a marked aid in keeping the patient clean during the postpartum stage. During shaving one should be very careful not to contaminate the vulva. Since it is very advantageous to have an empty rectum during labor, it is common practice to administer an enema following this procedure. If labor is prolonged, this should be repeated at the end of twelve hours. It is inadvisable to give a patient an enema once the second stage has begun. This procedure avoids the expulsion of fecal material when the descending part descends and presses on the rectum. It also frequently serves to stimulate the strength and frequency of the uterine contractions. The nurse carrying out these procedures should have her nose and mouth carefully masked.

Frequent observations of the patient should be made as labor progresses. These should be carried out by both the nurse and the doctor. The frequency, strength, and regularity of the pains should be noted. The rate and rhythm of the fetal heart should be carefully recorded at least every thirty minutes during the first stage of labor, being careful to make this observation between contractions. The descent of the presenting part should be followed by means of abdominal palpation. The character of the vaginal discharge should be noted, a continuous watery discharge increasing with contractions announcing the rupture of the amniotic sac; the presence of bloody mucus often suggesting that the second stage is approaching. The suprapubic region should be carefully watched for the occurrence of a distended bladder. If this is noted the patient should be encouraged to void voluntarily. Failing in this, she should be catheterized, using an aseptic technique such as will be described under vaginal examination. During the first stage all voluntary expulsive efforts on the part of the patient should be



discouraged since they only serve to exhaust her and accomplish nothing.

When contractions are noted to be frequent, strong, well sustained and regular in rhythm and it is known that the cervix is soft, retracted and partly dilated, a relatively short first stage may usually be anticipated. When the uterine contractions are widely spaced, weak, short and irregular and it is known that such cervical changes are present, the uterine forces can be stimulated by various measures. The quality of pains often improve after the routine enema which is given in early labor. Quinine hydrochloride grains 10 may be given with safety and often improves the contractions. Pituitrin should be used with great caution, an exceedingly small initial dose being used since certain patients appear to be very sensitive to this drug. Larger initial doses will sometimes produce such strong forces that in the mother extensive lacerations and rupture of the uterus will occur, as well as intracranial injury in the fetus. Pituitrin minim 1 can be given safely and if no marked effects are noted within twenty minutes, pituitrin 2 or 3 minims can be administered. Nearly always following this the uterine contractions will be found to be stronger and more efficient.

While early artificial rupture of the membranes as a means of accelerating and shortening labor has been advocated recently with a certain amount of enthusiasm, such a method should not be used routinely. It should only be applied in selected cases by individuals with considerable experience. Following this procedure, a long slow labor occasionally develops complicated by an amniotic sac infection with possible serious results for both mother and fetus. It is inadvisable to attempt to stimulate pains in the woman who commences labor with a long closed cervix and with pains of the type just described. Such patients suffer relatively little discomfort and frequently this type of contraction persists for twenty-four hours before efficient frequent pains begin.

During this time the cervix retracts, softens and begins to dilate. In patients with this type of labor, it is a good thing to keep them up and about their duties. If they are planning to be delivered in a hospital it is well to postpone their admission until hard contractions begin. One should be careful to keep up their morale, particularly in the primiparous patient. Adequate sleep must be secured by the use of the milder sedatives or, if these fail, with morphine grain  $\frac{1}{6}$ .

One should be careful to see that the woman in early labor receives a sufficient amount of fluids and food. This can be easily carried out providing the mother is not under deep analgesia. Small feedings consisting mainly of carbohydrates with milk and soups should be given every two or three hours. In many cases, when vomiting limits the fluid intake by mouth, marked benefit to the patient occurs following the use of 1000 c.c. of 5 per cent glucose intravenously. Solid food should be stopped as the second stage approaches. It is a marked disadvantage to have a full stomach during delivery since vomiting occurs both with and without general anesthesia. Aspiration of food with serious after effects may occur during or after anesthesia.

While many labors can be followed by abdominal examinations alone, it is often necessary to gain additional facts by an internal examination, either by rectum or vagina. Rectal examination can be easily and quickly done without the extensive preparation necessary for a safe vaginal examination and therefore it is a method frequently used. It is satisfactory for ascertaining the presenting part, the degree of descent and often the position of the fetal head. The degree of dilatation and the thickness of the cervix can be made out as a rule. Because of its ease of performance this examination is often carelessly done. It is advisable to follow a definite technique. The examiner should wear cap and mask. Gloves especially kept and used for no other purpose should be employed, since

once contaminated by rectal contents they may prove difficult to sterilize. A square of sterile gauze is placed over the vulva and held in place by the thumb of the examining hand as the lubricated index finger is inserted into the rectum. The nature, position and degree of descent of the presenting part may now be ascertained. The thickness and dilatation of the cervix may be noted. The ischial spines are easily palpated. The room available to the descending head in the posterior pelvis can be more easily ascertained than by vaginal examination. The mobility of the coccyx should be noted. It is of advantage to examine during a pain since the degree and ease of descent of the presenting part during a contraction can then be determined. The examining finger may then be withdrawn and the perineum and anus are wiped from above downward with the gauze square used to cover the vulva. Skill in this type of examination can only be acquired by those doing many vaginal examinations. It is suggested that the beginner check his findings by vaginal examination by a subsequent rectal examination in order to acquire the necessary experience.

The defect of this type of examination is that it can sometimes be deceptive even to the most skillful and it is often misleading to the inexperienced. It should be emphasized, therefore, that if the physician is at all in doubt as to his findings by rectum, or if, on repeated rectal examinations, labor does not seem to be advancing normally, that the rectal examination should be checked by a vaginal examination. When the latter is performed using a proper technique, it is certainly more troublesome to the doctor but no more dangerous to the mother than a rectal examination. In order to perform a vaginal examination without endangering the patient, the physician should prepare himself as if he were about to perform a delivery. Wearing a cap and mask, he should scrub systematically and vigorously with soap and water, taking care to get between the fingers. The nails should be carefully

cleaned with an orangewood stick. This should be followed by a further three minute scrub. The hands should then be dipped in 70 per cent alcohol and held in an elevated position so that excess solution runs from the fingers to the elbow. They should then be dried reserving a certain portion of the towel for the hands and others for the forearms which should be dried last. Various other antiseptic solutions may be used in a routine scrub up but these are probably unimportant as compared to the thorough use of soap and water. These antiseptic agents may even be harmful if the skin of the operator is sensitive, since it is difficult to properly scrub a skin with an acute or chronic dermatitis. Following the scrubbing and drying of the hands and forearms the examiner should put on a sterile gown and a pair of sterile gloves. Handling the latter by the turned up cuffs, he should be careful to put them on so that he does not touch the outer aspect of the glove. At Bellevue Hospital it is customary to perform this examination in the delivery room.

The patient is put on the delivery table, the lower extremities being held in the stirrups. The delivery room nurse, having scrubbed and put on sterile gloves, then washes the patient using sterile gauze, green soap and water. She first washes the external aspect of the vulva, then the lower abdomen, and inner aspect of the thighs, and finally the lower perineum and anal region. Holding the labia together to prevent contamination of the vagina the excess soapy solution is then washed off with a pitcher of sterile water. The examiner then drapes the lower abdomen and thighs with sterile towels. A sterile towel is placed under the buttocks. The labia are then held apart with the fingers of one hand, and using cotton balls soaked in 1 per cent lysol solution, the introitus is wiped carefully from above downward several times, a fresh cotton ball being used each time. Following this the examining fingers may be passed into the introitus being extremely careful not to touch the

patient at any other point. The same points may be noted, but much more clearly, as have already been enumerated under rectal examination. As a rule position can be much more easily made out, the anterior fontanelle and sagittal suture being more readily identified. The condition of the amniotic sac can be more easily made out. Prolapse of the cord is more likely to be detected. In addition it is possible to make out the character of the anterior pelvis, whether curved and roomy or angular and narrow. Following the withdrawal of the examining finger it is wise to check on the intertuberos diameter with the clenched fist. Gas anesthesia is of marked advantage in the patient who resists examination.

If catheterization is necessary, this is a very excellent opportunity, requiring only a change of gloves. In this technique the preparation of the doctor is essential. In certain institutions where the danger of infection is not so great and, possibly, in the home, the careful scrub down of the patient may be omitted. The patient may be examined in bed, after having been placed on a bed pan, and properly draped. The remainder of the technique should be carried out carefully. The discovery of any abnormality by these examinations should lead to a very careful reconsideration of the case, and in inexperienced hands, to early consultation with a competent obstetrician.

Finally, no discussion of the first stage of labor would be complete without a consideration of amnesia and analgesia. The number of agents used for this purpose have multiplied rapidly during the last few years and this may be taken as evidence that none of them are completely satisfactory. Excessive attempts to produce an absolutely painless labor may be detrimental to both mother and baby. Certain physicians with considerable skill and judgement in the use of drugs may nearly approximate this degree of perfection in obstetrical analgesia in the majority of their patients, but they have not been able to attain it in 100 per cent of cases. Furthermore their good results are ob-

tained by marked individualization of the care of their patients. No routine formula can attain their results. While the overuse of amnesic and analgesic drugs should be criticized, and while all known methods have their disadvantage, it is necessary to acknowledge that properly used they are relatively harmless, and are of great benefit to the morale of the patient. Furthermore, in certain instances these preparations seem to shorten labor. It is important in using all of these drugs to withhold them until labor seems definitely established with hard, frequent contractions which do not diminish when the patient is recumbent. The cervix should be dilated to at least 2 cm. The only exception to this rule is in the primiparous patient with a long closed unretracted cervix. Here a prolonged first stage may be anticipated and it is important to secure rest and sleep for the patient. This can only be attained by the early administration of some drug such as morphine. In other situations the earlier use of drugs tends to produce a long slow labor. Occasionally one encounters a patient in whom attempts to relieve pain result in a marked diminution of the force and frequency of uterine contractions even when labor appears to be well established. In these cases the use of drugs should be abandoned in order to avoid a prolonged first stage. More often the converse is noted; that is labor seems to progress more rapidly after amnesic and analgesic agents have been administered. The following methods are commonly used to produce these effects during the first stage of labor:

1. *Morphine and Scopolamine.* Morphine grain  $\frac{1}{6}$ , and scopolamine grain  $\frac{1}{300}$ , are given hypodermically after labor is well established and the cervix is about 2 cm. dilated. One to two hours later scopolamine grain  $\frac{1}{300}$  may be given if the condition of the patient demands it. Morphine should not be repeated unless the labor is very prolonged. When it is necessary to repeat morphine it is advisable to use grain  $\frac{1}{8}$ . The patient should be kept in a quiet darkened room and should be



observed continually. A certain proportion of patients will sleep deeply, arousing only for the uterine contractions. Others will obtain marked relief from pain but do not sleep. A moderate number will become restless and excited and may even require physical restraint. A minor proportion will state that little or no benefit resulted from this method. One cannot be certain of the results, no matter what the behavior is like during labor, until the patient is questioned the following day. This method should not be applied if it is felt that the second stage is imminent or that delivery will take place within two hours. If used too close to the time of delivery the baby may be born in a deeply narcotized condition and prove difficult to resuscitate. When given several hours before the second stage begins, as a rule no harmful effects are noted in the baby. While most of them appear apneic at birth it is fairly easy to establish respiration.

2. *Synergistic Analgesia (Gwatbmey)*. This method is also applied when labor is well established and the cervix about 2 cm. dilated. The rectum is thoroughly cleansed by means of a soapsuds enema. Morphine grain  $\frac{1}{6}$  and 2 c.c. of magnesium sulphate, 50 per cent solution, is given intramuscularly. Twenty minutes later the dose of magnesium sulphate is repeated. As soon as the sedative action begins to wear off or, in one hour, the rectal instillation of ether and oil is begun. To carry this out one requires a rectal tube to which a glass funnel is attached by rubber tubing and a glass connection. The oil-ether mixture is a standard preparation<sup>6</sup> containing:

Quinine.....	gr.	20
Alcohol.....	m.	40
Ether.....	oz.	2½
Olive oil q.s. ad.....	oz.	4

This preparation is heated by placing it for a few minutes in a basin of warm water. The patient is put on her left side and the anal region is annointed with vaseline. An ounce of warm olive oil is poured into the funnel and allowed to enter the rectum slowly. When the funnel is nearly empty

an additional ounce of olive oil is added in order to insure that all the mixture passes into the rectum. Pressure is then made over the rectum with a towel and the catheter is removed. Pressure is maintained for ten or fifteen minutes when as a rule all desire to expel the rectal contents will have disappeared. If the patient can be kept in a darkened quiet room the effect of this method is greatly enhanced. The patient should be constantly watched by an attendant. This method gives excellent results in many cases, but again is open to the criticism that severe restlessness and excitement appear in some patients. Little effect is seen in the newborn infant other than transient apnea.

3. *Barbiturates*. The most recent drugs used have belonged to the barbiturate group. Pernocton was one of the first of these. It is given intravenously in doses of 1 c.c. for each 12.5 kilos of body weight. Actually there appears to be a very large individual variation in the response to this drug as given intravenously and certain patients tolerate large doses before getting the desired effect. Two instances of fatal reactions following the use of this preparation have caused the abandonment of its use in New York City. Marked excitement and restlessness were commonly noted following its administration. Luminal and sodium amytal have also been used during labor. The most recent preparation that has been used extensively is sodium pentobarbital or nembutal. While this last drug has been used alone, it is most effective when used in combination with scopolamine. The optimum time of administration is about the same as noted in the other methods. Six grains of nembutal are given by mouth. Either immediately or one hour later, dependent on the intensity of the pains, scopolamine grain  $\frac{1}{150}$  is given by hypodermic. If an insufficient effect is obtained three grains of nembutal may be given two to three hours later, and a further dose at the same interval may be used in a prolonged labor. A rather rapid effect is attained, the patient sleeping

soundly and rousing only with pains. Again these patients may become excited and restless and require restraint. The best results from this method are obtained by careful individual attention to each patient and not by administering the drug on a time schedule. The effect on the baby is usually a transient apnea, although occasionally active resuscitation is required.

Nembutal and ether by rectum has also been used as well as nembutal by mouth and paraldehyde and oil by rectum. Since the author has had no experience in the use of these methods, no comment will be made. Avertin, evipal and spinal anesthetics have also been used, but since these are given late in the first stage of labor, they are really more concerned with second stage anesthesia and will not be discussed. One must conclude, however, serious defects are present in the three methods which have been outlined, and that the ideal method for controlling pain during the first stage of labor has not yet been discovered.

#### CONCLUSION

The duties of the physician during the first stage of normal labor are in the main

that of a passive observer. Any active intervention must be carried out only after carefully weighing its effect on both mother and fetus. In addition the doctor must take due precautions to prevent the possibility of sepsis in the puerperium. He must carefully observe the condition of mother and fetus not only at the onset, but throughout the first stage, and be constantly on his guard against the occurrence of an abnormal labor. He must maintain the morale and nutrition of the patient. Pain must be relieved to the best of his ability, but not to the detriment of mother and child. Keeping these aims before him, in most cases the first stage of labor can be carried to a safe conclusion.

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