TEN YEARS OF PAINLESS CHILDBIRTH*

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AT THE meeting of the British Medical Association at Birmingham, 1890, I was much impressed by an anecdote related by Alexander Simpson of Edinburgh, nephew of Sir James Y. Simpson, who in a paper on the "Management of Labor," told of a mistake made in the early years of his practice. Called to a woman in labor at some distance from his home, he found the patient having very weak pains and with evidence which he interpreted as indicating a slow delivery. Leaving several pills of ergot with directions to give one every hour until good labor had set in, he remounted his horse and returned home. On changing his clothes for dinner he found on emptying his pockets that the vial supposed to be pills of ergot did not contain ergot but pills of opium instead. Hastily returning to the house of the patient to prevent the giving of more opium he was astonished to find that the woman had fallen into a refreshing sleep after the first pill and, upon awakening, she began good hard pains which soon terminated the case. This experience set him to thinking, and he tried the experiment on subsequent occasions and usually with happy results.

On returning to America on consideration of the subject of the relief of pain in labor it occurred to the writer to try some expedient to accomplish this result since so frequently one is implored by the patient in the agony of her suffering to give her something to relieve her of pain.

To the average man the subject of pain in childbirth is a trivial matter and not longer ago than the present summer distinguished gentlemen, who are obstetricians, went on record as opposed to all drugs in labor.

Dr. Wakefield recently said that "the greatest outrage of modern civilization is the fact that, in spite of all that is recorded in medical literature, the profession and the public remain in silent acquiescence and have no regard for the suffering of women in childbirth, or make any attempt to alleviate this agony."

The twentieth century woman has by education and environment, developed into an extreme type of hypersensitiveness; she is possessed of a nervous system susceptible to impressions and feels pain more acutely; hence her physical and mental forces are easily depleted. The result is, as a general rule, she suffers under ordinary circumstances "a lack of the feeling of well-being which constitutes

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good health." Consequently, when she goes into labor, the modern woman cannot produce efficient efforts, either mental or physical.

Let us consider that 20,000 women annually die from childbirth in the United States, that hundreds of thousands more are incapacitated by invalidism due to the same causes. A melancholy picture! In the chairman's address in the Section on Obstetrics of the American Medical Association, Dr. John O. Polak, 1920, disclosed the fact that the death rate in obstetrics has increased from 1901 to 1919 and this in spite of all improved hospital technic. This fact must be recognized as a reflection on the general care of women in labor. The statistics of the hospitals bear out this conclusion. As both morbidity and mortality in hospital cases are lessened, we must in some way improve the method of obstetric care of the average woman in the home to lower the mortality rate of the country at large.

In what particular is this easier than to increase her own immunity by conservation of her reserve, simply by lessening pain, fatigue, shock and exhaustion?

The effect of suffering in labor demoralizes the nervous and vital forces to such a degree that it demands recognition and cooperation.

When one studies the statistics of the alarming decrease in the size of the families in this country in the last 40 years and the alarming increase in abortion, as shown by Arthur E. Meyer in the August number of this journal, we must conclude that some reason exists for the desire to escape maternity on the part of the American women. The maternal instinct is strong in the normal woman, and there is a reason for the record of our childless homes, aside from the oft quoted "high cost of living." Every family indulges in luxuries, and even if babies were to be classed among the articles subject to war tax, people would not reject them simply because of the cost. The great bugaboo of the young wife is the fear of the suffering she must endure in giving birth to a child.

What a pity that motherhood, which is the most beautiful relation in life, should be attended by physical suffering and mental terror, when this condition may be avoided by a safe and comparatively simple method of treatment. If we are able to give assurance that pain can be lessened or prevented by any combination of drugs, which may be used without injury, we bestow a boon on our patient; we gain her confidence; later, gratitude follows her having gone through the valley of the shadow without a memory of any disturbing character.

It is but fair to state, at the outset, that the views following are based on my own experience and where they differ from those of other men, they are to be taken as drawn from cases in our own clinic.

Various methods of combination of drugs have been devised by the few investigators interested in the study of relief of pain; some of

these having value, others being without virtue. As observation of one or another of these plans demonstrates to us its weak points, it has been dropped after more or less trial. For example, the tablet of hyoscine-morphine-cactin, which, after a vogue of several years has fallen into disuse, was early discovered to profoundly affect the child, and that in a most dangerous manner. This we at once discarded after a single trial. The deep narcosis of all large doses of morphine and hyoscine, or morphine and atropin was subject to the same serious objection. Scopolamin and morphine we first used in 1911, and we feel it met the indication; but the objections to it on the part of the profession have been so general, that it but slowly came into any considerable favor. It must be remembered that profound narcosis will, in greater or less degree, prevent uterine contractions, hence it is not possible to prevent pain absolutely and continuously throughout the labor.

Gauss early showed that there is a point in amnesia which falls between a simple temporary relief from pain, and absolute narcosis. This happy medium has been graphically styled, "Twilight Sleep." This term has been the subject of much opprobrium because it was formerly exploited in a popular way in articles printed in magazines for consumption by the lay public.

I believe the specific effect of the administration of scopolamin is of the greatest benefit in women of the highly organized nervous system of the cultured class. But in our experience the point at which this condition of amnesia appears is vastly different in different individuals, and must, therefore, correspond to the individual sensibility in order to avoid overdosing or fail, because of too small an amount being administered. In this individualization, as demonstrated in our own cases with the same results that have been conclusively shown by Dr. Gauss, the undesirable effect of extreme pain on the one hand, and deep narcosis on the other, are overcome.

The technic proposed by Siegel, of experimental fixed dosage, resulted in undesirable developments which I had already encountered in our early attempts to establish a fixed dosage for all patients. The sensibility of the patient is the only measure of the degree of narcosis and this can be ascertained only by observation of each patient as to the results of her treatment. If Siegel's method of the so-called "simplified amnesia" could be followed, the personal equation might be eliminated, and the care of the patient left to an intelligent nurse, except at the time of delivery; and one of the chief objections to scopolamin—the demand on the time of the physician—be thus removed. Siegel changed his technic three times; but in each method the large initial dose of scopolamin and repeated doses of narcophin of generous amount, was, to our mind, a fatal mistake. Siegel, also,

in his last series, used amnesin, a combination of quinine with narcophin, for the purpose of stimulating the labor pains which are, admittedly, reduced by the large doses of scopolamin and morphine. Whether quinine will be effectual in combination with an opiate, in overcoming the reduction of the expulsive force of labor, is a question. In the individualized method this "amnesin" is unnecessary. I am not yet ready to report whether quinine will be helpful in overcoming the occasional state of excitement due to the scopolamin.

In a most elaborate study of the opium alkaloids by Dr. D. I. Macht, of the Department of Pharmacology of Johns Hopkins, as reported in the Journal of the American Medical Association and the American Journal of Medical Sciences, he demonstrates that pantopon (pantopon hydrochlorate first devised by Sahli, at the University of Zurich, 1909, which includes the chlorides of the total alkaloids of opium) acts as a stimulant to the respiratory center, and thereby obviates the objection to which morphine has been subject. All of the criticism to the use of scopolamin and morphine in labor is centered on the fetal asphyxia which followed the use of this combination in the former dosage.

The comparison of Sahli's mixture of the total alkaloids, with the administration of morphine alone, shows a remarkable result; two mgs. of morphine completely paralyzed the respiratory center in a rabbit weighing 1000 grams, while in a rabbit weighing 900 grams after 14 mgs. of the total alkaloids of pantopon, equal to 7 mgs. of anhydrous morphine, the rabbit still responded to inhalations of CO_2. Sahli's mixture of opium has the experimental value of being safe to be used in several times the amount of morphine that could be tolerated alone, and the result is more prompt and efficient; also being much less depressant. For several years it has been recognized that the great objection to morphine is the depressant sedative effect on the respiratory center. Codein, though to a less degree, has the same general effect.

The accumulation of morphine is, in our opinion, the greatest menace to the life of the fetus, as it has been shown that, while scopolamin passing into the body of the child is eliminated by the urine in twenty minutes, morphine is not so easily eliminated. We have, therefore, following these experimental discoveries coincident with our own clinical experience, in the great majority of cases, discontinued the morphine entirely, as we believe the great danger of the combination is in the use of this opiate, and morphine has practically been abandoned in favor of pantopon in our work.

We find that the other objections to morphine, nausea, vomiting, constipation, suppression of urine, and distention, are less pronounced after pantopon than morphine. However, after some experience in administration we have in our later work found it has been unnecessary

to use even with the initial dose of scopolamin in many cases the pantopon. For many years we have used no opiate after the first dose. Of course, the individual cases where pantopon can be eliminated are carefully selected, the equable stable mental organization inviting the use of scopolamin alone, as these patients bear pain and respond without the necessity of the sedative before the analgesia. In other words, our personal experience has induced changes in the original detail of the administration of scopolamin, as observation demonstrates how the individual patient must be treated, rather that a fixed dose should be given to each patient, as suggested by Siegel in his experimental system, styled "the simplified method."

The question of the length of labor under scopolamin we have settled to our own satisfaction. We find that the first stage is less than in cases without the injection. The softening of the cervix in primiparae proceeds more readily than in other cases where it is not used. And this is one of the most grateful of the benefits resulting. In the second stage the duration is slightly lengthened. The average duration of labor in these cases is 10 hours and 49 minutes; in primiparae 13 hours and 20 minutes; in multigravida 7 hours 10 minutes.

We have frequently found the expulsion of the fetus expedited by ⅓ ampule of pituitrin hypodermically administered in those cases where delay is met as the head reaches the perineum and a degree of inertia prevents the forward movement of the child. The necessity for an increase in the use of forceps, is acknowledged; but with full dilatation and the head on the perineum, no harm can result from skillful application of forceps; proper care being observed to do extraction between pains, to remove forceps before the head is entirely extruded, and by pressure from below in the anal region to push the head gently through the outlet. The third stage of labor is somewhat prolonged, doubtless due to reaction after the relief from the burden of the labor ending with the expulsion of the child.

We are now trying out the procedure of giving ½ c.c. of pituitrin immediately following the expulsion of the fetus as a means of expediting the delivery of the placenta. Much of the shock, experienced in labor, is due to hurrying the placental stage before the afterbirth separates from its site in the uterine wall. As an index we clamp the cord with a hemostat at the vulva, the suggestion of Tweedy, and await the dropping of this barometer two and one-half inches before making any effort to expel the placenta. Our invariable rule is to avoid traction upon the cord, or the misapplied Credé of violent pushing against the abdomen to express the placenta.

In 1820 Charles D. Meigs said, "Show me a case of postpartum hemorrhage and I will show you a case of mismanagement of the third stage of labor." After a hundred years we are inclined to vote with

Meigs on this conclusion. At any rate, waiting for the placenta to be at the outlet, will, in the average case, diminish the tendency to postpartum shock, as well as postpartum hemorrhage. Our custom is to have the patient closely watched for two hours, cautioning the nurse as to rapid pulse, abdominal distention and free hemorrhage. We have no more tendency to hemorrhage in scopolamin cases than in those where it is not used.

All of our patients are delivered in the hospital, so that there has been no opportunity to compare the results of hospital managed cases with those confined at home. However, as there is an admitted psychic element in the success of the treatment, it would seem that an attempt to utilize this method in the bedroom of the patient at home might be disappointing, as she will be subject to disturbances from her environment. Ideal conditions in the hospital must be insured, such as absolute quiet in the delivery room and vigilant supervision on the part of the attendant. Cotton in the ears includes both suggestion and some degree of preventing disturbance by outside sounds. Since the patient in complete amnesia is likely to be unaware of the progress of the delivery, she must be watched for precipitate delivery, which is liable to occur if there is neglect of this precaution.

I believe much of the success of our method is due to using a reliable stable solution in ampules instead of the ordinary hypodermic tablet of commerce. Formerly we used a $\frac{1}{100}$ grain dose; but more recently we have depended on the $\frac{1}{200}$ grain ampule alone. Our average case has had 3½ ampules, the largest number 12 ampules; 12 per cent of our cases have had but one ampule. Cases delivered within two hours do not respond to scopolamin and these rapid deliveries are done under ether alone, if sufficient evidence is found to base an estimate of the probable length of the labor.

Since a large number of our cases are referred, and many of these are toxemic, we have not used the gas-oxygen anesthesia. Dr. Edward P. Davis, and other observers, believe this combination of anesthesia to be dangerous in cases of maternal toxemia. While many reports are given of admirable results from those clinics where gas is used, our results have not tempted us to change our method of amnesia.

The great aim in better obstetrics is twofold; it concerns mother and child, both as to morbidity and mortality. Fortunately, the interests of the two are most frequently identical, the argument as to the mother, I have attempted to make clear. As to the child, a glance at the comparative statistics must prove conclusive, as they are most striking. Williams, of Johns Hopkins, reports a fetal mortality of 7 per cent, and Slemmons, in California, had 5 per cent, which is about the average infant death rate. Gauss, at the Freiburg Clinic, has in his last report of 500 scopolamin cases a fetal mortality of 1.89 per cent,

and Polak, Brooklyn, in a series of 500 cases, reported a mortality of 4 infants, or less than 1 per cent. We have had no fetal death that could be charged to the scopolamin treatment. The fetal mortality from all causes in our last 500 cases, excluding prematurity, is 2.8 per cent. In contrast to our former experience is the fact that it has not been found necessary to tub a single scopolamin baby. Some children show an oligopnea; but none of the last series had apnea, and there were none that did not recover the respiratory rhythm after a few minutes, without more effort than allowing the mucus to be expelled from the mouth by suspending the child by the feet for a few minutes. We have, of course, no maternal mortality chargeable to scopolamin.

While no one can say what might have been the result in any case had the patient not been given scopolamin, we can only judge of the results in the aggregate of experiences compared with those delivered with this method, and those under other conditions. For instance, take the problem of occiput posterior positions of the vertex with which, unfortunately, all obstetricians are familiar. It is an axiom that given plenty of time, over 90 per cent of these cases will rotate spontaneously to an occipito anterior position; but, who has not made out the position without examination under these circumstances, by the incessant appeals for relief of pain in the back; the patient, finally, becoming exhausted by the long and tedious process of labor. These cases are admirably met by scopolamin, and the average patient comes through with a pulse under 100, and in a few hours recovers sufficiently to be asking for food.

It is only necessary to compare our experience in these cases alone, to be able to draw conclusions as to the degree of exhaustion suffered in cases with and without scopolamin. By and large our patients average a shorter convalescence and we are able to send them home earlier than under the old methods. Even in our City Hospital cases, although scopolamin has not been so satisfactory, we long ago abandoned any set day of convalescence as an indication of discharge, each woman being dismissed when the fundus of the uterus is at the symphysis and the lochia, for 48 hours, has shown no red color. In some patients this will be as early as the eighth day; ordinarily the average is the twelfth, instead of the fourteenth day, as formerly.

We find scopolamin to be of value in heart conditions, toxemia, rigid cervix, and contracted pelvis of minor degree; as the relief from agonizing pain allows for a lessening of the tension, both physical and mental, the patient recuperates for the further effort she must make for her delivery. The result is that shock is diminished, the head is more easily moulded, and the tendency to perineal laceration is diminished.

The claim that scopolamin produces a better milk supply, we have

not been able to substantiate. On general principles, the less exhausted the mother the better her nursing capacity; but the question of any specific relation is still open, and must be determined by further investigation.

It is a matter of interest that in so large a degree, even the men who have not been favorably disposed toward scopolamin as an amnesic in their work, have used morphine and hyoscin, or morphine and atropin, or morphine and scopolamin, as an analgesic antecedent to an inhalation anesthetic. Various observers report between 50 and 70 per cent of perfect amnesia. In 70 per cent of our patients we have had complete amnesia. The outstanding fact, claimed by Crile, in his anoci-association in general surgery, is that, in a sense, the area of nervous irritability is blocked and the agonizing pain of the patient is thus relieved. This is the secret of the amnesia of scopolamin.

CONCLUSIONS

1. Scopolamin is both safe and efficient if intelligently managed.

2. In primiparae it is invaluable, as the moulding and rotation of the head are encouraged by its influence.

3. The technic of Gauss must be followed to insure the greatest measure of success, rather than the "simplified method" of Siegel.

4. A shortening of the time in the first stage of labor results.

5. The second stage is doubtless somewhat extended. The forceps or pituitrin may be needed at the end of the second stage of labor.

6. Patients must be constantly watched for precipitate delivery.

7. No increase in postpartum hemorrhage has occurred in our cases.

8. Shock and fatigue are diminished.

9. Perineal lacerations are greatly reduced in degree and in frequency.

10. Fetal mortality is lessened.

11. Lactation is not affected.

12. Mothers are up earlier and in more nearly physiologic convalescence than in our cases where scopolamin was not used.

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