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DOES THE INHALATION OF ETHER PROMOTE POST- PARTUM HÆMORRHAGE?¹

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THERE is a difference of opinion among physicians engaged in obstetrical practice as to how far hæmorrhage after delivery is caused or promoted by the inhalation of ether or chloroform during labor. Many are averse to employing anæsthetics in parturition, because, among other unfavorable results, they have sometimes known them to be followed by hæmorrhage, or because they think they might be so followed, on account of their supposed effect in retarding uterine contraction. The question is an important one, for, on the one hand, the use of ether is an immense comfort to a woman in labor; and, on the other, hæmorrhage is justly considered to be one of the most dangerous complications of childbirth.

The only way in which this interesting question could be satisfactorily answered would be by comparing a large number of cases in which ether had been given with an equal number in which it had not been given. In such a comparison, however, it would be necessary that the recorded cases should be as similar as possible. Besides the inhalation of ether there are several circumstances which might have an influence in causing hæmorrhage or in preventing it, among which may be mentioned a family history of hæmorrhage, as showing a predisposition to flooding; a constitutional or acquired tendency to hæmorrhage, as shown, for instance, by menorrhagia; the previous health of the patient, whether vigorous or feeble; the number of her previous labors; the class of society to which she belonged; the character of the labor itself, whether difficult, lingering, powerless, complicated, etc.; the kind of anæsthetic employed, the amount inhaled, and the management of the placenta. All these considerations, and probably others, ought to be taken into account in making a perfectly trustworthy comparison, but the difficulty of doing this is so great that there seems to be no prospect at present of our obtaining a sufficient number of such observations as are necessary for a satisfactory solution of the question.

¹ Read before the Obstetrical Society of Boston.

Approximate results, however, might be obtained without these details, provided the number of cases to be compared were sufficiently large. If, for example, by comparing one thousand consecutive cases, in a lying-in hospital, in which ether had been given, with a similar number in which it had not been given, it should be found that there was a decided preponderance in favor of hæmorrhage in the first series, then the evidence would be strong that the ether was the cause of the hæmorrhage, or at least favored it. But until we have such means of comparing a large number of trustworthy observations, the question of the danger of giving ether in labor, so far as hæmorrhage goes, must, I think, still be considered as undecided. Meanwhile, however, it is possible that in the absence of such statistics an examination of even a limited number of cases in which ether was given during labor may afford some indication at least with regard to the influence, if any, which the anæsthetic had in the production of this accident. In the hope of contributing something towards the solution of this question, I have tabulated the results of one hundred and fifty-one cases of labor occurring in my own practice, in which ether was given during labor, the fact being recorded in nearly every instance. In a very few cases in which the record does not state whether the patient was etherized, I have relied on my recollection of the fact. In one instance in which there was post-partum hæmorrhage, the notes do not state that ether was used, nor have I any recollection of the fact; but I am confident that if it had not been used it would have been so recorded, and have therefore included the case in my collection.

At the outset of the investigation it is necessary to consider the question, What constitutes post-partum hæmorrhage? It is obvious that one woman will endure with apparent impunity a loss of blood which would cause serious and even alarming effects in another; and also that practitioners may differ in their estimate of the amount of danger in any one case. I have divided the cases in which noteworthy hæmorrhage occurred into two classes, the first including those in which the immediate effects were alarming or serious; the second comprising those in which there were no alarming symptoms, though sometimes such as caused anxiety. The symptoms presented by the first class of patients were those ordinarily noticed after profuse hæmorrhage: syncope, as shown by extreme pallor, more or less complete loss of consciousness, great rapidity and feebleness of the pulse (in some instances it could not be felt at the wrist for a considerable length of time), sighing, restlessness, etc. In the second category are included cases in which the amount lost was larger than usual, but in which the pulse was not affected, though the patient may have become somewhat pale. Where neither syncope, pallor, nor acceleration of the pulse occurred, I have not considered the hæmorrhage as of sufficient importance to be

specially noted, unless the amount was a good deal above that usually observed.

I will state that in every case of flooding recorded in the present paper, the patient recovered. The only case of fatal post-partum hæmorrhage which has occurred in my practice (exclusive of cases seen in consultation), was that of a woman who, to the best of my recollection and belief, took no anæsthetic; but as the record made at the time (many years ago) is silent on this point, I have excluded the case from consideration.

Of the whole number of cases (one hundred and fifty-one), there were twenty-five in which noteworthy hæmorrhage occurred after delivery; in twelve of these, or nearly eight per cent., it was so profuse as to give rise to serious symptoms; in thirteen others it was not alarming, though in some of them sufficient to cause anxiety.

I will first give the particulars of the twelve cases in which there was serious flooding.

CASE I. Mrs. D., June 17, 1865. She had already borne two children, the youngest ten years old (particulars as to hæmorrhage in those labors not known). There was "flooding to large amount," with faintness, etc., from which the patient rallied, and did well. The labor was otherwise quite natural, and I know of no immediate cause for the hæmorrhage unless it were the ether. This is the case in which ether was probably given, though there is no record of the fact, nor have I any recollection of it.

CASE II. Mrs. R., October 17, 1868. Profuse hæmorrhage, followed by alarming prostration, from which the patient recovered, and did well. The labor was otherwise normal, and I know of no immediate cause for the bleeding unless it were the ether. I had attended the patient in two previous confinements, and in neither labor was there hæmorrhage, *although she was etherized each time.*

CASE III. The same patient was again confined, February 21, 1876. This was her sixth labor, which, as was usual with Mrs. R., was rapid. Ether was given during half an hour before delivery, but the patient was insensible only during the last few pains. Ergot was given immediately after the expulsion of the placenta, but in about fifteen minutes the pulse rose, and the patient became pale. Very little blood flowed externally, but the womb was found to be full of clots, which had to be removed by the hand twice before there was firm contraction. For an hour the pulse could scarcely be felt at the wrist. The patient rallied under stimulants, and did well. She had undergone much anxiety and fatigue during several months on account of the illness of one of her children, who died a few days after her confinement. This circumstance may have contributed to the occurrence of the hæmorrhage, but no such cause existed on the previous occasion.

CASE IV. Mrs. S., April 24, 1870. Primipara. "Anterior fontanel felt nearly opposite the left cotyloid cavity." The patient began to take ether at noon. At five P. M., there having been no advance for several hours, the forceps were applied, and the child extracted with much effort. Soon after delivery the mother had profuse hæmorrhage, which ceased after the clots were removed from the womb. The labor lasted more than twenty-four hours, the pains being very inefficient, and this circumstance would seem to have had as much agency in causing hæmorrhage as did the ether. This patient was confined a second time, April 18, 1874. The labor was rapid and easy, and *she took no ether*. "A good deal of blood came with the placenta, but none afterwards." The history of this patient might be considered as proving that the use of ether favored a predisposition to hæmorrhage, inasmuch as when she took it she flowed profusely, and when she did not take it she flowed moderately. But it is obvious that the two cases cannot be compared. After a tedious labor, by which the patient was greatly exhausted, hæmorrhage would be likely to follow, whether ether were given or not; and the second labor, being natural and rapid, would not probably have been complicated with hæmorrhage, even had ether been given.

CASE V. Mrs. W., February 21, 1870. I had attended this patient in four previous labors, in all of which (as well as in one other) she was etherized. In one instance there was moderate hæmorrhage, but in none of the others. On the present occasion there was alarming hæmorrhage, followed by syncope and threatened collapse, but the patient rallied and did well. Here there was no apparent cause for the hæmorrhage (unless ether), except a constitutional tendency; she had always suffered from menorrhagia, though she was otherwise a remarkably healthy woman.

CASE VI. Mrs. F., November 2, 1871. Primipara. This patient was delicate, but there was no obvious cause for the hæmorrhage, unless it were the ether. "There was profuse hæmorrhage after the placenta was expelled, which was repeated in twenty minutes. I introduced the hand into the uterus and removed a large amount of clots, which were expelled with great force, and no more bleeding occurred. For more than an hour the patient's condition was alarming, but after that she was comfortable."

CASE VII. Mrs. G., December 20, 1872. This patient had had three children previously, without hæmorrhage. I had attended her in her last two confinements, in each of which I gave her ether. On the present occasion the pains began early in the morning, were slight throughout the day, became strong at ten P. M., though infrequent, and delivery occurred at half past eleven P. M. "She was soundly etherized at delivery, which was followed by profuse hæmorrhage and alarming

prostration." Under appropriate treatment the hæmorrhage ceased, but the patient remained in a dangerous condition for several hours. She did well. If the ether caused the hæmorrhage in this instance, why did it not do so on the two previous occasions?

CASE VIII. Mrs. P., June 30, 1872. Primipara. This was a case of lingering labor, with inefficient pains, though the patient was very robust and healthy. After twenty-four hours' labor the forceps were applied, and delivery easily effected, the patient being soundly etherized. The weather was excessively hot. Profuse hæmorrhage followed the expulsion of the placenta, causing alarming prostration. The bleeding continued at intervals for about three hours. The patient rallied and did well. Here the inefficient character of the pains and the length of the labor would seem to be sufficient to account for the hæmorrhage. At any rate, they would have been accepted as good and sufficient causes before the discovery of anæsthesia.

CASE IX. The same patient was again confined, January 5, 1875. The waters broke at four A. M. This was followed by pains, which increased till half past nine A. M., when they slackened. No advance having been made for an hour, and the head being quite low, the forceps were applied, and the patient was easily delivered. Ether to a moderate amount was given till the instruments were used, when the patient was made completely insensible. "Soon after the expulsion of the placenta there was a great gush of blood (at least a quart), by which the patient was prostrated, and the pulse could hardly be felt at the wrist. No more blood followed, and the patient did remarkably well." In this labor, as in the last, the hæmorrhage might be attributed to a constitutional predisposition, to inefficient pains, or to the use of ether. The patient was, however, as soundly etherized the second time as she was the first, while the hæmorrhage was much less; but the labor was much easier and more rapid. It seems right, therefore, to attribute as much agency to the character of the labor as to the use of ether.

CASE X. Mrs. L., May 29, 1873. Primipara. Here the pains were inefficient and the labor tedious, and it was terminated by the forceps. There was alarming hæmorrhage, from which the patient rallied, and did well. The character of the labor seems entitled to as much credit as the ether in causing the hæmorrhage, since when the same patient was again confined, June 2, 1875, she took ether "to unconsciousness" and had no hæmorrhage. The labor was rapid, and the pains were strong.

CASE XI. Mrs. R., April 12, 1874. Multipara. I had attended the patient in two previous labors, and etherized her; they were both rapid. The first time (the patient's second labor) there was no hæmorrhage. The next time there was some hæmorrhage, but not serious. In the present instance the quantity of ether inhaled was not

large. The placenta followed the child without any traction. "Profuse hæmorrhage followed, the womb dilating and contracting repeatedly. No pulse could be felt at the wrist for nearly an hour, and the patient was much prostrated. Compression of the abdominal aorta seemed to be of service. The patient rallied under stimulants and laudanum." Here the ether seemed to have but little influence in causing the hæmorrhage, as the amount used was small.

CASE XII. Mrs. W., March 12, 1876. I had attended the patient in her previous (first) confinement. It was a case of breech presentation. She was etherized, and had no hæmorrhage. In the present instance the presentation was normal, but an arrest of an hour having occurred, while the head was on the perinæum, the forceps were applied, and the patient was easily delivered, though considerable delay occurred in extracting the shoulders, on account of the size of the child, which weighed about twelve pounds. Along with the placenta there was expelled a large quantity of blood (perhaps two quarts), and the patient became quite faint. She was revived with brandy, gruel, etc., and did well, the pulse not rising above ninety.

Besides the above twelve cases of profuse or serious hæmorrhage, there were thirteen others in which the amount of flowing was noteworthy, although not attended with serious symptoms, as follows:—

CASE I. Mrs. C., February 23, 1867. There was "considerable flowing" after delivery; labor otherwise normal. I attended this patient in one previous labor, and in one subsequent one. In the first instance (she being primipara) there was a brisk uterine hæmorrhage a week before delivery, none after it. (There was no evidence of placenta prævia, other than the hæmorrhage.) In the last labor there was no hæmorrhage, either before or after delivery. If the ether caused the flowing after the second labor, why did it have no such effect in the first and third confinements?

CASE II. Mrs. C., December 30, 1869. Multipara. "Considerable hæmorrhage, with some prostration." The patient was a delicate woman. She inhaled ether "during the last pains" only. The state of the patient's health, and not the small amount of ether used, was obviously the cause of the flowing.

CASE III. Mrs. R., January 14, 1872. "Some hæmorrhage, but not serious." She was the same patient as in Case XI. of the previous series.

CASE IV. Mrs. D., July 2, 1873. "Rather free hæmorrhage." The labor was otherwise normal. I attended the same patient once previously and once subsequently, and at neither time was there any hæmorrhage, though she was fully etherized on both occasions.

CASE V. Mrs. S., March 20, 1874. (Sister of the preceding patient.) I had attended her once previously (her second labor), when

she was etherized, but had no hæmorrhage. On the present occasion she inhaled ether, but "not to complete insensibility." "Considerable blood with the placenta, none afterwards; rather more exhausted immediately afterwards than usual. She did well." The small amount of ether inhaled could hardly have caused the flowing.

CASE VI. Mrs. S., April 16, 1874. One child, born nine years ago. Labor rapid. "Some hæmorrhage, but not alarming."

CASE VII. Mrs. P., November 1, 1874. Primipara. Forceps used on account of delay, the head resting on the perinæum. "Hæmorrhage rather more free than usual, but not profuse." She was "soundly etherized."

CASE VIII. Mrs. W., November 6, 1874. Primipara. Tedious labor, with normal presentation. On account of symptoms of exhaustion, in consultation with Dr. Abbot, the forceps were applied within the os, and delivery was effected with considerable effort. A good deal of hæmorrhage followed, with pallor, but the patient soon rallied. Here the character of the labor and not the ether was evidently the cause of the flowing.

CASE IX. Mrs. F., November 20, 1874. Second labor. Rather more hæmorrhage than usual through the day, the following night, and the next day, with clots, but without any effect on the pulse or color.

CASE X. Mrs. R., November 21, 1874. Second labor. After the first, in which I attended her, there was no hæmorrhage. In the present instance "about a quart" of blood came with the placenta, but none afterwards.

CASE XI. Mrs. F., October 10, 1875. Third labor. Patient of nervous temperament. "Copious hæmorrhage immediately after expulsion of placenta, which ceased in fifteen minutes, and did not recur. Womb contracted well."

CASE XII. Mrs. T., January 14, 1876. Second labor. Profuse but not alarming hæmorrhage followed the expulsion of the placenta, and the patient was somewhat faint, but there was no recurrence of the bleeding.

CASE XIII. Mrs. C., January 31, 1876. "Rather more blood than usual followed the expulsion of the placenta." I had attended the same patient in her two previous labors, in neither of which was there any hæmorrhage, although she was etherized on both occasions.

In order to study to more advantage the twelve cases of serious hæmorrhage, in respect to cause, it will be convenient to arrange them in a condensed form, as follows:—

Case I. No obvious cause.

Case II. No obvious cause; ether in two previous labors, without hæmorrhage.

Case III. (Same patient as Case II.) Perhaps fatigue and anxiety.

Case IV. Tedious and difficult labor. Forceps.

Case V. No obvious cause. Ether in several previous labors, without hæmorrhage.

Case VI. No obvious cause.

Case VII. No obvious cause ; ether in two previous labors, without hæmorrhage.

Case VIII. Lingering labor, inefficient pains. Forceps.

Case IX. (Same patient as Case VIII.) No obvious cause, unless inefficient pains.

Case X. Tedious labor, inefficient pains. Forceps.

Case XI. No obvious cause. Small amount only of ether used. Ether in two previous labors, one of which was followed by slight hæmorrhage, the other by none.

Case XII. No obvious cause. Ether in one previous labor, without hæmorrhage.

Thus in seven (and perhaps eight) of the cases, including Case III., of serious hæmorrhage, there was no obvious cause for the complication, unless the ether be so considered ; but in six of them the patients had inhaled ether previously or subsequently without hæmorrhage. In three other cases the labor was tedious or difficult, and terminated by forceps. It seems to me hardly fair to attribute the hæmorrhage to ether in any of the cases ; at any rate it could be considered the sole cause in only seven, or about five and one half per cent. of the whole number observed, which, I suppose, would not be a large number under any circumstances.

There is one circumstance to which I attribute considerable influence in the production of hæmorrhage in these cases. The social condition of nearly all the patients was unfavorable to vigorous health and muscular development. Among hard-working women, who spend a considerable portion of their time in the open air, or in bodily labor, we may naturally expect a more vigorous uterine contraction after labor than in those whose lives are comparatively easy, who are chiefly occupied in-doors, and who do no hard bodily work. Accordingly, if we examine the statistics of lying-in hospitals we shall find the proportion of cases of dangerous hæmorrhage to be small. How far, under these predisposing circumstances, the employment of anæsthetics might tend to promote the complication of hæmorrhage, if at all, can be determined only by the comparison of a larger number of cases than I have been able to collect.

It is sometimes remarked that the use of ether in childbirth seems to slacken the pains, both in frequency and in strength, and tends to prolong the duration of labor, and consequently to favor the occurrence of hæmorrhage by paralyzing uterine contraction. It is difficult to judge, however, whether the use of ether really retards the pains in any given

case, because we do not know how the labor might have proceeded without it. Few things are more tedious than waiting by the bedside of a woman in labor, and our impatience may lead us to attribute delay to the ether, when the real cause is something else. According to my own observation, ether has no effect in retarding a *rapid* labor, and I have not seldom seen the pains become more frequent and stronger under its use in labors which were not rapid.

RECENT PROGRESS IN PATHOLOGY AND PATHOLOGICAL ANATOMY.¹

BY R. H. FITZ, M. D.

PATHOLOGICAL ANATOMY.

Ossified Hæmatoma of the Dura Mater. — The possibility and way of a cure for the bloody tumor of the dura mater is suggested by Paulus,² who describes the appearances in a specimen accidentally discovered. The rarity of the condition mentioned is referred to.

Two cysts with bone-like walls were found in the region of the parietal protuberance, and contained a brownish mass, easily crumbled, which was regarded as decomposed blood. The walls of fibrous tissue were calcified, in part actually ossified, and the innermost layers were of a brownish color. The brain presented no other change than a corresponding depression.

Results of Concussion of the Brain. — Willigk³ describes the histological changes found by him in a case of this sort. The interval between the accident and death was rather more than three months. The pons varolii was swollen and contained an extensive softened portion of a spotted dark-red color, extending into the right cerebellar hemisphere. The pia mater of the pons, medulla oblongata, and spinal cord was of a dirty brown color. The medulla oblongata and the upper cervical region of the spinal cord were somewhat softer than usual. There was no evidence of recent hæmorrhage, but the red color of the softened region was due to injection of the dilated blood-vessels. The surrounding brain substance was abundantly infiltrated with lymphoid cells, in part fatty degenerated, which surrounded the vessels as a sheath. The walls of the vessels were fatty degenerated in spots. Pigment, whether free or in round cells, was rarely found in the vicinity of the vessels. The color of the pia mater was due to an increase of the pigment cells often normally found in the region referred to. The smallest blood-vessels, especially the capillaries in the various parts of the brain and

¹ Concluded from page 450.

² Dissertatio. Erlangen. Centralblatt für die medicinischen Wissenschaften, 1875, xi. 686.

³ Prager Vierteljahrschrift, 1875, lxxviii. 19.