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ON

PUERPERAL CONVULSIONS.

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DUBLIN:

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1874.

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[Read before the Dublin Obstetrical Society—May 9th, 1874.]

THERE are few obstetric questions of greater interest than the etiology, prevention, and treatment of puerperal convulsions. Some advance has been recently made in the prophylaxis and management of this disease, but its causes remain *sub judice*, and little can yet be added with certainty to what Hippocrates wrote:—"Σπάσμος ἢ ὕπο πληρώσιος ἢ κενώσιος:" though from his time to the present almost innumerable theories had been applied to this subject.

I shall now lay before the Society the history of a few of the cases of puerperal convulsions that have come under my notice in hospital and private practice, together with some general observations on the disease, and a reference to the principal views that have prevailed at different times as to their nature and treatment. Several of the opinions thus referred to, though quoted from writers now seldom consulted, are nevertheless of interest. For, in investigating subjects like the present, which have long engaged and baffled inquiry, it is surely not unworthy of a scientific society, however practical and devoted to progress, occasionally to look back to what has been done by those who have been pioneers in those obscure paths of inquiry which we would ourselves explore.

Convulsions are, with the exception of rupture and inversion of the uterus, the most dangerous as well as the least frequent of the complications of labour. The relative frequency as well as the danger of this disease is shown by the following table, compiled from Reports of the Masters of the Dublin Lying-in Hospital.

Table.

Date	Master	Deliveries	Convulsions	Primiparæ	Twin Births	Result to Mother		Sex of Children		Living	Still-born	Mode of Delivery				
						Recovered	Died	Male	Female			Natural	Forceps	Version	Vectis	Craniotomy
1787–1793	Dr. Clarke - -	10,387	19	16	—	—	—	—	—	—	—	—	—	—	—	—
„	Dr. Collins - -	16,654	30	29	2	25	5	20	10	14	18	15	6	—	—	8
1842–1845	Dr. C. Johnson - - (Reported by Drs. Hardy and M'Clintock)	6,702	13	10	—	10	3	6	7	7	6	6	2	—	1	4
1847–1854	Dr. Shekleton - - (Reported by Drs. Johnston and Sinclair)	13,748	63	49	5	50	13	36	33	45	25	36	24	2	—	7
1868–1869	Dr. Johnston - -	1,159	4	—	—	—	—	—	—	—	—	—	—	—	—	—
1869–1870	Do. - -	1,087	5	2	1	4	1	4	2	4	2	—	3	1	—	1
1872–1873	Do. - -	1,191	4	3	—	—	4	—	—	—	—	—	4	—	—	—
	Total	50,928	138	109	8	89	26	66	52	70	51	57	39	3	1	20

I. *Etiology of this disease.*—The theory that puerperal convulsions are reflex actions excited by cerebro-spinal or medullary irritation, of uterine origin, and transmitted through the ganglionic cells in which the reflex nerves terminate, has been formulated by several recent writers, but may be traced back to Laurence Joubert, who, during the middle of the sixteenth century, was Professor of Medicine in the University of Montpellier. In his essay on convulsions, this once well-known author not only controverted the Hippocratic aphorism already quoted, but, moreover, asserted that the cause of convulsions is irritation, and that only by the removal of the source of this irritation can the paroxysms be arrested.[a]

The analogy between the abnormal nervous action thus excited, and the effects of an electrical discharge has been remarked by obstetricians as well as physiologists from the time of William Hunter. The proximate cause of this disease must primarily affect the central excito-motor portion of the nervous system. Reflex actions are now generally referred to the medulla oblongata, and the researches of Dr. Brown-Séquard support the opinions of Van der Kolk, Kussmaul and Tenner, as well as those of Dr. Marshall Hall and other older writers, in assigning the upper part of the spinal cord, the medulla oblongata, and pons varolii, where the roots of the first motor nerves have their origin, as the probable starting point of the convulsive action in these cases. In proof of the influence of physical impressions on the medulla oblongata in producing convulsive action, I may refer to two cases of acephalous fœtuses which came under my observation some years ago in the Lying-in Hospital. One lived for twenty minutes, and the other for an hour and a half after birth, and in both it was remarked that the slightest pressure on the bulbous expansion of the medulla oblongata, which supplied the place of the brain, produced violent general convulsions.

The older British obstetricians, with a few exceptions, held that puerperal convulsions were generally occasioned by determination of blood to the head, and should be treated by blood-letting. This was the teaching of Scott,[b] of the Hamiltons,[c] Smellie,[d] Denman,[e] Bland,[f] Foster,[g] William

[a] Joubert, de Convulsionis Essentia et Causis, Op. Om. p. 219, Ed. Antwerp. 1500.

[b] Lectures on Midwifery. By Robert Scott, M.D. 1775. P. 113.

[c] A Treatise on Midwifery. By Alexander Hamilton, M.D. P. 199. Edinburgh. Dr. Hamilton's Lectures on Midwifery, in the University of Edinburgh, 1815-16; reported by Dr. M'Keever. MS. P. 65.

[d] A Collection of Cases and Observations in Midwifery. By William Smellie, M.D. Vol. ii., Collect. xviii., No. 5. London, 1779.

[e] Introduction to Midwifery. By Thomas Denman, M.D. P. 430. Ed. Edinburgh, 1781.

[f] On Human and Comparative Parturition. By James Bland, M.D. P. 138. London, 1794.

[g] Principles of Midwifery. By Edward Foster, M.D. P. 118. London, 1781.

Hunter, and other eminent men-midwives of the eighteenth century. The same theory being propounded by Davis,[a] Ryan,[b] Blundell,[c] Burns,[d] Maunsell,[e] and others, was, down to a comparatively recent period, generally accepted as a sufficient explanation of the causes of convulsions. In America, too, according to a very able writer, "we find no other idea but congestion of the head is entertained as the cause of puerperal eclampsia."[f] And this theory is reiterated in the principal manuals used by students in that country.[g] I might easily add a much longer list of Continental as well as of British and American authorities to the same effect. But fully enough have been adduced to prove the widespread acceptance of this opinion.

Pregnancy may, to some extent, be regarded as a predisposing cause of cerebro-spinal congestion. The blood at this time is not only increased in quantity, but also contains more fibrine than usual. As gestation advances the enlargement of the uterus increases the tension of the cerebral vessels, which attains its maximum during the violent efforts of parturition when puerperal convulsions most frequently commence.

It has been argued by Dr. Inglis and others, that the circumstance of eclampsia commonly beginning at night is a proof that the disease is connected with congestion of the brain. This fact does not, however, appear to me to support the opinion thus founded upon it. For, it is now generally held that during sleep the brain is in a comparatively bloodless condition; and the blood in the encephalic vessels is not only diminished in quantity, but moves with diminished rapidity.[h]

Convulsions are not confined to plethoric patients; and it is unquestionable that anæmia, whether resulting from the sudden loss of blood

[a] Principles and Practice of Obstetric Medicine. By D. D. Davis, M.D. Vol. ii. P. 1027. London, 1836.

[b] A Manual of Midwifery. By Michael Ryan, M.D. P. 519. Third Ed. London, 1831.

[c] Principles and Practice of Obstetric Medicine. By James Blundell, M.D. P. 424. London, 1831.

[d] Principles of Midwifery. By John Burns, M.D. P. 519. Tenth Ed. London, 1843.

[e] The Dublin Practice of Midwifery. By Henry Maunsell, M.D. Edited by Thomas More Madden, M.D. P. 194. Sixth Ed. London, 1871.

[f] Principles and Practice of Obstetric Medicine and Surgery. By Francis Ramsbotham, M.D. P. 449. First Ed. London, 1844.

[g] On Puerperal Eclampsia. (Review) American Journal of Medical Science, April, 1869. P. 437. Conspectus of Medical Sciences. Edited by H. Hartshorne, M.D. P. 997. Philadelphia, 1869.

[h] Dr. Inglis—Facts and Cases in Obstetric Medicine, p 7: London, 1836. Mr. Durham—On the Physiology of Sleep, Guy's Hospital Reports, p. 24: London, 1860. Dr. T. More Madden—On Dreaming considered in Relation to the Study of Insanity, read before Med. Soc. Coll. Physicians, Dublin; Medical Press and Circular, 1869.

by hæmorrhage, or from the gradual deterioration of the vital fluid by disease, is conducive to eclampsia.

Nor is pregnancy, even when apparently accompanied by plethora, actually so in most cases. On the contrary, the blood, though increased in quantity, is then more generally impoverished, containing fewer corpuscles, less albumen, and a larger proportion of water, by which the circulation is more and more embarrassed as the uterus enlarges. This vascular tension occasionally results in serous effusions into the areolar tissue or serous cavities, and the discharge of albuminous urine, by which a considerable drain of the nutritive elements of the blood is produced.

The connexion between general dropsy and convulsions was pointed out by Dr. Hamilton, of Edinburgh, in the year 1800. Dr. Blackwell next showed that albuminuria was present in these cases; and about the year 1835 it was discovered by Dr. Bright, that this was connected with granular degeneration of the kidneys. The field of investigation thus opened was further explored, with a special reference to the pathology of puerperal eclampsia, by Dr. Lever, M. Robin, M. Becquerell, M. Frerichs, Professor Braunn, and others, by whom it was proved that the convulsions of pregnancy are frequently associated with dropsy, marked by albuminuria, and attended by the diminished excretion of urea and uric acid, and the consequent retention of these compounds in the system.

In cases of this kind the urine is not invariably albuminous. I have examined this secretion in six instances of convulsions during labour, and in only four of them was albumen discovered. On the other hand, I have found albuminuria in pregnant women who had no subsequent attack of eclampsia.

In two cases of stenic convulsions I had an opportunity of testing the blood for excess of urea, but was unable to detect any appreciable trace of this salt on a microscopic examination of the evaporated serum, treated in the ordinary manner with nitric acid. Either urea or carbonate of ammonia, resulting from its decomposition, is frequently present to an abnormal extent in such cases; though both these salts may be injected into the blood of a healthy animal without producing convulsions.

That convulsive action may be occasioned by blood-poisoning is well known in other diseases in which—as, for instance, in small-pox—severe jaundice, morbus Addisonii, Bright's disease, and during recovery from scarlatina, convulsions occasionally result from this cause. And during pregnancy a similar effect is not improbably produced by the pressure of the gravid uterus on the renal emulgent veins interfering with the functions of the kidneys, as well as acting as a cause of cerebro-spinal congestion.

In considering the causes of puerperal eclampsia, we must bear in mind the various conditions under which ordinary epileptiform convulsions occur. Many agree with Trousseau[a] in regarding these as identical; and certainly Cullen's definition of epilepsy applies to the disease we are now considering—*musculorum convulsio cum sopore*.[b] Dr. Radcliffe[c] has shown that epileptiform convulsions occur in connexion with almost every variety of cerebral disease as well as in the moribund state, and as a consequence of reflex irritation.

That great hæmorrhage is productive of convulsions is known to every accoucheur who has had to witness a case of fatal *post-partum* flooding; therefore it is unnecessary for obstetricians, at least, to dwell on the elaborate experiments by which this fact has been established. The convulsions produced by hæmorrhage, like those arising from the circulation of impure or vitiated blood, result from the interruption of that regular and sufficient supply of healthy blood to the nervous centres, which is essential to their normal action, and the sudden withdrawal of which by hæmorrhage, or its gradual deterioration by disease, are alike probable causes of these irregular manifestations of disordered nerve force.

Putting aside the distinction between the proximate and the predisposing causes of this disease, which I believe are so inextricably interwoven that it would be impossible to consider them separately, from the foregoing abstract of the different opinions which have prevailed on this subject, read by the light of my own clinical observations, I would venture to draw the conclusion, that in the causation of puerperal convulsions a variety of circumstances have a share, and must be taken into equal account. In the first place the disease is obviously connected not only with the state of the uterus itself, and with that of the adjoining organs during gestation, but still more so with the remarkable condition of nervous susceptibility peculiar to pregnancy. In the cases under consideration, the cerebro-spinal nervous centres are usually more or less congested, even when the patient's general condition is anæmic, and are irritated by the circulation of vitiated blood containing some non-eliminated *materies morbi* through their vessels, producing a direct toxic effect on the excito-motor nerve substance of the brain and medulla oblongata, and stimulating the hyperæsthetic condition just referred to till the latent excitability becomes so intense that it needs only the addition of uterine irritation, such as the first pain of labour, to cause the pent-up nerve force to burst into uncontrollable action, and produce the violent reflex muscular spasms that constitute puerperal convulsions.

The season, the age of the patient, her temperament, and the fact of

[a] Trousseau—Clinical Medicine. Vol. i., p. 32.

[b] Cullen—Synopsis Nosologiæ Methodicæ. Edit. 3. 1780.

[c] Radcliffe, on Epilepsy and Convulsive Affections. 2nd Edition, p. 262.

its being her first pregnancy or not, have also a considerable influence in the causation of this disease.

It is a remarkable fact, that puerperal convulsions generally attack a number of individuals almost simultaneously. The disease is by no means a common one; and yet, of the few instances of it which I have seen during the last six years, no less than three occurred within one fortnight. Madame Lachapelle and Dr. Ramsbotham both make a similar observation. The former says—"When one of our women is taken with convulsions, we rarely fail to have soon afterwards others in the same state." The latter observes—"I have repeatedly remarked amongst the numerous patients of the Royal Maternity Charity, as well as amongst others to which I have been accidentally called, that several cases have occurred soon after each other."[a] And it certainly seems not improbable, as was long since conjectured by Smellie[b] and Denman,[c] whose opinions have been confirmed by M. Andral,[d] Dr. Inglis,[e] as well as by Dr. Hall Davis[f] and other recent writers, that the explanation of this circumstance will be found in the occurrence of some peculiar electrical condition of the atmosphere at the time these manifestations of disordered nervous action are most rife.

II. *Presentation.*—In almost every instance of puerperal eclampsia that I have met with, the presentation was natural; and the experience of most other practitioners is similar to my own on this point.

III. *Plural Births* are most frequently complicated with convulsions.

IV. *Influence of Convulsions on Parturition.*—Whenever eclampsia occurs towards the end of pregnancy, labour is produced by the disease. If it commences after labour has set in, the delivery is generally rather accelerated by their complication.

V. *Effect of Mental Impressions in Causing Convulsions.*—This has been remarked by all obstetricians since the time of Denman, by whom it was most ably and fully discussed. Anxiety of mind, depression of spirits from reverse of circumstances, sudden shocks, are conducive of eclampsia; and some one of these, or still more commonly the combination of shame, anxiety, and sorrow in unmarried women, were clearly predisposing causes of this disease in almost every case that I have seen.

VI. *Primiparæ are most liable to Convulsions.*—Thus, in the cases of eclampsia which have come under my observation, five occurred in cases

[a] Dr. Ramsbotham—Obstetric Medicine and Surgery, p. 451. London, 1844.

[b] Smellie—Midwifery. Vol. ii., p. 285. London, 1779. Vol. iii., p. 161. London, 1789.

[c] Denman—Introduction to Midwifery. P. 428.

[d] M. Andral—Clinique Médicale. Translated by D. Spillan, M.D. P. 77. Lond., 1836.

[e] Dr. Inglis. Obstet. Med. P. 10.

[f] Dr. Hall Davis, on Puerperal Convulsions. London Obstetrical Society. Vol. xi., p. 274. London, 1870.

of first labour, and three in subsequent confinements. The same remark has been made by nearly every other writer on the subject, and is borne out by the Table I have constructed from the reports of the Rotunda Hospital, by which it appears that of 138 patients attacked by convulsions, 109 were primiparæ, and only 29 were multiparæ.

VII. *The Classification of Puerperal Convulsions* into hysterical, epileptic, and apoplectic, may, I think, be entirely disregarded. This disease differs essentially in its nature and causes from either epilepsy or apoplexy, being a convulsive affection *sui generis* peculiar to women who are either pregnant or soon after parturition.

The hysterical form of puerperal convulsions being merely ordinary hysteria occurring in the early months of gestation, though possibly excited by reflex uterine irritation, requires no peculiar treatment nor further notice. Epileptiform and apoplectiform convulsions are identical in their origin and nature, approaching each other in widely varying degrees in different cases, and influenced in their symptoms by the severity of the attack and the constitutional state of the patient, rather than by any essential difference in the nature of the disease.

VIII. *Premonitory Symptoms.*—In the majority of cases puerperal convulsions are preceded by œdema of the upper extremities, face, and eyelids, pain in the lumbar region, and albuminuria. For several days before the attack the patient generally complains of malaise, followed by head-ache, giddiness, confusion of thought, or peculiar irritability of temper, similar to that which is occasioned by the circulation of lithic acid in the blood, and which precedes an attack of gout.

IX. *Symptoms of Asthenic or Epileptiform Puerperal Convulsions.*—The phenomena of the complete seizure are somewhat similar to those of an ordinary epileptic fit. Commencing with twitching of the muscles of the eye-lids and eye-balls, the convulsions soon increase in violence, extending to every part of the body (though in every case that I have seen they were more marked on one side than on the other), and recur at irregular intervals, in clonic spasms of varying duration and intensity. In anæmic patients throughout the attack the face may be cool and pale, the eye glistening, and the pupils contracted. In the majority of cases the patient's state during the commencement of the attack is that of vascular depression, rather than of vascular excitement; the extremities being cold, the countenance pallid, and the pulse, though quick, weak and compressible. But generally as the convulsions recur more frequently, the impeded respiration and consequent non-aëration of the blood induces symptoms of venous congestion; the face becomes dusky and livid, the lips and ala nasi turgid, the breathing hissing or stertorous, the pulse full and labouring; and thus the disease passes from the first into the second stage, or from the so-called epileptiform into the so-called apoplectiform convulsions.

X. *Sthenic or Apoplectiform Convulsions.*—In plethoric women the disease generally presents, *ab initio*, the apoplectiform character, and may commence by a sudden violent convulsion, after which the patient falls into a comatose state, in which she lies, as well described, "like a person dead drunk," the convulsions meanwhile recurring at irregular intervals. Her face is congested, the carotids and temporal arteries throb visibly, the respiration becomes stertorous, the pulse slow and full, the limbs placid, and no reflex action responds to any external stimulation. After remaining for an uncertain time in this condition, midway between life and death, under favourable circumstances the convulsions may cease, and the patient at last slowly regains consciousness, and awakes once more to renewed vitality, though her mental powers will probably remain clouded for some days. But, on the other hand, the coma may become more profound, the pulse slower and more labouring, the respiration more embarrassed, the face more pallid, the extremities colder, and the skin covered with a clammy moisture, until at length "the last sad scene of all" is closed by a violent and final convulsion.

These convulsions may occur at any time of pregnancy, during labour, and within the puerperal period. Most commonly they begin with the dilatation of the os.

XI. *Treatment.*—The treatment of puerperal convulsions must be considered in reference to the state of the patient in each instance.

In all cases prevention is better than cure, and hence the importance of an early recognition of the premonitory symptoms, as by timely prophylactic measures we may sometimes succeed in warding off impending convulsions.

In this prophylactic treatment our objects are—first, to relieve the kidneys; secondly, to assist the efforts of nature to purify the blood; and, thirdly, to soothe the nervous irritability peculiar to these cases. The first object may be attempted by cupping and fomentations over the loins, the free use of diluents, and the cautious administration of mild diuretics, and especially by colchicum, in small and guarded doses. The second intention may be fulfilled by saline aperients as well as by diaphoretics, if the skin be harsh and dry, and the third by sedatives, especially bromide of potash and belladonna.

The therapeutic indications in cases of puerperal eclampsia are—first, to arrest the convulsive action; and, secondly, to remove the cause of its recurrence.

During the convulsions the ordinary precautions, such as loosening the patient's clothing, and preventing her from biting her tongue, by inserting any suitable substance between the teeth, or from injuring her person in any way by proper restraint, should, in the first instance, be attended to.

One of the most effectual means of shortening the paroxysms is cold

affusion in a small stream from a moderate height on the head and face. This remedy is of considerable antiquity, being recommended by Valescus, of Tarenta, in a work[a] originally published in the year 1482. It was re-introduced into practice on the authority of Denman, who derived great benefit in such a case by merely sprinkling his patient's face with cold water during the paroxysms—a very different practice, I may observe, from the copious cold affusions now recommended. In the asthenic form of eclampsia this remedy should be used cautiously. It should not be employed except during the convulsions, nor persevered in so long as to depress the circulation unduly.

In all cases the *primæ viæ* should be unloaded, as soon as the convulsions commence, by a bolus of calomel and jalap, or by a drop of croton oil placed on the tongue. Enemata of assafœtida and turpentine, suspended in thin gruel, may also be resorted to, and repeated if necessary.

The head should be shaved if possible, and the back of the scalp freely painted over with liquor epispasticus, whilst, at the same time, a bladder loosely filled with ice may be laid over the front of the head. The feet and calves of the legs should be enveloped in mustard poultices, until a decided rubefacient effect is produced.

In cases of sthenic puerperal convulsions, *venesection* is, notwithstanding the disusage into which blood-letting has fallen in all other diseases, still the only remedy of undoubted efficacy in subduing the convulsive action. If the patient be plethoric, and her pupils be contracted, showing cerebral congestion, we may, as a rule, bleed. If, on the contrary, the pupils are dilated, the condition of the brain may be considered as anæmic, and blood-letting would probably be out of the question. This rule is liable to many well-known causes of exception, as the state of the pupil may normally vary widely in different individuals, as well as be affected by various toxic agents.

The amount of blood that may be taken from a plethoric woman, suffering from eclampsia, should be measured by the patient's condition and the effect produced, rather than by the quantity abstracted. In one case I took nearly forty ounces of blood, and within a few hours twelve ounces more, but without any benefit. Generally, however, a very much smaller bleeding will suffice, and, as a rule, not more than from eight to twelve ounces of blood should be taken.

Chloroform is still regarded by some authorities as the remedy *par excellence* for puerperal convulsions: and though, according to my experience, this is an exaggerated estimate of the value of this anæsthetic, its inhalation is of unquestionable use in many cases. In hysterical convulsions, if sprinkling the face with cold water does not

[a] Valescus de Tarenta, Philon. Pharmaceut. et Chirurg. Lib. i., c. 27, p. 92. Franca, 1599.

suffice, a few whiffs of chloroform will generally cut short the attack. In true puerperal convulsions, however, in which I have used chloroform pretty extensively in the manner originally suggested by the late Sir James Simpson, and have kept patients under its influence for several hours at a time, it requires to be used with great caution, its exhibition being obviously contra-indicated where either the circulation is depressed, or where there is any tendency to apoplectiform symptoms. But in suitable cases I have found chloroform most serviceable in subduing the convulsions and prolonging the intervals between them. If it be inhaled only during the paroxysm, chloroform appeared to have no effect in shortening the attack; but if exhibited before its expected return, it often prevents its recurrence for hours together, and gains time, during which the labour may be completed, and the patient placed in comparative safety.

Chloral was suggested by myself in a paper published four years ago, and has since been employed with varying success by other practitioners in England and America.

Opium, though recommended upon high authority,[a] is, in my opinion, clearly contra-indicated in all cases of eclampsia during labour in which there is any tendency to apoplectiform symptoms.

The Tincture of Veratrum Viride has been used as a substitute for blood-letting in cases of puerperal convulsions by Dr. Fearn, of Brooklyn. Dr. Fearn exhibited this remedy in very large doses in ten cases of this kind—"there being," he says, "no danger from the medicine as long as the convulsions continue."[b] I should, myself, prefer some safer plan of treatment than these heroic doses of so powerful a drug.

Belladonna was originally introduced into practice in these cases by M. Claussier fifty years ago,[c] and has again been recommended by recent writers. My own experience in those cases in which I have seen it tried, would not lead me to attach any value to this drug in the treatment of eclampsia during labour. But in convulsions occurring before and after parturition, I have found small doses of belladonna most beneficial in calming the nervous susceptibility so intimately connected with convulsive action.

In every case of convulsions during labour our primary object should be to deliver the patient as speedily as is consistent with her safety and that of the child. This rule of practice was long since pointed out by Mauriceau—"La convulsion est un autre accident qui fait souvent perir

[a] Manning on Female Diseases, p. 357: London, 1775. Romberg, a Manual of the Nervous Diseases of Man, Sydenham Society, Translation, Vol. II., p. 190: London, 1853. Schwartz, Ueber Eclampsia der Kreissenden, p. 54: Riga, 1851.

[b] Fearn, American Journal of Obstetrics, May, 1871, p. 28.

[c] Claussier, Considerations sur les Convulsions qui attacquent les Femmes Encientes: Paris, 1823.

la mere et l'enfant, si la femme n'est très promptement secourue par l'accouchement qui est le meilleur remède qu'on puisse apporter à l'une et à l'autre."[a]

The convulsions do not always cease when delivery is effected, or may even commence after it. Still these cases afford no argument against the general principle that, puerperal convulsions being obviously connected with the state of the gravid uterus, the sooner this condition is terminated the sooner will the convulsions cease. The manner of accomplishing this purpose must depend on the stage and character of the labour in each case. But if the symptoms be at all urgent, the former consideration may be in a great measure disregarded, and we should not then hesitate to deliver our patient by either version or the long forceps as soon as the os uteri can be opened sufficiently to enable us to do so. In these cases only, despite Dr. Blundell's excellent aphorism, "meddlesome midwifery," is not necessarily "bad midwifery."

With regard to the manner of effecting this, as a rule the dilatation of the os goes on during the convulsions, and by keeping our patient under chloroform we may generally attend the natural occurrence of the second stage of labour before being obliged to deliver. But in some cases, as I very recently had an instance, the os, after expanding to a certain extent, becomes rigid and undilatable, the convulsions meanwhile recurring with increasing violence. In such cases the perforator and crochet were formerly freely resorted to. Thus, in no less than eight of Dr. Collins' thirty cases of convulsions, delivery was effected in this way. I cannot regard embryotomic or child-destroying operations as justifiable, even in these cases, for we now have it in our power to effect delivery without resorting to them, by dilating the os uteri with Dr. Barnes' dilators, or, where these fail, by incising the contracted circular fibres of the os with a guarded bistoury, as originally suggested by M. Dubosc of Toulouse, in 1781, so as to allow a living child to be delivered. Such an operation should, however, be only regarded as the *ultima spes*, and confined to those rare cases in which the delivery of a living child from a living mother cannot be effected by less hazardous means.

Case I.[b]—(Reported by Dr. F. Butler, then resident in the hospital). Mary Corby, aged eighteen, first pregnancy; duration of labour seventeen hours, complicated with apoplectic convulsions and plurality of children. First child, head presentation, delivered (dead) with forceps. Second child, footling presentation, lived only two or three minutes.

History and Treatment.—At 2 o'clock, p.m., on October 21st, when first

[a] Traite des Maladies des Femmes Grosses, par François Mauriceau, 7th Edition, Tome Premiere, p. 335: Paris, 1740.

[b] I am indebted for the reports of several of these cases to the notes of gentlemen who were at the time resident in the Rotunda Hospital.

seen patient was suffering from a paroxysm of apoplectic convulsions; cold water and vinegar were applied to the vertex and nape of the neck; after fifteen minutes' application without any good result, Dr. More Madden was sent for and advised the cold douche, which was tried and continued for thirty minutes, but without relieving the paroxysm; it, however, reduced the frequency of the pulse from 145 to 80 beats per minute. On examination per vaginam the os was found to be dilated to the size of a shilling.

Dr. More Madden administered calomel gr. v., and proposed depletion by bleeding from the arm, but as the paroxysms were almost continuous, he was unable to do so until chloroform was administered, which immediately checked the fit. She was now bled from the right arm and took ʒxij. of blood; previous to the bleeding her pulse had risen to 140, but after it fell to 72 per minute. The patient was then (4 45) removed to the hospital, being still under the influence of chloroform.

When the patient came into hospital the hair was closely cut from the back of her head and vesicating collodion applied.

At 7, Dr. Denham visited her and ordered sinapisms to the calves of her legs and the soles of her feet, and an enema of turpentine, castor-oil, and assafœtida to be administered, which only partially relieved the rectum. At 10 30 the membranes ruptured, the os being about the size of a five-shilling piece, and the head presenting.

At 10 40, the patient's pulse being 154, full and bounding, and her respiration stertorous, Dr. Madden again bled from the arm and took ʒxxxviij. of blood; a bladder of ice was applied to her head; the pulse did not diminish in frequency, but became small and compressible, nor was the florid colour of her lips at all altered.

At 11 30 an enema, the same as before, was administered, and hot stupes applied to her feet every fifteen minutes for an hour.

At 12 30 we administered croton oil ♏ij.

At 12 50, on examination, the os was found fully dilated.

At 12 55, Dr. More Madden applied his forceps and delivered the first child (dead). The Master now examined and found there was a second child, footling presentation, which was delivered, but only lived for three minutes.

Seven minutes after the birth of the second child both placentæ came away. After delivery the patient appeared to be sinking, and sinapisms were applied to the calves of her legs and over her heart, and an enema of beef-tea and brandy administered and repeated every hour until death ensued, at 2 30 p.m., on the 22nd.

Leave having been obtained to examine her head, a *post-mortem* examination was made at 8 p.m.; the pia mater was congested, but there were no clots found, nor was there any serous effusion.

Subjoined is a list of the paroxysms:—

The first paroxysm was felt by the patient at 9 a.m. on the 21st, and she had five fits before she was seen at 2 p.m.

Duration of Fit. minutes	Interval. minutes	Characters
2	18	General.
2½	18	Do.
2	2	Do.
3	23	Do.
2	3	Do.
2	5	Do.
2	10	Do.
3	5	Do.
2	25	Do.
2	10	Confined to body, head and right arm.
1½	3	Do.
2	30	Do.
4	1	Do.
1	5	Do. and left arm.
2	10	Do.
1	48	Do.
2	20	Confined to head, body and upper extremities
3	27	Do.
2	22	Do.
2	2	Confined to head, body and upper extremities
2	57	General.
2½	18	Do.
1	12	Do.
2	62	Do.
3	20	Do.
2	17	Do.
2½	30	Do.
2	30	Do.
1½	20	Do.
2	15	Do.
2	15	Do.
2½	15	Do.
2	15	Do.
2	20	Do.
1½	20	Do.
2	20	Do.
3	15	Do.
2	15	Do.

During each paroxysm chloroform was administered until the fit terminated; at first this treatment was attended with marked success, but afterwards did not prove so efficacious.

Case II.—Rosanna Mortimer, aged twenty-eight, first pregnancy, was admitted into hospital, October 8th, 1869, being eight months pregnant. She had five attacks of epileptiform convulsions during that day, commencing at 5 p.m. in the afternoon. When admitted she was in a semi-comatose condition, cold affusion was immediately resorted to with sinapisms to the legs and feet, and turpentine and assafœtida enemata. She soon became conscious, had no return of the fits, but still complained of head-ache and confusion of thought. One grain of extract of belladonna was ordered every fourth hour. On the 10th she was delivered of a healthy living male child, weighing 5 lbs., after a natural labour of nine hours, and made an excellent recovery.

Case III. (Reported by Mr. Roche, then resident).—M. R., aged twenty-two; first pregnancy; married ten months; labour commenced at 1 p.m., November 15th, and terminated at 1 a.m., on the following morning. The child was a male, and was born alive, and the placenta was expelled immediately. Shortly afterwards she had in rapid succession three attacks of convulsions. At 2 a.m. Mr. Roche saw her, and found her unconscious, and suffering from hæmorrhage. On examination, a small piece of membrane was found in the os, and being removed, the hæmorrhage ceased. At 2 30 a.m., she had a fit of an apoplectic

kind, and up to 6 o'clock a.m., when she was removed to the hospital, she had had seven of these seizures, with an average interval of half an hour between them. During the fits, the eye-balls were turned up, the pupils widely dilated, tongue protruded and bitten, frothing at the mouth, lips blown outwards with the violent expirations and a peculiar jerking lateral movement of the lower jaw. The head, neck, and upper extremities, were the parts principally affected during the fits.

Eight grains of calomel and a drop of croton oil were now administered, and followed by a fœtid enema. The head was shaved, ice was applied, hot mustard stupes to the calves of the legs and soles of feet, and blister to the nape of the neck.

From 6 a.m. to 2 15 p.m., she had nine fits, with an interval of three-quarters of an hour between them. They then became more frequent, till a quarter past eleven o'clock p.m., during which time—*i.e.*, from 2 15 till 11 15 p.m.—she had eighteen fits. There was then an interval of one hour and twenty-five minutes, followed by a fit, and at 1 15 a.m., November 17th, the last fit occured. The total number of convulsive seizures was thirty-six.

At 3 50 p.m., November 16th, her pulse being 116, hard, full and bounding, and the fits recurring very frequently, twenty ounces of blood were taken from the arm; the pulse now rose to 154, but became soft and compressible, and the frequency of the epileptiform seizures diminished. Midnight on the 16th, the following was directed:—

℞ Extract of belladonna,	- -	gr. ii.
Chloric ether,	- - -	♏ xl.
Aromatic spirits of ammonia,	-	♏ xl.
Beef-tea,	- - - -	℥ iv.

℥i. to be injected every 3rd hour, ice bag to head, and the evaporating lotion. Under this treatment the symptoms of eclampsia rapidly subsided, and on their cessation the following day, she was quite sensible, but unable to speak, or swallow, the tongue being greatly swollen and very painful, having been severely bitten during the fits.

On the 18th, cerebral symptoms being superinduced by the belladonna, it was discontinued, and general stimulants with appropriate local treatment, were directed. She convalesced speedily, and on the 27th was discharged well.

Case IV.—Julia Kavanagh, aged thirty-eight; second pregnancy; admitted December 6th., 1869, brought in from North Union, where she had had a great number of epileptiform fits during the entire time of labour. Shortly after her admission she was delivered naturally of a living male child, weighing 7½ lbs., having been twenty-six hours in labour. Ten minutes after the expulsion of the placenta she had a violent epileptiform fit, which was checked by cold affusions, sinapisms,

and blisters. She was then put on ½-grain doses of extract of belladonna, had no return of the seizures, and made a good recovery.

Case V.—Julia Ward, married, aged twenty-five; first pregnancy. First seen at 11 a.m., April 5th, 1870. At this time she was completely insensible. The friends stated that she was seized with convulsions at 5 a.m., and since that time had had three. She rallied after the first, and conversed rationally, but since the second she had been comatose. A slight contusion was noticed above the right eye, caused by a fall at the access of the first paroxysm. Had passed urine involuntarily. Upon vaginal examination, the os uteri readily admitted the end of the finger. She was taken to the hospital, and had a convulsion while in the cab. On admission, comatose; slight œdema of lower extremities; urine drawn by catheter, and found loaded with albumen. 11 30 a.m.—Ordered

℞ Calomel, - gr. v.	℞ Spt. terebinth, ℥j.
Pulv. jalap. co, gr. xv.	Tr. assafœtida, ℥j.
Ft. bolus.	Decoct. avena, - oj.
	Ft. enema.

To be given at once.

Slight operation from enema. Paroxysms continued at intervals of about twenty minutes. The convulsions were general, epileptiform in character, and about one minute in duration.

At 1 50 p.m., ordered repetition of enema, sinapisms to calves of legs, and cold lotion to the head. The enema was not at all retained, a paroxysm coming on while it was being administered. About fifteen minutes after, slight action of bowels. During the afternoon the pulse was 90 during the interval of the convulsions, and 120 immediately after a paroxysm. After 1 30 p.m., there was continuous slight convulsive action during the intervals of the paroxysms. At 5 p.m., the administration of chloroform was commenced, and continued until 8 20 p.m.; during this time the convulsive action of the muscles ceased, but the paroxysms were unmodified in their character or duration, and occurred at average intervals of twenty-five minutes, ℥jjj. ℥j. of chloroform were administered. At 9 p.m., the os being about the size of a half-crown, and dilatable, the long forceps was applied, and the patient was delivered of a dead female child (the head was presenting in the third position). The placenta came away in five minutes. The uterus contracted well after delivery, and no hæmorrhage followed. Convulsions continued after delivery, at average intervals of about twenty-minutes. At 11 35 p.m., Dr. Johnston ordered an enema of one grain of aqueous extract of belladonna, in two ounces of beef-tea, sinapisms repeated. Enema repeated 12 30 a.m., April 6th, sinapism to back of neck at 12 40 a.m., pulse 140. Convulsions still continuing at brief intervals. Enema repeated at 3 30

a.m., and again at 6 30 a.m.; sank at 10 20 a.m. At no time since first seen had she been conscious.

List of the Paroxysms.

April 5th. Commenced at 5 a.m. Three before 11 a.m

No.	Time	No.	Time
4	11 30 a.m.	29	12 25 a.m.
5	12 15 p.m.	30	1 0 a.m.
6	1 0 p.m.	31	1 15 a.m.
7	1 45 p.m.	32	1 28 a.m.
8	2 0 p.m.	33	1 55 a.m.
9	2 40 p.m.	34	2 20 a.m.
10	3 10 p.m.	35	2 37 a.m.
11	3 30 p.m.	36	2 55 a.m.
12	4 5 p.m.	37	3 30 a.m.
13	4 25 p.m.	38	3 48 a.m.
14	4 45 p.m.	39	4 15 a.m.
15	6 15 p.m.	40	4 35 a.m.
16	6 40 p.m.	41	5 5 a.m.
17	7 0 p.m.	42	5 20 a.m.
18	7 25 p.m.	43	5 40 a.m.
19	8 0 p.m.	44	6 8 a.m.
20	8 20 p.m.	45	6 25 a.m.
21	8 45 p.m.	46	6 47 a.m.
Delivered at	9 0 p.m.	47	7 25 a.m.
22	9 40 p.m.	48	7 50 a.m.
23	10 10 p.m.	49	8 20 a.m.
24	10 25 p.m.	50	8 45 a.m.
25	10 50 p.m.	51	9 5 a.m.
26	11 15 p.m.	52	9 20 a.m.
27	11 50 p.m.	53	9 50 a.m.
April 6th.			
28	12 10 a.m.		

Post-mortem examination at 3 45 p.m., April 6th. Purple discoloration of dura mater, an inch and a half in length, and one inch in width, at a point corresponding to the union of the sagittal sutures with the coronal; surface of brain congested. Clots in posterior portion of superior longitudinal sinus, and colourless fibrin throughout the whole extent of the sinus; about ʒij. of serum in right ventricle.

Uterus rising to lower margin of umbilicus, and containing several clots. Kidneys apparently normal on section. A small quantity of pus found in the pelvis of each. Local peritonitis in region of left kidney.

Case VI.—April 18th. B. W., aged thirty, first pregnancy; was delivered of a living female child, after a labour of sixteen hours. A short time after the commencement of labour she was attacked by asthenic convulsions, after which she became unconscious. The fits continued to recur at shortened intervals during the entire time of labour. All the usual remedies—cold affusion, purgatives, counter-irritants, &c.—being, of course, resorted to, though without benefit. The placenta was retained by want of uterine action for two hours, and shortly after its expulsion she sank, and died in a comatose state.

Case VII.—M. K., aged thirty-five, was delivered of her sixth child, a healthy male, on May 14th, after a natural labour of twenty-four hours. The placenta followed almost immediately, and ten minutes after its expulsion she was attacked by asthenic convulsions, having only one fit however. This lasted for seven minutes, and was checked by cold affusions and sinapisms to the calves of the legs. After the seizure she remained unconscious for some time, but had no return of the attack, and made a good recovery.

Case VIII.—Within the last month, through the kindness of Dr. J. Byrne Power, I had an opportunity of seeing a very interesting case of puerperal eclampsia in a patient of his—a lady, aged about thirty-two, who was attacked with asthenic convulsions immediately before labour. It was her third pregnancy, and several years had elapsed since her last confinement. The convulsions commenced about midnight, April 17th, when Dr. Power was sent for, and resorted to all the measures that could be employed to arrest the disease. When I saw her, about 5 a.m., she was completely unconscious, and, despite the judicious treatment which had been employed by Dr. Power, the fits recurred about every twenty minutes with increasing violence. The convulsions were general, but more marked on the right side. The os was still undilated and rigid, but after some time we were able to introduce, first one large-sized Barnes' dilator, and subsequently a second; but, finding it impossible to overcome the rigidity sufficiently to effect delivery, we were ultimately obliged to incise the os sufficiently to allow version to be performed, and were compelled to complete the operation with the forceps, as the os contracted so firmly after the shoulders had passed as to prevent delivery being otherwise accomplished. The child, a male, was still-born. After the operation the uterus contracted firmly, the placenta was expelled immediately, and there was no hæmorrhage. Half an hour subsequently she had another seizure, and at intervals seven other attacks. She never recovered consciousness, and died five hours after.